Grain, Vapor, Ray (2020)
for ensemble and electronics

Stefan Maier

For Ensemble contemporain de Montréal
with special thanks to Véronique Lacroix

General

For amplified ensemble and electronics.

The piece should be performed with exaggerated uniformity. Though often rhythmically striated, think of the pieces as a drone composition consisting of juxtaposing textures/fields of sound. Sound textures should always be full and saturated even when at quieter dynamics. Accordingly, a great degree of sustained material focus and intensity is necessary.

Grain, Vapor, Ray often *works* with unusual and unpredictable sounds that do not readily allow consistent reproduction. This is the crux of the matter: ***actively explore this inconsistency and revel in the unpredictable inner life of the material!***

Tempi must be strictly adhered to so as to maintain coordination with the triggered electronics. When the electronics are rhythmic, take tempos cues from the electronics to maintain synchronization (rhythmic cues shown in score).

Amplification and Electronics

Strings should be amplified with individual DPA clip-on close microphones. The piano is amplified with a Shertler P-48 piano pickup (provided by the composer). 2 over heads should be used for the rest of the ensemble: the first set for piccolos and clarinet, the second for horn, bassoon and Percussion.

Electronics are triggered manually coordinated precisely with the conductor (at points indicated in the score with numbers).

The piece is for amplified ensemble ***and*** electronics, not ensemble ***with*** electronics. Accordingly, the ensemble should be mixed ***into*** the fixed media. Consistency between the ensemble and the electronics should be always maintained. Furthermore, *Grain, Vapor, Ray* must be rehearsed with the full electronics set up and amplification.

Mixer setup:

Instruments	Channels	EQ	Compression (if possible)	Pan
overheads I	1+2	Low cut	4:1	LR
overhead II	3+4	Low cut	4:1	LR
Piano	5	High shelf -6	4:1	C
Violin I	6	None	2:1	15L
Violin II	7	None	2:1	5L
Viola	8	None	2:1	5R
Cello	9	None	2:1	15R
Electronics	10+11	None	None	LR

Objects provided by composer

Clarinet: whistle
Bassoon: ratchet, sprocket, megaphone, styrofoam pieces, dog whistle
Horn: 2 small resonant metal boxes, 1 small vibrator, ratchet, styrofoam pieces, dog whistle
Percussion: styrofoam, 2 terracotta pots, frog drum
Violin I: styrofoam, fan
Violin II: 6 circular paper clips, fan
Viola: 3 circular paper clips, fan
Cello: styrofoam, 5 rectangular paper clips

Performance Notes for Ensemble

General

Noteheads

indeterminate harmonic(s)

Continuous Noise, no pitch content

Percussive noise (click or impulse), no pitch content

indeterminate multiphonic

"piston" burst (see Piccolo and Clarinet performance notes for more detail)

as high as possible

Articulation

even repetitions; always constant

somewhat irregular repetitions; should still be continuous, but constantly changing

articulate in even circular fashion; at a comfortable speed

Mouthpiece Positions

Perform action with mouth fully covering mouthpiece

Perform action with mouth over mouthpiece so that air both into the instrument and across the mouthpiece. Find angle which maximizes intensity and dynamic level. Always accompanied with phonetic material. Mouth should be extremely tense, with teeth significantly contributing to sound production so as to ensure a biting timbre. Focus air so that it is as bright as possible always.

tch — **ch**urch
sh — **sh**ip
ss — **s**nake

Inhale/Exhale

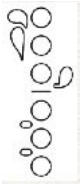
Assume Exhale unless otherwise noted; inhales and exhales should always be performed with extreme intensity: the mouth and teeth should be very tense so as to contribute to a very focused sound. Focus air so that it is as bright as possible always.

Inhale

Exhale

Piccolo

“Piston”-sound clef



Close the given keys and the opening at the end of the pipe of the instrument with one’s pinky so that no air escapes the chamber. Whenever this clef is used it assumes that the chamber of the instrument is fully pressurized, but no sound is being produced! **Notated fingerings indicate where pressurized air is escaping from, not that the finger is being either released or depressed, as it depends on which key is being used** (e.g. G# key is depressed to generate sound, while others are released)

"Piston" sound. A sudden release of pressurized air. Requires significant pressure and air. Always greater effort required than sounding dynamic suggests.

