

# Glass Ephemera

*for piano and live electronics*

Reuben de Lautour, 2020

## Contents

|                                   |     |
|-----------------------------------|-----|
| Information & Program Note.....   | i   |
| Performance instructions.....     | ii  |
| Max MSP patch operation.....      | iii |
| Stage Plan & technical notes..... | iv  |
| Full Score.....                   | 1–9 |

## Program note

*Glass Ephemera* explores the connection between sonic resonance and memory. The musical material is derived from a physical object made of glass, which for the composer carries with it its own history and personal associations. The spectral properties of the object when percussed are mapped to musical pitches and various electronic sounds. The electronic textures function as symbolic echoes or reverberations of the musical material produced by the piano.

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## Information

**Approximate duration 8'30"**

**Download link for Max MSP patch and associated files:**

<https://drive.google.com/drive/folders/1xqJVTRtd0SRTu1K3D56pP0d1T3Zc3a-n?usp=sharing>

**Setup and rehearsal time: approx. 25' assuming PA is set**

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# Performance Instructions

## Piano

The electronics part does not contain any sounds of fixed duration so the player can interpret the rhythms and tempi with some freedom. However, many of the cues are synchronised from some feature of the piano part (note onset, change in register, pitch, or dynamic), and these points should be articulated clearly. Synchronisation points are indicated with a dotted line connecting to a cue number or boxed text.

A dotted barline indicates a change from bars / beats to seconds. Durations in seconds are approximate, especially when they appear over a square fermata. At these points the electronics is often reacting to something the pianist has just played, so the player can wait and listen to the modulation of the sounds and continue when it feels appropriate.

Specific events are notated underneath the piano staff using text or symbols. These provide a rough guide to what kinds of sounds will be heard in each passage.

Pedalling: Change or lift pedal as indicated; if no change or lift is marked, keep pedal open.

## Electronics

The electronic sounds are generated by the included Max / MSP patch “Glass Ephemera Live Electronics.”

Cue numbers appear as circled text beneath the score, and are triggered by pressing the "cue" button or the down arrow button on the computer keyboard. Dotted vertical lines indicate roughly the point at which cues should be triggered.

Audio features of the piano sound are used for precise synchronisation of some events, and also to modulate and control DSP processes. These include several different averages of the peak level, the spectral centroid, pitch flux, onsets, and changes in macrodynamic level. The operator should not normally have to worry about these, but it is essential that the cues are triggered in advance of the sync point in order for the feature detection and / or modulation to work properly.

Many cues are triggered by changes in a piano feature (onset, change in dynamic or pitch). In these cases the cue number is followed by an arrow, and the dotted line indicates the point at which the feature should be detected. Pressing the cue button "arms" the cue, which will trigger when the relevant feature is detected (most often an onset). The cue number will appear greyed out until the feature is detected, when it turns solid white.

If the feature is not detected, the cue will remain greyed out. If this happens press the "jog" button to manually trigger the event (keyboard shortcut "q").

## Max MSP patch operation

During normal operation, all that should be necessary is clicking the “cue” button at the appropriate point in the score.

During rehearsal cues can be triggered out of sequence by navigating with the << or >> buttons. Cues can also be entered by typing directly in the number box, or using the numeric keys on the computer keyboard.

### GUI commands:

**cue** Advance and trigger next cue; activate selected cue after scrolling with right or left arrows, or manually entering cue  
Shortcut: down arrow

**>>** Advance to next cue but do not trigger  
Shortcut: right arrow

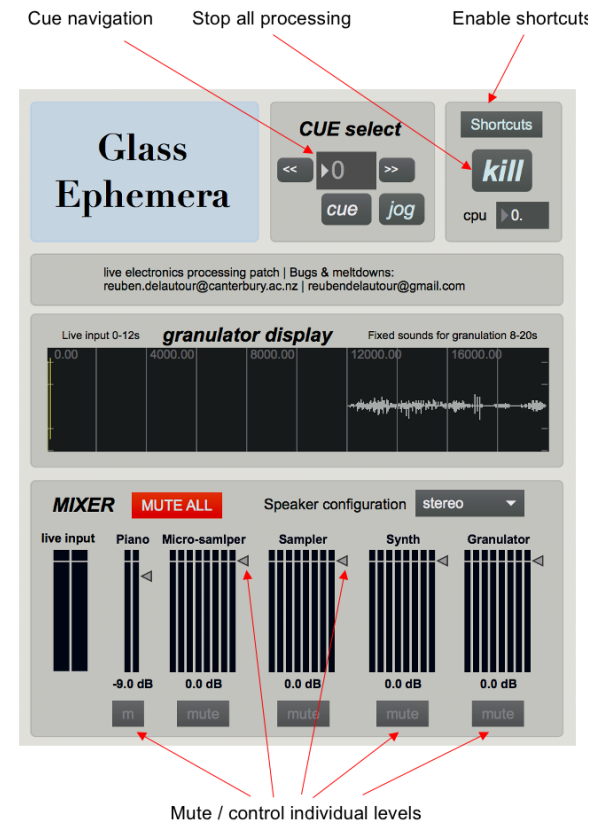
**<<** Return to previous cue but do not trigger  
Shortcut: left arrow

**jog** Jog button (for missed onsets and other features)  
Shortcut: q

**kill** Stop all processing

**mute** mute channel

**MUTE ALL** mute everything



# Stage plan & technical notes

Speaker positions are approximate. Subs can be taken from a sum of all channels, or sum of 1-4 and 5-8 respectively.

