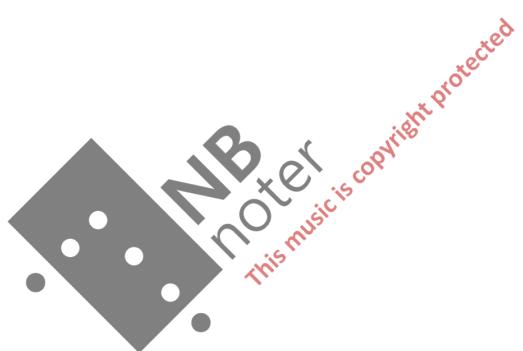


*Dedicated to Ola Nordal*

Mathieu Lacroix

# Quasar (2019-2020)

For Sinfonietta & Electronics



Written with the support of Det Norske Komponistfond

# Information & Dedication

Ever since I've been a child, science and astronomy have interested me quite a bit. Books and shows by the likes of Luminet, Cox, Sagan among others, as well as science fiction have played an important part in my life. This piece is one of the results of that inspiration. This is not meant to be program music at all, but the piece was heavily inspired by reading Luminet's books on the subject at hand. A few scientific theories and mathematical principles are hidden throughout the piece.

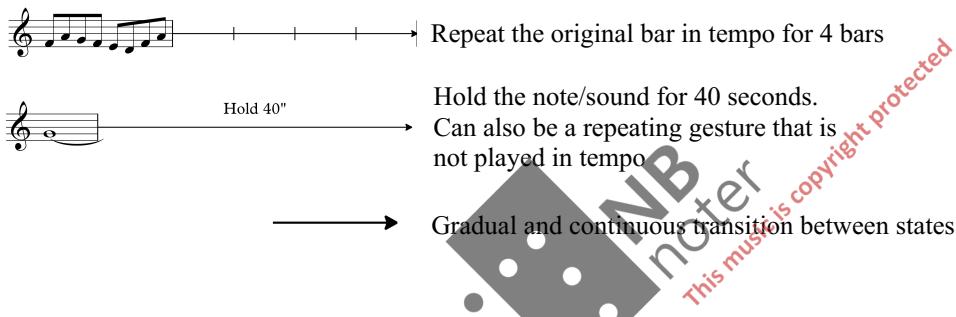
Quasar is for 12 musicians and electronics. There's a speaker array around the audience, as well as five additional speakers on stage which function as "avatars". The electronics are synchronized with the ensemble in different ways and with different strategies to make them flexible both in what they play, how and when. The idea is to try to give the electronics as much flexibility and interpretative power as a musician. I believe this is the way forward in mixed music, as then every performance is even more unique. The electronics become an integral part of the piece and its interpretation instead of being just another technical problem to solve.

Quasar is dedicated to Ola Nordal. Thank you for having been a great teacher, and especially for engaging and challenging me in discussions about aesthetics, music, production and the arts.

Commissioned by Trondheim Sinfonietta with the support of The Norwegian Composers' Fund. Thank you!

For more information: [www.mlacroix.com](http://www.mlacroix.com)

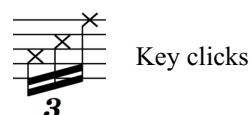
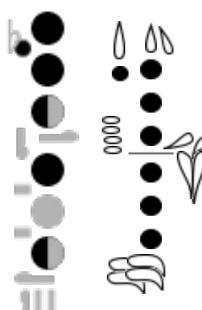
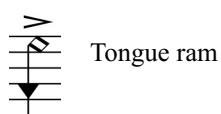
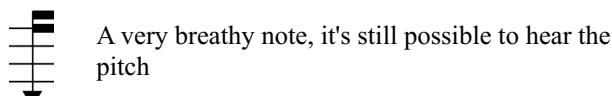
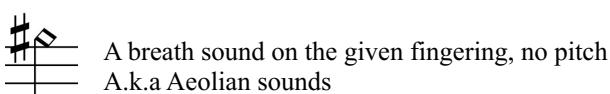
## Notation Explanation General



S.V. - Senza Vibrato / play as straight as possible  
 M.V. - Molto vibrato / a slightly exaggerated romantic vibrato  
 Trills should always be 1 semitone upwards unless indicated otherwise

All glissandi should start immediately at the start of the note value  
 The final note of glissandi is not to be played separately  
 Tremolos are unmeasured - play them as quickly as possible

## Woodwinds & Brass



# Strings

S. P. Sul Ponticello

S.T. Sul Tasto

Molto means greatly exaggerated



Circular bowing



Flautando with no discernible pitch on given note

Bow pressure crescendo/decrescendo.

