Inner Nature Persistently Emerges

(2005)

for Bb bass clarinet and computer

William Kleinsasser

Duration: 12 minutes

Composed for E. Michael Richards

NOTES AND NEEDED EQUIPMENT

- 2 instrument clip-on mics with mic cables from stage into mixer
  Bass Clarinet is slightly amplified to mix and balance with computer outputs through mixer and bass clarinet signal is processed live in computer

- 1 Mixer with at least six inputs with 2 mic preamp inputs with phantom power and 6 computer line inputs all inputs bussing to speaker outputs

- 2 Pre-Fader Aux sends from mixer to computer into ADC interface for computer

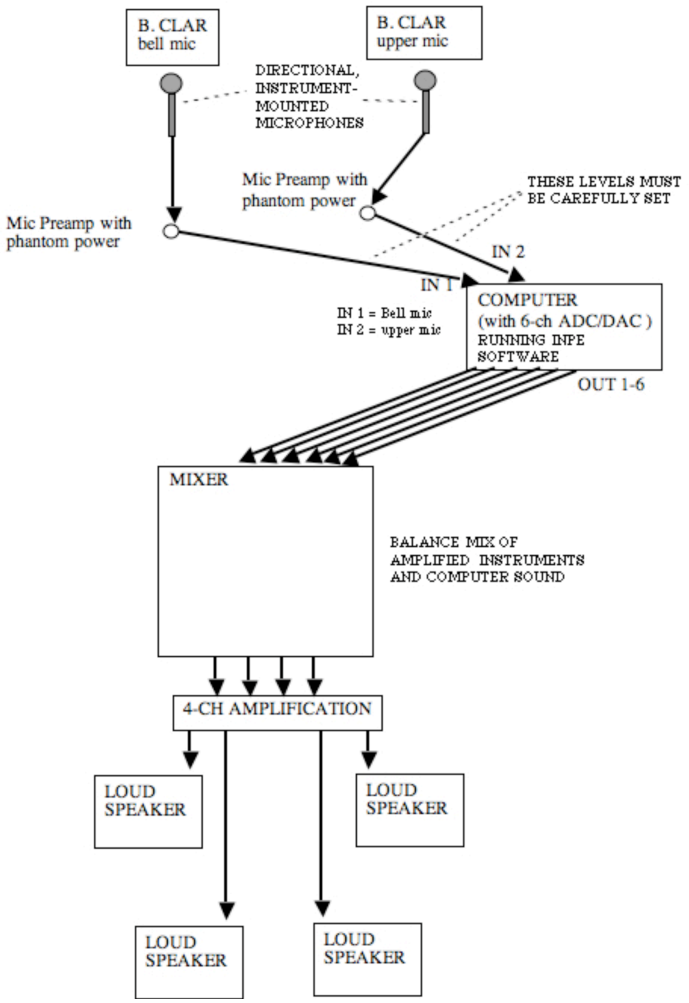
- Computer outputs (4 channels) from 1/4" TRS jacks computer DAC interface to 4 mixer channels with fader control routed to Quad concert hall system loudspeakers with good low frequency range. 8-channel distribution is also supported (preferred)

* A small table for computer, ADC/DAC interface, music, and a small light to read score during performance

* Four power outlets for equipment near mixer

- A computer operator mixes the piece in performance and controls the progress through the 76 computer cues so that person will need to be able to reach the mixer faders and computer at the same time

SYSTEM CONFIGURATION FOR *INNER NATURE PERSISTENTLY EMERGES*



Inner Nature Persistently Emerges (2005)

for bass clarinet and computer

Inner Nature Persistently Emerges is a work for bass clarinet and computer that grows out of the possible extended sonic explorations of E. Michael Richards who commissioned the piece. Recordings of a vast array of multiphonics (sounds made by coaxing the instrument's air column to vibrate at multiple frequencies resulting in multi-toned sounds) form the basis of the computer music which presents a dynamic field within and through which the bass clarinet projects the linear, rhetorical foreground of the music which is formed into five continuous sections. The title refers to the emergent patterns that result from sonic and constructive considerations of the source multiphonics. The computer music, (developed Max/MSP), is the result of real-time processing of the music played by the bass clarinet during the performance and of short prerecorded excerpts and multiphonics.

The Max/MSP processing, like many Max/MSP patches, owes much to other developers and uses standard-issue Max/MSP objects as well as Timothy Place's tap.shift, Richard Dudas' Newverb~, and fiddle~ by Miller Puckette, Ted Apel and David Zicarelli. The granular synthesis method was developed from the basic granular example offered in the Max/MSP distribution by Les Stuck and Zoax, and spectral filtering is done with a modification of the Forbidden Planet example patch by Zack Settel, Cort Lippe and Zoax. Thanks to Erik Oña, Cort Lippe, and Miller Puckette who offered the model for the cross-bar mixing method using menu-driven routing and the matrix~ object that is the basis of the structure of the processor and thanks to Chris Dobrian for the windowed buffer recording methods used in the piece.

