

# UC Berkeley

## UC Berkeley Electronic Theses and Dissertations

### Title

Anima

### Permalink

<https://escholarship.org/uc/item/0q4863bb>

### Author

Cashetta, Kayla Ann

### Publication Date

2021

Peer reviewed|Thesis/dissertation

Anima

By

Kayla Ann Cashetta

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Music

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Ken Ueno, Chair

Professor Myra Melford

Professor Greg Niemeyer

Fall 2021



Abstract

Anima

by

Kayla Ann Cashetta

Doctor of Philosophy in Music

University of California, Berkeley

Professor Ken Ueno, Chair

Anima ("soul" in Italian) explores drama, space, and intimacy through the relationship between acoustic and electronic sound sources. The orchestral instruments of the ensemble are amplified, allowing them to fuse with the electronic sounds produced by an analog drone pedal in real time.

The sound quality of the drone machine is reminiscent of an organ or bagpipe, with long, sustained tones that are brought to life and warped by a series of guitar effects pedals. The acoustic and electronic parts shift between contrapuntal interactions and coming together to form unified colors and textures. The meditative nature of the drone brings a calm, spiritual element to the piece, but when pushed to its sonic limits, the machine is able to produce sounds that are forceful, powerful and intense, in an exploration of extremes that is mirrored by the other instruments of the ensemble.

## Instrumentation :

- Flute
- Clarinet
- Violin
- Percussion (Snare Drum, Gong, Vibraphone)
- Piano
- Electronics (Drone machine and pedals)

## Technical Needs :

The electronics for the piece are entirely hardware-based - no computer is necessary.

Each instrument should be recorded through a separate microphone for amplification. If possible, two microphones should be used overhead for the drum setup, and additional mics can be used for the Snare Drum and Gong.

Mics :

- 8 cardioid microphones with 1/4 inch cable connections and stands
- 2 overhead microphones with cables

Monitors :

- 3 monitor speakers should be positioned in front of the ensemble so that the blend of acoustic and electronic instruments can be heard in real time.

An interface or mixer with at least 13 inputs and 5 outputs is required.

Input Channels (13) :

- 1 for direct input of electronics setup
- 8 mics for instruments
- 2 overhead mics to record entire ensemble
- 2 overhead mics above percussion setup