Combined with the word Crush for its highest pressure

## Piano

 Play the note while muting it with your hand and hold down the pedal to let it resonate.

 Pluck the strings inside the piano as fast as possible.

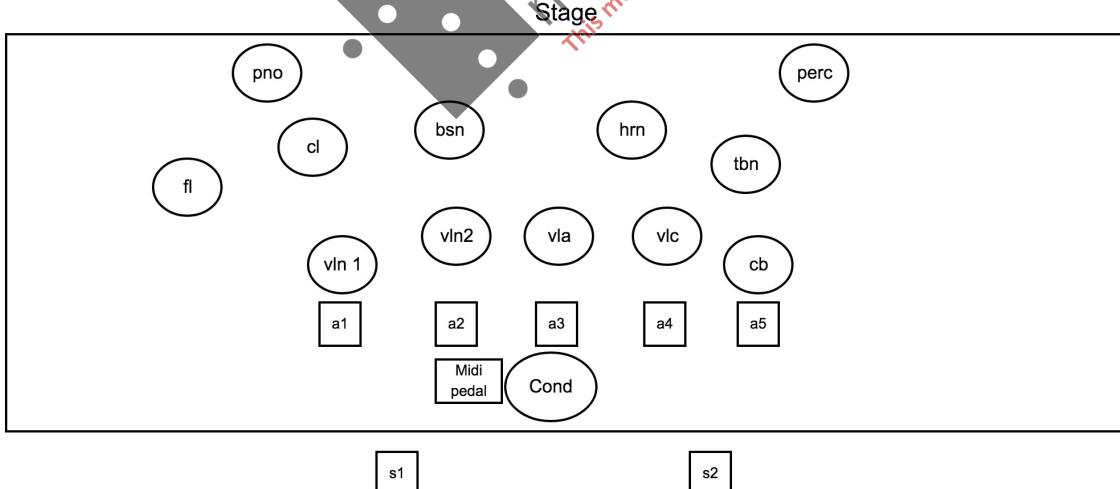
The pianist is required to use up to four ebows during this piece. It is always indicated when to prepare an ebow. I recommend the E-Bow Plus, but any model will do.

The amount and usage of the pedal is at the discretion of the player depending on the acoustics of the hall in which the piece is being played in.

The player also requires a pair of soft mallets to hit the strings in one section.

## Electronics Instructions

The piece uses several different synchronization techniques and strategies to make the electronics as flexible as possible. The extra staff "Pedal" indicates both when the conductor and when the computer music design have to trigger a new event. The conductor should only press the pedal when it is indicated as a C and a number. The other pedals are for the person in charge of the electronics. See additional documentation for details.



Different placement MUST be compensated for in the Max patch  
S = speakers for ambisonics

A = avatar speakers



Minimum 8 speakers around audience.  
A sub placed in the middle in front of the audience is also optimal

# Quasar (2019-2020)

4

$\text{♩} = 55$  Senza misurata / loosely

Mathieu Lacroix

**A**

Cymbal: Soft mallets, Hold 40" - soft accent at the end,  $ppp$ ,  $mp$ .

Contrabass: S.V. Ord., Hold 30", Crush / molto S.P., Hold 40", S.P., 20", S.V. Ord., Hold 25", Sempre.

Electronics: Resonating plate with CB, Additional tape & processing, Sempre...

Pedals: C01, C02, E01, C03.

≡

**I2**

Cym.: Hold 35" - soft accent at the end,  $ppp$ ,  $mp$ ,  $p$ , Hold 25",  $mf$ , Hold 10".

Vln.: Con sordino, S.V. S.T., 10" gliss., M.V., Hold 10".

Vln. II: Con sordino, S.V. S.T., 10" gliss., M.V., Hold 10".

Vla.: Con sordino, S.V. S.T., Hold 10", Hold 10".

Vc.: S.V., Hold 15", Crush, Hold 10", Hold 10", Hold 10", Hold 10", ff.