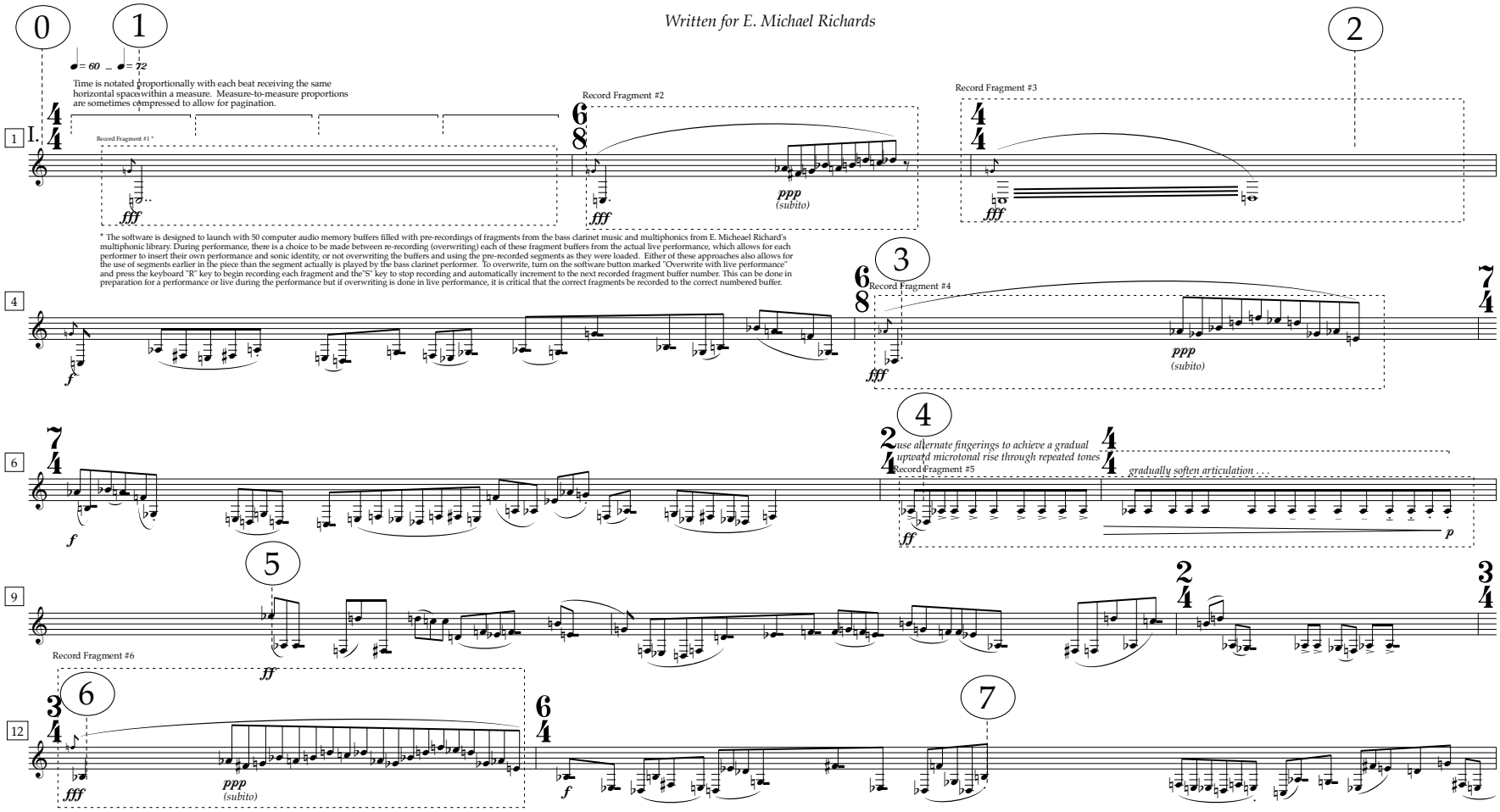
TRANSPOSED PART IN Bb

Inner Nature Persistently Emerges

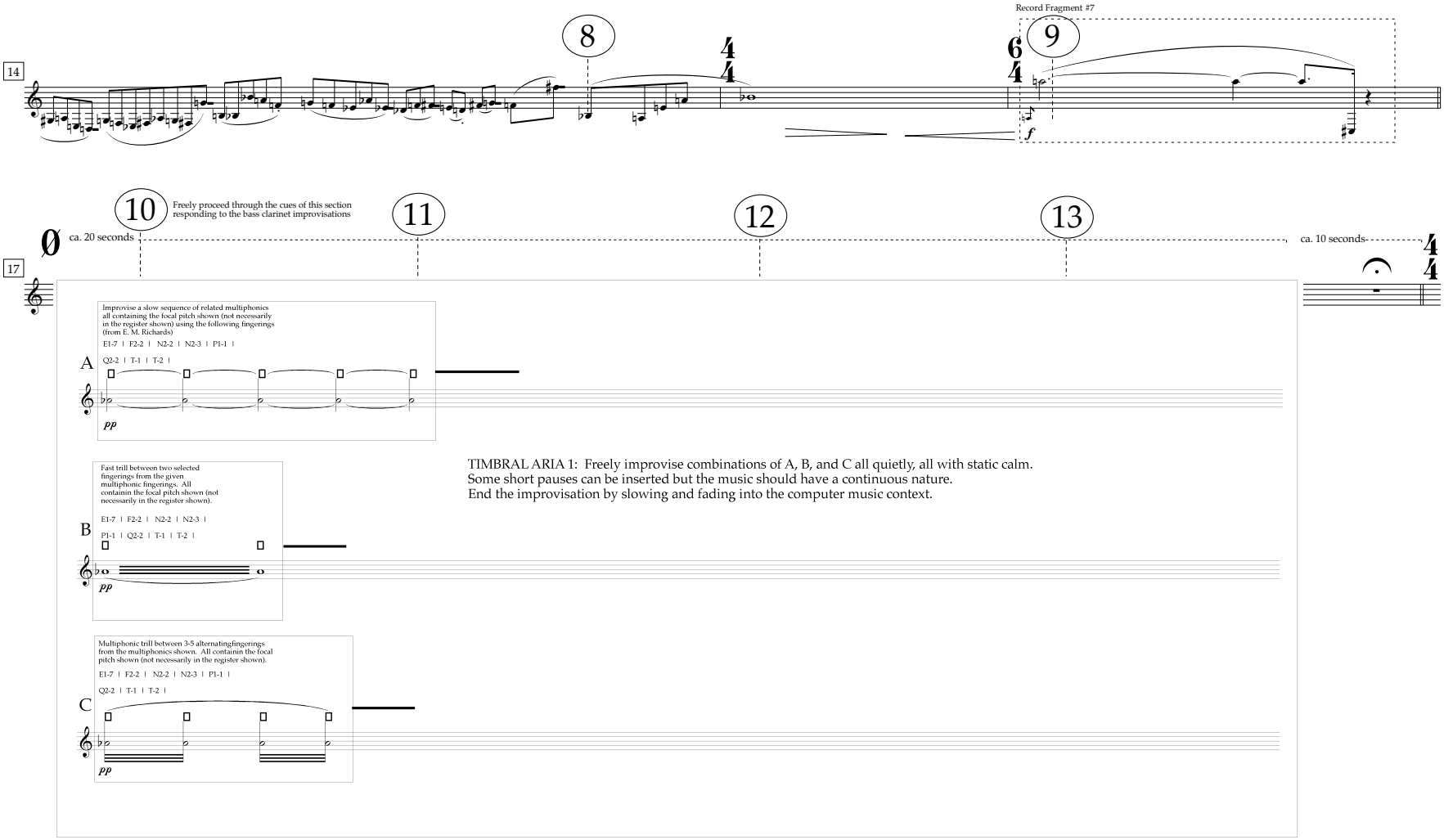
for Bb bass clarinet and computer

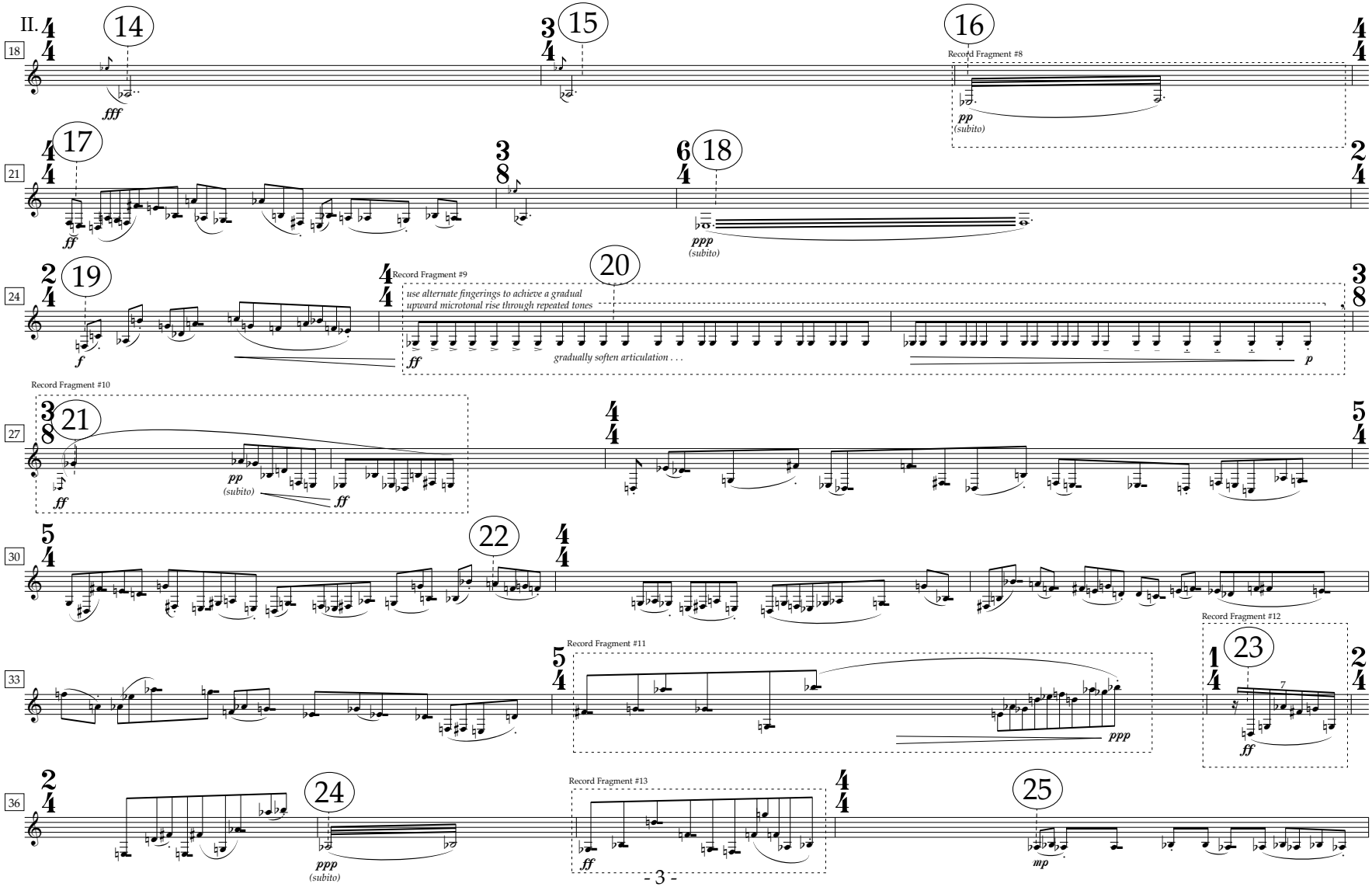
Written for E. Michael Richards

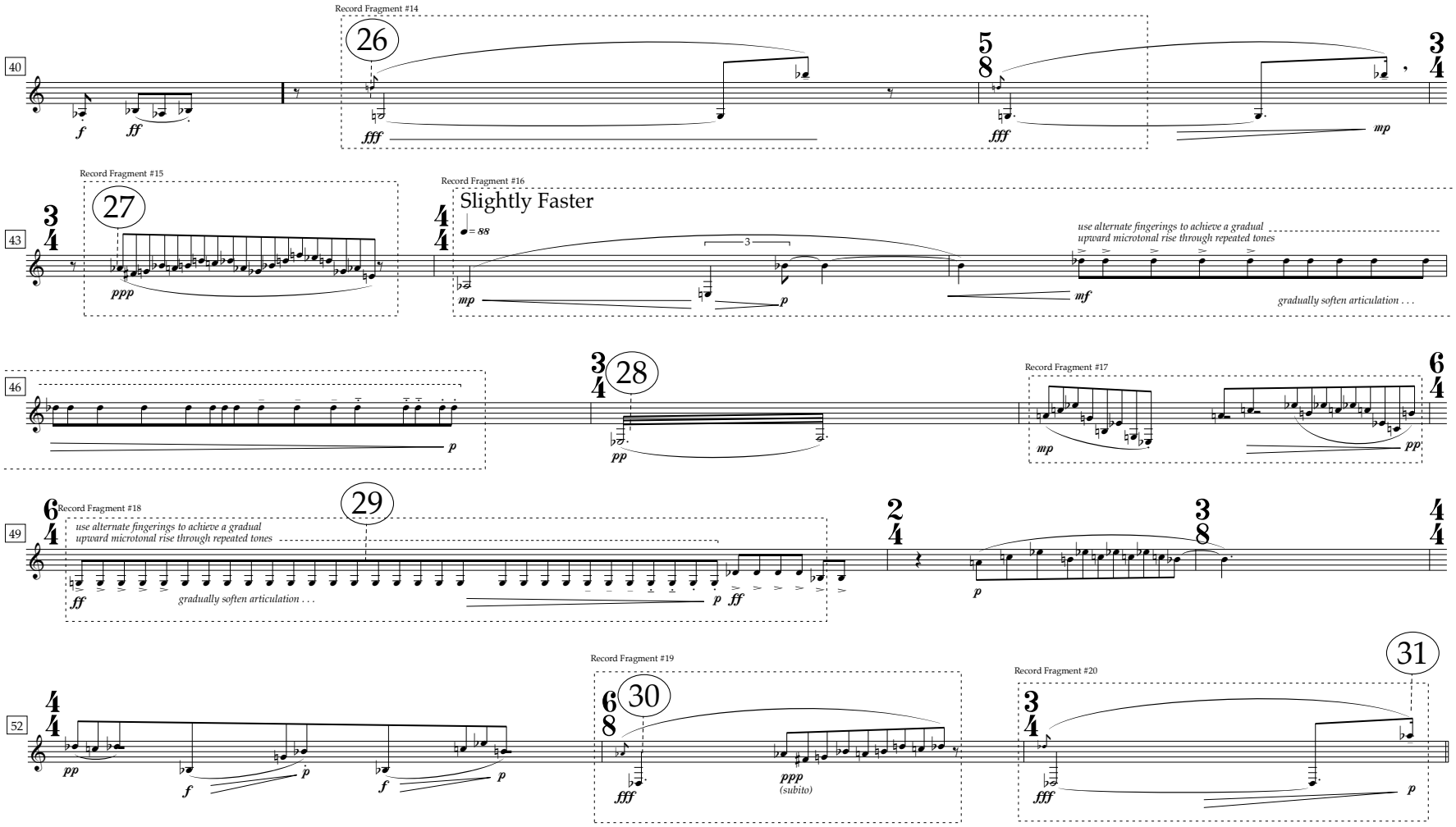
William Kleinsasser
(2005)



