Rand Steiger

Ecosphere

commissioned by Ircam
for the Ensemble Intercontemporain

first edition
18 January 2002

Premiere:

March 1, 2002; Grand Salle, Centre George Pompidou, Paris
Ensemble Intercontemporain; Patrick Davin, conductor;
Technique Ircam; Olivier Pasquet, software design and computer performance

Program Note:

The earth has a complex and delicate balance of ecosystems that sustain a diversity of life forms. Human intervention is now altering this balance in unprecedented ways, most notably from rain forest eradication, and the various effects of global warming. The geographer Robert Bailey has classified terrestrial ecosystems into four domains (polar, humid temperate, dry, and humid tropical) divided into 15 regions. All of the earth's land mass fall into these 15 classifications in various percentages, from savanna (17%) to hot continental (1.4%). This is a dynamic equation that human intervention is altering quickly and dangerously.

This piece draws on Bailey's classifications as a formal model. There are sixteen sections (in one continuous movement) that take their temporal proportions from the percentages of their corresponding ecosystem, presented in the following order (with cities given as one example of where each ecosystem may be found):

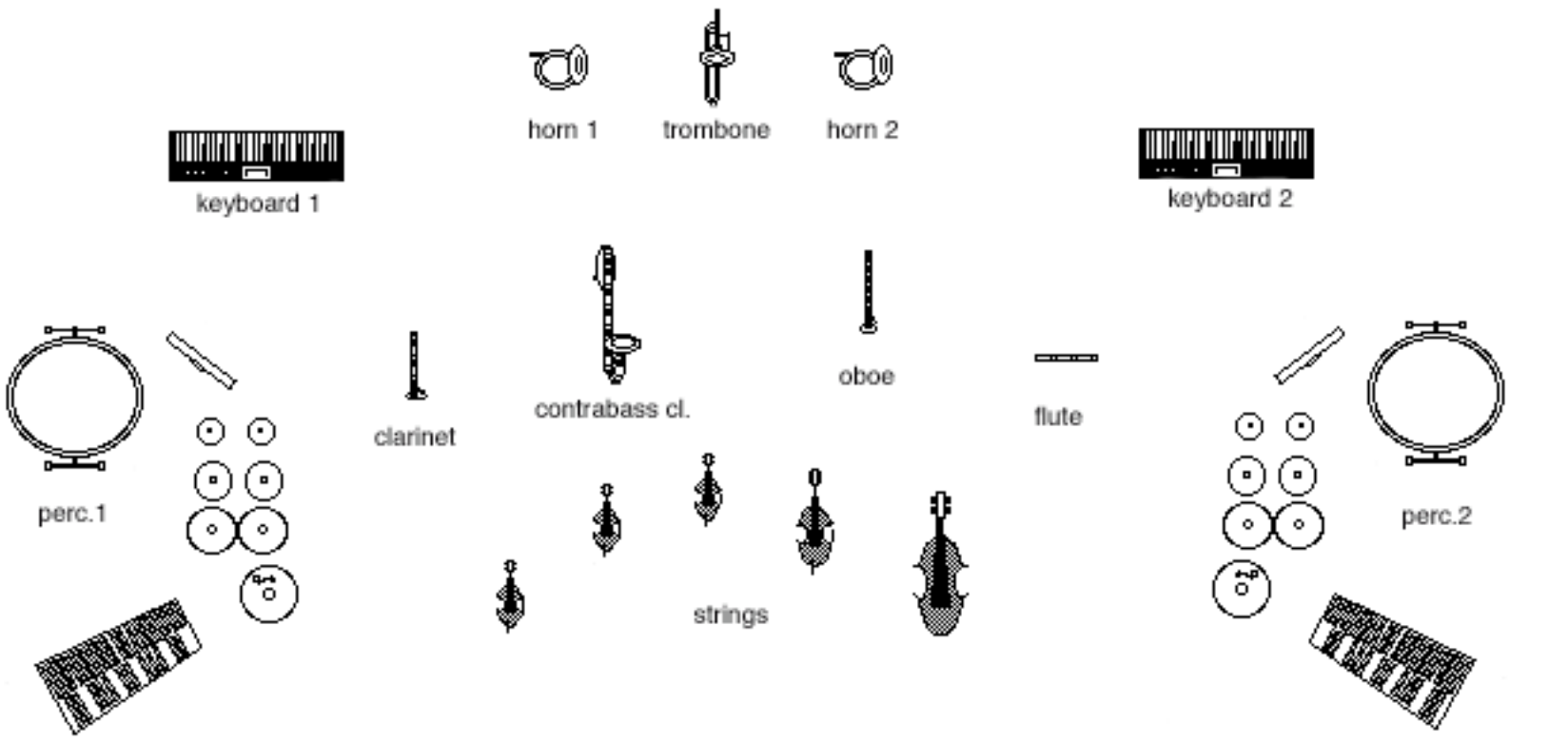
1. atmosphere
2. subarctic (Fairbanks)
3. tundra (Reykjavik)
4. warm continental (Tallinn)
5. temperate steppe (Volgagrad)
6. marine (Paris)
7. hot continental (Nagano)
8. mediterranean (San Diego)
9. tropical steppe (Khartoum)
10. tropical desert (Djibouti)
11. rain forest (Manaus)
12. savanna (Madras)
13. temperate desert (Taschkent)
14. subtropical (Sydney)
15. prairie (Montevideo)
16. icecap (Byrd Station)

Some data about each regions climate is taken into consideration in developing the material for each section, particularly the way temperature and precipitation change over the course of an average year. But other then this, the music is composed freely, with no attempt to illustrate. I do not seek to create a musical picture of these systems, but rather use this data as a model for a journey through a varied musical terrain. I also wish to celebrate the present diversity of ecosystems, and lament the gradual erosion of this diversity and corresponding extinction of numerous life forms.