Cb.: Crush, Hold 35", molto S.P., 20", S.V., Hold 15", Hold 10", Hold 10", ff.

Elec.: Sempre,  $ppp$ ,  $p$ ,  $p$ , ff.

Ped.: E02, C04, C05, E03.

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Fl.  Hold for as long as possible → 120" of electronics

Cl.  Hold for as long as possible → 120" of electronics

S.V. Bsn.  Hold for as long as possible, repeat note smoothly → 120" of electronics

Hn.  Hold as long as possible → 120" of electronics

Tbn.  Hold as long as possible → 120" of electronics

Cym.  Hold 15" → > 120" of electronics

Crot.  mp 120" of electronics

Vln. S.V. S.T.  3" gliss. → M.V. Via sordino 120" of electronics

Vln. II S.V. S.T.  gliss. 3" → Hold 4" M.V. Via sordino 120" of electronics

Vla.  Hold 7" → Hold 4" M.V. Via sordino 120" of electronics

Vc. S.V.  Hold 5" → Hold 7" Extreme S.P. 120" of electronics

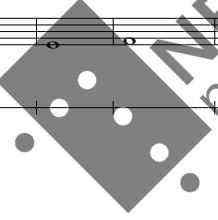
Vc. S.V.  Hold 5" → Hold 7" ff Extreme S.P. 120" of electronics

Cb.  p Hold 5" → Hold 7" ff Extreme S.P. 120" of electronics

Elec. Turn on-stage lights off

Ped. [C06] [C07] [E04] [E05]

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**C** = 40 Thick & fluid      ♩ = 50 Lightly

6

Vln. 37 S.T. → S.P. S.T. → S.P. pizz poco accel. pp pizz pp pp

Vln. II S.T. → S.P. S.T. → S.P. mp

Vla. mp

Vc. mp

Cb. mp

Elec. Soft synth blanket / Turn stage lights on Spectral delays that are very soft surround the audience, transposing the notes as well according to pitch set. Movement around the audience

Ped. C08 EO6

**♩ = 60 Rougher & rougher**

45 *arco* Vln. *arco* Vln. II *arco* Vla. *arco* Vc. *arco* Cb. *arco* Elect. Ped.

Bowing sounds as well as a continuation of the pizz surround the audience

**E07**

51

Vln.

Vln. II

Vla.

Vc.

Cb.

Elec.

Ped.

poco accel.

crush

$\text{♩} = 68$   
Lightly & with lots of breath

7

**D**

Fl. Cl. Bsn. B. D.

Prepare elbow on lowest E Let resonate

Pno. Ebow

Vln. S.V.S.T.

Vln. II S.V.S.T.

Vla. Ord

Vc. tr... crush Ord

Cb. crush Ord

Ambience around the audience

Elec. Ambience around the audience

Ped. | E08 | E09 |

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$\text{♩} = 72$  Fluid

Fl. Cl. Bsn.

Mar. soft mallets

Pno. Let resonate

Elec. Granular synthesis on piano and marimba surround the audience slowly

Ped. | E10 |

$\text{♩} = 62$  Heavier**E**

Fl.  $f$  → S.V.

Cl.  $f$  → S.V.

Bsn.  $f$  → S.V.

Hn.  $mp$

Tbn.  $mf$

Mar.  $mp$

Pno. Let resonate  
Stop e-bow note and remove it  
 $mf$

Vln.  $pizz$

Vln. II  $pizz$

Vla.

Vc.

Cb.  $p$

Elec. Electronics fade out  
Harmonies in the avatars

Ped. **E11** | **C09**

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Fl. *mf*  
Cl. *mf*  
Bsn. *mf*  
Hn. *mp* *mf*  
Tbn. *mf*  
Cym. *mp* *Bow*  
Mar.  
To

NB  
noter  
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Pno.

Vln. *arco*  
Vln. II *arco*  
Vla. *pizz* *p*  
Vc. *pizz* *p* *arco*  
Cb. *arco*

Elec.

Ped. **E12**

Pitched delays start to come back / spatialization around audience

♩ = 70 Getting heavier and heavier

Cl.

Bsn.

Tbn.

B. D.

Crot.

Pno.

Vln.

Vln. II

Vla.