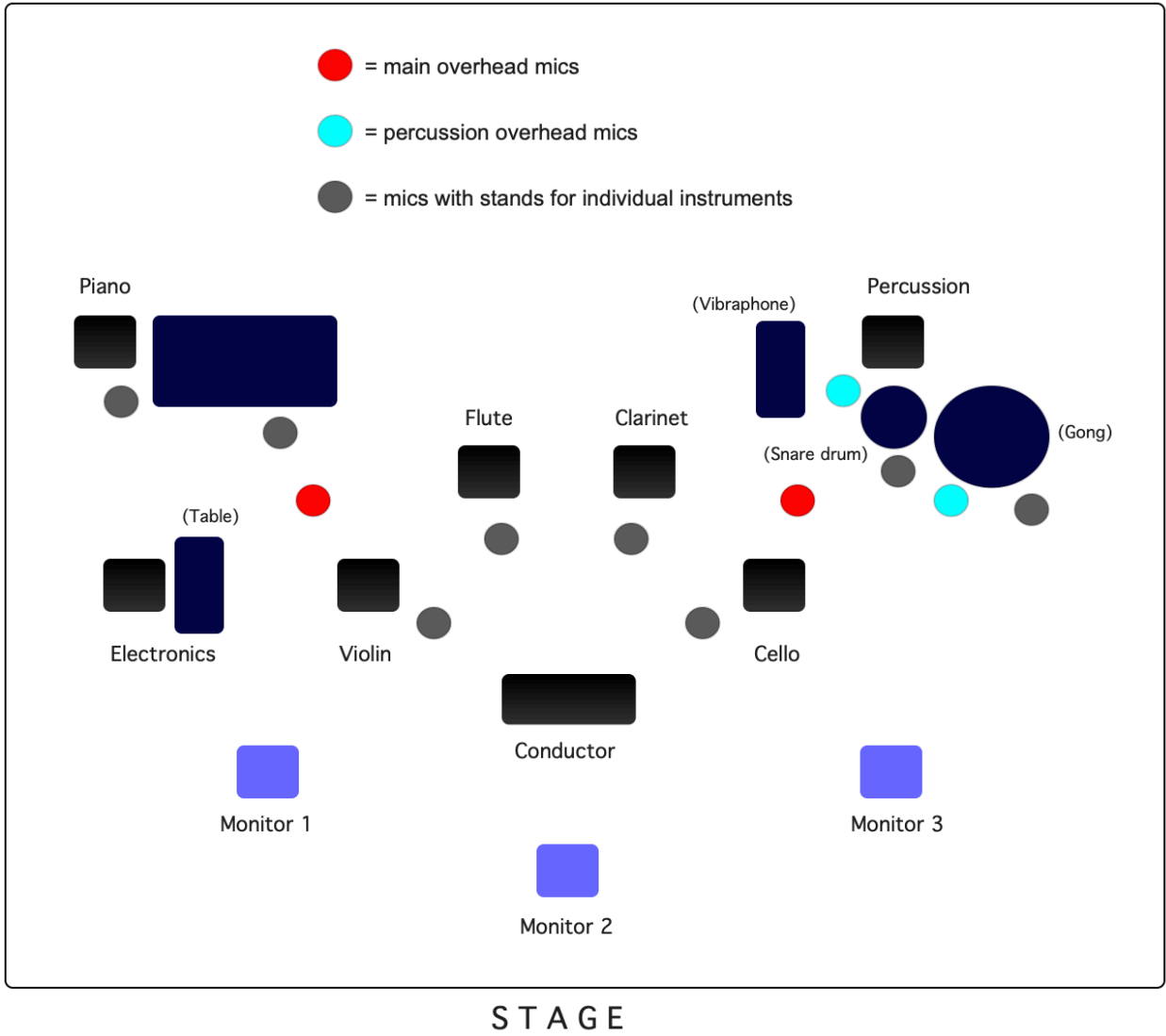
Output Channels (5) :

- 2 Stereo Mains
- 3 monitors

If possible, a small amount of reverb should be added to the instrument inputs by the sound engineer to allow the mic'ed instruments to blend more naturally with the electronics.

## Stage Setup :

Piano should use 2 microphones, one pointed towards the high register and the other pointed towards the low register of the instrument.




Performance Notes :


Winds :


⊞ = half air, half pitch

✕ = air only

## Strings :

 = soft pitch-less noise (whispery, airy)

 = abrasive pitch-less noise (“scratch tone”)

 = natural harmonic, diamond notehead indicates where to place LH finger

sv = senza vibrato

mv = molto vibrato

msp = molto sul ponticello

mst = molto sul tasto

HBP = high bow pressure, greater bow pressure than normal playing, so that there are elements of both noise and pitch

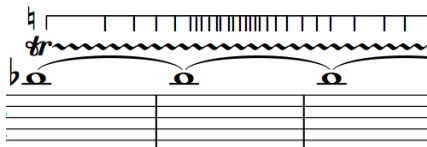


= double-stop, one string playing natural harmonic gliss and the other playing an open string.

## Piano :



= tremolo clusters of notes in the lowest register of the piano to produce a low rumble, generally following the given contour.



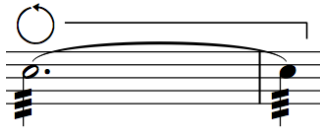
= trill at an aperiodic rhythm, more slowly when notches above trill symbol are spread apart, and faster when they're closer together.

## Percussion :

The percussion setup consists of the following instruments :

1. Vibraphone, with motor on (played with soft mallets and bow)
2. Snare drum (played with sticks and brushes)

### 3. Gong (with soft mallets)



= at Rehearsal X - with brushes, drag brushes across drum head.