Alternate speaker routing (e.g. “paris” configuration or circle of eight with front center speaker) available on request.

In the case of the pianist triggering the electronics, the laptop and converter can be mounted on the stage next to the performer.

Composer will supply laptop and 8 channel interface if required.

Mic positions are suggestions only and at the discretion of the engineer, but channel 1 should be predominantly treble and channel 2 predominantly bass.

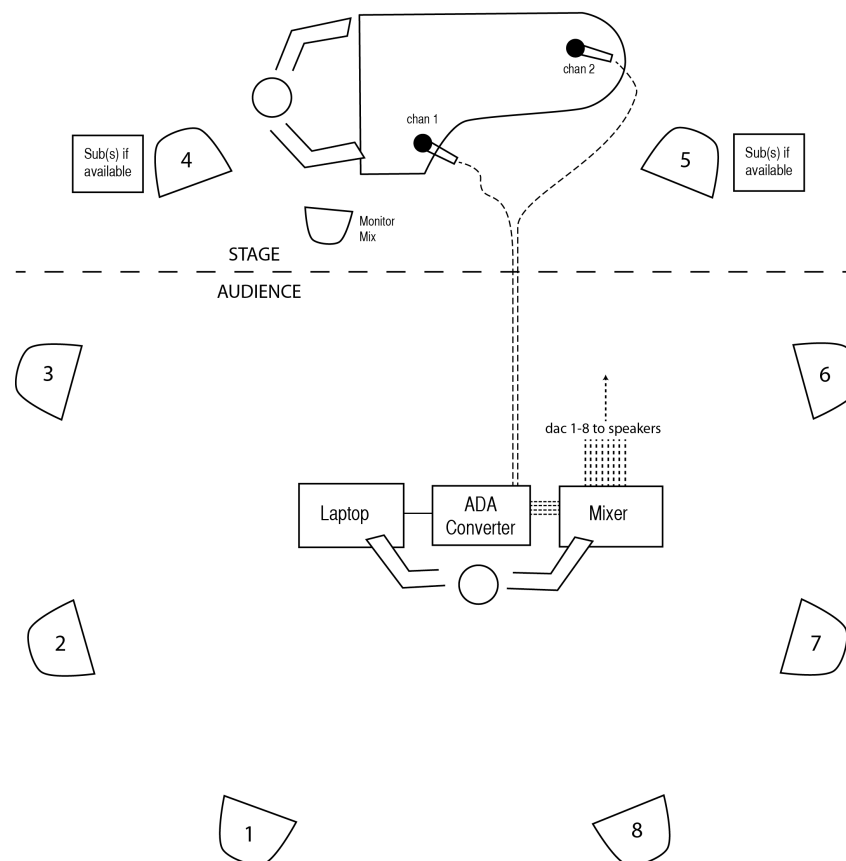
Max / MSP version 7.3.4 or greater is required.

The following abstractions need to be placed in the Max search path:

metro-k.maxpat  
sine-k.maxpat  
curve-k.maxpat  
pause.maxpat  
debug.maxpat  
emphem-grain-8ch~  
ephem-clink-8ch~  
ephem-loop-8ch~  
ephem-synth-8ch~

The following files need to be placed in the patcher’s root directory or the Max search path:

ephemera-clink-info  
ephemera-plink-info  
Sounds (folder)





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**Piano**

$\text{♩} = \text{ca } 68$

$8^{\text{va}}$

$\approx 5''$

$\approx 15''$

$ff$   $f$   $pp$

$\text{mf} > pp < mp > pp \dots \text{sim.}$

Asymmetrical dynamic swells ad lib., always return to pianissimo

**Electronics**

① → gong-like resonances

sustained tones react to dynamic changes in piano

**Pno.**

$\approx 5''$

4 (tr)  $pp$   $ff$   $\text{sub. } p$  secco, poco staccato

7 7 7 7 5 5 3

② → sustained tones fade a bit; "clinking" notes at same pitches emerge

9 3 3 3 5 3 3 3

"clinking" and sustained sounds continue

pp ③

13  $\approx 20''$

Pno.

Wait for electronics to fade completely

$ff$   $mf$   $ff$

8<sup>va</sup>

6

Ped.

wait for sounds to fade out completely then set cue ④ → Rapid tremolo sound at same pitch

⑤ → Low sustained texture; tremolo slowly adds extra notes

16 5 3

Pno.

