

Andrew Lovett

On the Curves of the Winds

for cello and computer

(2013)

SCORE

On the Curves of the Winds (2013) for cello and computer

Composed at CCRMA, Stanford University, California, January to April 2013
Revised, January 2016 (Princeton).

Samples: Chris Chafe (cello) and Roberto Fernandez (flute).

Additional samples: Judith Mitchell (cello), Damien Royannais (saxophone), Tim Palmer (percussion).

Samples recorded by Jay Kadis and the composer.

Duration: 13.30

For Chris and June

Performance Instructions:

This piece is intended for playback through a multi-speaker system.

The computer part consists of twelve audio channels which may be mixed during performance or pre-mixed during rehearsal. Playback from a laptop requires an audio interface, preferably with ten outputs.

For full details see appendix 1.

A stereo version is available for rehearsal purposes (see appendix 2).

The cello is amplified. Careful use of digital reverb is encouraged, which should be varied during the course of the performance.

Although the computer playback is fixed, there is scope for flexibility in timing and (micro-) tuning by the performer. Long pauses by the player (while the computer-part continues) are indicated by a tail-less solid note with a line following. The solo part should fade into the computer part very gradually (usually there is a computer component corresponding to the pitched note).

Approximate pitches are indicated by cross note-heads and high indeterminate pitches are indicated by arrowhead note-heads. In these passages, rhythm and timing may be very flexible, too.

The score contains a simplified transcription of the computer part, with timings corresponding to the fixed taped-part.

Theatre:

There is, potentially, a theatrical element. The performer may use props, costume-elements and lighting to create an impression that s/he is flying an early biplane (constructed of wood and string). During pauses - especially the long pause at letter X - the performer may be preoccupied adjusting some aspect of the craft. A lighting plot may be created to help reinforce this idea.

Programme note:

A bird maintains itself in the air by imperceptible balancing, when near to the mountains or lofty ocean crags; it does this by means of the curves of the winds which as they strike against these projections, being forced to preserve their first impetus bend their straight course towards the sky with divers revolutions, at the beginning of which the birds come to a stop with their wings open, receiving underneath themselves the continual buffettings of the reflex courses of the winds.

— Leonardo da Vinci

Andrew Lovett moved from the UK to live in Princeton (joining the Music Department at Princeton University as a Professional Specialist) in September 2009. He composes chamber-opera, chamber music and electroacoustic music. His work has been performed in Germany, France, Switzerland, Portugal, Spain, Sweden, Japan, Canada, Cuba, the USA and throughout the UK.

Lonely Sits the City (2009), for solo voice and surround-sound electronics, was premiered at the Junction, Cambridge by The Electric Voice Theatre.

Abraham On Trial (2005), an opera for five singers, electroacoustic music and digital video, was performed at the Junction Theatre, Cambridge by The Electric Voice Theatre, directed by Patrick Morris.

The Colour of Sadness (2003) for soprano saxophone and electronics, was premiered by Damien Royannais and recorded by for AMPublishing.

Unknown Terrors (2000) for cello, keyboard and electronics was premiered by Judith Mitchell and Clive Williamson and broadcast on Radio 3.

Voyage (1997) for ensemble and electroacoustic music was performed by the London Sinfonietta at the South Bank Centre, London in April 1999, conducted by Martyn Brabbins.

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I: $\text{♩} = 72$ light, fluttering - senza vib

Con sord.

Cello

Computer

(0.00)

COMPUTER START

sul pont. nat [still] A sul tasto nat

Vc. 5 (poco) *sf*

Cmpr

(0.24)

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sul pont. nat [still] A sul tasto nat

(poco) *sf*

6

----- *sul pont* -----

slight ritardando -----

nat.

Vc. *II*

Cmpt

(0.41)

[still]

B

sul tasto -----

Vc. *16*

[blend into computer harmonic]

via sord.

Cmpt

(0.58)

24

Vc.

p <> <> <>

Cmpr

(1.28)

31

Vc.

(on the D string) harmonic gliss

f >

accel.