## Electronics :



- The electronics are written for the following 5 pedals to be played live in combination as a single instrument :

1. Electro-Faustus Drone Thing (EF109)
2. Mooer Pure Octave Pedal
3. CNZ Audio Tremolo Pedal
4. TC Electronic Flashback Delay and Looper
5. Caline Snake Bite Reverb Pedal

Instruments/pedals should be connected with balanced or unbalanced 1/4 inch cables. (4 will be required)

The signal flows from right to left, starting with the Drone machine as the input generator and the output of the reverb pedal as the overall output of the pedal chain.



The pedals have mono outputs, and the output coming out of the last pedal may be plugged directly into the main mixing board/interface. Since all of the pedals require external power sources, a power strip is advised.

Descriptions of each pedal and its function is listed below. Substitutions of different pedals with similar functions can be made.

### Electro-Faustus Drone Thing :



This pedal functions as the sound source for the whole electronics setup. All other pedals affect the signal generated by this device.

The switch in the top left corner turns the entire instrument on and off.

The knob directly below it controls the output volume.

The first knob directly above the switches

running along the bottom of the instrument is a Low Frequency Oscillator (LFO), which modulates the signal.

The following five knobs above the switches each control the frequency of a different square wave oscillator. When knob is turned counter-clockwise, the frequency gets lower, and when turned in a clockwise direction it gets higher.

The switches along the bottom turn on and off the corresponding oscillators found above them.

A High Pass Filter is controlled by the knob in the top right corner. As the knob gets turned counter-clockwise, the cutoff frequency will get lower.

The knob directly below controls the Power Starve function. This sends less signal to power controls, resulting in a grittier-sounding color and noise when the knob is in its leftmost position.

A 9V power source is required.

## Mooer Pure Octave Pedal :

The function of the pedal is to add thickness to the sound by adding additional frequencies either 1 or 2 octaves above or below the frequencies being produced by the drone machine. The main white knob controls the modes, which consist of different combinations of 1 or 2 octaves above/below.

Turning the Sub knob to the right increases the volume of a low, sub bass frequency, adding body to the sound.

The Dry knob controls the mix between the unaffected signal from the drone machine and the octaves generated by the octave pedal.

The Upper knob controls the tone of the high frequency range.

The silver button on the bottom is a Bypass switch. Pressing it down will turn the pedal on, and pressing it again will turn it off and let the unaffected signal pass through to the next pedal.

A 9V power adapter is required.



## CNZ Audio Tremolo Pedal :



The purpose of this pedal is to add movement to the sound. The main knob in the middle controls the speed of the tremolo. As the knob moves counter-clockwise, the speed gets slower. The speed gets faster as the knob turns in a clockwise direction.

The depth knob controls the intensity of the tremolo effect. Turning the knob clockwise will increase the intensity.

Turning the Bias knob counter-clockwise will decrease the presence of the effect for a more subtle tone shift, and turning it clockwise will increase the presence of the sound and effect.

The silver button on the bottom is a Bypass switch. Pressing it down will turn the pedal on, and pressing it again will turn it off and let the signal from the previous pedals pass through to the next.

A 9V power adapter is required.

## TC Electronic Flashback Delay and Looper :

This is a hybrid pedal that includes both a delay function to add space and dimension and a loop function to record the input signal and play it back as the current signal continues to pass through.

This pedal provides an option of using either a mono or stereo input and output. For this project, the mono input/output should be used.

The Delay knob controls the time of the delay. Turning it counter-clockwise will produce a longer delay time, and turning it clockwise will produce a shorter delay time.

The Feedback knob will fold the affected signal back into itself, increasing the density of the delay signal and altering the timbre of the sound. Turning the knob in a clockwise position will increase the intensity of the feedback effect. Feedback will not occur when the knob is set to the leftmost position.

The FX Level knob serves as a mix knob to control the balance between the dry signal and signal affected by the pedal. When the pedal is in its leftmost position, the dry signal passes through the output. As the knob is turned in the clockwise direction, the percentage of the wet/affected signal mixed in with the dry/unaffected signal increases.