Ecosphere is scored for flute (with piccolo and alto), oboe (with cor anglais), 2 clarinets (with bass, and contrabass), two horns, trombone, 2 percussionists, 2 keyboards, and string quintet. The keyboards control sample players to simulate various plucked and struck instruments, with a computer deployed to dynamically retune the samples in a just relationship to the fundamental frequency of each phrase. Real-time audio signal processing is deployed on all of the other instruments for spatialization, resonance, reverberation, delay, cross synthesis, and just intonation pitch shifting.

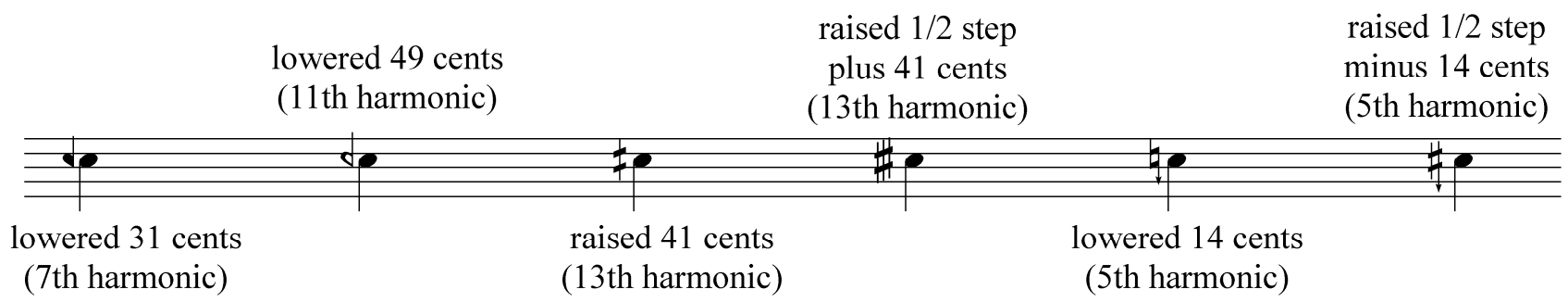
Ecosphere was commissioned by IRCAM. I wish to express my gratitude to Eric DeVischer and Allain Jaquinot for their support, to Miller Puckette of UCSD for his software development, and to Olivier Pasquet of IRCAM for his indispensable assistance with the technical realization of this work.

Stage Diagram:



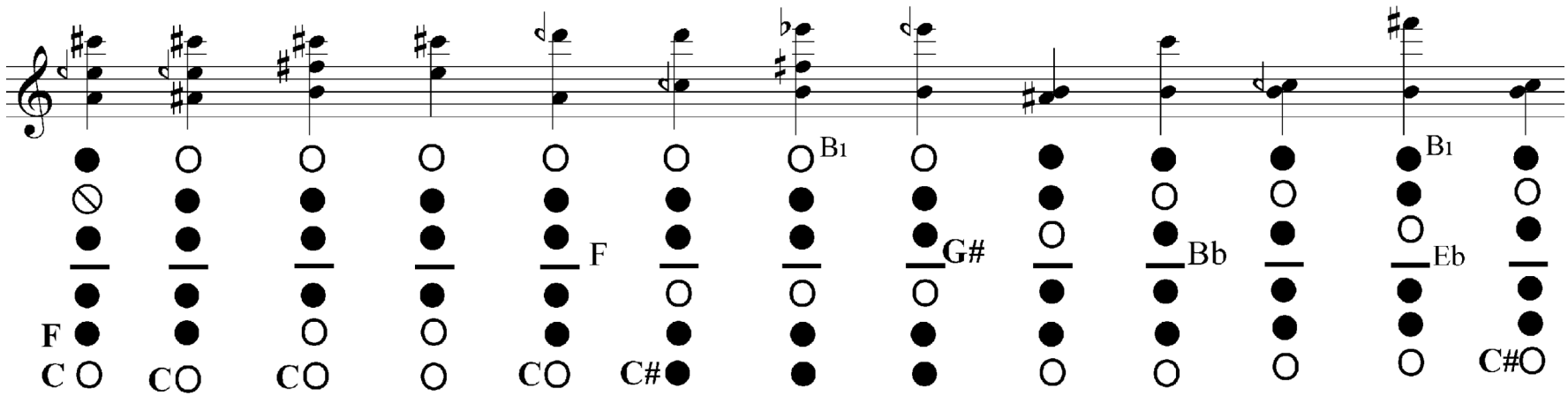
Microtonality:

The following special accidentals are used to indicate specific micro-intervals for just tuning. In the case of the horns and trombone, these pitches are to be realized by playing natural notes.



Flute: square note heads indicate a "tongue ram" played at pitch, and sounding one octave lower

Oboe Multiphonics: The following multiphoncs (with fingering suggestions from the Nora Post article) are specified in the score:

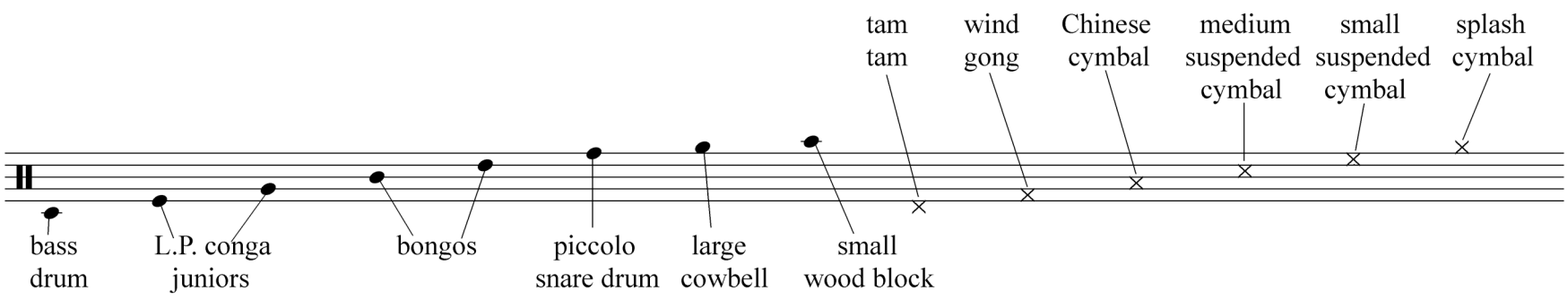


Horns: All glissandos are to be played as harmonic glissandos, and all trills are to be played as lip trills (except where indicated otherwise). When a trill pitch is not indicated in parenthesis next to the main note, the trill should be played to the next highest partial. All microtonal pitches specified are to be played as "natural tones" in the corresponding series. For example, F with a 49 cent quarter flat indicates playing the 11th harmonic in the series of B, while F with a 31 cent flat indicates the 7th harmonic in the series of G.

Trombone: Glissandos are to be played with the slide, unless the indication "Harm." appears above the gliss., indicating a harmonic glissando. All trills are to be played as lip trills to the pitch indicated, or to the next highest partial. As in the horn parts, microtonal notes are to be played as natural tones wherever possible, including high partials on the bass side of the instrument. A few notes in the part are not possible to play this way, and in that case the pitch should be adjusted by using the slide. But this should only be done when it is the only alternative. When using the harmon mute, the stem is to be fully inserted. When a **+** is indicated above the part, the end of the stem should be covered with the left hand, and an **O** indicates leaving it completely open. A line between an + and O indicates a gradual change from one to the other to create a timbral transformation.

Keyboards: The two keyboard parts are played on 88 key midi keyboards that controls a 32 channel, 128 voice E4X Sampler, through a mediating computer program. The lowest octave of the keyboard does not trigger audible notes, but rather indicates to a computer program a fundamental frequency to which other notes of the keyboard are then adjusted in a just relationship. Therefore the notes produced will not all be tempered, as they appear in the score. A hybrid just tuning scheme is deployed, where the intervals of the major third (5th harmonic, -14 cents), tritone (11th harmonic -49 cents), minor sixth (13th harmonic, +41 cents), and minor seventh (7th harmonic, -31 cents). For example, if the lowest note (A) is depressed, until another note in the lowest octave is depressed, all C#'s will be lowered 14 cents, all g's will be lowered 31 cents, etc. ***When a diamond shape note head (like those used to indicate string harmonics) appears in the left hand of the keyboard part, it is to be played ONE OCTAVE LOWER THAN NOTATED, and it indicates the playing of one of the silent fundamental notes explained above.***

Percussion: Both percussionists play vibraphones, and identical sets of non-pitched instruments, notated as follows:



In addition, percussion one has a chromatic set of 13 tuned aluminum pipes, from D3 to D4, tuned 31 cents flat, and crotales (lower octave). Percussion two has a chromatic set of 13 tuned aluminum pipes from A#3 to A#4, tuned 49 cents flat. (If pipes are not available, a mallet Kat controller will be used instead to trigger recorded pipe samples.) *The notes for the pipes are indicated as tempered notes in the score*.

Strings: All harmonics sound where they are notated unless otherwise indicated by a small notehead in parenthesis. Jeté, or "thrown bow" technique is used very often in all the string parts. This is indicated by a slur following the note with a series of dots underneath it. The motion begins at the indicated note, and the bow is then allowed to freely bounce as long as possible after the note begins. **OP** over a note indicates over-pressure, or "bow distortion" which should always produce noise and not a clear pitch. This notation only applies to the note it appears above unless continued with a bracket. The bass part is always indicated one octave higher then sound, even when in treble clef and when indicating harmonics. There is one exception to this, in measures 510 through 534 where the part is written *suono reale*.

Ecosphere Signal Processing Details

Two macintosh computers running a complex program written in Max/MSP are used to perform digital signal processing on all instruments. Below is a list of cues that occur throughout the piece, with the cue number, measure number, and the signal processing that occurs in that section.

Glossary of Processes:

Resonance: resonant filters are deployed to create an effect similar to the sympathetic resonance that occurs when the pedal of the piano is depressed

Delays: delay lines are deployed to create echos of the original signal

Reverberation: digital simulation of sonic reflections that occur in large rooms with hard surfaces

Harmonizing: the signal is reproduced (with a slight delay) with the same timbre and a different pitch, used to create tri-chords with just tuned intervals from one original note

Chorusing: harmonizing at a very close, fluctuating interval, producing slight beating and enriching the original signal

Cross-synthesis: the timbre of one instrument is analyzed and this data is used to modulate the timbre of another instrument, creating an effect similar to vocoding

High-pass filter: low frequencies are removed from the signal

Spatialization: a number of different kinds of spatialization are deployed throughout the piece: X/Y refers to random movement in straight lines between the speakers and circle refers to random circular motion. At other times specific patterns of movement are synchronized with musical gestures, or instruments are assigned to different static positions.