Vc.

Cb.

Elec.

Ped.

pp → f

Let resonate

mp

f subito mp

arco

mp

mf

mp

mf

mf

More processing on samples

E13

N.B. Notes  
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82

poco accel.  $\downarrow = 75$

Bsn.

Hn.  $mf$

Tbn.  $mf$   $f$

B. D.  $ff$   $f$

Cym.

Crot.

Pno.  $f$   $p$   $mf$  Let resonate  $3$

Vln.  $mp$   $ff$  S.V.  $f$  M.V. flaut

Vln. II  $mp$   $ff$

Vla.  $mp$   $ff$  S.V. M.V. flaut Ord

Vc.  $mp$   $ff$  S.V. M.V. S.P.

Cb.  $mp$   $ff$  f S.V. arco  $mp$

Elec. Electronics fade out and move towards azim 0

Ped. [E14]  $\downarrow = 60$  poco accel. [C10] Granulation & Delays / Ambience in avatars

12

88

*J = 70*

**G** *J = 45*

*J = 60 poco accel.*

Fl.

Cl.

Bsn.

Hn.

B. D.

Cym.

Pno.

Vln.

Vln. II

Vla.

Vc.

Cb.

Elec.

Ped.

*Let resonate*

*Let resonate*

*mp*

*f*

*ff*

*f*

*flaut*

*flaut*

*M.V.*

*S.P.*

*f*

*mp*

*mp*

*fade out*

**C11**

**C12**

Granulation & Delays / Ambience in avatars

Fl. *mf*

Cl.

Bsn. *mp*

Hn. *p* *mf*

Tbn. *p* *mf*

B. D. *f*

Pno. Let resonate

Vln. Ord *p* *mf* S.V. S.T.

Vln. II Ord *p* *mf* S.V. S.T.

Vla. S.T. *mp* Ord *mf* S.P. *mp* *f* *f*

Vc. *3* *mp* S.P. *mp* *f* *f*

Cb. crush Molto S.P. complete crush

Elec. Fade out

Ped.

**H** *f*

**C13**

**C14**

*J = 60 poco accel.*

98

Bsn. *mf*

Pno. *mp* *mf*

Vln. *gliss.*

Vln. II *p* *mp*

Vla. *p* *mp* *p*

Vc. *flaut* *mf*

Elec.

Ped.



Fl. *mp* 3 *mf* 3 *f*

Cl. *mp* 3 *mf* 3 *f*

Bsn. overblow Ord *f* *mp* *f* *mp*

Hn. *pp* *f*

Tbn. *f*

B. D.

Cym. Bow *f*

Mar.

Pno. *mf* *f* *p* *mf* *p*

Vln. flaut *f* *Ord* *f* *subito p* *mf* *gloss.*  
Vln. II flaut *f* *Ord* *f* *subito p* *mf* *gloss.*  
Vla. flaut *f* *Ord* *f* *subito p*  
Vc. *mp* *f* *Ord* *f* *subito p*  
Cb. S.P. *f* *p*  
Elec. Fade out  
Ped.

**I** *f*

*= 50*

*= 60 poco accel.*

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**C15** **C16**

Granulation & Delays / Ambience in avatars

107

Bsn.

Hn. → slight pitch → slight pitch

Tbn. → slight pitch → slight pitch

Mar.

Pno. → S.V. → molto S.T.

Vln. → S.V. → molto S.T.

Vln. II → S.V. → molto S.T.

Vla. → S.P. → molto S.T.

Vc. → S.P. → molto S.T.

Cb. extreme crush / molto S.P.

Elec.

Ped.

*J* = 70      *J* = 50      *J* = 60      *J* = 50      **K** = 40 Monolithic      Ord = 64      M.V.      Ord      M.V.

Fl.      Cl.      Bsn.      S.V.      Ord      M.V.      Ord      M.V.

*f*      *f*      *mp* = *f*      *fp*      *mp* = *f*      *fp*      *mp* = *f*      *fp*

*mp* = *f*      *fp*      *mp* = *f*      *fp*      *mp* = *f*      *fp*      *mp* = *f*      *fp*

*mp* = *f*      *fp*      *mp* = *f*      *fp*      *mp* = *f*      *fp*      *mp* = *f*      *fp*

Hn.      Tbn.      S.V.      Ord      M.V.      Ord      M.V.

