

# MAM

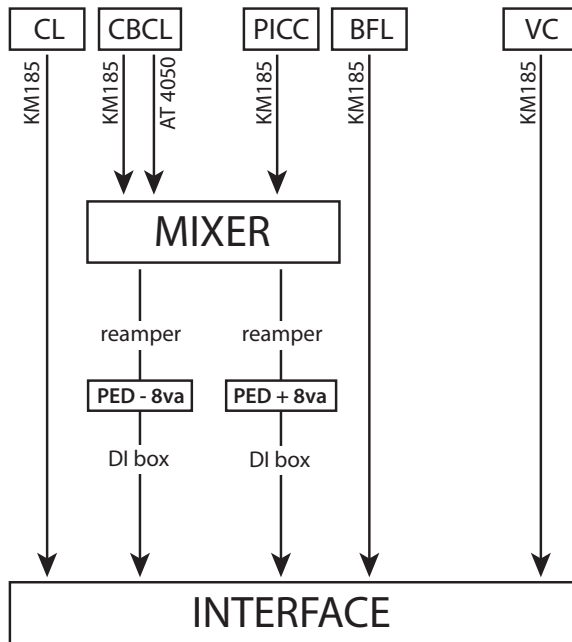
for flute, cello, clarinet, and electronics

Julio Zúñiga  
(2017 - 2018)



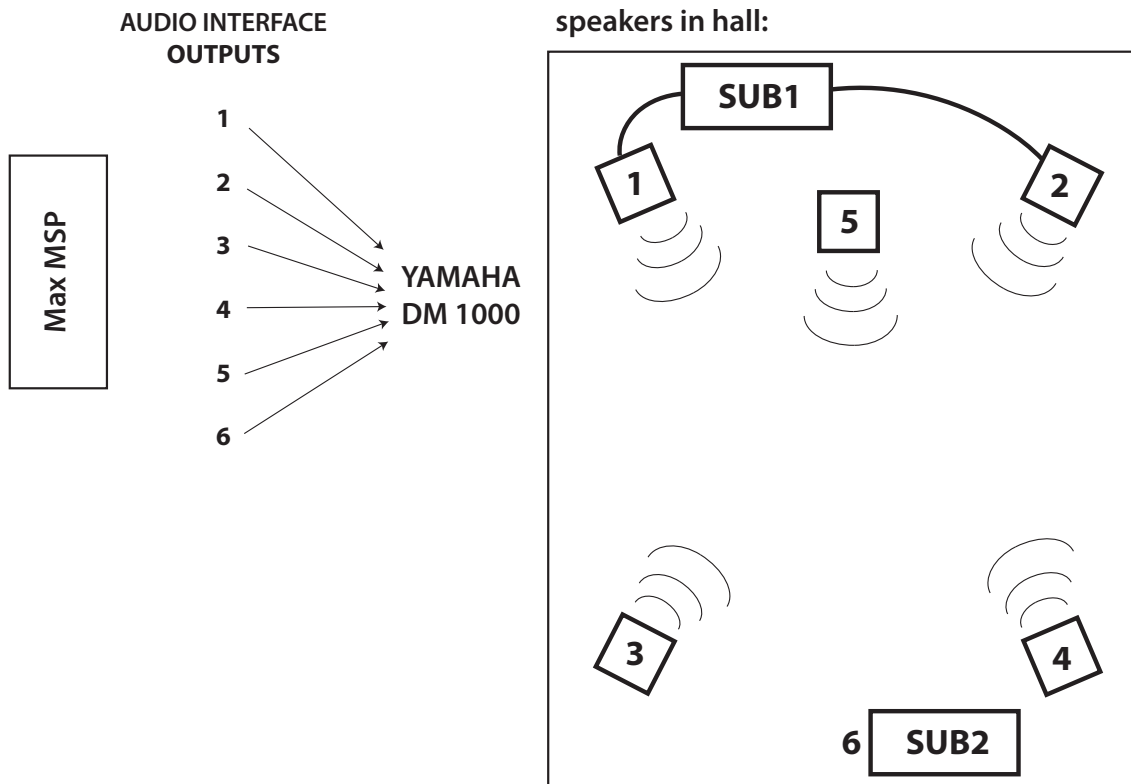


# ROUTING DIAGRAM



The performers must not be on stage. Rather, they should be amplified from a separate room and invisible to the audience. This room may be backstage or similar, from which the signal can be fed into the hall.