* The software is designed to launch with 50 computer audio memory buffers filled with pre-recordings of fragments from the bass clarinet music and multiphonics from E. Micheael Richard's multiphonic library. During performance, there is a choice to be made between re-recording (overwriting) each of these fragment buffers from the actual live performance, which allows for each performer to insert their own performance and sonic identity, or not overwriting the buffers and using the pre-recorded segments as they were loaded. Either of these approaches also allows for the use of segments earlier in the piece than the segment actually is played by the bass clarinet performer. To overwrite, turn on the software button marked "Overwrite with live performance" and press the keyboard "R" key to begin recording each fragment and the"S" key to stop recording and automatically increment to the next recorded fragment buffer number. This can be done in preparation for a performance or live during the performance but if overwriting is done in live performance, it is critical that the correct fragments be recorded to the correct numbered buffer.


Record Fragment #7
8
9
10
Freely proceed through the cues of this section responding to the bass clarinet improvisations
11
12
13
ca. 20 seconds
ca. 10 seconds
Improvise a slow sequence of related multiphonics all containing the focal pitch shown (not necessarily in the register shown) using the following fingerings (from E. M. Richards)
E1-7 | F2-2 | N2-2 | N2-3 | P1-1 |
Q2-2 | T-1 | T-2 |
A
pp
Fast trill between two selected fingerings from the given multiphonic fingerings. All containin the focal pitch shown (not necessarily in the register shown).
E1-7 | F2-2 | N2-2 | N2-3 |
P1-1 | Q2-2 | T-1 | T-2 |
B
pp
Multiphonic trill between 3-5 alternatingfingerings from the multiphonics shown. All containin the focal pitch shown (not necessarily in the register shown).
E1-7 | F2-2 | N2-2 | N2-3 | P1-1 |
Q2-2 | T-1 | T-2 |
C
pp
TIMBRAL ARIA 1: Freely improvise combinations of A, B, and C all quietly, all with static calm.
Some short pauses can be inserted but the music should have a continuous nature.
End the improvisation by slowing and fading into the computer music context.


II.
18
14
15
16
Record Fragment #8
fff
pp
(subito)
21
17
18
ff
ppp
(subito)
24
19
20
Record Fragment #9
use alternate fingerings to achieve a gradual
upward microtonal rise through repeated tones
f
ff
gradually soften articulation . . .
p
Record Fragment #10
27
21
ff
pp
(subito)
ff
30
22
33
Record Fragment #11
ppp
Record Fragment #12
23
7
ff
36
24
ppp
(subito)
Record Fragment #13
ff
25
mp


Record Fragment #14
26
Record Fragment #15
27
Record Fragment #16
Slightly Faster
= 88
use alternate fingerings to achieve a gradual
upward microtonal rise through repeated tones
gradually soften articulation . . .
28
Record Fragment #17
Record Fragment #18
29
use alternate fingerings to achieve a gradual
upward microtonal rise through repeated tones
gradually soften articulation . . .
Record Fragment #19
30
(subito)
Record Fragment #20
31

Freely proceed through the cues of this section
responding to the bass clarinet improvisations

32 33 34

55

ca. 20 seconds

ca. 10 seconds

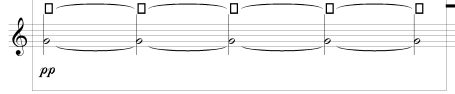
5/4

A

Improvise a slow sequence of related multiphonics
all containing the focal pitch shown (not necessarily
in the register shown) using the following fingerings
(from E. M. Richards)

E1-2 | E1-6 | F2-1 | F2-4 |

H1-4 | P-3 | P-6



B

Fast trill between two selected
fingerings from the given
multiphonic fingerings. All
containin the focal pitch shown (not
necessarily in the register shown).

E1-2 | E1-6 | F2-1 | F2-4 |

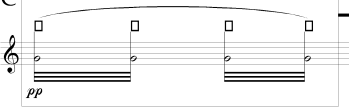
H1-4 | P-3 | P-6

C

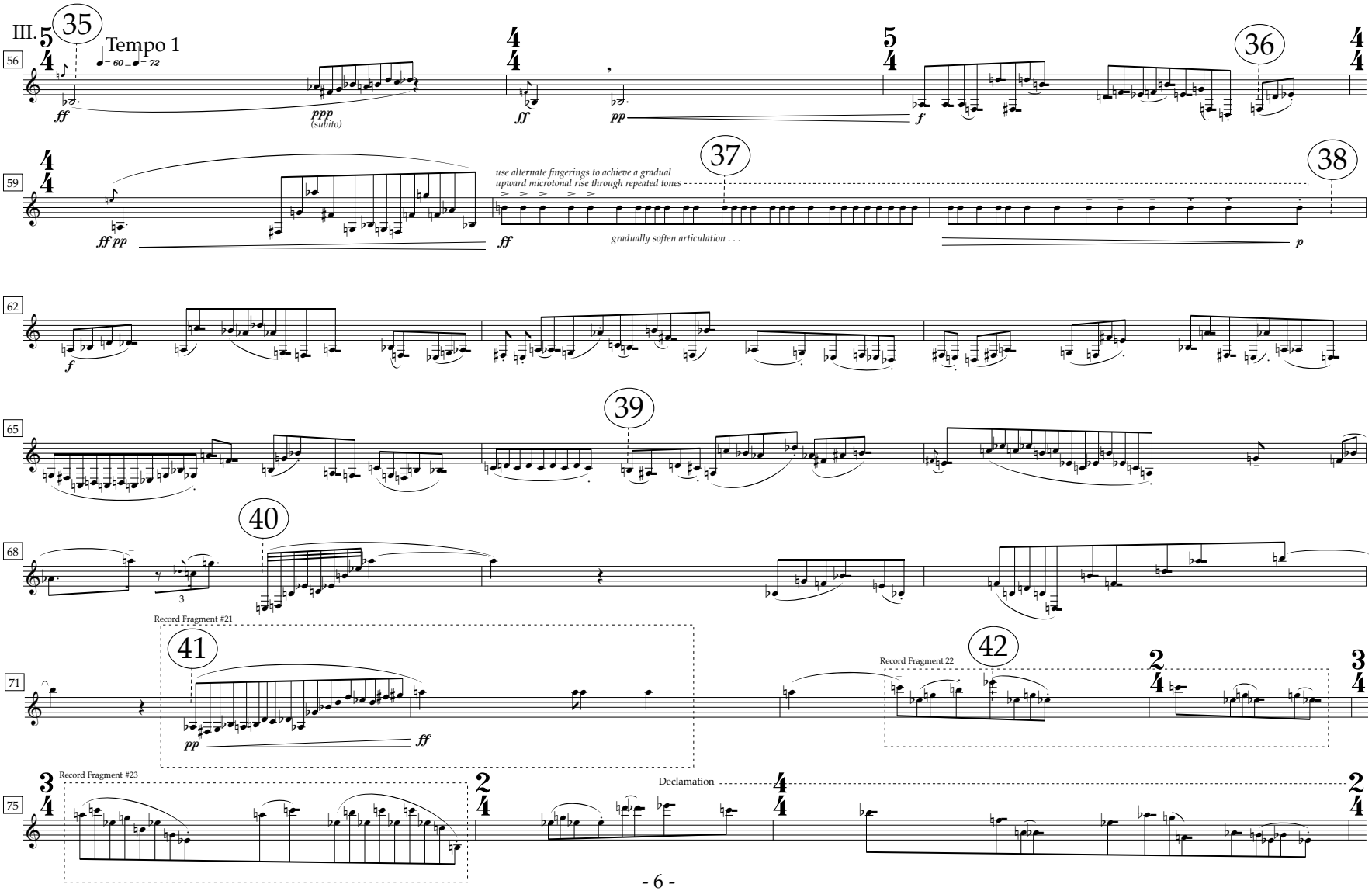
Multiphonic trill between 3-5 alternatingfingerings
from the multiphonics shown. All containin the focal
pitch shown (not necessarily in the register shown).