When “piston” is closed, slam fingers down resulting in a percussive click, with the air sound being suddenly cut off

Prepared Bb Clarinet/Bass Clarinet

Both Bb clarinets and Bass clarinet are called for in the work. The Bass Clarinet is played normally, while the Bb is prepared. This preparation consists of removing the mouthpiece and the upper half of the instrument. Cork or foam is inserted into the bell of the instruments forming a seal so that if one is blowing into the instrument fully covering the mouthpiece with holed keys depressed, the chamber of the instrument becomes pressurized.

A small whistle is also called for.

“Piston”-sound clef

Close the holed keys so that no air escapes the chamber. Whenever this clef is used it assumes that the chamber of the instrument is fully pressurized. **Notated fingerings indicate where pressurized air is escaping from, not that the finger is being either released or depressed, as it depends on which key is being used.**

▲

"Piston" sound. A sudden release of pressurized air. Requires significant pressure and air. Always greater effort required than sounding dynamic suggests.

When “piston” is closed, slam fingers down resulting in a percussive click with the air sound being violently cut off

Bassoon

ratchet, sprocket, megaphone, styrofoam pieces, dog whistle

Ratchet and sprocket should be attached to a resonant surface/music stand with clamps for ease of access and sound production.

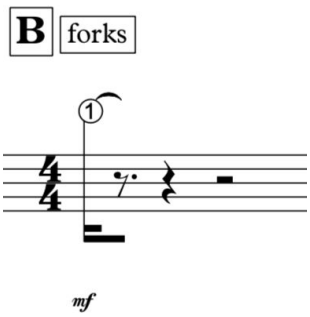
Horn

2 small resonant metal boxes, ratchet, styrofoam pieces, dogwhistle
1 small vibrator

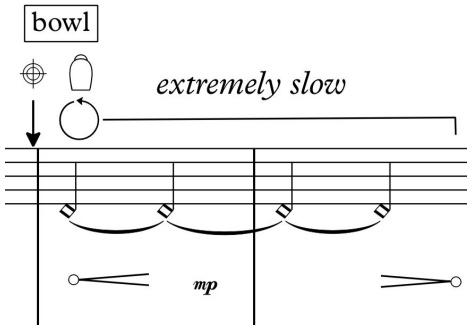
Sprocket should be attached to a resonant surface/music stand with clamps for ease of access and sound production.

Piano

3 resonant forks, glass bowl



Piano is prepared with three resonant forks wedged between strings in the upper 2 octaves of the piano. When flicked, it results in a complex, synthetic resonance. See video. This technique is slightly different in each piano, so close consultation with the composer is required to find the correct location for preparation. The three forks are notated according to relative pitch.



Spin small bowl on unwound strings. Find the location that speaks best, and stick with it. Results in high rich, blossoming partials. Highly variable and chaotic. Open strings should not resonate. Vary pressure, speed and position. WIth each rearticulation change direction.

Percussion

Vibraslap, Crotales (C, C#, G, B, C), Bass Drum, Vibraslap, Styrofoam, Frogdrum (provided by composer)

Bass bow, soft bass drum mallets

Crotales

Crotales is ALWAYS bowed**.** Bows should be extremely resonant, strong and assertive.**The bowed crotale is one of the most important materials in the piece; always play out and explore!** Explore the slight changes in timbral quality that this amazing instrument facilitates. The crotales is often played in conjunction with modulating sinetones; explore the slight differences in beating patterns, distortion, and psychoacoustic phenomena.