*f*      *f*      *fp*      *f*      *f*      *mp* = *f*      *fp*      *mp* = *f*      *fp*

*f*      *f*      *fp*      *f*      *f*      *mp* = *f*      *fp*      *mp* = *f*      *fp*

B. D.      *f*      *f*

Pno.      Let resonate

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Pno.      Let resonate

Vln.      Vln. II      Vla.      Vc.      Cb.

*mf*      *f*      *ffmp*      *ffmp*      *ffmp*      *ffmp*      *ffmp*      *ffmp*      *ffmp*

S.V. S.T.      Ord      S.V. S.T.      Ord      S.V. S.T.      Ord      S.V. S.T.      Ord

*ffmp*      *fp*      *ffmp*      *fp*      *ffmp*      *fp*      *ffmp*      *fp*

Elec.      Ped.

Fade out      Ring Mod & Granulation      C.B. avatar has ambience      Ring Mod & Granulation      Tape swells up, surrounds audience

C17      C18      E15      C19      E16

18

**L** = 55**J** = 65**M** = 70 As a thousand voices

Fl.

Cl.

Bsn.

Hn.

Tbn.

B. D.

Cym.

Pno.

Vln.

Vln. II

Vla.

Vc.

Cb.

Elec.

Ped.

Granulation and slight stretching /  
ambience of the strings in their respective avatars.

Ring modulation on the strings

Delays that are transposed and heavily granulated /  
Samples of the main voice are stretched and mangled

C20

E17

C21

127

Fl.

Cl.

Bsn.

Hn.

Tbn.

Pno.

Vln.

Vln. II

Vla.

Vc.

Cb.

Elec.

Ped.

mp

mf

3

3

3

3

Ord

mf

3

3

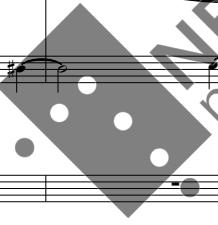
3

Ord

mp

6

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Fl. f

Cl.

Bsn. 3 f

Hn. 3 f con sordino mp

Tbn. con sordino mp

Crot. mp 3 3

Pno. 6 Hit the strings with soft mallets mp

Vln. 6 f p S.T. S.V. → flaut

Vln. II 6 f p S.T. S.V. → flaut

Vla. 6 f p S.T. S.V. → flaut S.T. gliss.

Vc. 3 f p S.T. S.V. → flaut S.T. 5 p

Cb. f mp 3 f

Elec. gliss.

Ped. Shorter delays, brass and strings are sent to granulation as well  
Samples slowly morph from G to E

E18

140 Repeat the last two bars

**O** 21

Fl.

Cl.

Hn.

Tbn.

Crot.

Pno.

Vln. S.V. → flaut

Vln. II 6

Vla.

Vlc.

Cb. S.P. → Molto S.T. Molto S.T. gliss Ord S.T. → flaut crush molto S.P.

Elec.

Ped.

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Sample fades out

E19

Fl. *mf* *f* *ffp* *mf*

Cl. *mf* *f* *ffp* *mf*

Bsn. S.V. *ffp* *f* *ffp* *mf*

Hn. S.V. *f* *ffp* *ffp* *f* S.V. M.V.

Tbn. S.V. *f* *ffp* *ffp* *f* S.V. M.V.

B. D. *f* *f*

Cym. soft mallets *mf* soft mallets *mf*

Pno. *mf* *f* *ffmp* *p* *ffmp* *f*

Vln. S.T. *mp* *f* *ffmp* *p* Ord S.T.

Vln. II S.T. *mp* *f* *ffmp* *p* Ord S.T.

Vla. S.T. *mp* *f* *ffmp* Ord S.T.

Vc. Ord → S.P. S.V. S.V. → M.V. S.V. → M.V. S.V. → M.V.

Cb. Ord → S.P. S.V. S.V. → M.V. S.V. → M.V. S.V. → M.V.

Elec.

Ped.