$p$   $8^{vb}$

$\approx 15''$

Wait for texture to stabilize, listen for a while, continue when it feels like time for a change

$mf$   $secco$

8<sup>va</sup>

3

Set cue after piano resonance has died a bit ⑥ → Piano notes trigger stuttering effects

20

Pno.

8<sup>va</sup>

3

3

3

3

3

5

Stuttering continues along with other percussive sounds



Musical score for Piano (Pno.). The score is written for the right and left hands. The right hand features complex chords and arpeggios, often marked with '5' and '3' for fingerings, and '8va' for octave transposition. The left hand provides a bass line with some triplets and arpeggios. The piece concludes with a final chord marked '8vb' and a 'Cut all sounds' instruction.

29

$\approx 3''$

$\approx 2''$

8va

$\approx 3''$

8va

$\approx 2''$

*mf*

*f* *mp*

*mf* *p*

Timing of pauses approximate;  
wait just long enough to hear  
small modulations in electronics

8

Elctr.

Sustained notes suddenly quieter, change of timbre and small grainy sounds

9

Sustained notes ripple and swell

10

33

8va

~5"

8va

~3"

Pno.

mf

mf

f

mf

Let electronics breathe and modulate a bit

11

Sustained notes ripple and swell

Each cue triggers small changes in timbre and modulation; subtle granulation of live piano

⑬ Hit cue just after piano chord to catch and freeze the sustain

15 Catch and freeze sustain

Light granular texture

Stuttering pitch-shifted granulation ----->

48  $\approx 4''$   $\text{f}$   $\text{mp}$   $\text{p}$   $\text{f}$   $\text{mp}$   $\text{pp}$   $\text{f}$   $\text{p}$   $\approx 10''$   $8^{\text{va}}$

Pno.

tre corda  $\text{Ped.}$

count beats normally

Wait for sustained tone to emerge and stabilize

(17) → Harp-like gestures following the contour of the piano

(18) → Cut resonance, impulsive clattering sounds follow piano

(19)

55  $\text{mf}$   $\text{f}$   $\text{mf}$   $\text{pp}$   $\text{f}$   $\text{p}$   $8^{\text{va}}$

Pno.

$\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$

→ Piano triggers vibrato in sustained note; Harp-like gestures continue

Granulated echoes of piano

(20) Harp-like gestures continue, light granulated textures

$8^{\text{va}}$

64  $8^{\text{va}}$   $\approx 4''$   $\text{secco}$   $\text{f}$   $\text{mp}$   $\text{ff}$   $\text{p}$   $\text{f}$   $\text{pp}$   $\text{mp}$   $\approx 7''$   $\approx 4''$

Pno.

$\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$   $\text{Ped.}$

gradually clear resonance

(21) Sustained resonance, light granulation

(22) Harp-like gestures return then fade away

(23) Trill recorded

71

Pno.

7 6 3 5

Continue until granulated trill is heard, improvise a few more beats if needed

$\approx 4''$

*mf*

*mp*

*Red.*

Granulated trill emerges

Notes in live piano trigger pitch deviations in granulated trill

78

Pno.

*p*

Wait for electronics to fade a bit

*f*

*ff*

*f*

*p*

*mf*

$\approx 5''$

$8^{va}$

*Red.*

(24) Fade and pitch drop

(25) Harp-like gestures

(26) Rapid tremolo sound at same pitch

84

Pno.

*f*

*mp*

*f*

*ff*

count beats normally

*Red.*

(27) Sustained harmonic resonances

(28) Harp-like gesture

88

Pno.

*ffpp*

*ff*

$\text{♩} = \text{ca } 105$

*mp* *mf*

*Ped.*

9

8<sup>va</sup>

5

5

5

29

10 seconds of piano recorded

91

Pno.

*p* *mf* *mp* *mf* *f* *mf* *f* *p*

*Ped.* *sim.*

3

3

5

7:4

Granulated piano emerges

97

Pno.

$\approx 12''$

Wait for tone of granulated piano to open up a bit

*mf* *f* *mp*

*Ped.*

3

5

3

7

16

*mf* *f*

5

6

8<sup>va</sup>

30

Granulated piano continues, low resonances emerge

102

Pno.

$\approx 6''$

$\approx 12''$

*mf* *f* *p* *f*

5

3

6

9

16

5

3

8<sup>va</sup>

31

Granulated piano changes pitch, glassy granulated texture emerges

All sounds drop in pitch

8

Pno. 108 <sup>8<sup>va</sup></sup>  32 High register sounds re-emerge

Pno. 113  33 Cut high register granulation, high sustained tones emerge

Pno. 117  34 Granulated piano drops in pitch

Pno. 121 <sup>8<sup>va</sup></sup>  35 Complex granular texture

Pno.

Pno.

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