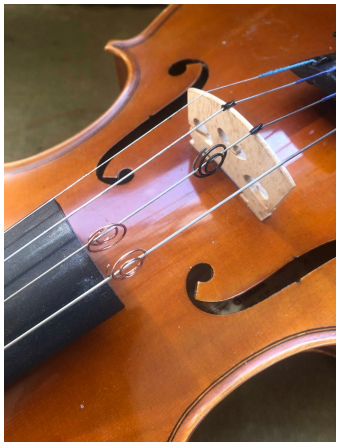
Strings

Violin I, Violin II and Viola have small hand held fans
Violin I and Cello have pieces of styrofoam (firmly attached to back of music stand with tape so that they can be bowed without putting down instrument)

Preparations

Violin II, Viola and Cello are to be prepared in the following manner:

Violin II
6 circular clips

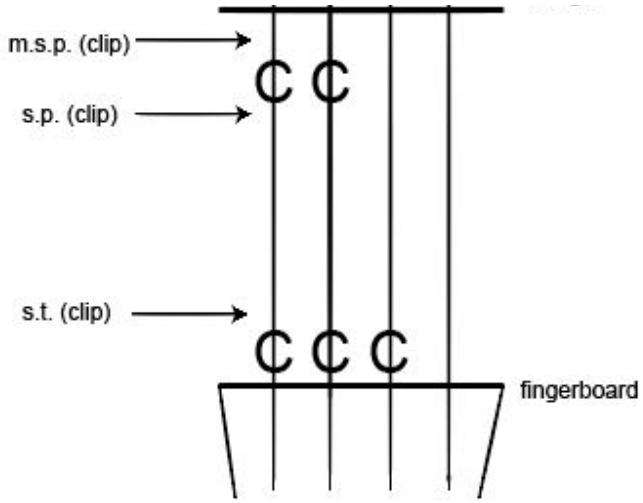


Viola
3 circular clips

Cello
5 rectangular clips

Additionally, the Cello uses an extreme scordatura for IV. C string should be tuned down a minor 9th to B. Here, pitch is only marginally important and will change with dynamics (pitch will rise with greater dynamic levels). The string should stutter and rattle at higher dynamics.

Bowing position



(cello preparations as example, but positions applicable to all strings)

Bowing techniques

*****regardless of bowing technique/pressure employed, a high degree of harmonic/multiphonic instability is desirable! The preparations result in an immense degree of instability — enjoy*****

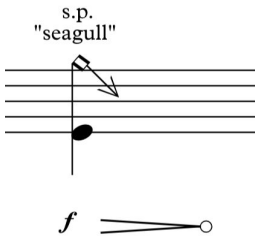
*m. flau*t. — very light bow pressure, slow speed, always explore unstable pitches that may sound

flaut. — light bow pressure, show speed, always explore unstable pitches that may sound

ord. — normal bow pressure

dist. — heavy pressure, harsh distortion (as bright as possible! No snore!)

Bow with the metal windings at the frog on the legno-side of the bow.
-always irregular stuttering o.p.; uncontrollable; constantly varied, pitched clicking; always over fingerboard

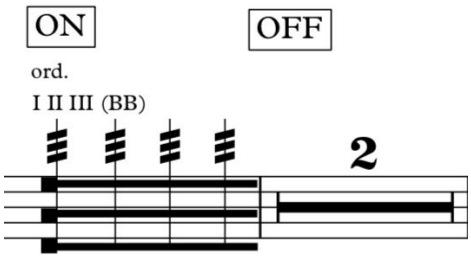


“Seagull” glissando: single quasi-artificial-harmonic glissando from very high on the string to low, resulting in cascading harmonic glissandi.

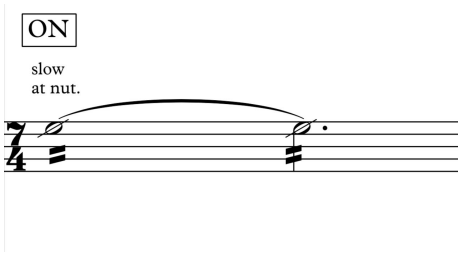
L.H. techniques

mute string(s) on the fingerboard side of preparations so that only high, indeterminate multiphonics from the preparations sound (e.g. no fundamental(s) from string!)