Channels 1 and 2 are sent to sub 1 as well.



\* the six outputs from DM 1000 are routed to their corresponding speaker #'s in hall; sub1 receives signal from channels 1 & 2; sub2 receives channel 6 only

## INSTRUMENTATION AND SETUP

piccolo flute, bass flute

analog pitch shifter pedal on piccolo, transposing one octave up  
(1st performance: EHX Pitch Fork)

violoncello

2 MIDI foot pedals: 1 cue ped., 1 expression ped.  
(scordatura: tune 4th string down to 60Hz)

clarinet in B<sup>b</sup>, contrabass clarinet

analog pitch shifter pedal, transposing one octave down  
(1st perf.: EHX Bass Micro Synth)  
1 MIDI cue pedal

6 condenser microphones

(1st perf.: 4 Neumann KM 185 on piccolo, cello, bass flute, and middle portion of contrabass cl.;  
1 AT 4050 on lower portion of cb. cl)

2 subwoofers, 1 speaker center stage, 4 speakers around the audience

## GENERAL INDICATIONS AND PEDALS

This is a **transposing** score. In addition to the customary transposition applied to the piccolo flute and contrabass clarinet, the pitch shifter pedals will transpose the resulting pitch yet one more octave up, in the case of the piccolo, and one more octave down, in the case of the contrabass clarinet.

Small arrows on accidentals indicate subdivisions smaller than a quarter-tone.

Tiny numbers like the 5 below the bridge clef in measure 1 or the ones preceding the first electronic part in m. 73 simply indicate the speakers that the subsequent passage on given staff comes out of. This becomes particularly relevant in m. 135, for example, where the whole trio is redirected inside the Max patch to a quad arrangement.

Dynamics are to be interpreted very literally throughout. *Cresc.* and *decresc.* should not be applied to note onsets and offsets, respectively. Rather, **the impression of crude sonic blocks** is desired. (Think of **NOTE ON, NOTE OFF.**)

## CELLO

The cello is sent directly to the computer through the audio interface. It is very heavily amplified throughout. From mm. 1-131, the amplified, mono signal comes out of the center speaker after it is filtered using a band-pass filter in Max-MSP (notated in gray in the score).

While the first MIDI pedal triggers cues (notated in boxed numbers in the score), the expression pedal moves the BPF's outer frequencies from an initial (ped. down) to a final point (ped. up) that change with each cue number. Note that the direction of the filter—whether it moves up or down in the register—does not correspond with pedal motion: the pedal simply carries the BPF filter from an initial set of values to a final one.

The expression pedal's function changes once the BPF disappears, after m. 131: in the last page of the score, it acts as a volume pedal. The cue pedal, on the other hand, retains its cueing function.

## CONTRABASS CLARINET

With the exception of cue 68, in m. 166, the contrabass clarinet's MIDI pedal always triggers the low sine tones. These will come out of the second subwoofer, in the back of the hall, while the contrabass clarinet's octave-shifted signal comes out of speakers 1 and 2, and subwoofer 1. There is thus an antiphonal relationship between the two subs while the contrabass clarinet is present. It is important for this effect that the tone is kept dark—poor in upper partials, with a strong emphasis on the fundamental—throughout this entire section.

Approximate duration: 15 minutes

Written for **DAD**: Madison Greenstone,  
TJ Borden, and Michael Matsuno







# MAM

for DAD: Madison, TJ, Michael

Julio Zúñiga

♩ = 55

3  
4  
5 (mono)  
BPF  
cue ped 1  
exp ped

*mf* sempre

9

17

25

33

41

VC BPF 440Hz 300Hz 315Hz  
cue ped 21  
exp ped

22 23 24

666Hz 222Hz 666Hz 222Hz

sim

Detailed description: This block shows measures 41 to 44. The musical staff features a treble clef, a 7/8 time signature, and a key signature of one sharp (F#). Measure 41 starts with a quarter rest followed by a quarter note G4. Measures 42, 43, and 44 each contain a dotted quarter note G4. Below the staff, the VC (Voltage Control) parameter is shown with a BPF (Band Pass Filter) envelope that starts at 440Hz and 300Hz, tapers to 315Hz by measure 42, and then has a step increase to 666Hz at measure 22. The 'cue ped' parameter is a step function that is 0 until measure 21 and then jumps to 1. The 'exp ped' parameter is a ramp that starts at measure 21 and increases linearly to measure 44. Boxed numbers 21, 22, 23, and 24 are placed below the VC line at the start of each measure.