CUE LIST

cue #	mea.#	description
ATMOSPHERE		
1	1	entire ensemble excites resonance in all speakers
2	5	turn off silent instruments
3	6	vibraslaps into delays and moved to rear speakers string tremolos move around randomly (X/Y)
4	8	adjust levels, crotales and vibraphone delayed in three speakers at different rates
5	17	cancel previous, turn on all instruments with resonance in all speakers (as in cue 1)
6	20	turn off silent instruments
7	22	assign instruments to different speakers so cross fades pan
TUNDRA		
8	27	brass excite resonance (shorter decay then cue 1) and reverberation, percussion scrapes into delays in rear speakers
9	33	turn off silent instruments
SUBARCTIC		
10	50	all instruments amplified with reverb in front vibraslap delays in rear
11	53	trombone into multiple delay lines, all in center speaker, then moving out to rear and side speakers (in 5 seconds) where they stay for the whole section. Crescendos in other instruments pan quickly and randomly (X/Y) among all the speakers
12	80	trombone continues in delays but quieter, crescendos continue as before, oboe randomly moves among speakers (X/Y) with heavy reverb, string jete's in delay lines in multiple speakers
13	84	flute into multiple delays, panning randomly (X/Y), viola into delays, but stationary; everything else continues as in 12
14	101	gradually increase level of trombone delays
15	112	turn off silent instruments, turn on string amplification with reverb, trombone continues in delays
WARM CONTINENTAL		
16	124	cello with FFT delay (throughout movement), clarinet with 2 voice harmonizing with changing intervals in subsequent cues (start here 351 and -200)
17	125 b.2	clarinet intervals change:200, -200
18	125 b.4.5	clarinet intervals change:640, 351
19	126 b.4	clarinet intervals change:200, -200
20	127 b.5	clarinet intervals change:551, -498
21	128 b.2	clarinet intervals change:200, -200
22	129 b.1.25	clarinet intervals change:651, -700
23	129 b.4	clarinet intervals change:200, -200
24	130 b.3.5	clarinet intervals change:651, -500
25	131 b.1.5	clarinet intervals change:200, -200
26	131 b.4	clarinet intervals change:386, -231
27	132 b.5	clarinet intervals change:200, -200
28	133 b.2	clarinet intervals change:351, -431
29	134 b.2.5	clarinet intervals change:569, -500
TEMPERATE STEPPE		
30	136	cor anglais with chorusing and reverb in right speakers, viola with chorusing and reverb in left speakers, other strings excite resonance in all speakers
MARINE		
31	147	two voice harmonizing on flute (200, -200) on left, and clarinet (640, 351) on right, other instruments amplified with reverb
32	152	two voice harmonizing on oboe (714, 470) in center, others continue
HOT CONTINENTAL		
33	167	solo violin in top center speaker with resonance
34	168	violin moves to rear
35	168 b.5	violin moves to left side, bass clarinet is amplified in center
36	170 b.3.5	violin immediately to top center speaker again, then moves to rear, then left side
37	172 b.3	violin moves around to right side
38	173 b.2.5	violin immediately to top center, then back down to rear
MEDITERANEAN		
39	175	w.w. and brass in individual speakers for hocketing, strings with delays in front
40	175 b.3	percussion 1 moves around randomly (circle) with heavy reverb, everything else continues
TROPICAL STEPPE		
41	183	all instruments move randomly (x/y) with delays, chorusing, and resonance
42	201	everything continues, levels adjusted, horns with delay in front speakers
43	230	continues, levels adjusted

TROPICAL DESERT

44	247	everything off from previous section, all instruments amplified in front with reverb
45	250	harmonizing on strings fade in: v1 (10), v2 (440), vla (351), vc (269)
46	250 b.5	cross synthesis: when bass plays it is modulates strings in rear speakers, bass clarinet modulates strings in left side, and trombone on right side
47	255	change string intervals: : v1 (740), v2 (651), vla (269), vc (186)
48	258	change string intervals: : v1 (740), v2 (10), vla (151), vc (-431)
49	261	change string intervals: : v1 (740), v2 (351), vla (-714), vc (-431)
50	263	change string intervals: : v1 (451), v2 (-260), vla (-431), vc (-331)
51	266	delay and chorusing on v1 and 2, harmonizing on vla . (351), and vc (269)
52	268	delay and chorusing on v1,v2,vla, two voice harmonizing on vc (551, -231)
53	270	add delay to cello
54	272	harmonize V1 (569)
55	274	harmonize Vla (386)
56	278	change V1 interval (10)
57	279	change vla interval (10)
58	280	chorusing and delays on v1,2, vla, and vc
59	283	harmonizing on strings fade in: v1 (269), v2 (-200), vla (186), vc (500)
60	284	change intervals: : vc (-231)
61	285	change intervals: : vla (151), vc (269)
62	287	change intervals: : vla (186), vc (551)
63	289	change intervals: : vla (151), vc (-231)
64	293	delay on bass clarinet, bass and trombone
65	295	turn off delay on bass and bass clarinet
66	296	turn on delay on bass, off on others
67	299	loud delays and harmonizing on wind and percussion with fast random movement (x/y)

RAIN FOREST

68	314	all instruments with delays, moving randomly (x/y), and exciting heavy resonance which gradually fades away over 30 seconds, clarifying the sound
69	380	delays and motion continue (no resonance) high pass filter gradually rises in frequency over 30 seconds, filtering away lower part of spectrum and leaving shimmering high harmonics moving around

SAVANNA

70	393	filter is removed, instruments amplified with reverb in fixed positions around the room
71	395	all instruments move to new position in 2 seconds
72-77	397-419	(with percussion unisons) instruments move to new position, 2 instruments are given delays and x/y random movement (different ones each cue)
78-80	425-435	(with percussion unisons) gradually add instruments to random rotating movement
81	441	slow movement slightly, gradually introduce resonance
82	445	gradually introduce delays on all instruments
83	449	all instruments slowly circle randomly, with resonance and delays (like at the start of Rain Forest)
84	467	ob, vla, horn 1 slightly louder and move randomly in X/Y mode, others stay the same
85	474	cl1,v2,h2 slightly louder and move randomly in X/Y mode
86	480	fl,v1,trb slightly louder and move randomly in X/Y mode
87	483	cl2,vc,bs slightly louder and move randomly in X/Y mode
88	490	vla, vc, v1 in x/y random movement (no delay)
89	493	cl2, bs, trb join x/y movement
90	495	h1,h2,ob,cl1 join x/y movement
91	496	vl and v2 join - all instruments moving randomly (x/y) - gradually introduce resonance with short decay time in all speakers
92	508 b.2	all instruments move to front speakers in 1 second and stay fixed with reverb, resonance fades in 1 second