Cmpr

* Harmonic glissandi can be approximate (notes and timing) - follow the glissandi in the computer part.

stronger and more energetic alternating with moments of stillness

[still]

37

Vc.

f

Cmptr

(1.57)

[still]

43

Vc.

mf

>**p**

Cmptr

(2.12)

C $\text{♩} = 168$

49

Vc.

f

sfz

Cmptr

<img alt="Musical score for the Cimbalom (Cmptr) part, page 49. It shows seven measures of eighth-note patterns. Measures 1-3: 3/4 time. Measures 4-7: 8/8 time. Measures 8-10: 3/4 time. Measures 11-13: 8/8 time. Measures 14-16: 3/4 time. Measures 17-19: 8/8 time. Measures 20-22: 3/4 time. Measures 23-25: 8/8 time. Measures 26-28: 3/4 time. Measures 29-31: 8/8 time. Measures 32-34: 3/4 time. Measures 35-37: 8/8 time. Measures 38-40: 3/4 time. Measures 41-43: 8/8 time. Measures 44-46: 3/4 time. Measures 47-49: 8/8 time. Measures 50-52: 3/4 time. Measures 53-55: 8/8 time. Measures 56-58: 3/4 time. Measures 59-61: 8/8 time. Measures 62-64: 3/4 time. Measures 65-67: 8/8 time. Measures 68-70: 3/4 time. Measures 71-73: 8/8 time. Measures 74-76: 3/4 time. Measures 77-79: 8/8 time. Measures 80-82: 3/4 time. Measures 83-85: 8/8 time. Measures 86-88: 3/4 time. Measures 89-91: 8/8 time. Measures 92-94: 3/4 time. Measures 95-97: 8/8 time. Measures 98-100: 3/4 time. Measures 101-103: 8/8 time. 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Measures 1640-1642: 3/4 time. Measures 1643-1645: 8/8 time. Measures 1646-1648: 3/4 time. Measures 1649-1651: 8/8 time. Measures 1652-1654: 3/4 time. Measures 1655-1657: 8/8 time. Measures 1658-1660: 3/4 time. Measures 1661-1663: 8/8 time. Measures 1664-1666: 3/4 time. Measures 1667-1669: 8/8 time. Measures 1670-1672: 3/4 time. Measures 1673-1675: 8/8 time. Measures 1676-1678: 3/4 time. Measures 1679-1681: 8/8 time. Measures 1682-1684: 3/4 time. Measures 1685-1687: 8/8 time. Measures 1688-1690: 3/4 time. Measures 1691-1693: 8/8 time. Measures 1694-1696: 3/4 time. Measures 1697-1699: 8/8 time. Measures 1700-1702: 3/4 time. Measures 1703-1705: 8/8 time. Measures 1706-1708: 3/4 time. Measures 1709-1711: 8/8 time. Measures 1712-1714: 3/4 time. Measures 1715-1717: 8/8 time. Measures 1718-1720: 3/4 time. Measures 1721-1723: 8/8 time. Measures 1724-1726: 3/4 time. Measures 1727-1729: 8/8 time. Measures 1730-1732: 3/4 time. Measures 1733-1735: 8/8 time. Measures 1736-1738: 3/4 time. Measures 1739-1741: 8/8 time. Measures 1742-1744: 3/4 time. Measures 1745-1747: 8/8 time. Measures 1748-1750: 3/4 time. Measures 1751-1753: 8/8 time. Measures 1754-1756: 3/4 time. Measures 1757-1759: 8/8 time. Measures 1760-1762: 3/4 time. Measures 1763-1765: 8/8 time. Measures 1766-1768: 3/4 time. Measures 1769-1771: 8/8 time. Measures 1772-1774: 3/4 time. Measures 1775-1777: 8/8 time. Measures 1778-1780: 3/4 time. Measures 1781-1783: 8/8 time. Measures 1784-1786: 3/4 time. Measures 1787-1789: 8/8 time. Measures 1790-1792: 3/4 time. Measures 1793-1795: 8/8 time. Measures 1796-1798: 3/4 time. Measures 1799-1801: 8/8 time. Measures 1802-1804: 3/4 time. Measures 1805-1807: 8/8 time. Measures 1808-1810: 3/4 time. Measures 1811-1813: 8/8 time. Measures 1814-1816: 3/4 time. Measures 1817-1819: 8/8 time. Measures 1820-1822: 3/4 time. Measures 1823-1825: 8/8 time. Measures 1826-1828: 3/4 time. Measures 1829-1831: 8/8 time. Measures 1832-1834: 3/4 time. Measures 1835-1837: 8/8 time. Measures 1838-1840: 3/4 time. Measures 1841-1843: 8/8 time. Measures 1844-1846: 3/4 time. Measures 1847-1849: 8/8 time. Measures 1850-1852: 3/4 time. Measures 1853-1855: 8/8 time. Measures 1856-1858: 3/4 time. Measures 1859-1861: 8/8 time. Measures 1862-1864: 3/4 time. Measures 1865-1867: 8/8 time. Measures 1868-1870: 3/4 time. Measures 1871-1873: 8/8 time. Measures 1874-1876: 3/4 time. Measures 1877-1879: 8/8 time. Measures 1880-1882: 3/4 time. Measures 1883-1885: 8/8 time. Measures 1886-1888: 3/4 time. Measures 1889-1891: 8/8 time. Measures 1892-1894: 3/4 time. Measures 1895-1897: 8/8 time. Measures 1898-1900: 3/4 time. Measures 1901-1903: 8/8 time. Measures 1904-1906: 3/4 time. Measures 1907-1909: 8/8 time. Measures 1910-1912: 3/4 time. Measures 1913-1915: 8/8 time. Measures 1916-1918: 3/4 time. Measures 1919-1921: 8/8 time. Measures 1922-1924: 3/4 time. Measures 1925-1927: 8/8 time. Measures 1928-1930: 3/4 time. Measures 1931-1933: 8/8 time. Measures 1934-1936: 3/4 time. Measures 1937-1939: 8/8 time. Measures 1940-1942: 3/4 time. Measures 1943-1945: 8/8 time. Measures 1946-1948: 3/4 time. Measures 1949-1951: 8/8 time. Measures 1952-1954: 3/4 time. Measures 1955-1957: 8/8 time. Measures 1958-1960: 3/