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Processing gets more intense

Sample of textures from the string tones  
More movement around audience in processing and samples

E20 C22

161 Multi  
Fl. ff  
Cl. Multi  
ff  
Bsn. f

Hn. 3 via sordino  
Tbn. mp 3 via sordino

Cym. Try to emphasize the higher harmonics while bowing the cymbal pp  
Crot. mf

Pno. Let resonate p prepare ebows

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Vln. ff molto S.P. crush con sordino via sordino  
Vln. II ff molto S.P. crush con sordino via sordino  
Vla. ff molto S.P. crush S.T. flaut S.P.  
Vc. ff molto S.P. crush S.T. flaut S.P.  
Cb. ff molto S.P. crush flaut S.P.

Elec. Crescendo in the amount of granulation

Ped. C23

**P**

24  $\text{♩} = 40$  Monolithic poco accel.

Fl. S.V.  $f\text{imp}$

Cl. S.V.  $f\text{imp}$

Bsn. S.V.  $f\text{imp}$

Hn. S.V. 3  $ff\text{imp}$   $mp$

Tbn. S.V.  $f\text{imp}$

Cym. Bow  $mp$   $ff$

Crot.

Pno.  $\text{♩} = 60$   $\text{♩} = 45$  prepare bows

Vln. S.V. Ord  $ff = mp$   $mp$   $3$   $mf$  S.V.

Vln. II S.V. Ord  $ff = mp$   $mp$   $battuto$   $mf$   $f$   $mp$  S.V.

Vla. S.V. Ord  $ff = mp$   $mp$   $battuto$   $Ord$   $mf$  S.V.  $ff = mf$

Vc. S.V. Ord  $ff = mp$   $3$   $battuto$   $mf$   $3$   $mf$  S.V.  $mp$

Cb. S.V. Ord  $ff = mp$   $mp$   $battuto$   $mf$  S.V.

Elec. Electronics slowly fade out

Ped.  $\text{♩} = 6$  **C24**  $\text{♩} = 4$  Freeze-like textures Pitched delays **E21**  $\text{♩} = 6$  **C25**  $\text{♩} = 4$  Freeze-like textures Pitched delays



26

**S** ♩ = 55      poco accel.      ♩ = 70

Cl.      → M.V.  
f      → M.V.

Bsn.      f

B. D.      ♩ = 6      f

Cym.      Soft mallets, ♩ = 6      f

Pno.      Let resonate      ♩ = 6      \* f

Vln.      S.V.S.T. → M.V.      Ord      ff      mf

Vln. II      S.V.S.T. → M.V.      Ord      5 5 5 5      pp p mp mf

Vla.      S.V.S.T. → M.V.      Ord      7 7 7 7      pp p mp mf

Vc.      S.V.S.T. → M.V.      Ord      ff mf 3

Cb.      S.V.S.T. → M.V. Ord crush      ff mp

Elec.      Freeze-like textures      Plate-sounds from CB      Pitched delays      Electronics slowly fade out

Ped.      ♩ = 6      C28      E23      C29      ♩ = 6

**T** ♩ = 45      poco accel.      ♩ = 65      **U** ♩ = 70      27

Fl.

B. D.

Cym.

Pno.

Vln.

Vln. II

Vla.

Vc.

Cb.

Elec.

Ped.

Let resonate

S.V.

M.V.

S.V.

S.T.

S.V.

M.V.

S.V.

S.T.

S.V.

Molto S.T.

Crush

Ord 3

crush / molto S.P.

Tape file plays

CB is sent to resonant plate

WW -> sustain / Piano -> granular and ring modulation  
Samples of heavily granulated texture in first avatar

**C30**

**E24**

**E25**

198

Fl. ff

Cl. 5 mf

Bsn. 3 tr. mf

Hn. p

Tbn. 3

B. D. f

Cym. Bow f

Pno.

Elec.

Ped.

Heavily granulated texture in last avatar

E26



203

Fl. ff

Cl. 3 mf

Bsn. (tr) 3 mf

Hn. p

Tbn. p

B. D. ff

Cym. Bow

Crot.

Pno. 5 prepare ebow

Vln. con sordino

Vln. II con sordino

Vla. con sordino

Vc. con sordino

Cb.

Elec. Heavily granulated texture in second avatar

Ped. E27 E28

30

**V**

Fl.

Cl.

Bsn.