TEMPERATE DESERT

93	510	all strings with harmonizers that raise and lower the frequency in proportion to the amplitude of the bass clarinet (when bs.cl. is not playing, they have jittery chorusing, as he plays louder one pitch moves down and another up to a whole tone cluster when cl. reaches FF). Bass clarinet also modulates the timbre of the strings (cross synthesis), and pans the strings (front when quiet, rear when loud). Bass clarinet itself is in rear speakers.
94	523	turn on flt, ob, cl1 with reverb in front

SUBTROPICAL

95	535	all instruments random movement (x/y) independently
96-99	538-543	movement of instruments becomes identical when they play in unison, until everyone is moved the same at cue 99
100-102	548-546	reverse process, instruments move independently as they depart from unison
103	556	everyone independent again, turn on brass in front speakers with reverb
104	558 b.2	begin processing for next movement: cello delays, clarinet 2 voice harmonizing with shifting intervals (starting with 351, -231)

PRARIE

105	559 b.3	change clarinet intervals (200, -200)
106	560 b.2	change clarinet intervals (351, -698)
107	561	change clarinet intervals (-569, -431), two voice harmonizrer on flute (551, 396)
108	562	change cl. intervals (351, -700), change flt intervals (569, -500), 2voice harm. on oboe (-131, -400)
109	565	change cl. intervals (186, 641), change flt intervals (251, -200)
110	565 b.4	change oboe intervals (269, -800)
111	569 b.1.5	change intervals cl (286, -459), flt (351, -200)

ICECAP

112	573	all instruments excite resonance, string tremolos move around randomly (X/Y), trombone and horns with delays
113	577	add viola to high string movement
114	581	remove viola from movement
115	585	delay on percussion, everything else continues
116	589	turn off silent instruments, increase delays on trombone and horns
117	600	tremolo strings move around together randomly (circle), percussion with heavey delays and reverb in rear speakers
118	609	turn everything off and go someplace to drink a lot of champagne, wine, and cognac!

Score in C

8/4/03 1:38 PM

Commissioned by IRCAM
for the Ensemble Intercontemporain

Ecosphere

Rand Steiger

I. *Atmosphere*

= 144

= 60

flute
oboe
Bb clarinet
Bb contrabass clarinet
horn 1
horn 2
tenor/bass trombone
pipes (-31 cents)
perc. 1
crotales
med. suspended cymbal with soft mallets
l.v.
pipes (-49 cents)
perc. 2
vibraphone
large suspended cymbal with soft mallets
Ped.
kb.1
(various pitched metal instruments)
kb.2
violin 1
violin 2
(dim. for Ab only, G remains FF)
(dim. for Gb only, F remains FF)
viola
cello
bass
pizz.

6

fl.

ob.

cl.

cb. cl.

ff *pos.*

h.1

ff

h.2

ff

trb.

ff

pipes (-31 cents)

perc. 1

large wooden vibraslap
played near cymbal mic

crotales

sempre l.v.

ff

p *mf*

pipes (-49 cents)

perc. 2

wooden vibraslap
played near cymbal mic

vibraphone

(hold pedal until mea. 20)

ff

p *mf*

6

kb.1

p

kb.2

vln.1

mf

vln.2

mf

vla.

mf

OP

ord.

vc.

ff

pp *mf*

arco

bs.

fff

6

(♩ = 120) accel . . . . . ♩ = 144

fl.

11

ob.

cl.

cb. cl.

h.1

h.2

trb.

(♩ = 120) accel . . . . . ♩ = 144

pipes (-31 cents)

perc. 1

crotales

pipes (-49 cents)

perc. 2

vib.

11

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

11

16

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes (-31 cents)

perc. 1

crotales

pipes (-49 cents)

perc. 2

vib.

16

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

16

22

fl.

(40 cents lower then strings)

ob.

cl.

(40 cents lower then strings)

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

22

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

sul tasto

sul pont.

sul tasto

22

27

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

scrape with triangle beater
(through measure 48)

sempre l.v.

perc. 2

scrape with triangle beater
(through measure 48)

sempre l.v.

27

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

(t: horn 1)

(t: horn 2)

pizz.

arco

27

fl.

31

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

31

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

31

35

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

35

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

35

40

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

40

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

45

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

45

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

45

50

fl.
ob.
bs. cl.
cb. cl.
h.1
h.2
trb.
perc. 1
perc. 2
kb.1
kb.2
vln.1
vln.2
vla.
vc.
bs.

change to bass clarinet
solo
flt.
hard vib. mallet
(center of tam tam)
vibraphone
l.v.
metal vibraslap
pizz.
arco

fl.

55

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

ff *f* *p* *f* *flt.*

perc. 1

vib.

mf Ped.

perc. 2

vib.

mf Ped.

55

kb.1

f Ped.

kb.2

vln.1

vln.2

vla.

vc.

bs.

55

59

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

lip tr.

sfzp *f*

(*harm.*)

sfzp *f*

(M2 lip tr.)

pp *f*

perc. 1

perc. 2

59

kb.1

f Ped.

kb.2

f Ped.

vln.1

vln.2

vla.

vc.

bs.

59

64

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

flt.

perc. 1

perc. 2

64

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

64

fl.

69

ob.

bs. cl.

bs. cl.

h.1

h.2

(harm.)

(M2 lip tr.)

trb.

perc. 1

wood vibraslap

perc. 2

69

kb.1

Ped.

kb.2

Ped.

vln.1

vln.2

vla.

vc.

bs.

69

74

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

(M2 lip trills)

(harm.)

trb.

pp

ff

perc. 1

perc. 2

74

kb.1

Ped.

kb.2

Ped.

vln.1

vln.2

vla.

vc.

arco

bs.

cres. poco a poco

74

78

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

78

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

78

pp f p f ff ff mf ff mf ff mf sfzp ff f (M2 lip tr.) mf sempre l.v. mf sempre l.v. mf (t: horn 1) pizz. arco mf pizz. arco mf pizz. mf pizz. mf pizz. ff f

82

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

82

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

(t: horn 1)

arco

pizz.

82

85

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

(lip trill)

(harm.)

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

85

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

85

89

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

89

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

89

92

fl.

ob.

bs. cl.

bs. cl.

change to contrabass clarinet

h.1

h.2

trb.

(harm.)

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

92

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

fl.

96

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

96

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

96

fl.

99

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

99

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

99

fl.

102

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

102

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

102

Rit. . . . . = 52

fl.

106

ob.

p *ff*

bs. cl.

cb. cl.

Rit. . . . . = 52

h.1

h.2

trb.

(harm.) *simile* *gliss.* *gliss.*

p *f*

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

106

kb.1

kb.2

Rit. . . . . = 52

vln.1

vln.2

vla.

vc.

bs.

106

110

fl.

ob.

bs. cl.

cb. cl.

♩ = 60

h.1

h.2

trb.

gliss.

(harm.)

gliss.

♩ = 60

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

110

kb.1

♩ = 60

kb.2

vln.1

vln.2

vla.

vc.

bs.

mf

arco

mf

mf

110

fl.

113

ob.

bs. cl.

change to Bb clarinet

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

113

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

113

fl.

118

ob.

cl.

cb. cl.

h.1

h.2

(harm.)

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

118

kb.1

(scraped piano strings)

kb.2

vln.1

vln.2

vla.

vc.

bs.

118

= 80

fl.

124

ob.

cl.

p *f* *sfzp* *f*

cb. cl.

h.1

h.2

trb.

= 80

pipes -31

perc. 1

vib.

f

Ped.

pipes -49

perc. 2

vib.

f

Ped.

124

(harp, guitar, koto)

kb.1

f

(gongs,bonang,crotales)

kb.2

f

Ped.

= 80

vln.1

vln.2

vla.

vc.

sfzp *ff* *pizz.* *ff* *arco* *sfzp* *f* *gliss.* *pizz.* *ff* *arco*

bs.

pizz. *mf*

124

fl.

127

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

127

kb.1

kb.2

(harp, guitar, koto)

vln.1

vln.2

vla.

vc.

bs.

127

fl.

130

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

130

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

130

fl.

133

ob.

cl.

pp *f* *f* *pp* *f*

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

133

kb.1

kb.2

vln.1

vln.2

vla.

vc.

gliss.

ff *f* *p*

bs.

133

♩ = 50

fl.

136

c.a.

cor anglais

cl.

cb. cl.

h.1

h.2

trb.

♩ = 50

perc. 1

perc. 2

136

kb.1

♩ = 50

kb.2

(harpsichord)

vln.1

vln.2

vla.

vc.

bs.

136

fl.

140

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

140

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

140

fl.

144

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

144

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

144

p

f

ord.

sul pont.

gliss.

mp

ff

pp

♩ = 120 *accell. poco a poco (to 144) at ms. 155*

fl.

147

c.a.

cl.

cb. cl.

h.1

h.2

trb.

♩ = 120 *accell. poco a poco (to 144) at ms. 155*

perc. 1

perc. 2

147

(harp, guitar, koto)

kb.1

kb.2

♩ = 120 *accell. poco a poco (to 144) at ms. 155*

vln.1

vln.2

vla.

vc.

bs.

147

151

fl.

ob.

Oboe

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

151

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

151

155

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

155

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

155

159

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

159

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

159

fl.

163

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

163

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

163

fl.

167

ob.

cl.

change to bass clarinet

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

perc. 2

167

(dulcimer)

kb.1

(harpsichord)

kb.2

arco esp.

vln.1

vln.2

vla.

vc.

bs.

167

fl.

170

ob.

cl.

bs. cl.

ff

sfzp *ff*

sfzp *ff*

h.1

h.2

trb.

pipes -31

perc. 1

vib.

Ped.

perc. 2

170

kb.1

kb.2

gliss.

sfzp *ff*

vln.1

vln.2

vla.

vc.

bs.

170

fl.

172

ob.

cl.

bs. cl.

sfzp *ff*

sfzp *ff*

h.1

h.2

trb.

pipes -31

perc. 1

vib.

perc. 2

172

kb.1

kb.2

vln.1

sfzp *ff*

vln.2

vla.

vc.

bs.

172

175

fl.

ob.

cl.

change to contrabass clarinet

bs. cl.

stop mute

h.1

stop mute

h.2

straight mute

trb.

= 60

perc. 1

perc. 2

wood vibraslap

small maracca

chinese cymbal with soft mallet

175

(dulcimer)

kb.1

kb.2

= 60

vln.1

gliss.

arco

vln.2

arco

vla.

arco

vc.

arco

bs.

175

178

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

large maracca

wind gong
with hard mallet

susp. cymbal
scrape with triangle beater

wood vibraslap

178

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

178

= 100

182

fl.

ob.

cl.

to Bass Cl.

cb. cl.

= 100

h.1

h.2

trb.

perc. 1

(l.v.)

= 100

perc. 2

182

kb.1

= 100

kb.2

vln.1

gliss.

vln.2

vla.

vc.

bs.

182

185

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

185

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

185

189

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

189

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

189

193

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

193

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

193

197

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

197

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

197

fl.

201

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

201

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

201

fl.

205

ob.

bs. cl.

change to bass clarinet

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

205

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

205

fl.

209

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

209

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

209

fl.

213

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

213

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

213

fl.

217

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

217

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

217

fl.

221

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

221

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

221

fl.

225

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

225

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

225

229

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

229

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

229

fl.

232

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

232

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

232

235

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

235

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

235

238

fl.

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

perc. 1

perc. 2

238

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

238

mf *gliss.* *pp*

fl.

243

ob.

bs. cl.

bs. cl.

h.1

h.2

trb.

with Harmon mute (stem in, open)

Chinese cymbal

perc. 1

suspended cymbal

perc. 2

243

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

243

fl.

247

ob.

Change to Bb Cl.

bs. cl.

change to contrabass clarinet

bs. cl.

with mute

h.1

with mute

h.2

trb.

perc. 1

perc. 2

247

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

247

fl.

252

ob.

cl.

cb. cl.

3

f

pp *ff*

ff

h.1

h.2

trb.

(Harmon mute)

mf

perc. 1

perc. 2

252

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

f

pizz. *arco* *sul pont.*

ff

252

257

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

257

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

f

mf

pizz.

arco sul pont.

ord.

gliss.

8va

257

fl.

261

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

261

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

261

fl.

265

ob.

cl.

cb. cl.

h.1

h.2

trb.

ff *mf* *pp* *f* *f* *f*

perc. 1

perc. 2

265

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

arco *gliss.* *gliss.* *pizz.* *arco*

f *f* *f* *f*

265

fl.

269

ob.

cl.

cb. cl.

p *f* *pp* *f* *pp* *ff* o

f o

h.1

h.2

trb.

o

remove mute

with plunger

+ o

tr

( )

pp *f*

perc. 1

perc. 2

269

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

pp *f* *pp* *f* *pp*

8va

f

f *pp* *f*

pp *f* *pp* *f* *pp*

(loco)

pizz. ord.

269

fl.

272

ob.

cl.

cb. cl.

f

h.1

h.2

trb.

(vary plunger positions to imitate speech)

(etc. continue to imitate speech through mea. 256)

p *f*

perc. 1

perc. 2

272

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

arco

8va

pizz.

loco

pp

272

fl.

275

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

275

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

275

fl.

278

ob.

cl.

cb. cl.

f *p* *ff*

h.1

h.2

trb.

(continue speech immitation)

perc. 1

perc. 2

278

kb.1

kb.2

vln.1

mf *pp* *f*

vln.2

vla.

vc.

bs.

278

fl.

280

ob.

cl.

cb. cl.

fp *f* *pp* *f*

h.1

h.2

trb.

harm.gliss.

gliss.

(open)

mf

perc. 1

perc. 2

280

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

arco

mf *pp* *f* *p*

280

283

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

Harmon mute

perc. 1

perc. 2

283

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

pizz.

arco

8va

loco

pizz.

283

fl.

287

ob.

cl.

cb. cl.

f *ff* *ff* *f* *f*

h.1

h.2

trb.

f *f*

perc. 1

perc. 2

287

kb.1

kb.2

vln.1

vln.2

gliss.

vla.

vc.

bs.

arco 8va *loco* *sul pont.* ord.

f *f* *p* *f* *f*

287

fl.

291

ob.

cl.

cb. cl.

f *f* *ppp* *f*

h.1

h.2

trb.

f *mf* (harmonic glissando, as high up the series as possible with the dim.) *gliss.* (with slide) *mf*

perc. 1

perc. 2

291

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

pizz. *arco* *pizz.*

f *ff* *f* *f* *f*

291

fl.

296

ob.

cl.

cb. cl.

rit. . . . . . (♩= 48) *a tempo*

♩= 120

h.1

h.2

trb.

(air without pitch)

pp *ff*

pp *mf*

perc. 1

perc. 2

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

sul pont.

(harmonic glissando)

302

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

302

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

302

computer reverberates and multiplies sounds

change to pic.

(air without pitch)

change to Bb clarinet

(bass drum)

sempre l.v.

computer reverberates and multiplies sounds

fl.

309

ob.

cl.

cl. 2

computer reverberates and multiplies sounds

h.1

h.2

trb.

perc. 1

pp *f* *pp* *f* *pp* *f* *pp* *f* *pp* *f* *pp* *ff*

computer reverberates and multiplies sounds

perc. 2

pp *f* *pp* *f* *pp* *f* *pp* *f* *pp* *ff*

309

kb.1

computer reverberates and multiplies sounds

kb.2

vln.1

vln.2

vla.

vc.

bs.

309

Piccolo

pic.

314

ob.

cl.

Bb Clarinet

cl. 2

h.1

h.2

cup mute

trb.

perc. 1

perc. 2

314

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

314

pic.

318

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

318

vln.1

vln.2

vla.

vc.

bs.

318

322

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

322

vln.1

vln.2

vla.

vc.

bs.

322

326

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

326

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

326

pic.

330

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

330

vln.1

vln.2

vla.

vc.

bs.

330

pic.

334

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

334

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

334

pic.

338

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

338

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

338

pic.

342

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

342

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

342

346

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

346

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

346

pic.

350

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

350

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

350

pic.

354

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

354

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

354

pic.

358

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

358

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

358

362

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

362

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

362

366

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

366

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

366

pic.

370

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

370

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

370

pic.

374

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

374

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

374

pic.

378

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

378

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

378

pic.

382

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

382

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

382

386

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

386

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

386

pic.

389

ob.

cl.

cl. 2

h.1

h.2

trb.

perc. 1

perc. 2

389

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

389

pic.

393

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

393

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

393

396

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

396

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

396

399

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

399

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

399

pic.

402

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

402

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

402

405

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

405

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

405

pic.

408

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

408

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

408

pic.

411

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

411

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

411

pic.

414

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

414

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

414

pic.