62

Vc.

Cmpr

68

Vc.

Cmpr

E

accel.

74

f

Musical score for Cmptr, showing measures 1 through 4. The score consists of two staves. The top staff is treble clef and the bottom staff is bass clef. Measure 1 starts with a whole note followed by a half note. Measure 2 is a rest. Measures 3 and 4 each contain four eighth-note chords. Measure 5 is a rest.

(2.51)

repeat - irregularly

A musical staff for the Cmptn part, starting with a bass clef. It contains eight eighth-note chords, each consisting of two notes: a black note on the second line and a white note on the third line. The notes are grouped by vertical bar lines. The first four chords have stems pointing down, while the last four have stems pointing up.

F  = 72

hold note (ad lib) blending with computer sounds...

Musical score for page 85. The top staff shows the Bassoon (Vc.) playing eighth-note patterns with grace notes, dynamic markings *f* and *ff*, and a fermata. The bottom staff shows the Computer (Cmptn) playing eighth-note patterns with grace notes and dynamic markings *f* and *ff*. The score includes a section labeled "computer solo" with dynamics *s* and *ff*.

G ♩ = 112

97

Vc.

(flt flutter)

pizz.

(3.34)

H ♩ = 168

I

103

Vc. 

(3.40) (3.45)

109

Vc. 

Cmpr. 

J $\text{♩} = 72$

K $\text{♩} = 168$

114 *intense*

Vc. **f**

Cmptn pizz.

(3.51) (4.06)

(3.51) (4.06)

Musical score for Viola (Vc.) and Cimbalom (Cmplt) at measure 122. The score includes dynamic markings *sf*, *sfz*, and *intense*. The tempo is indicated as **L** with a note value of $\text{♩} = 72$. The Viola part features a rhythmic pattern of eighth and sixteenth notes, while the Cimbalom part provides harmonic support.

M $\text{♩} = 168$

Vc. 128

Cmtr

(4.22)

This section of the score begins with a measure for the Cmtr (Cembalo) consisting of sustained notes with grace notes. The Vc (Violin) enters with eighth-note patterns. Measure 129 starts with a forte dynamic (sfz) for the Cmtr. Measures 130-131 show the Vc playing eighth-note patterns while the Cmtr provides harmonic support. Measure 132 features a dynamic change to sfz for both parts. Measures 133-135 continue with eighth-note patterns, with the Cmtr's dynamics changing to pizz. and arco.