Hn. S.V. *p*

Tbn. S.V. *mp*

B. D.

Cym. Bow *pp* *f* *pp* Bow *pp* *f*

Crot. *mf* *mf*

Pno. change ebow

Vln. S.V. S.T. *mp* *mf* *mp* *mf* *mp*

Vln. II S.V. S.T. *mp* *mf* *mp* *mf* *mp*

Vla. S.V. S.T. *mp* *mf* *mp* *mf* *mp*

Vc. S.V. S.T. *mp* *mf* *mp* *mf* *mp*

Cb. *molto S.P.* *crush* *ff* *molto S.P.* *crush* *ff*

Elec.

Ped. [E29]

**W**

Granulation of WW and cymbals, delays and RM on the strings  
Heavily granulated texture on all avatars  
Movement of processing from azim 0 to surrounding the audience

Movements start over around audience start over, and are larger

[E30]

**X**

217

Fl. *p*

Cl. *p*

Bsn.

**Y**

poco accel.

S.V.

Hn. *mp*

S.V.

Tbn. *mp*

S.V.

Cym. *pp*

Bow

*f*

*pp*

Crot. *mf*

Mar.

Pno.

change ebow

change ebow

Vln. *mp*

Vln. II *mp*

Vla. *mp*

Vc. *mp*

Cb. *pp*

*molto S.P.*

*crush*

*ff*

*pp*

*molto S.P.*

*crush*

*via sordino*

*ff*

*pp*

Elec.

Movement around audience starts again

**E31**

Movement goes from large to the avatars

**E32**

Ped.

225 **Z**  $\text{♩} = 75$

Fl. *mp*

Cl. *mp*

Bsn. *mp*

Hn. *S.V.* *mp*

Tbn. *S.V.* *#d.* *mp*

Mar.

Pno. *8 $\ddot{\text{b}}$*

Vln. *via sordino* *pizz* *mp*

Vln. II *via sordino* *pizz* *mp*

Vla. *via sordino* *pizz* *mp*

Vc. *via sordino* *pizz* *mp*

Cb. *pizz* *mp*

Elec.

Ped. **E33**

poco rit.

*NB* *noter* This music is copyright protected

Send all strings to spectral delays, record the pizzicato to use later / marimba gets some ring modulation  
 Fade in the pizzicato played by the strings are slightly stretched and coloured in the avatars.  
 The delays move around the audience  
 A freeze-like texture is played as well

230 **AA** S.V.

Fl. *pp*  
Cl. *pp*  
Bsn. *S.V. Lots of breath pp*  
*Breathing through instrument / different rhythms ad lib*

Hn. *Lots of breath S.V. pp*  
Tbn. *Breathing through instrument / different rhythms ad lib p*

Cym. *Bowing ad libitum / different rhythms / dynamics from pp to mp p*

Mar. *mp*

Pno. *pp* *Prepared bows*

Vln. *arco S.V. S.T.*  
Vln. II *arco S.V. S.T.*  
Vla. *arco S.V. S.T.*  
Vc. *arco S.V. S.T.*  
Cb. *arco ffimp mf 3 3*

Elec. *Fade out pizz / CB is sent to resonant plate / Delays on the WW*  
*Frozen textures around audience*

Ped. **E34**

**BB**

Fl. Cl. Bsn.

Breathing through instrument / different rhythms ad lib

**CC**

Hn. Tbn.

Breathing through instrument / different rhythms ad lib

Cym.

Pno.

Prepare bows

Prepare bows

Vln. Vln. II Vla. Vc. Cb. Elec. Ped.

M.V. Ord S.T. M.V. Ord S.T.

crush

Ord mp 3 mf 3 ffmp Ord S.P. p 3

Breathing through instrument / different rhythms ad lib

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Slow fade out of all electronics except sample

E35 E36

246

**DD**

Breathing through instrument / different rhythms ad lib 45"

**EE** poco rit.

35

Fl.

Cym.

Pno.

Vln.

Vln. II

Vla.

Vc.

Cb.

Elec.

Ped.

M.V.

Repeat ad libitum for 45"

flaut → S.P. → flaut

Repeat ad libitum between pp and p until the hall is silent. 120" of electronics

Stage lights should slowly fade out around 2 minutes of electroacoustic music

CB to resonant plate subtly in the background  
Extra delays and granular synthesis movee around avatars

**E37**

**E38**