49

VC 25 (sempre sim) 26 27 28

Detailed description: This block shows measures 49 to 52. The musical staff features a treble clef and a 4/4 time signature. Measures 49, 50, 51, and 52 each contain a dotted quarter note G4. Below the staff, the VC parameter is shown with a step function that is 0 until measure 25 and then jumps to 1. The text '(sempre sim)' is written below measure 25. Boxed numbers 25, 26, 27, and 28 are placed below the VC line at the start of each measure.



57

VC 29 30 31 32

Detailed description: This block shows measures 57 to 60. The musical staff features a treble clef and a 4/4 time signature. Measures 57, 58, 59, and 60 each contain a dotted quarter note G4. Below the staff, the VC parameter is shown with a step function that is 0 until measure 29 and then jumps to 1. Boxed numbers 29, 30, 31, and 32 are placed below the VC line at the start of each measure.



65

VC 33 34 35

594Hz 488Hz 526Hz 498Hz 364Hz 279Hz 268Hz 222Hz 500Hz 320Hz 666Hz 222Hz

1 4 3 3 4 5 8

Detailed description: This block shows measures 65 to 68. The musical staff features a treble clef and a 5/8 time signature. Measure 65 starts with a quarter rest followed by a quarter note G4. Measure 66 contains a triplet of eighth notes: G4, A4, and B4. Measure 67 contains a triplet of eighth notes: G4, F#4, and E4. Measure 68 contains a quarter note G4. Below the staff, the VC parameter is shown with three distinct envelopes: a ramp from 594Hz/488Hz to 526Hz/498Hz in measure 33, a ramp from 364Hz/279Hz to 268Hz/222Hz in measure 34, and a ramp from 500Hz/320Hz to 666Hz/222Hz in measure 35. Boxed numbers 33, 34, and 35 are placed below the VC line at the start of each measure.



71

VC 36 37 38

EL 1 2 3 4 field

white noise

285Hz 245Hz 333Hz 245Hz 333Hz 245Hz 440Hz 220Hz

Detailed description: This block shows measures 71 to 74. The musical staff features a treble clef and a 5/8 time signature. Measure 71 starts with a quarter rest followed by a quarter note G4. Measure 72 contains a quarter note G4. Measure 73 contains a quarter note G4 followed by a quarter rest. Measure 74 contains a quarter note G4. Below the staff, the VC parameter is shown with two envelopes: a ramp from 285Hz/245Hz to 333Hz/245Hz in measure 36, and a ramp from 333Hz/245Hz to 440Hz/220Hz in measure 37. The EL parameter is shown with a 'field' parameter that is 0 until measure 38 and then jumps to 1. A 'white noise' parameter is shown as a grey bar starting at measure 38. Boxed numbers 36, 37, and 38 are placed below the VC line at the start of each measure.

77

VC

BPF 483Hz  
338Hz

39 40

electronics only

EL

2  
4  
filtered white noise

616Hz  
580Hz

41



83

VC



88

VC

358Hz  
233Hz

42



93

$\text{♩} = 60$

VC

508Hz  
267Hz

43

1036Hz  
960Hz

740Hz  
677Hz

VC 99

40"

♩ = 55

3/4

BPF

45

588Hz  
370Hz

313Hz  
280Hz

46

5"

CB CL

transposed

1, 2 + sub1

44

*pp*

SINES

sub2 (mono)

51.2 Hz

*pppp almost imperceptible*

*pp*

4

4

*p*

*p*

cue 45 will cut off the contrabass clarinet's and low sine tone's sound during these three measures; continue playing regardless so as to keep gradual *cresc.* before sound comes back on with cue 46

104  $\text{♩} = 72$

CB CL

SINES

*mf* *mp* *mf* *ppp*

47 48 49 50

45.14 Hz 38 Hz 58.2 Hz 84 Hz

20"

110 4" 20"  $\text{♩} = 55$

VC

BPF

mst

*pp*

51

315 Hz 666 Hz 322 Hz 251 Hz

from this moment onward, vc cue ped. stops functioning as voi. ped.