The knob directly to the right sets the mode. Changing the mode will change the behavior and timbre of the delay.

The silver button at the bottom of the pedal serves a dual purpose. In any of the delay modes, it serves as a Bypass button and functions in the same way as the previous pedals in the chain. When the pedal is set to Loop mode, the button controls the record on/off functions.

A 9V power supply is required.



## Caline Snake Bite Reverb Pedal :

This pedal adds space and dimension to the sound through the reverb effect by simulating an acoustic space. The top row of knobs control filter parameters. The first controls the resonance, giving a boost in volume to the cutoff frequency. The cutoff



frequency is set by adjusting the middle knob. The rightmost knob is a Low Pass Filter, which alters the timbre of the reverb response.

The bottom-left knob adjusts the time of the pre-delay. Adjusting the knob to the clockwise direction will increase the amount of time it takes for the reverberation to begin to take effect.

The Mix knob adjusts the balance between the dry and wet signals. At its leftmost position, the sound will be completely dry/unaffected. As the knob is turned in the clockwise direction, the percentage of the wet signal relative to the dry will increase.

The Decay knob controls the time of the reverb tail. Turning it in a clockwise direction will increase the duration.

This pedal requires a 9V power supply.

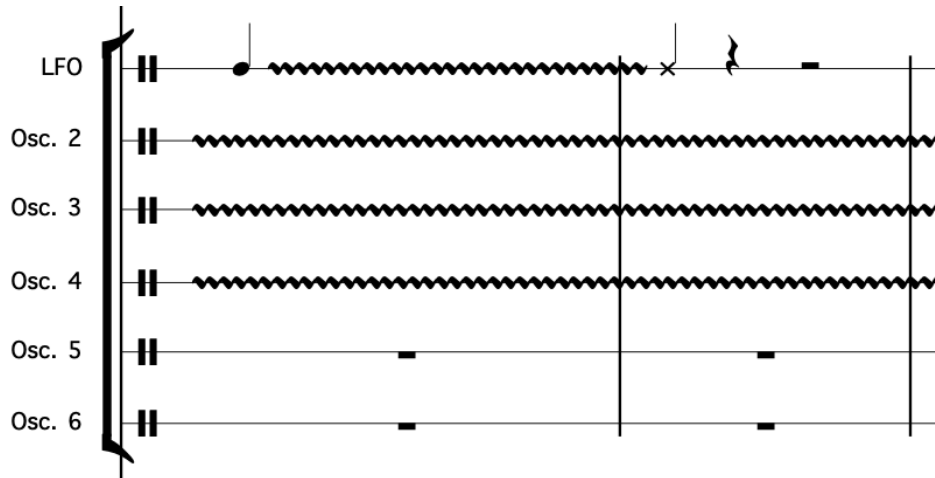
## System of Notation :

The goal of this system is to include just enough information so that the electronics instrumentalist is not overloaded with instructions, but has enough information to be able to reproduce the interpretation of the piece multiple times in a relatively precise fashion. It includes representations of actions for the instrumentalist to perform and the resulting sonic reactions from the pedals.

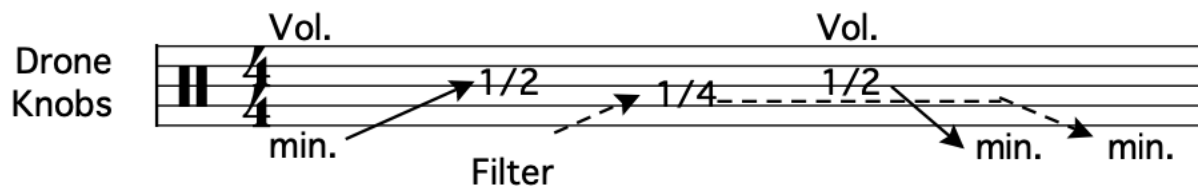
The notation of the electronics is divided into the 4 following groups :

1. “Resulting Sound” - roughly indicates resulting overall sound after effects through both traditional notation/graphic representations and written descriptions.