418

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

418

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

418

422

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

422

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

422

426

pic.

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

426

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

426

pic.

430

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

430

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

430

pic.

434

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

434

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

434

pic.

438

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

438

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

438

pic.

442

ob.

cl.

cl. 2

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

442

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

442

pic.

446

ob.

cl.

cl. 2

change to contrabass clarinet

h.1

Remove mute.

h.2

Remove mute.

trb.

Change to harmon mute

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

446

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

446

449

pic.

ob.

cl.

cb. cl.

h.1

h.2

trb.

(with Harmon mute)

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

449

kb.1

kb.2

vln.1

vln.2

vla.

sul pont.

vc.

bs.

(fade in upper voice)

449

454

pic.

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

454

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

454

458

pic.

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

458

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

458

pic.

461

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

crotales

crotales

pipes -49

perc. 2

vib.

461

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

461

pic.

466

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

crotales & vibraphone

vibraphone

pipes -49

perc. 2

vib.

466

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

466

pic.

470

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

crotales & vibraphone

perc. 2

470

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

470

pic.

474

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

crotales & vibraphone

vibraphone

crotales

perc. 2

474

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

arco

OP

sul pont.

pizz.

8va

474

478

pic.

ob.

cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

crotales &
vibraphone

crotales

perc. 2

478

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

(fingered)

(loco)

pizz.

arco

OP

478

pic.

482

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

482

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

482

pic.

486

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

486

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

486

490

pic.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

490

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

(:4.5)

490

pic.

494

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

494

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

494

LOCO

pic.

498

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

498

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

498

pic.

502

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

502

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

502

pic.

506

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

506

vln.1

vln.2

vla.

vc.

bs.

506

pic.

510

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

510

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

510

(l.v.)

suono reale **(through m.535)**

II.

alto fl.

515

ob.

cl.

cb. cl.

sfzp *f* *fp* *ff* *sfzp* *f* *sfzp* *ff*

h.1

h.2

trb.

perc. 1

perc. 2

515

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

IV. **III.**

pp *mf* *pp* *mf*

515

alto fl.

518

ob.

cl.

cb. cl.

pp *f* *sfzp* *ff*

h.1

h.2

trb.

perc. 1

perc. 2

518

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

IV. II.

pp *mf* *p* *mf*

518

Alto Flute

alto fl.

522

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

522

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

522

526

alto fl.

sfzp *ff* *p* *f* *fp* *f*

Cor Anglais

c.a.

f *pp* *f* *ff*

cl.

cb. cl.

ff *ff*

h.1

h.2

trb.

perc. 1

perc. 2

526

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

I. IV.

p *mf*

alto fl.

530

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

530

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

530

alto fl.

535

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

535

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

535

alto fl.

538

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

538

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

538

alto fl.

542

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

542

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

542

alto fl.

546

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

546

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

546

alto fl.

550

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

550

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

550

alto fl.

555

c.a.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

555

kb.1

kb.2

(patch change:
harp, guitar, koto)

(patch change:
harp, guitar, koto)

vln.1

vln.2

vla.

vc.

bs.

555

♩= 80

559

fl. — **Flute**

ob. — **Oboe**

cl.

cb. cl.

h.1

h.2

trb.

♩= 80

perc. 1

perc. 2

559

kb.1

kb.2

♩= 80

vln.1

vln.2

vla.

vc.

bs.

559

562

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

562

kb.1

kb.2

(patch change on beat two:
gongs, gamelan, crotales)

vln.1

vln.2

vla.

vc.

bs.

562

fl.

566

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

566

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

566

569

fl.

ob.

cl.

cb. cl.

h.1

h.2

trb.

perc. 1

perc. 2

569

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

569

rit. . . . . = 60

mf

p mf

mp

change to bass clarinet

(patch change: harpsichord)

Ped.

pp

♩ = 52

fl.

573

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

(hold pedal through m. 584)

pipes -49

perc. 2

vib.

(hold pedal through m. 584)

573

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

573

fl.

577

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

577

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

577

fl.

581

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

gliss.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

large wood vibraslap

581

kb.1

kb.2

15ma

vln.1

15ma

vln.2

ord. (pitch slightly sharper than trb.)

vla.

vc.

bs.

581

fl.

585

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

center of tam tam
with vibe mallet

(vibraphone) (hold ped. through m. 599)

pipes -49

perc. 2

vib.

large wood vibraslap
(close to microphone)

(vibraphone)

(hold ped. through m. 599)

585

kb.1

(hold pedal through the last measure)

kb.2

(hold pedal through the last measure)

(loco)

vln.1

(loco)

vln.2

(loco)

vla.

arco

vc.

pizz.

arco

bs.

pizz.

arco

585

fl.

589

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

589

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

589

rit. . . . . = 48

fl.

593

ob.

bs. cl.

cb. cl.

ff

f

h.1

(harmonic gliss.)

p f

h.2

(harmonic gliss.)

p f

pp (pos.) mf

trb.

gliss.

pp

mf

p

mf

rit. . . . . = 48

pipes -31

perc. 1

vib.

pipes -49

perc. 2

vib.

593

kb.1

kb.2

vln.1

rit. . . . . = 48

vln.2

vla.

(t: trombone)

vc.

f

mf

bs.

p mf

593

597

fl.

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

pipes -31

perc. 1

vib.

tam tam
with vibe mallet

pipes -49

perc. 2

vib.

large wood vibraslap
(close to microphone)

597

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

pizz.

arco
(with sympathetic vibrato sul III)

597

fl.

602

ob.

bs. cl.

cb. cl.

h.1

h.2

trb.

perc. 1

mf

perc. 2

f *mf*

large wood vibraslap

mf

602

kb.1

kb.2

vln.1

vln.2

vla.

vc.

bs.

602

FINE