Mal_Functions for String Quartet and Live Electronics

Elliott Andrew Lupp

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Mal_Functions
For String Quartet and Live Electronics

by

Elliott Andrew Lupp

A thesis submitted to the Graduate College
in partial fulfillment of the requirements
for the degree of Master of Music
School of Music
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2019
Mal_Functions
For String Quartet and Live Electronics

Elliott Andrew Lupp, M.M.
Western Michigan University, 2019

Mal_Functions is a four-movement work for string quartet and live electronic that takes as its subject the timbrally rich and expansive acoustic capabilities of a string quartet and twists, warps, and expands upon them with the addition of the live electronic processing. The addition of electronics acts as only an extension of the performer, and therefore, appears to be generated by the performers themselves - as opposed to the computer. The overall goal of this piece is to take a well-established object of the musical past (the string quartet) and add to it something from the present day (live electronic processing).
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Independent Signal Processors: Each instrument has its own effects chain given the cue.

Effects:
- Each effect has a wet/dry knob and various other controllable parameters
- Signal in smooth
- Delay Lines
- Pitch Shifter (in cents)
- Reverb wet/dry
- Bit Shifter/Granular Effect
- Effects and Dry Signal display
- Panning
- Clear Delay: will flash when delay line is cleared

Master:
- MiraWeb Link: for Performers to view Cues
- Master Control for Delay Lines
- Cue Data Storage
- Master Reverb Control
- Main Balance
- Cue Information
- Master Out

The Patch
Performance Notes

**Bridge**
Play directly on bridge

**MSP**
Molto Sul Ponticello

**Ord.**
Ordinary Bow Placement

**MST**
Molto Sul Tasto

**Clb.**
Col Legno Battuto

**Clt.**
Col Legno Tratto

**SH**
*(Shakey hand)* Your bowing should be shakey, inaccurate, and like that of someone who has barely played your instrument.

**NH**
*(Normal hand)*: Control your right hand as you normally would.

Hold the bow normally.

Slant the bow at a vertical angle, with your elbow slightly pressed into your body. The frog should be closer to you.

Slant the bow at a vertical angle, with your elbow slightly extended from your body so that the tip is closer to you than the frog.

Slant the bow at an extreme vertical angle, with your elbow as close to your body as possible and the bow is nearly parallel to your instrument.

Slant the bow at an extreme vertical angle, with your elbow as far away from your body as possible and the bow is nearly parallel to your instrument.

Transition evenly between two bow positions. When this is not indicated, the transition between positions should be as abrupt as possible

Circular bowing

---

**Accented overpressure**: overpressure should be brief

**Bow behind the bridge**

**Sub tones (scratch)**

**Vibrato contour**: perform with vibrato according to contour

**As fast as possible**

**Finger pitches without bowing. This notehead is often used in tandem with improvisatory guidelines for a variety of bowing techniques (instructed within the score).**

*When a regular notehead is used within this texture, bow normally.*

**As high as possible**

**Gradually transition from one effect to the other**

**Gradually apply overpressure**

---

**All Tremolos are very dense EXCEPT:**

- When measured tremolos are given, bow speed changer should be gradual.
- Pitch successions without articulations or slurs are to be played quasi legatissimo (one note to a bow).

---

**Ricochet into arco MORE CONTROL**: allow the bow to bounce with some pressure applied and transition into arco

**Ricochet into arco LESS CONTROL**: allow the bow to bounce freely and transition into arco

**Jete (ricochet)**: fully controlled
A

Vln. I

full bow (bow as needed)
as still and steady as possible

Vln. II

Vla.

Vc.

elec.

MSP to MST

Ord.

MSP to MSP

Ord.

ppp

MSP to MSP

Ord.

MSP to Ord.

to MSP

Ord.

MST

MSP to MSP

MSP to Ord.

MSP to MSP

ppp

MSP to Ord.

MSP to MSP

Ord.

MSP

MSP
slowly transition to natural harmonic while glissing (C - E G)

To ord. to MSP to ord. to ord.

To ord. to ord. to ord.

To ord. to ord. to ord.

To ord. to ord. to ord.

To ord. to ord. to ord.

To ord. to ord. to ord.
impress occasional burst of tremolo
MSP

as steady as possible
begin a slow "tremelo"
and overtime build up speed
eventually reaching an extreme tremolo
to Ord.

with great stress and aggression

Ord.

begin a slow "tremolo"
and overtime build up speed
eventually reaching an extreme tremolo
Ord.

with great stress and aggression

Ord.

with great stress and aggression

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with great stress and aggression

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with great stress and aggression

Ord.
begin gradually slowing down tremolo

begin gradually slowing down tremolo

begin gradually slowing down tremolo

begin gradually slowing down tremolo

begin gradually slowing down tremolo

begin gradually slowing down tremolo

begin gradually slowing down tremolo

begin gradually slowing down tremolo
try to match bowing of another performer
DO NOT accent re-bows

as high as possible

hold for 10 sec.
as steady as possible

mf

bridge non-exact

mf ppp

bridge

mf ppp

mf ppp

mp
Vln. I

Vln. II

Vla.

Vc.

Elec.
like walking on thin ice  \( \frac{3}{4} \)  \( \approx \)  c. 50
rubato sempre

Violin I

Violin II

Viola

Cello

Electronics

full bow (bow as needed)
as steady as possible
MST (flautando)
no vib. (stasis)

(full bow (bow as needed))
as steady as possible
MST (flautando)
no vib. (stasis)

full bow (bow as needed)
as steady as possible
MST (flautando)
no vib. (stasis)

(full bow (bow as needed))
as steady as possible
MST (flautando)
no vib. (stasis)
like walking on thin ice \( \frac{\text{B}}{\text{MST (flautando)}} \) " \( \frac{\text{c. 50}}{\text{rit.}} \) keep bow position still
Moderato \( \frac{q}{\text{c. 108}} \)

\begin{align*}
\text{Vln. I} & \quad \text{Vln. II} \\
\text{Vla.} & \quad \text{Vc.} \\
\text{Elec.} & \\
\end{align*}
slowly become less precise

frantically (not exact)

Vln. I

Vln. II

Vla.

Vc.

Elec.

slowly become less precise

frantically (not exact)

slowly become less precise

frantically (not exact)

slowly become less precise

frantically (not exact)
Vln. I

Vln. II

Vla.

Vc.

Elec.

\[\sum \sum \sum \sum \sum \sum \sum \]

\[\sum \sum \sum \sum \sum \sum \sum \]

\text{frantically}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}

\text{frantically}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}

\text{frequently randomly switch bow angles}

\text{producing scratch tones}
frequently randomly switch bow angles
producing scratch tones

norm arco

48
frequently/randomly bow a harmonic
as rhythmically precise as possible

rit.

as rhythmically precise as possible

to MSP

as rhythmically precise as possible

as rhythmically precise as possible

as rhythmically precise as possible

as rhythmically precise as possible
like walking on thin ice \( \frac{q}{c} = 50 \)

[Musical notation with dynamics and articulations]
frequently/randomly bow a harmonic

frantically

bow a harmonic

full bow (bow as needed)
to MST (flautando)

(h)

MSP

MSP

MST

MST

MST

MST
create steady pulse with circular bowing
follow rhythm

increase circular bow speed with dynamic

create steady pulse with circular bowing
follow rhythm

increase circular bow speed with dynamic

create steady pulse with circular bowing
follow rhythm
Vln. I

Vln. II

Vla.

Vc.

Elec.

full bow (bow as needed)

pppp

mf

96

to C

full bow (bow as needed)

pppp

mf

58
increase circular bow speed with dynamic

frantically

increase circular bow speed with dynamic

increase circular bow speed with dynamic

arco

increase circular bow speed with dynamic

arco
A  

Vln. I

Vln. II

Vla.

Vc.

Elec.

full bow (bow as needed)
as steady as possible
MSP

accel. 

to Ord.

MSP

full bow (bow as needed)
as steady as possible
MST

Ord. to Ord.

to Ord.

full bow (bow as needed)
as steady as possible
MST

Ord. to Ord.

full bow (bow as needed)
as steady as possible
MST

Ord. to Ord.

full bow (bow as needed)
as steady as possible
MST

Ord. to Ord.

full bow (bow as needed)
as steady as possible
MST

Ord. to Ord.

full bow (bow as needed)
as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
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Ord. to Ord.

as steady as possible
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as steady as possible
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as steady as possible
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as steady as possible
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Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.

as steady as possible
MST

Ord. to Ord.
as steady as possible
MST
MSP
full bow (bow as needed BUT accent each bow change)
let pitch waver

full bow (bow as needed BUT accent each bow change)
let pitch waver

let pitch waver

let pitch waver

let pitch waver
OUT OF TIME (15 - 20 seconds)

CUE TOGETHER

Improvise as chromatically as possible
aggressive, quick, and percussive gestures.
Use pizzicato, harmonics, quick glissandi
and the full range of your instrument.

Moderato (\( \cdot \cdot \cdot \) \( \cdot \cdot \cdot \) 108)

---

CUE TOGETHER

Improvise as chromatically as possible
aggressive, quick, and percussive gestures.
Use pizzicato, harmonics, quick glissandi
and the full range of your instrument.

---

CUE TOGETHER

Improvise as chromatically as possible
aggressive, quick, and percussive gestures.
Use pizzicato, harmonics, quick glissandi
and the full range of your instrument.

---

CUE TOGETHER

Improvise as chromatically as possible
aggressive, quick, and percussive gestures.
Use pizzicato, harmonics, quick glissandi
and the full range of your instrument.

---

Vln. I

Vln. II

Vla.

Vc.

Elec.
LOOK FOR CUE FROM VIOLIST

Improvise as chromatically as possible with aggressive, quick, and periodicistic gestures.

Use pizzicato, harmonics, quick glissandi, and the full range of your instrument.