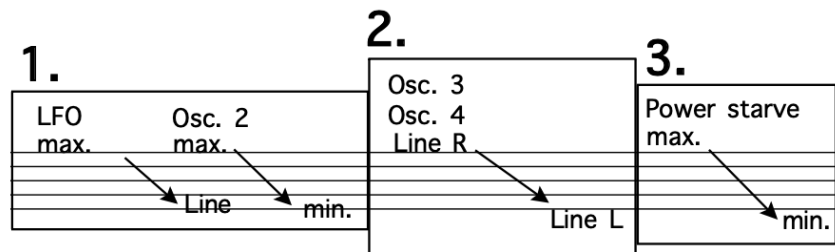
- “Oscillators” - contains six one-line staves, each corresponding to an oscillator on the drone machine from left to right. The wavy line represents an active oscillator. traditional noteheads indicate the action of turning the oscillator on, and “x” noteheads indicate the action of turning it off. When a staff is blank, the oscillator is currently off/inactive.



- “Drone Knobs” - indicates changes made to the following effects on the drone machine : Volume, Filter, Power Starve, Oscillator Frequency

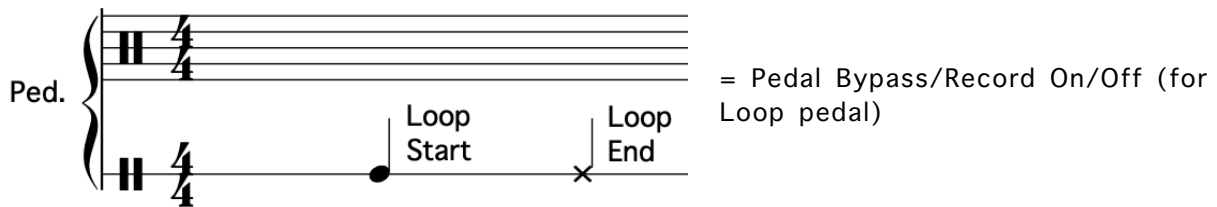
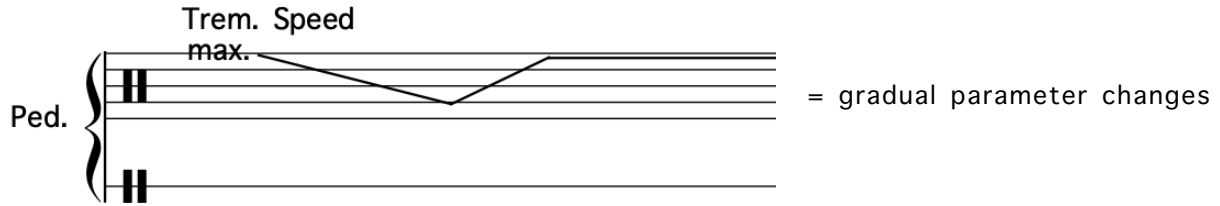


Instructions that are boxed and numbered indicate that each of these changes should be done in separate phases. The order of completing the instructions inside each box is up to the performer.



- “Pedals”- contains two staves:

- The top line (5-line staff) indicates changes made to all other effects pedals.
- The bottom line (1-line staff) represents the on/off settings of the effects pedals. traditional note heads indicate of turning the pedal on, and “x” noteheads indicate the action of turning it off.



### Practical Performance Considerations :

- Each of the oscillators on the drone machine have a slightly different range. None of the knobs have specific value markings - in certain areas of the score it is best to adjust parameters by ear, but when moments of precision are necessary, use tape to mark the position of the knobs.

- The Octave pedal produces pitches that are not perfectly in tune. This is not necessarily a drawback in this context - the deviation in frequency by a matter of cents produces beating patterns that add movement and texture to the overall sound.