Vc. 136

Cmtr

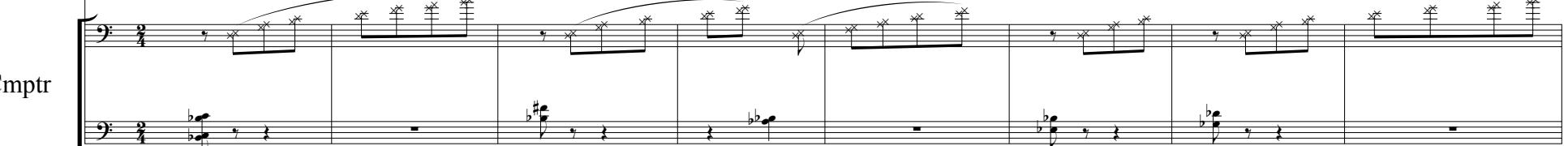
pizz. arco

This section begins with a dynamic sfz for the Vc. Measures 137-138 show the Vc playing eighth-note patterns with dynamics sfz and sffz. Measures 139-140 feature eighth-note patterns with dynamics sffz and sfz. Measures 141-142 show eighth-note patterns with dynamics sffz and sfz. Measures 143 concludes with eighth-note patterns and dynamics sffz and sfz.

N*accel.*

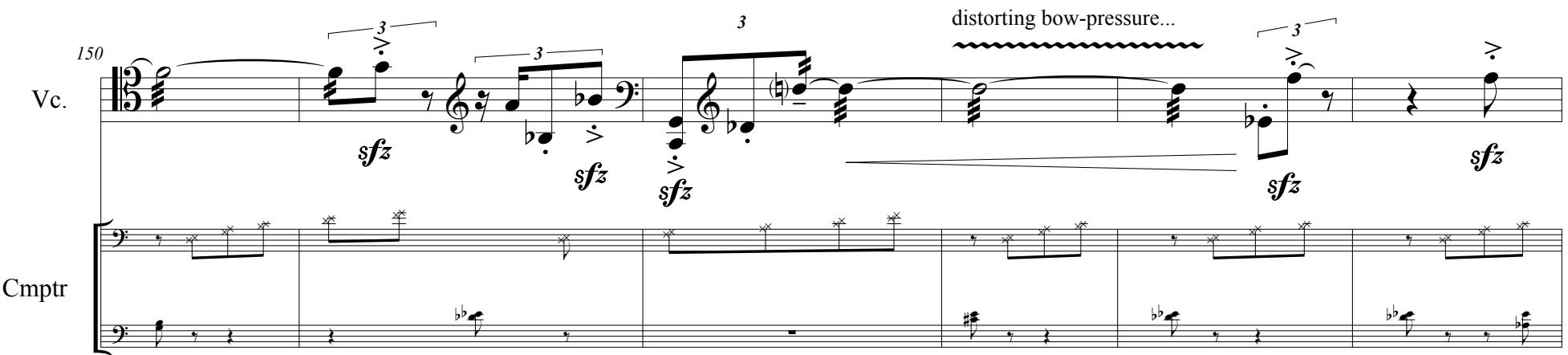
142

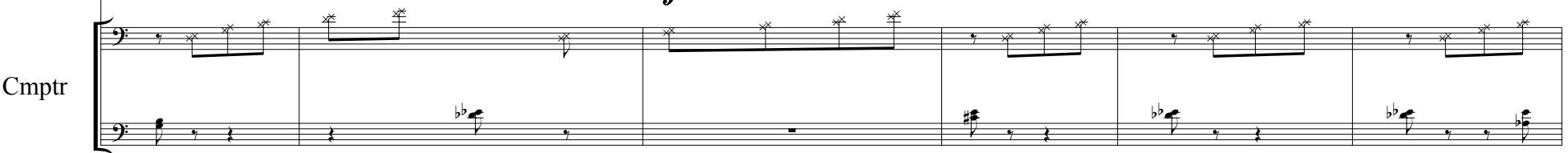
Vc. 

Cmpr. 

(4.32)

150

Vc. 

Cmpr. 

repeat - irregularly - smooth transition from repeated notes to tremolo distorting bow-pressure...

156

Vc.

Cmtr

III: $\text{♩} = 112$

powerful and commanding - gradually calming...

nat.

166

Vc.

Cmtr

(4.52)

calming very gradually

171

Vc.

Cmpr

O

178

Vc.

Cmpr

(5.18)

P

185 Vc. [blend] sul tasto _____ nat.
 Cmtr (5.35)

PPP

Q

191 Vc. sul tasto _____ (gradually...) _____ nat
 Cmtr (5.58)

mp

R

199

Vc.

CmPTR

(6.11)

S

205

Vc.

CmPTR

(6.24)

210 [still] [blend] 3 3

Vc. CmPTR (sax-fluttertongue m/phonics) **mp**

217 distorting... 3 3 T

Vc. CmPTR (6.54)

U

Musical score for page 7.11, measures 224-225.

Violin (Vc.)

- Measure 224:
 - Tempo: 7
 - Dynamic: \textcircled{O} (open circle)
 - Performance instruction: **-- COMPUTER SOLO --**
 - Measure 225:
 - Tempo: 7
 - Dynamic: \textcircled{O} (open circle)
 - Performance instruction: **-- COMPUTER SOLO --**

Computer (Cmptr)

 - Measure 224:
 - Tempo: 7
 - Dynamic: \textcircled{O} (open circle)
 - Performance instruction: **-- COMPUTER SOLO --**
 - Measure 225:
 - Tempo: 7
 - Dynamic: \textcircled{O} (open circle)
 - Performance instruction: **-- COMPUTER SOLO --**

Tempo: 7
Dynamic: \textcircled{O} (open circle)
Performance Instruction: -- COMPUTER SOLO --

234

Vc.

Cmplt

(non vib)

238

Vc.

Cmpr

242

Vc.

Cmpr

V

(7.39)

This musical score page contains two systems of music. The top system, starting at measure 238, features the Cello (Vc.) and the Double Bass (Cmpr). The cello has a sustained note with a grace note, followed by a dynamic marking 'mf' and a melodic line. The double bass provides harmonic support with sustained notes and rhythmic patterns. The bottom system, starting at measure 242, also features the Cello and Double Bass. The cello plays a melodic line with grace notes and dynamic markings. The double bass continues its rhythmic pattern. A large square bracket labeled 'V' is positioned above the double bass staff in measure 242. The page number '23' is located in the top right corner.

246

Vc. 

Cmptr

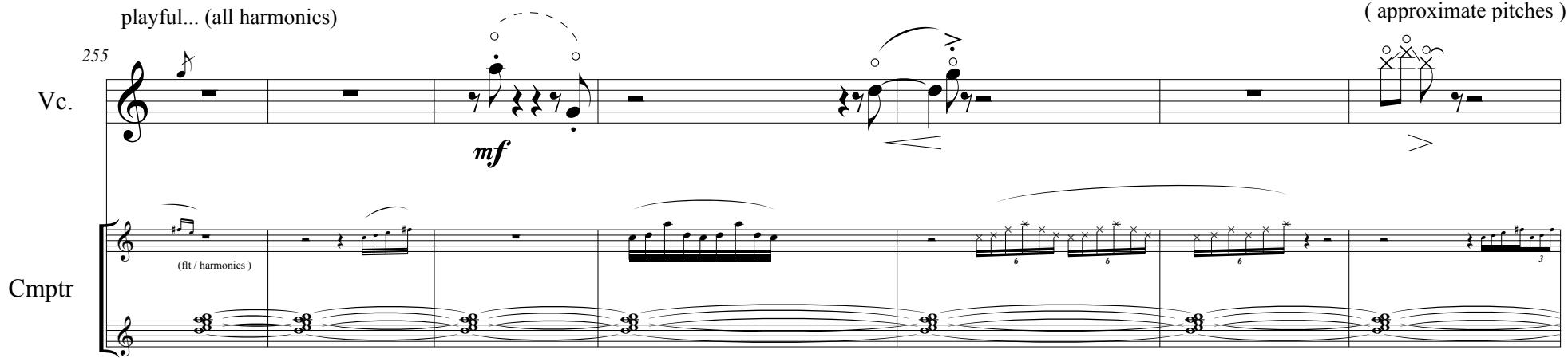
(In section 4, exact pitch and timing are not essential - follow and respond to the surround-sounds)

IV: (same tempo)

playful... (all harmonics)

(approximate pitches)

255

Vc. 

Cmptr

(8.03)

262

Vc.