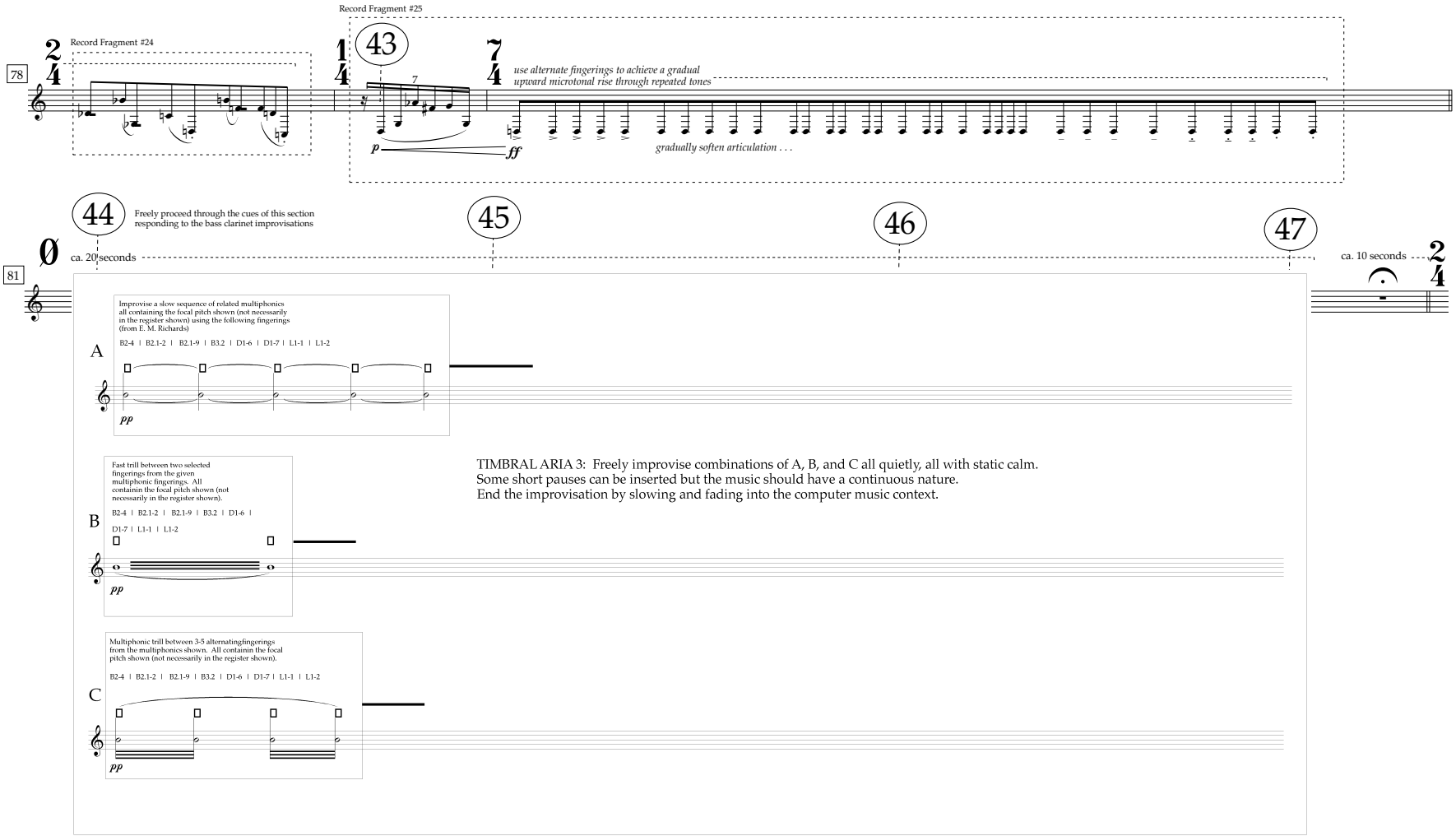
E1-2 | E1-6 | F2-1 | F2-4 |

H1-4 | P-3 | P-6

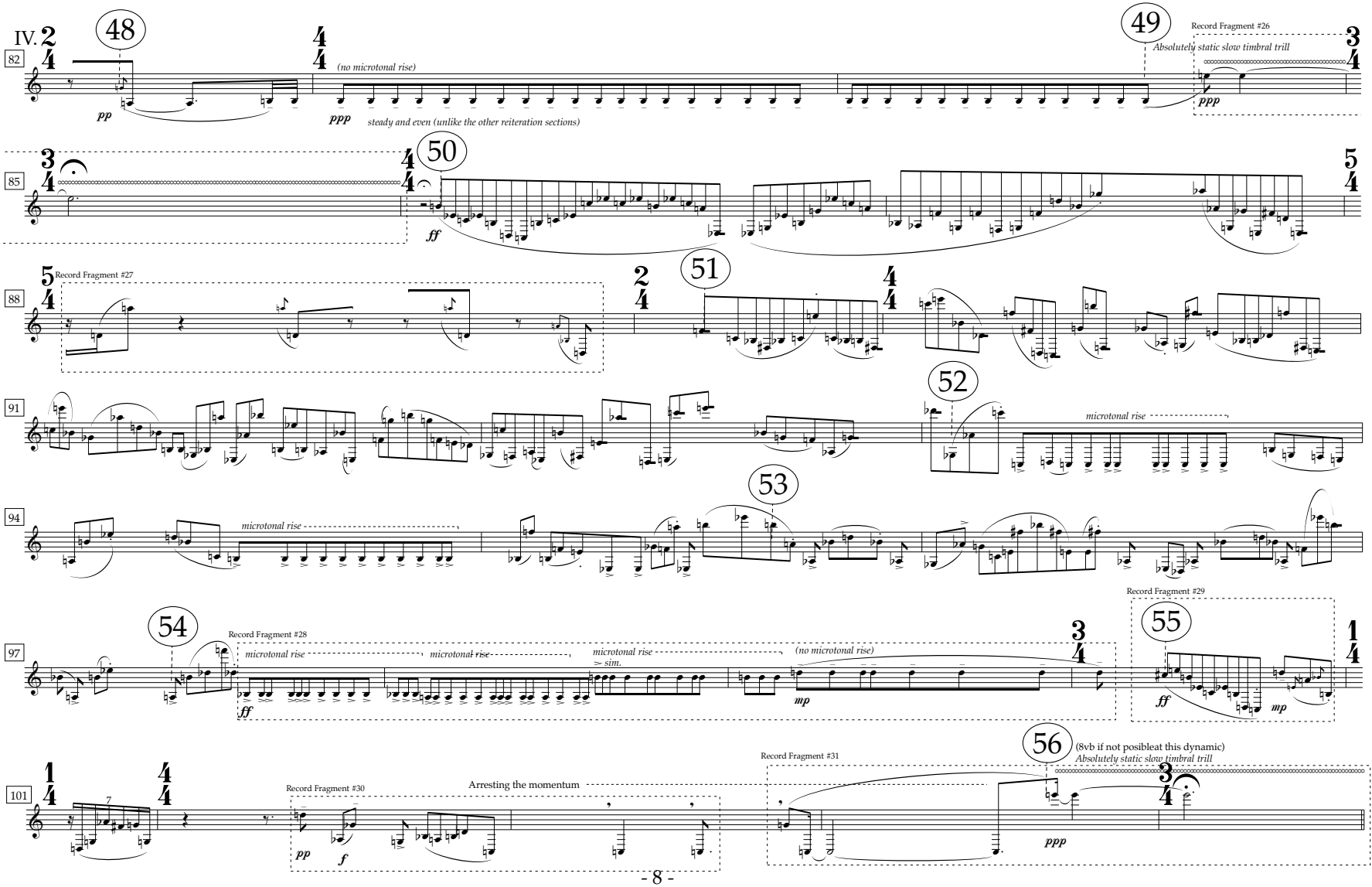


TIMBRAL ARIA 2: Freely improvise combinations of A, B, and C all quietly, all with static calm.
Some short pauses can be inserted but the music should have a continuous nature.
End the improvisation by slowing and fading into the computer music context.