# Anima

TRANSPOSING SCORE

for amplified pierrot ensemble and drone machine  
written for the Refugee Orchestra

Kayla Cashetta  
2021

## Introduction

## A Delicately

$\text{♩} = 72$

Flute

Clarinet in B $\flat$

Violin

Violoncello

Vibraphone

Piano

Resulting Sound

Oscillator 1 (LFO)

Oscillator 2

Oscillator 3

Oscillator 4

Oscillator 5

Oscillator 6

Drone Knobs

[Kobs]

Pedals

[On/Off]

flautando

String IV

*pp*

norm.

LFO = max.

[High frequencies]

*mp*

Power Starve = min.

Filter = 1/4

Volume

min.

Filter

Power Starve

max. Vol.

min.

min.

min.

Trem. Depth = max.

Trem. Speed = max.

Trem. Bias = min.

Delay = Slap

Octave = (+1, +2, -1)

Reverb Mix + Decay = max.

Trem. Depth

min.

max.

All effects ON



8

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

1/2 air, 1/2 pitch

*pp*

1/2 air, 1/2 pitch

*pp*

8<sup>va</sup>

*p*

→ msp → norm.

*p*

*pp*

*pp*

*ppp*

1/4

near min.

**B**

14

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

*p*

*pp*

norm.

mssp

Vibraphone with soft mallets

[Effect pedals will cause changes in timbre and dynamics]

[Gliss. melody with delay]

Filter

Osc. 4 Pitch

19

Fl. *ftz.*

Cl. *pp*

Vln. *pizz.* *pp* *ord.* *norm.* *msp* *p* *pp*

Vc. *pp* *pizz.* *p*

Perc. *p*

Pno. *8va* *p* *Red.* *p*

Res. Sound *8vb*

LF0

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs *Improv. "melody" with heavy reverb and delay* *[Filter]*

Ped.



30

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

*p*

*mp*

*p*

*mf*

*p*

*p*

*p*

norm.

msp

ricochet

8va

[Gliss. melody with delay]

8vb

Osc. 4 Pitch

[Filter]

36

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

full sound

pp

pp

p

8va

pizz.

norm.

8vb

Octave (+1, +2, -1)

(+1, +2, -2)

**C**

41

Fl. *p* *pp* *p*

Cl. *p* fltz. 3

Vln. *p* 3 ord. *mv* *8va* *msp*

Vc. *p* 3 *p*

Perc. *mp* *Red.*

Pno. *mp* *p* *8va* *Red.*

Res. Sound [Gliss. melody with delay] *8vb*

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs [Freely adjust Trem. Speed + Filter] Filter Trem. Speed

Ped. Trem. Speed

45

Fl. *mp* *p* *p*

Cl. *pp* *p* *p*

Vln. *p* *mp* *pp* *mp* *p*  
*8va* *mv* *tr* quarter-tone trill *ricochet* *norm.* *m* *msp*

Vc. *mp* *p* *msp* *ord.* *p* *pp*

Perc. *mp* *Red.* *8va*

Pno. *mp* *Red.*

Res. Sound (8) [Lower frequencies]

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs Vol. + Filter 1/2 Vol. min. min.

Ped. Trem. depth max. Octave (+1, +2, -2) (-1, -2)



52 **D**  $\flat$  *tr*  $\frac{1}{2}$  full sound

Fl.  $\#$   $p$   $pp$   $p$

Cl. *mf* *fltz.*  $p$   $pp$   $p$   $\#$

Vln.  $p$   $mp$  *mv* *gva*

Vc. *mf*  $p$   $ppp$   $mp$  *mv* *gva*

Perc.  $p$  *Ped.* *gva*

Pno.  $p$  *Ped.*

Res. Sound  $p$  (s)

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs Filter  $\frac{1}{2}$  min. max. Vol.  $\frac{1}{2}$  min. min.

Ped. Delay Slap Loop

# E Loop pedal

8 sec.

57

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

bowed

*p*

*p*

Red.

[High frequencies will get picked up by loop pedal resulting in sustained, long tones]

1.

2.

3.

Vol. min. