Kontakt

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Graduate Program in Music
A thesis submitted in partial fulfillment of the requirements for the degree in Master of Music
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KONTAKT

(Thesis format: Score)

by

Michael Lukaszuk

Graduate Program in Music

A thesis submitted in partial fulfillment of the requirements for the degree of
Master in Music Composition

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
London, Ontario, Canada

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Abstract

*Kontakt* is a c. 14-minute composition for string orchestra and audio signal processing that deals with imitation and ensemble communication. The first and third section of the piece are comprised of a series of sound objects. The second section uses one of these objects to create a collection of palindromic motives, phrases and subsections. The pitch material in my thesis composition consists of a slowly evolving cell containing three intervals at a time. The piece uses Max/MSP software to create delay networks, live recording and playback of audio material, harmonization of live material, and quadraphonic sound diffusion. In *Kontakt*, imitation is explored using canonic, spatial, textural, and timbral effects. A three-part interplay consisting of 1) performing acoustic material, 2) digital processing and 3) interpretation of the processed material creates a deep connection between the acoustic and electroacoustic elements in the piece.

Keywords

*Kontakt*, electroacoustic music, divided string orchestra, Canadian music
Acknowledgments

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Kontakt

(2013)

String Orchestra and audio signal processing

Michael Lukaszuk
Kontakt

Instrumentation

8 violins, 3 violas, 2 cellos, 1 double bass
Divided in two groups

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 violins</td>
<td>2 violins</td>
</tr>
<tr>
<td>1 viola</td>
<td>2 violas</td>
</tr>
<tr>
<td>1 cello</td>
<td>1 cello</td>
</tr>
<tr>
<td></td>
<td>1 double bass</td>
</tr>
<tr>
<td></td>
<td>2 electronicians</td>
</tr>
</tbody>
</table>

Two electronicians will process audio from group 2.

Suggested Seating Arrangement

Groups are arranged in two semicircles. Instruments belonging to Group 2 appear in italics in the above diagram.
Notation

Accidentals carry through the measure.

The note heads in parentheses indicate how long the gliss. should last. This gliss. should last as long as the combination of a sixteenth, quarter and half note. Do not rearticulate unless a change of bow direction is necessary, or the following notation is used:

Rearticulate this note as fast as possible until the line ends.

Excessive/Extreme bow pressure to create a scratchy sound.

Start playing this note at a random point in the measure.

Gradually change from one mode of execution to the next.

A beam that thickens over time into three beams indicates an unmeasured accelerando. During such passages the performer should not concern themselves with playing the exact number of notes on the page.
The Electroacoustic Component

Electronician 1 is given a variety of cues throughout the piece. All of these are to be executed using a Behringer BCF2000 MIDI control surface (or a controller with similar features). Electronician 1 manipulates a Max/MSP patch to affect the delay times, reverb decay time, computer generated transpositions of audio material, live recording, playback and sound diffusion. All cues list information in the following order:

Cue 1 – all channels
Record buffer A until------------------------
Delay Times – 1 = ___ ms , 2 = ___ ms , 3 = ___ ms
Feedback = ___
Reverb Decay time = ___ ms
Transposition - Major 2\textsuperscript{nd} above
Spatio = 1 + 2

The first line in a cue indicates which of the six input channels will be active during the processing.

The input channels should be assigned as follows:

Group 2

Violin 1 = Channel 1
Violin 2 = Channel 2
Viola 1 = Channel 3
Viola 2 = Channel 4
Cello = Channel 5
Double Bass = Channel 6

The last line in a cue indicates which of the four loudspeakers will be used.

Electronician 2 controls the loudspeaker output levels using a mixing console or similar audio interface. Levels are notated using standard dynamic markings (i.e. mp, ff) and crescendo/decrescendo hairpin signs. All output gains are equal unless a specific number appears above a hairpin.

e.g.:

\begin{equation}
\text{1.} \quad \text{------------------------}
\end{equation}

Raise and lower the output gain for speaker 1. Gains for other output channels that may be active are not to be altered.
Please refer to the Max/MSP patch for more information on setup and performing cues. Contact Michael Lukaszuk to obtain a copy of the Max/MSP patch.

Duration approximately 14:00
Channels 2-6
Dly t->-----1500ms until m.30
Feedback = 1.5
Rvb decay time = 500ms
Spatio rotate 1-4
change every measure
Delay times: 1=1550ms, 2=2300ms, 3=3450ms
Feedback = 1.2
Rvb decay = 1000ms
Transpose with each delay: Maj 2, Min 3 and Min 6
Spatio = 1+2
Cue 8
all channels
add 1 dly time per. bar - 1= 1500ms, 2= 750ms, 3= 375ms, 4 = 187ms
feedback = 1.5
rvb decay 2000
staggered transpositions up: Maj 2, Maj 3 and dim.5
spatio = 1-2
Vln. I

Vln. II

Vln. III

Vln. IV

Vln. V

Vln. VI

Vla.

Vc.

Vln. I

Vln. II

Vla. I

Vla. II

Vc.

D.B.

Elec. 1

Elec. 2

rit. until m. 115

sempre staccato

mf
Add 1 Delay time per bar - 1 = 250ms, 2 = 350ms, 3 = 450ms, 4 = 550ms
feedback = 1
Rvb Decay time = 1000ms
Transposition = randomly select transpositions of Maj 2nd, Maj 3rd, Dim.
Spatio = rotation 1-4, new speaker each measure
rit. until m. 178
Vln. I
Vln. II
Vln. III
Vln. IV
Vln. V
Vln. VI
Vla.
Vc.

181

Vln. I
Vln. II
Vln. III
Vln. IV
Vln. V
Vln. VI
Vla.
Vc.

181

D.B.

Elec. 1

Elec. 2

GRP. 1

GRP. 2

sul pont.

sul tasto

pizz.

arco
Vln. I
Vln. II
Vln. III
Vln. IV
Vln. V
Vln. VI
Vla.
Vc.

Play buffD (0.5 x speed)
Delay times: 1 = 250ms, 500ms
Reb Decay time: 1500ms
Spatio = alternate 1+3, 2+4 every measure
play buffer A (0.5x speed)
transpose down - maj. 6th
spatio = 1

Vln. I

Vln. II

Vln. III

Vln. IV

Vln. V

Vln. VI

Vla.

Vc.

D.B.

Elec. 1

Elec. 2

Cue 22
Channel 2
Delay Times: 1 = 500ms, 2 = 550ms, 3 = 750ms, 4 = 1500ms
Feedback = 1
Res Decay Time = 1500ms
Spatio = rapidly alternate 3, 4, 2

Cue 24

\( e^\text{+q} + q \)
unmeasured glissandi, gradually increase number of glissandi per bar
# Curriculum Vitae

**Name:** Michael Lukaszuk

**Post-secondary Education and Degrees:**
- University of Western Ontario, London, Ontario, Canada
  - The University of Western Ontario, London, Ontario, Canada
  - 2011-2013 M.Mus.

**Honours and Awards:**
- Paul Akira Ohashi Summit Award
  - 2011
- Western Graduate Research Scholarship
  - 2011-2013
- The University of Western Ontario Dean’s List
  - 2009-2011

**Related Work Experience**
- Teaching Assistant
  - The University of Western Ontario
  - 2011-2013
- Research Assistant
  - The University of Western Ontario
  - 2010-2011