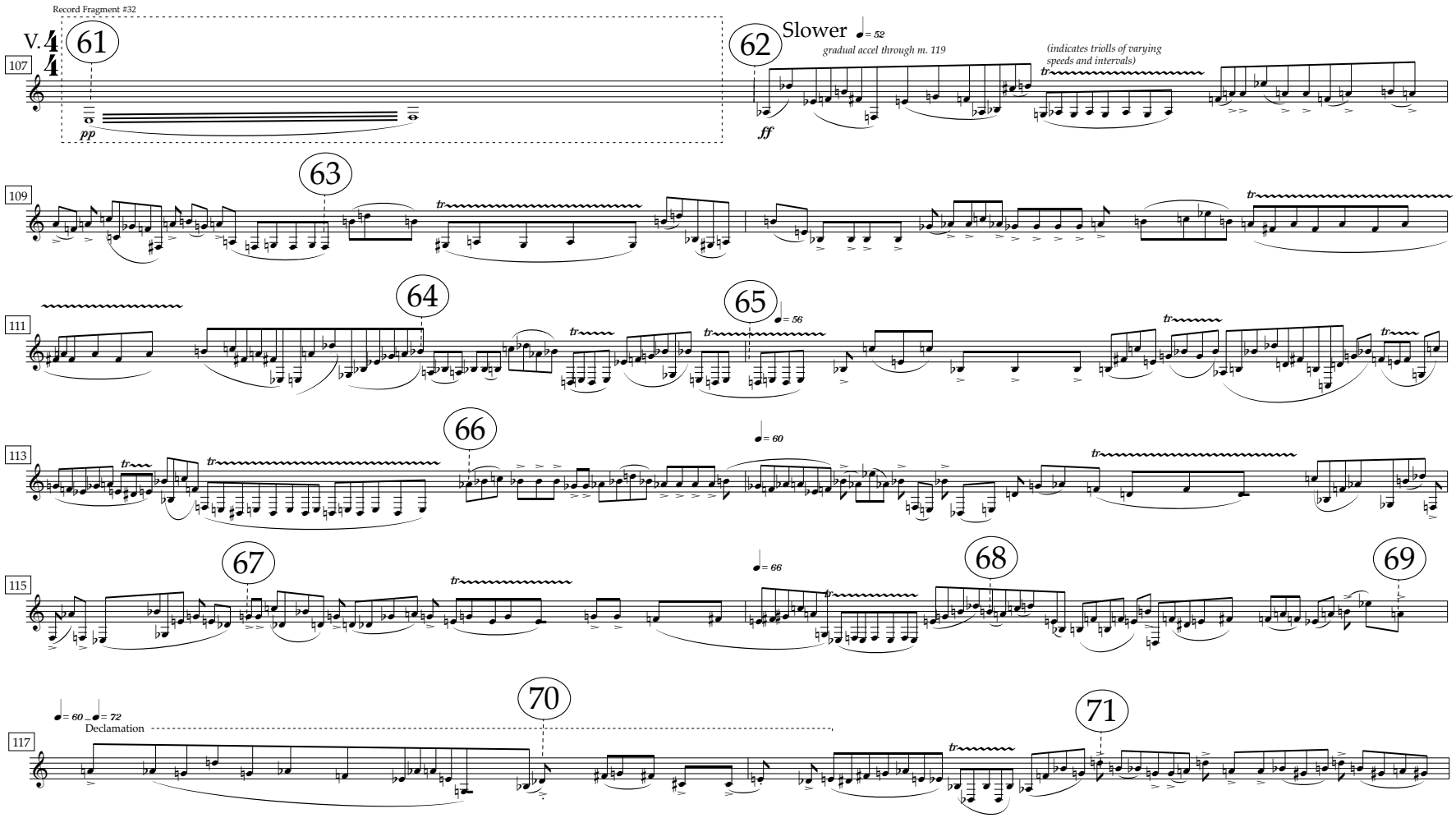

III.
35
Tempo 1
♩= 60 – ♩= 72
ff
ppp
(subito)
ff
pp
f
36
use alternate fingerings to achieve a gradual
upward microtonal rise through repeated tones
37
38
ff pp
ff
gradually soften articulation . . .
p
f
39
40
3
Record Fragment #21
41
pp
ff
42
Record Fragment 22
Record Fragment #23
Declamation

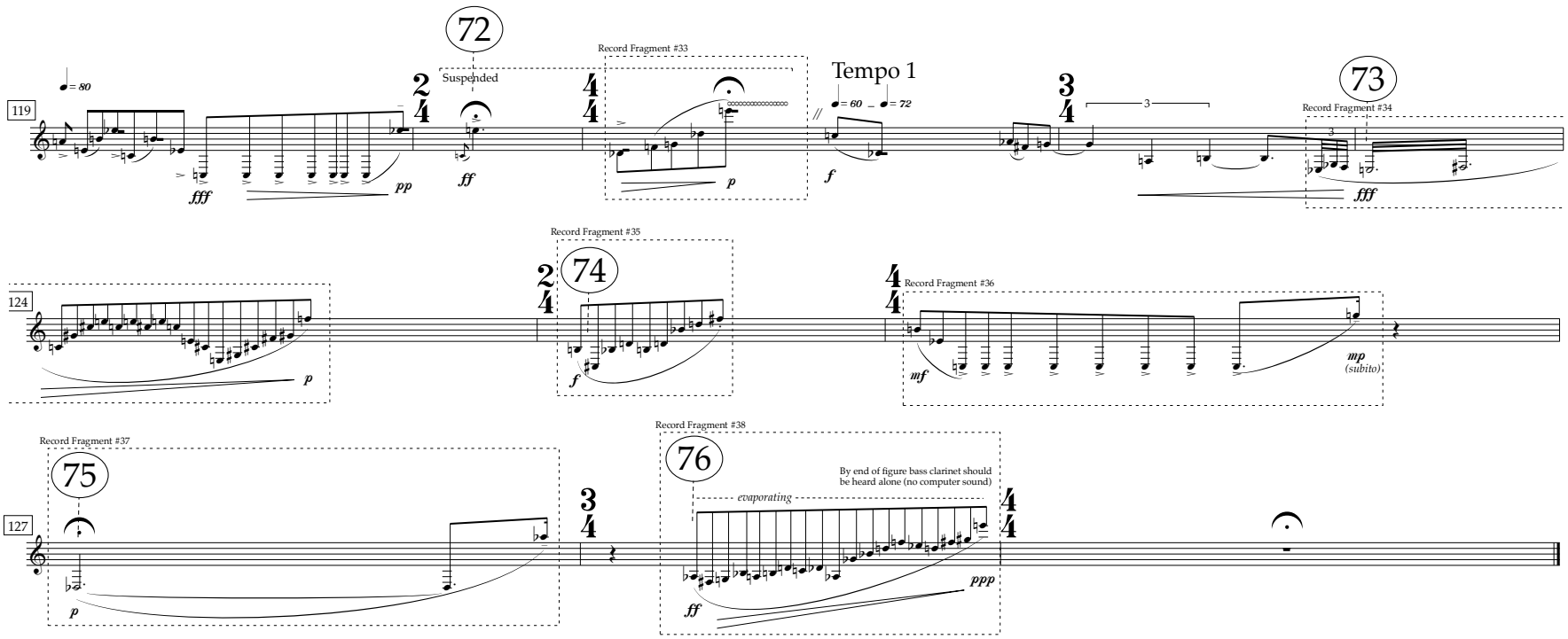


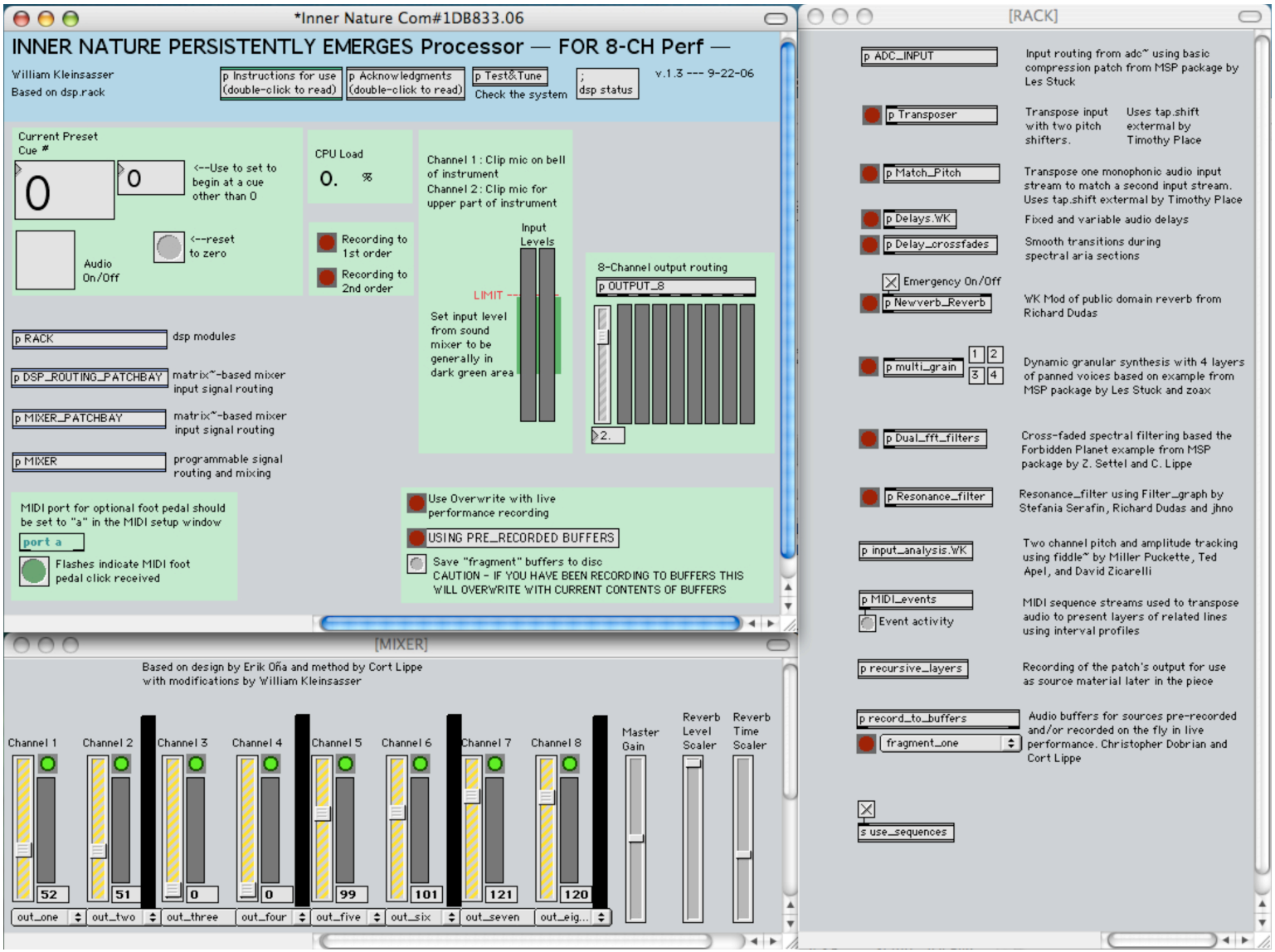
TIMBRAL ARIA 3: Freely improvise combinations of A, B, and C all quietly, all with static calm.
Some short pauses can be inserted but the music should have a continuous nature.
End the improvisation by slowing and fading into the computer music context.