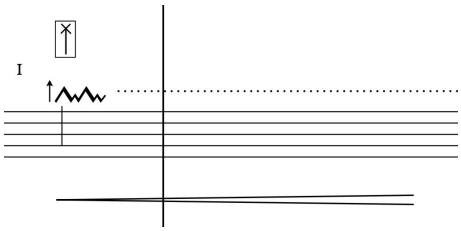
Fan



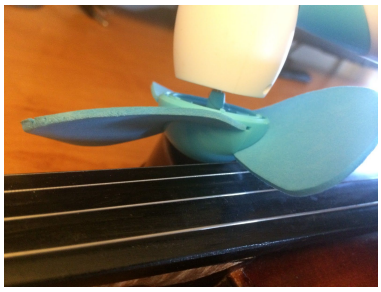
Perpendicular to the string(s) allow the spinning blades of the fan attack the string. With the exception of Violin II, always behind bridge.
- either *ord.* (allow full speed), or *slower* (reduced speed by increasing resistance between fan and string by bringing fan closer to string)



Violin II only; fan perpendicular to I at the nut, so that the open prepared string sounds.



touch the rotating nose of the fan directly at a harmonic node (1st or 2nd works best) to produce an otherworldly, extremely high cluster of unstable harmonics. This sound is incredibly unpredictable so allow sufficient time and space for speaking.



(fan head at 1st node on I)

A ♩=60

B

Piccolo

Piccolo II

Clarinet

Bassoon

Horn

Piano

Percussion

A ♩=60

B

Violin I

Violin II

Viola

Cello

Electronics

dog whistle

sprocket
approximately 5-6 articulations per second

styrofoam pieces
v. slow
hold up to mic

sprocket
approximately 6-7 articulations per second

bowl
extremely slow

forks

Ped.
(ad lib)

crotales
arco
l.v.

teracotta
even, as uniform as possible,
aprox. 1 revolution ever 2"

styrofoam
arco
light hissing with very high partials
very slow bow, legatissimo
m. flaut.

harsh
dist.
hissing with very high partials
flaut.

fan
EXPLORE electromagnetic field of fan motor
around mic, subtle, very gradual changes

OFF

(emergent changes is dynamics from EMF,
try to make as smoothe as possible)

fan

ON
slow
I II (behind bridge)

styrofoam
arco
light hissing with very high partials
very slow bow, legatissimo
m. flaut.

s.t.
(clip)
ord.

in sync with rhythmic pulsing

7

Picc. I

Picc. II

Cl.

Bsn.

Hn.

Pno.

Perc.

7

Vln I

Vln. II

Vla.

Vc.

Electronics

G# 2 3 4 3 2 3 3 4 3 2 3 3 G# B

mf mp

bowl forks extremely slow

crotales arco l.v. 15

teracotta
even, as uniform as possible,
aprox. 1 revolution every 2"

ON slow I II (behind bridge) OFF ON slow I II (BB) OFF arco OFF ON slow I II (BB)

s.t. (clip) flaut. s.p. (clip) s.t. (clip)

flaut. ord.

14

Picc. I

Picc. II

Cl.

Bsn.

Hn.

forks
bowl

extremely slow

Pno.

Perc.

14

Vln I

fan

ON
slow
I II (BB)

OFF

Vln. II

OFF

ON
slow
I II (BB)

Vla.

flaut.

ord.

Vc.

Electronics

20

C

12"

Picc. I

Picc. II

Cl.

Bsn.

Hn.

Pno.

Percussion

Vln I

Vln. II

Vla.

Vc.

Electronics

mf

G#

B

v. slow

mp

p

arco

crotales

m. flaut.

OFF

flaut.

s.t.
(clip)

s.p.
(clip)

D

25

Picc. I

Picc. II

Cl.

Bsn.

sprocket
approximately 5-6 articulations per second

approximately 6-7 articulations per second

sprocket
approximately 6-7 articulations per second

Hn.

sprocket
approximately 6-7 articulations per second

approximately 7-8 articulations per second

forks

Pno.

teracotta

even, as uniform as possible,
aprox. 1 revolution ever 2"

faster
aprox. 1 revolution ever 1"

Percussion

25 **D**

flaut.

dist. *flaut.*

Vln I

Vln. II

Vla.

Vc.

ON
slow
I II
(BB)

OFF

ON
slow
I II (BB)

OFF

ON
slow
I II (BB)

OFF

ON
slow
II III (BB)

ord.
s.t.
(clip)

flaut.

ord.

flaut.
s.p.
(clip)
s.t.
(clip)

ord.

Electronics

in sync with rhythmic pulsing

34

Picc. I

Picc. II

Cl.

Bsn.

megaphone
ratchet

Hn.

vibrator on metal

Pno.

v. slow

forks
bowl

Perc.

arco crotales

arco styrofoam

flaut. dist.

34

Vln I

dist. flaut.

dist.

Violin fan

ON

Vln. II

ON
slow
II III (BB)

OFF

ON
slow
at nut.

Vla.

OFF

ON
slow
II III (BB)

Vc.

flaut.

ord.

flaut.

s.p.
(clip)

s.t.
(clip)

Electronics

Picc. I

Picc. II

("ff ")

Cl.

breating into megaphone aprox 1/2 inch away; bright white noise

Bsn.

approximately 6-7 articulations per second

Hn.

Pno.

Percussion

flaut. *dist.* *flaut.* *dist.* *flaut.* *dist.*

39

Vln. I

ord.
I II III (BB)

OFF

ON
ord.
I II III (BB)

Vln. II

OFF

ON
ord.
I II III (BB)

Vla.

OFF

ord.

flaut.

Vc.

Electronics

43

Picc. I

Picc. II

Cl.

Bsn.

Hn.

Pno.

bowl

v. slow

Percussion

flaut. dist. flaut. dist. flaut. dist. flaut. dist. flaut. dist.

43

Vln. I

Vln. II

Vla.

Vc.

Electronics

ON

OFF

slow
at nut.

s.p.
(clip)

s.t.
(clip)

flaut.

ord.

Picc. I

Picc. II

Cl.

Bsn.

sprocket
approximately 4-5 articulations per second

Hn.

Pno.

Percussion

48

OFF

styrofoam

arco

Vln. I

Vln. II

ON

slow
at nut.

slow
II III (BB)

Vla.

Vc.

Electronics

15" 19" **E** ♩=55

53

Picc. I

Piccolo II

Prepared Clarinet

Bsn.

Flute

Bass Clarinet

Nr. 1070

styrofoam pieces

irregular
approximately 3-4 articulations per second

sprocket

Hn.

v. slow
hold up to mic

Pno.

Percussion

crotales
arco

BD

E ♩=55

53

(using the metal threading at the frog of the bow)
I *o.p. irregular*
II a.s.t
approximately 3-4 articulations per second

Perc.

m. flaut.

Vln. II

OFF

remove preparations I

arco

Vla.

EXPLORE electromagnetic field of fan motor
around mic, subtle, very gradual changes

v. slow
II III (BB)

OFF

ON

(there will be emergent changes is dynamics,
try to make as smoothe as possible)

etc.

flaut.
s.t.

s.p.

s.t.
(clip)

s.t.

Vc.

Electronics

58

fragile, blossoming aeolian tone
explore!

Picc. I

Fl.

Nr. 233

Nr. 233

B. Cl.

Bsn.

Hn.

Pno.

Percussion

58

Vln. I

Vln. II

OFF

ON

OFF

ON

Vla.

s.p.

s.t.
(clip)

ord.
s.t.
(clip)

flaut..

s.p.
(clip)

ord.
s.t.
(clip)

Vc.

Electronics

F ♩=55

62

7"

6"

B

Picc. I

Picc. II

B. Cl.

Bsn.

v. slow

Hn.

forks

bowl

extremely slow

Pno.

Percussion

l.v.

slow bow, one for each articulation

62

F ♩=55

v. slow

Vln. I

v. slow

Vln. II

silently attatch
preparations I + II

OFF

Vln. I

flaut

s.p.
(clip)

s.t.
(clip)

s.p.
(clip)

Vc.

Electronics

G

73

Picc. I

Picc. II

Cl.

Bsn.

Hn.

Pno.

try to make as continuous as possible

sim.

Percussion

terracotta
slow.

crotales
arco

terracotta

styrofoam
arco
m. flaut.

G

73

Vln. I

Vln. II

Vln. I

Vc.

arco

flaut.

s.t. (clip) → s.p. (clip)

fan

styrofoam
arco
m. flaut.