The musical score consists of two systems of staves. The top system, labeled 'Vc.', starts with a treble clef, a key signature of one sharp, and a common time signature. It contains two measures of rests followed by a measure with sixteenth-note patterns (crosses and circles) and a fermata. The bottom system, labeled 'Cmtr.', shows sixteenth-note patterns with a '6' below each group of six notes. Measure 263 begins with a measure of rests followed by a measure with sixteenth-note patterns and a fermata. Measure 264 starts with a measure of rests followed by a measure with sixteenth-note patterns and a fermata. Measure 265 starts with a measure of rests followed by a measure with sixteenth-note patterns and a fermata. Measure 266 starts with a measure of rests followed by a measure with sixteenth-note patterns and a fermata. Measure 267 starts with a measure of rests followed by a measure with sixteenth-note patterns and a fermata. Measure 268 starts with a measure of rests followed by a measure with sixteenth-note patterns and a fermata. Measure 269 starts with a measure of rests followed by a measure with sixteenth-note patterns and a fermata.

(A-string)

A detailed view of the string notation for the A-string. It shows a series of vertical lines representing the string, with various symbols (circles, crosses, dots) placed above it to indicate specific notes or techniques. The notation is connected by a dashed horizontal line at the top, with a bracket underneath indicating the range of the string.

269

Vc.

Cmtr.

(A-string)

A detailed view of the string notation for the A-string in measure 269. It shows a series of vertical lines representing the string, with various symbols (circles, crosses, dots) placed above it to indicate specific notes or techniques. The notation is connected by a dashed horizontal line at the top, with a bracket underneath indicating the range of the string.

(A-string)

276

Vc.

CmPTR

W

suddenly tense...

(short, hard pizzicato notes - as high as possible - alternating across strings...)

280

Vc.

pizz.

sforzando

CmPTR

(very hard taut pizzicato)

(8.56)

Musical score for orchestra and piano, page 286. The score shows two staves. The top staff is for the Cello (Vc) and the bottom staff is for the Cimbalom (Cmplt). The Cello part consists of a series of eighth-note patterns with slurs and dynamic markings like *sfz*. The Cimbalom part features sustained notes with grace notes and dynamic markings like *f*. The score is in common time.

arco scratchy distorted

very noisy
gliss from
highest possible

293

Cvc.

Cmpt

V: $\text{♩} = 72$

301

Vc. very rough 3

fff

Cmptn

ffz

(9.40)

306

Vc.

Cmptr

X**-- COMPUTER SOLO --**

very long hold - gradually blending into computer

311

Vc. *mp* Cmpr. *fff* 20 20 20

(10.21)

Y

Con sord.

334 sul tasto

Vc. *pp* Cmpr.

pp

(11.30)

Z

342

Vc.

Cmptr

(12.11)

349

Vc.

Cmptr

355

Vc.

The musical score shows two staves. The top staff is for the Cello (Vc.), which plays sustained notes with wavy horizontal lines underneath. The bottom staff is for the Piano (Cmtr), which has a treble clef and a bass clef. It also features sustained notes with wavy horizontal lines. Measure 355 ends with a dynamic marking ***pp***. The measure number (12.57) is written below the piano staff.

Cmtr

pp

(12.57)

363

Vc.

The musical score shows two staves. The top staff is for the Cello (Vc.), which begins with a short note followed by a sustained note with a wavy horizontal line underneath. The bottom staff is for the Piano (Cmtr), which continues its sustained-note pattern with wavy horizontal lines. A dashed horizontal line extends from the end of the piano staff across the page.

Cmtr

(13.34)

Appendix 1: Computer audio material.

The audio material is recorded at 48kHz, 24 bit with C=440

The "unmixed" version consists of 12 channels:

- 1&2 - main stereo channels (space filling - some slight left and right information)
- 3&4 - high stereo channels (one or two speakers high above the audience and performer)

5- 12 - eight individual mono channels - in four pairs, intended to be spaced as follows:

- speakers 1 and 2 front left and right (narrow)
- speakers 3 and 4 - front left and right (wide)
- speakers 5 and 6 - middle left and right (wide)
- speakers 7 and 8 rear left and right (wide)

In an ideal situation, there are 8 speakers around the audience with two high above. Channels 1&2 are sent to all eight lower speakers with stereo separation (odd=left, even=right)
The eight individual channels are sent to the eight individual speakers.
Channels 3&4 are sent to the high stereo (or mono) speaker.

Depending on the space and configuration, the output channels will have to be balanced in rehearsal.

There is a pre-mixed version for 7.1 surround-sound configuration.

Appendix 2: rehearsal CD

The rehearsal CD is for practice. It contains a slightly compressed stereo version of the piece (44.1/16).