IV.
82
48
49
Record Fragment #26
Absolutely static slow timbral trill
pp
ppp
(no microtonal rise)
steady and even (unlike the other reiteration sections)
ppp
85
50
ff
88
Record Fragment #27
51
91
52
microtonal rise
94
microtonal rise
53
97
54
Record Fragment #28
microtonal rise
microtonal rise
microtonal rise
~ sim.
(no microtonal rise)
ff
mp
Record Fragment #29
55
ff
mp
101
56
(8vb if not posibleat this dynamic)
Absolutely static slow timbral trill
Record Fragment #31
Arresting the momentum
Record Fragment #30
pp
f
ppp


57
Freely proceed through the cues of this section responding to the bass clarinet improvisations
58
59
60
ca. 20 seconds
ca. 10 seconds
106
Improvise a slow sequence of related multiphonics all containing the focal pitch shown (not necessarily in the register shown) using the following fingerings (from E. M. Richards)
B2.1-4 | B2.1-5 | B3.1-1 | B3.1-2 | B3.1-3 | B3.1-4 | B3.1-5 | B3.1-6 | B3.1-7 |
A
pp
TIMBRAL ARIA 4: Freely improvise combinations of A, B, and C all quietly, all with static calm.
Some short pauses can be inserted but the music should have a continuous nature.
End the improvisation by slowing and fading into the computer music context.
Fast trill between two selected fingerings from the given multiphonic fingerings. All containin the focal pitch shown (not necessarily in the register shown).
B2.1-4 | B2.1-5 | B3.1-1 | B3.1-2 | B3.1-3 |
B3.1-4 | B3.1-5 | B3.1-6 | B3.1-7 |
B
pp
Multiphonic trill between 3-4 alternatingfingerings from the multiphonics shown. All containin the focal pitch shown (not necessarily in the register shown).
B2.1-4 | B2.1-5 | B3.1-1 | B3.1-2 | B3.1-3 | B3.1-4 |
B3.1-5 | B3.1-6 | B3.1-7 |
C
pp


Record Fragment #32
V.
61
62
Slower
= 52
gradual accel through m. 119
(indicates triolls of varying speeds and intervals)
63
64
65
= 56
66
= 60
67
= 66
68
69
70
71
= 60 = 72
Declamation
107
109
111
113
115
117
pp
ff
tr


72
Suspended
Record Fragment #33
Tempo 1
73
Record Fragment #34
119
fff
pp
ff
p
f
fff
Record Fragment #35
74
Record Fragment #36
124
p
f
mf
mp
(subito)
Record Fragment #37
75
Record Fragment #38
76
By end of figure bass clarinet should be heard alone (no computer sound)
evaporating
127
p
ff
ppp


*Inner Nature Com#1DB833.06
INNER NATURE PERSISTENTLY EMERGES Processor — FOR 8-CH Perf —
William Kleinsasser
Based on dsp.rack
p Instructions for use (double-click to read)
p Acknowledgments (double-click to read)
p Test&Tune
Check the system
; dsp status
v.1.3 --- 9-22-06
Current Preset Cue #
0
0
<--Use to set to begin at a cue other than 0
Audio On/Off
<--reset to zero
CPU Load
0. %
Recording to 1st order
Recording to 2nd order
Channel 1 : Clip mic on bell of instrument
Channel 2 : Clip mic for upper part of instrument
Input Levels
LIMIT
Set input level from sound mixer to be generally in dark green area
8-Channel output routing
p OUTPUT_8
2.
p RACK
dsp modules
p DSP_ROUTING_PATCHBAY
matrix~-based mixer input signal routing
p MIXER_PATCHBAY
matrix~-based mixer input signal routing
p MIXER
programmable signal routing and mixing
MIDI port for optional foot pedal should be set to "a" in the MIDI setup window
port a
Flashes indicate MIDI foot pedal click received
Use Overwrite with live performance recording
USING PRE_RECORDED BUFFERS
Save "fragment" buffers to disc
CAUTION - IF YOU HAVE BEEN RECORDING TO BUFFERS THIS WILL OVERWRITE WITH CURRENT CONTENTS OF BUFFERS
[MIXER]
Based on design by Erik Oña and method by Cort Lippe with modifications by William Kleinsasser
Channel 1
Channel 2
Channel 3
Channel 4
Channel 5
Channel 6
Channel 7
Channel 8
Master Gain
Reverb Level Scaler
Reverb Time Scaler
52
51
0
0
99
101
121
120
out_one
out_two
out_three
out_four
out_five
out_six
out_seven
out_eig...
[RACK]
p ADC_INPUT
Input routing from adc~ using basic compression patch from MSP package by Les Stuck
p Transposer
Transpose input with two pitch shifters.
Uses tap.shift extermal by Timothy Place
p Match_Pitch
Transpose one monophonic audio input stream to match a second input stream. Uses tap.shift extermal by Timothy Place
p Delays.WK
Fixed and variable audio delays
p Delay_crossfades
Smooth transitions during spectral aria sections
Emergency On/Off
p Newverb_Reverb
WK Mod of public domain reverb from Richard Dudas
p multi_grain
1 2 3 4
Dynamic granular synthesis with 4 layers of panned voices based on example from MSP package by Les Stuck and zoax
p Dual_fft_filters
Cross-faded spectral filtering based the Forbidden Planet example from MSP package by Z. Settel and C. Lippe
p Resonance_filter
Resonance_filter using Filter_graph by Stefania Serafin, Richard Dudas and jhno
p input_analysis.WK
Two channel pitch and amplitude tracking using fiddle~ by Miller Puckette, Ted Apel, and David Zicarelli
p MIDI_events
Event activity
MIDI sequence streams used to transpose audio to present layers of related lines using interval profiles
p recursive_layers
Recording of the patch's output for use as source material later in the piece
p record_to_buffers
fragment_one
Audio buffers for sources pre-recorded and/or recorded on the fly in live performance. Christopher Dobrian and Cort Lippe
s use_sequences

INNER NATURE PERSISTENTLY EMERGES: 8-CH Audio Processor

William Kleinsasser
wkleinsasser@towson.edu ------ http://www.towson.edu/~bill
Version 1.3 September 22, 2006

Questions about the use of this sprocessor for the INNER NATURE PERSISTENTLY EMERGES Max/MSP patch can be addressed to wkleinsasser@towson.edu.

License and use

Installing and running the INNER NATURE PERSISTENTLY EMERGES Max/MSP patch represents agreement to all of the following terms:

Include all documentation in this release of INNER NATURE PERSISTENTLY EMERGES Max/MSP patch in any copies that are made. The INNER NATURE PERSISTENTLY EMERGES Max/MSP patch is made freely available "AS IS" without warranties of any kind. William Kleinsasser shall have absolutely no liability in connection with its use including without limitation, any liability for damage to your computer hardware, data, information, materials and business resulting from the use of the INNER NATURE PERSISTENTLY EMERGES Max/MSP patch.

Acknowledgments:

The audio processing contained in this distribution of the INNER NATURE PERSISTENTLY EMERGES Max/MSP patch is based on standard-issue Max/MSP objects with the exception of the tap.shift pitch shifting object which is distributed with the processor by permission from its programmer, Timothy Place, and a modification of Richard Dudas' Newverb~ (newverb.wk~). These are included in the 'Externals Used' folder of this distribution. Newverb.wk~ must be placed in the Extensions folder of Max/MSP. The original Newverb~ object by Richard Dudas which is available as a public domain reverb object from the Cycling74 web page of shared objects. Tap.shift is distribued with this software with a free-use license for this application so long as no fee is collected for its use and so long as the ReadMe document associated with it is included in the distribution. Tap.shift will need to be installed according to the instructions included with it.

The INNER NATURE PERSISTENTLY EMERGES Max/MSP patch is based on W. Kleinsasser's Dsp.rack (available from http://concert.towson.edu/WK/dsp.rack) and owes acknowledgement and thanks to the following Max/MSP developers who have offered models and suggestions during development: Cort Lippe, Miller Puckette, and Erik Ona who developed models for crossbar mixing and routing methods using menu-driven send/receive signal flow. The approach of modular dsp functions in an integrated software environment relates to work by Cort Lippe (compositions) and Zack Settel (multi effects processor, Jimmies) Christopher Dobrian and Cort Lippe offered help on the buffer writing method and other audio handling. Daniel Koppelman provided the preset advancing method. Les Stuck's compression method from examples is used on the microphone input module and his granular synthesis example forms the basis of the granular processing. The sound file playback and delay methods were developed in order to help, and deriving help from, my students Brian Comotto, Daniel Hope, Ljiljana Jovanovic, Scott Leake, Beau Lochte, and Nicholas Schoeb. Thanks to Miller Puckette and David Zicarelli for developing Max and Max/MSP and to the Max/MSP developers who share their solutions and ideas.

and ideas.

Acknowledgement and thanks are owed to E. Michael Richards who commissioned the piece and who provided recordings of bass clarinet multiphonics and recorded fragments to fill the audio buffers in the patch. These sounds form the basis of much of the processing in the piece and are used with his permission.

Update report

9/22/06
Following the multiple performances from fall and winter 2005, this version is the latest version with all working changes as of this date.