Electronics

H ♩=60

84

Picc. I

Picc. II

Cl.

Bsn.

sprocket
regular, approximately 6-7 articulations per second

sprocket
regular, approximately 5-6 articulations per second

Hrn.

Pno.

VS
ord.

Percussion

H

84 ♩=60

flaut.

Vln. I

silently remove preparations I + II w/ LH

ON
slow
II III (behind bridge)

Vln. II

Vln. I

"seagull"
ord.
ord.
m.s.p.
(clip)
flaut.

Vc.

Electronics

in sync with electronics
(listen for high throb on beat 1s)

I

91

Picc. I

Picc. II

Cl.

Bsn.

megaphone
ratchet

approximately 8-9 articulations per second

Hrn.

vibrator on metal

Pno.

VS
styrofoam

Percussion

flaut. *dist. flaut.*

I

91

Violin

Vln. I

ON
ord.

Vln. II

arco

fan

Vln. I

arco

Vc.

ord.
ord.
"seagull"

m.s.p. s.t.

Electronics

J

10" 10" 10" 10" 10"

100

Picc. I

irregular smacking, as bright and lively as possible

z

"f"

Picc. II

irregular smacking, as bright and lively as possible

z

"f"

Cl.

irregular smacking, as bright and lively as possible

z

"f"

Bsn.

sprocket

approximately 6-7 articulations per second

sprocket

approximately 5-6 articulations per second

Hrn.

slow

as continuous as possible, try to maintain same pitches as long as possible!

Pno.

①
②

f

f

Percussion

VS

frog drum

v. slow.
v. irregular

sfz

mf

J

bring in clicking as inconspicuously
as possible at earliest oppertunity

100

I
II

o.p. irregular
a.s.t

Vln. I

mf

(bring in clicking as inconspicuously
as possible at earliest oppertunity if downbeat is not possible)

I
II

o.p. irregular
a.s.t

Vln. II

mf

(using the metal threading at the frog of the bow)

I
II

o.p. irregular
a.s.t

Vln. I

mf

s.p.
"seagull"

Vc.

f

Electronics

K
10"
10"
18"
18"
17
105
Picc. I
Picc. II
Cl.
Bsn.
v. slow.
v. irregular
styrofoam pieces
slow
hold up to
mic
p
Hrn.
Pno.
arco
styrofoam
BD
very slow bow, legatissimo
light hissing with very high partials
m. flaut.
crotales
arco
l.v.
Percussion
mf
p
K
styrofoam
arco
105
Vln. I
fan
Vln. II
Vln. I
Vc.
8vb
Electronics

L ♩=55

109

Picc. I

Picc. II

B. Cl.

Bsn.

Hrn.

Pno.

Percussion

L ♩=55

109

Vln. I

Vln. II

Vln. I

Vc.

Electronics

ON
v. slow
II III (BB)

ord.
s.t.
(clip)

flaut
s.t.
(clip)
s.p.
(clip)
s.t.
(clip)

extremely slow

M

117

Picc. I

Picc. II

B. Cl.

Bsn.

Hrn.

Pno.

Percussion

Vln. I

Vln. II

Vln. I

Vc.

Electronics

sprocket
approximately 3-4 articulations per second

sprocket
approximately 4-5 articulations per second

ON
slow
II III (BB)

ord.
s.t.
(clip)

flaut

s.p.
(clip)

dist.

I

N

46"

125

Picc. I

Picc. II

Cl.

Bsn.

Hrn.

Pno.

Vln. I

Vln. II

Vln. I

Vc.

Electronics

whistle EXPLORE high partials, constantly changing
(stagger breathing w/ horn and bassoon, short fade in and out when rearticulating)

clarinet

dog whistle
(stagger breathing w/ clarinet and horn, short fade in and out when rearticulating)

dog whistle
(stagger breathing w/ clarinet and bassoon, short fade in and out when rearticulating)

m. flaut.

N

EXPLORE subtle changes in distortion, try to make as gradual as possible

EXPLORE electromagnetic field of fan motor
around mic, subtle, very gradual changes

etc.

(bring in fan as inconspicuously
as possible at earliest oppertunity)