CB CL

*pp* *mp*

52 53 54 55

38.3 Hz 33.8 Hz 77.2 Hz 73.8 Hz 118.4 Hz 39.5 Hz 52 Hz 41.4 Hz 34.7 Hz

114 26" 8" 5" 6" 7"

CB CL

*pp* *mf* *ppp*

SINES

♩ = 90

115

VC

BPF

34.4 Hz

29.5 Hz

30 Hz

37.8 Hz

31.9 Hz

3+1  
4+16

*mf*

56

57

58

*mf*

*p*



121

VC

*mf*

660Hz

222Hz

59

60

71 Hz

128.2 Hz

43 Hz

37.5 Hz

*mp*

*p*

*mp*



127

CB CL

61

62

63

79 Hz

44.2 Hz

*mf*

*p*

1/4

2/4

2/4

♩ = 44

132

PICC  $\frac{2}{4}$  1 2 3 4  $f$  bass flute

VC  $\frac{2}{4}$   $15^{ma}$  BPF OFF (allpass)  $mp$  3 10"

CBCL  $\frac{2}{4}$   $mf$   $ff$  3 3 → cl. in B $\flat$

SINES 64 50.4 Hz  $mf$  65 30 Hz  $f$  audio file will begin gradually after a 3.3-second delay 66 1 2 3 4

EL audio file

♩ = 72

135 II, multiphonic

VC  $\frac{3}{4}$  1 2 3 4  $mp$  (no decresc.!) emphasize A and D emphasize lower hum

EL (audio file)

139

B FL  $\frac{2}{4}$   $mp$  bring out upper partials w/o entirely losing fundamental

VC  $\frac{2}{4}$   $mp$   $p$   $p$  sim.; spectrum as full and stable as poss. very faint: II pont.

CL  $\frac{2}{4}$  1 2 3 4  $ppp$  almost imperceptible change fingering

EL

145

much more airy; add whistling high partials

B FL

VC

CL

EL

*p*

(pont.) quickly move bow → mst

no *descrec.*

III mst

*p*

*p* poss.

SINES

67

48 Hz

*p* poss.

151

B FL

VC

CL

SINES

EL

*p*

no *descrec.*

157

B FL

VC

CL

EL

*pp*

*p*

*pp*

*p* sub. (only air)

slowly and carefully turn ped. level down a notch

sudden cut

3



163 ● clean, full, stable sound      make rearticulation seamless

B FL *pp*

VC *pp* mst ord (1) 8va

CL *ppp* 3

SINES 32 Hz

68

EL



. . . c o m p l e t e s t a s i s . . .

169

B FL *no descrec.!* 4/8

VC *no descrec.!* 4/8

CL *no descrec.!* 4/8

SINES 32 Hz

EL

♩ = 99

175

BFL

CL

EL

w/ whistling upper partials

*ppp*

*mf*

*mp*

*pp*

69

181

BFL

VC

CL

EL

st / slow bow

*p*

*ppp*

*p*

*p*

mst

187

BFL

VC

CL

EL

II, multiphonic (see m. 135)

*ppp*

*pp*

*pp*

VC 191  
1'33" rest  
~1'20"  
exp. ped.  
~15" rest

CL  
~10"  
*mp* *mf*

EL  
field

3'08"

Detailed description: This musical score page features three staves. The top staff, labeled 'VC', begins with a bracketed measure number '191' and a '1'33" rest'. It then contains a long note with a duration of '~1'20"', marked with 'exp. ped.' and a dashed box. This is followed by a '~15" rest'. A horizontal line above the VC staff spans the entire width of the page and is labeled '3'08"'. The middle staff, labeled 'CL', starts with a treble clef and a duration of '~10"'. It features a dynamic marking that transitions from '*mp*' to '*mf*'. The bottom staff, labeled 'EL', is a solid grey block with the word 'field' written below it. A vertical bar line is present at the end of the page.