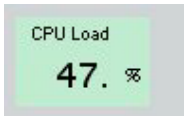
Inner Nature Persistently Emerges
8-CH Processor 9.22.06

William Kleinsasser
wkleinsasser@towson.edu ------ http://www.towson.edu/~bill
September 22, 2006

Installing and i/o setup and CPU load test

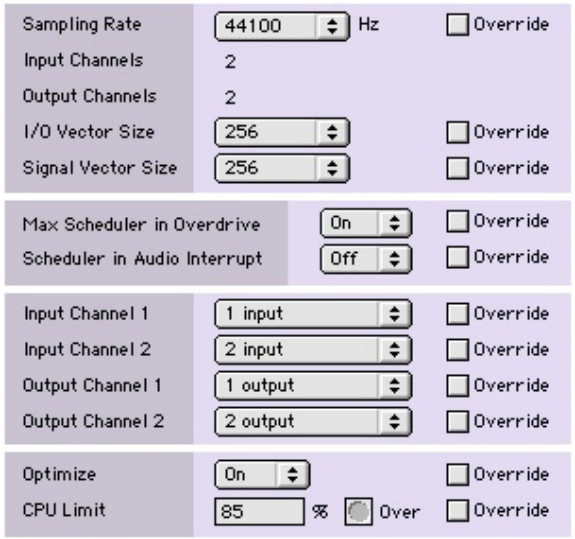
This software has been tested and runs with OS 10.4 If you are running a different version of these the OS the program may not work properly.

This INPE patch, when launched, automatically configures the computer's DSP settings to run at 44100 SR and should run on any Macintosh G4/1.67GHz or faster with Max/MSP Runtime 4.5.7 or newer



* CPU loading can be high with this patch. Do not run the patch on your computer if the CPU loading is greater than 65% at any time in the piece (it varies from Cue to Cue) as this may cause poor processing, audible clicking and distortion, and the potential of crashing the computer. *

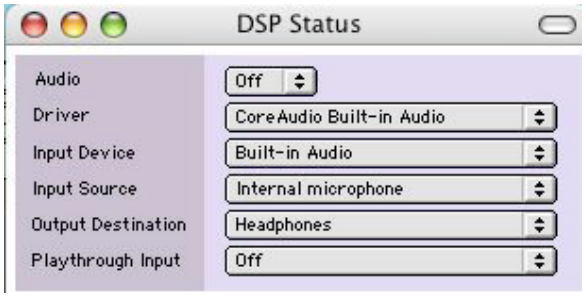
Click on the gray "dsp status" button in the patch main window to confirm the settings below. Your i/o hardware may require different I/O Vector and Signal Vector sizes to avoid glitching and clicks. Setting these to a higher setting may avoid this but going aboove 512 will introduce i/o latency. Each time the patch is loaded it will set the vectors to 256.



Set up the sound system as follows:

* Whatever hardware i/o you use, be careful to make certain that the input signal is not being directly routed through (unprocessed) to the outputs. *

Click on the gray "dsp status" button to enter the DSP Status window and set the i/o Driver, audio input source and output to match the Analog-to-Digital converter in use. (the example below uses the Macintosh internal i/o but you may have an external i/o device)



This program is sensitive to feedback so be especially careful about mic and speaker placement and levels when the processor is running.

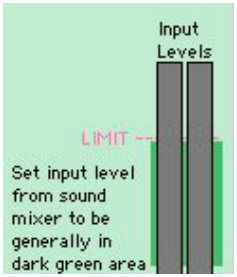
Stage setup and signal flow

Click to see setup diagram

INPUT: Run 2 mic inputs (through a preamplifier or small mixer) into the sound input on the Analog-to-Digital converter you are using. In this patch, the left channel is for the bell mic and the right channel is for the upper bass clarinet region. Double-click gray sub-patch called "Test&Tune." This will open a window that will let you test the inputs and outputs.

* Sound quality and output levels from the processing are dependent on good input levels from the microphones through the external mixer. *

Turn on the Audio On/Off toggle button (large X-Button) and set the input levels from the microphones into the patch using the input meters in the main window by adjusting the external mixer's gain and mic send levels. In the patch, the two mic inputs are kept separate and recorded to a stereo buffer. The input level should never exceed the upper limit shown on the meter.



* Setting the inputs from the mixer sends is very imporant. Set the level with the external mixer to get the mic input levels to fall in the

optimal dark green range and never exceed the limit shown. *

OUTPUT: Run audio cables out of your Digital-to-Analog converter outputs into a mixer routed to a sound system with 2, 4, or 8 speakers. To assign the 8 output signals to output channels, use the gray "dsp status" button in the patch to set the I/O Mappings to match your configuration. Assignment details are provided below.

FOR 2-CHANNEL PERFORMANCE:

Max/MSP DSP I/O Mapping: (click gray dsp status button to set these)

[iomap]

Input Mapping		Output Mapping	
Chan Group	1-16	Chan Group	1-16
1	1 input	1	1 output
2	2 input	2	2 output
3	Off	3	1 output
4	Off	4	2 output
5	Off	5	1 output
6	Off	6	2 output
7	Off	7	1 output
8	Off	8	2 output
9	Off	9	Off
10	Off	10	Off
11	Off	11	Off
12	Off	12	Off
13	Off	13	Off
14	Off	14	Off
15	Off	15	Off
16	Off	16	Off

MSP DAC Channel Outs and Mixer Bus Mapping:

MSP out 1/3/5/7 route to mixer output bus 1

MSP out 2/4/6/8 route to mixer output bus 2

Mixer Bus to Speaker Array Assignments

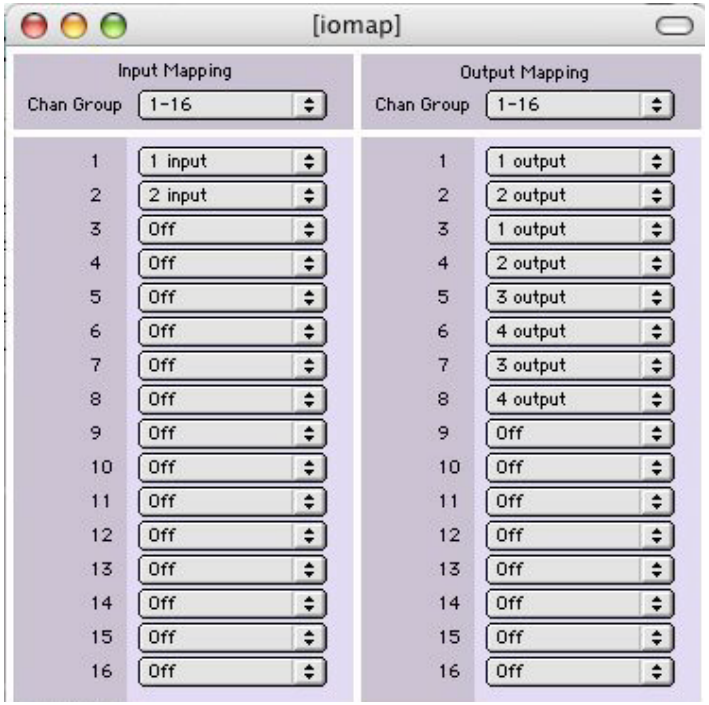
Output bus 1 to Front Left Speaker

Output bus 2 to Front Right Speaker

At the external mixer, the amplified bass clarinet is set to Front Left and Front Right panned to center.

FOR 4-CHANNEL PERFORMANCE:

Max/MSP DSP I/O Mapping: (click gray dsp status button to set these)



MSP DAC Channel Outs and Mixer Bus Mapping:

MSP out 1/3 route to mixer output bus 1

MSP out 2/4 route to mixer output bus 2

MSP out 5/7 route to mixer output bus 1 and 3

MSP out 6/8 route to mixer output bus 2 and 4

Mixer Bus to Speaker Array Assignments

Output bus 1 to Front Left Speaker

Output bus 2 to Front Right Speaker

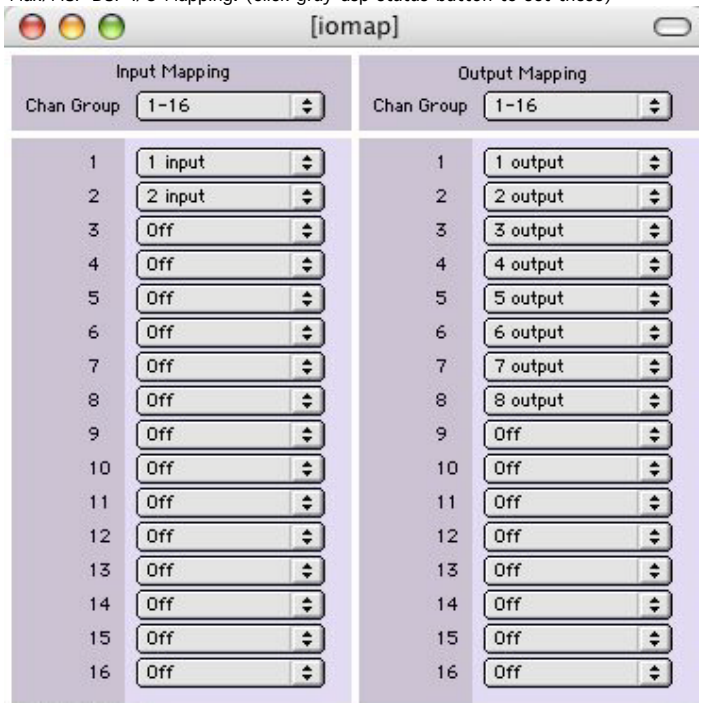
Output bus 3 to Rear Left Speaker

Output bus 4 to Rear Right Speaker

At the external mixer, the amplified bass clarinet is set to Front Left and Front Right panned to center.

FOR 8-CHANNEL PERFORMANCE:

Max/MSP DSP I/O Mapping: (click gray dsp status button to set these)



1 2

3 Speaker 4
array
5 setup 6

7 8

MSP DAC Channel Outs and Mixer Bus Mapping:

MSP out 1 route to mixer output bus 1, 3
MSP out 2 route to mixer output bus 2, 4
MSP out 3 route to mixer output bus 3, 5
MSP out 4 route to mixer output bus 4, 6
MSP out 5 route to mixer output bus 5, 7
MSP out 6 route to mixer output bus 6, 8
MSP out 7 route to mixer output bus 1, 3, 5, 7
MSP out 8 route to mixer output bus 2, 4, 6, 8

Mixer Bus to Speaker Array Assignments

Output bus 1 to Front Left Speaker (1 in array diagram above)

Output bus 2 to Front Right Speaker (2 in array diagram above)

Output bus 3 to Front-side Left Speaker (3 in array diagram above)

Output bus 4 to Front-side Right Speaker (4 in array diagram above)

Output bus 5 to Flanking Left Speaker (5 in array diagram above)

Output bus 6 to Flanking Right Speaker (6 in array diagram above)

Output bus 7 to Rear Left Speaker (7 in array diagram above)

Output bus 8 to Rear Left Speaker (8 in array diagram above)

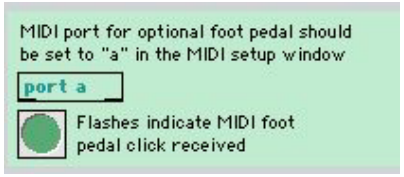
At the external mixer, the amplified bass clarinet is set to Front Left and Front Right panned to center.

Output level is set to be strong but not clip if the input levels are adjusted correctly coming from the external mixer. Overall output levels can be set with the gain and channel faders at the external mixer. Set the overall sound level and balance between the bass clarinet (slightly amplified) and the computer using the external mixer.

The"Test&Tune" sub-patch can be used in a sound check to make sure that output is reaching your system at the proper levels.

Optional MIDI sustain pedal setup

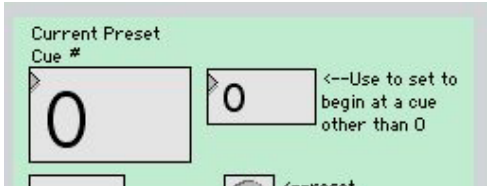
To use a MIDI sustain pedal on stage to advance through the computer cues, the MIDI input port must be set to "a" in the MIDI Setup menu and the foot pedal must be set to send controller 64 "'on messages." When set correctly, the small green button will flash with each MIDI foot pedal event.

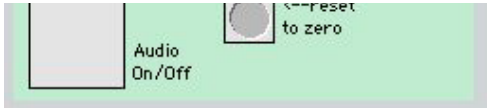


Run the software in rehearsal or performance:

Once you are sure the sound system is operating correctly and all of the overall audio settings are right, you can run the INPE Processor.

Turn on the MSP audio using the large X-Box labeled Audio On/Off





Click the "reset to zero" button to set the patch to Cue 0 for the beginning of the piece. Begin the piece with Cue "0" showing in the large number box labeled Current Prest Cue #. This box shows the Cue preset and should coincide with the Cues indicated in the score.

Advancing through the patch presets using Cue numbers

After turning on the main audio button and clicking the "reset to zero" button, begin the piece. During Cue 0 there will be no computer processing (it is silent before teh beginning of the piece). Beginning with Cue 1 there will be computer processing. An operator will need to advance the patch through the 76 Cue presets as indicated in the score.

Click the "reset to zero" button to set the patch to Cue 0 for the beginning of the piece. Begin the piece with Cue "0" showing in the large number box labeled Current Prest Cue #. This box shows the Cue preset and should coincide with the Cues indicated in the score.

MIDI foot pedal option:

If desired, the bass clarinettist, while playing, can advance through the cues from on stage using an optional MIDI foot pedal.

Advance the program through the numbered cues with single foot pedal clicks. Clicking the pedal faster than twice per second will be ignored.

Computer operator option:

If a foot pedal performed by the bass clarinettist is not the desired option, a computer operator can move through the Cues without a MIDI pedal by using the computer keyboard space-bar. This frees the instrumentalist from concern over pedals and presets and also allows the computer operator to mix and monitor the computer processing.

Rehearsing and jumping around Cue presets

If you would like to rehearse a section other than starting from the beginning, type the Cue number at which you would like to begin into the smaller box to the right of the Cue box, type the Enter key and now when the space bar or MIDI foot pedal is pressed, the patch will jump to that cue preset. Note: typing numbers into the CURRENT CUE box will not jump to that cue.

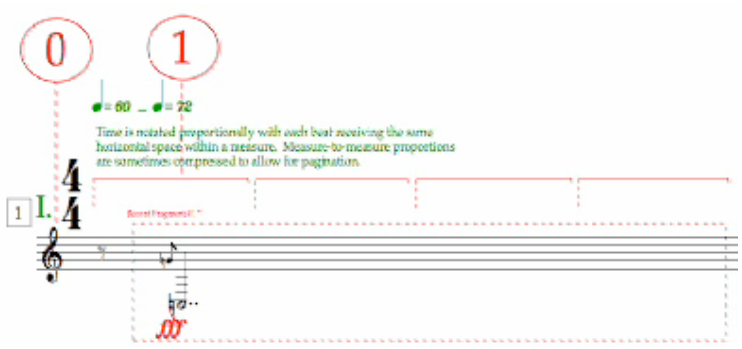
You can set the patch for beginning the piece at any time by clicking the "reset to zero" button to set the patch to Cue 0.

Some presets depend on music recorded into buffers earlier in the piece so jumping around like this will not always produce the full processed effect but it can be convenient for rehearsing.

Recording to the 50 memory buffers used for processing

The INPE software is designed to launch with 50 computer audio memory buffers filled with pre-recordings of fragments from the bass clarinet music, indicated with labeled dashed boxes in teh score

bass clarinet music, indicated with labeled dashed boxes in ten score

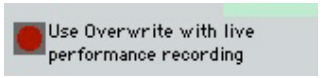


The pre-recorded fragments were recorded before the premiere in 2005 by E. Michael Richards and multiphonic recordings from his multiphonic library. The autoloading of pre-recorded fragments allows for the processing of fragments earlier in the piece than the fragment actually is played by the bass clarinet performer.

Prior to each performance, there is a choice to be made between re-recording (overwriting) each of these fragment buffers or using the pre-recorded fragments. Overwriting can be dome in the performance from real-time recordings of the actual live performance or a prepared recording session prior to performance cn be used to overwrite the buffers. This allows each performer to insert his/her own performance of the fragments and his/her sonic identity in teh computer music.

Not overwriting the buffers uses the pre-recorded segments as they were loaded when the patch was launched. The non-overwriting option can also be used after a performer has prepared new buffers using the overwriting option in which case that performer's saved pre-recordings of each fragment will load and be used in subsequent non-overwrite performances.

To overwrite new recordings into the buffers, in teh main patch window, turn on the button labeled "Use Overwrite with live performance recording." If this button is engaged it glows red indicating that overwriting is being used.



To record into progressively numbered buffers, press the keyboard "R" key to begin recording exactly at the beginning of each fragment indicated in the score with labeled dashed boxes.

Press the"S" key to stop recording and automatically increment to the next recorded fragment buffer number ready to record into that next buffer when the "R" key is pressed again.

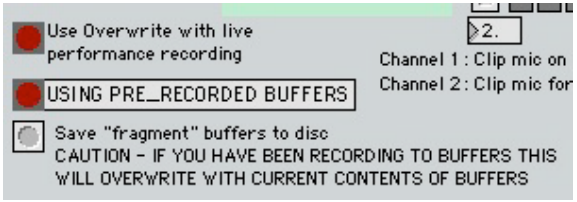
A second red LED and text box indicate when recording is taking place and which buffer is being recorded into.

This method of overwriting the buffers can be done in preparation for a performance or live during the performance but if overwriting is done in live performance, it is critical that the correct fragments be recorded to the correct numbered buffer.

In this version, there is no simple way to jump around recording into non-sequential buffers. All buffers must be recorded into sequentially from the beginning though it is possible to stop before all are recorded into or to pause indefinitely between fragments when recording in a prepared (non-performance) session.

Once buffers have been overwritten, when the patch is closed those recordings will be lost since they are written only into RAM buffers. If it is desired to save the overwritten recordings in the buffers for future use, press the button marked "Save fragment buffers to disc" which will replace the recordings of E. Michael Richards performing the fragments with the new recordings.

Caution should be taken before pressing the save button because once this button is pressed, the only way to recover the original recordings that were in the buffers at the time of launching is by copying them out of the folder named "Pre-recorded sounds safety copy" back into the main directory level for the patch. The safety copy folder contains duplicates of E. Michael Richards' recordings. If you have already recorded and Saved once already, if those recordings are replaced with a future Save, you will have had to have kept a duplicate of those recordings to recover them.



Once overwritten recordings have been saved, those new recordings will automatically load each time the INPE patch is launched and will serve as the pre-recordings in the buffers.

In this version buffer overwrite recording only applies to the fragment buffers. The multiphonic buffers are never overwritten and E. Michael Richards' pre-recordings are always used.

Emergency shutoff

In the event of a need to stop the program rather than continue with the performance, stop the program at any time by clicking on the X-button marked Audio On/Off.

After doing this, before beginning the patch again Quit the patch and launch it again. This will reset the program and clear any audio hang-ups.

Questions can be sent to: wkleinsasser@towson.edu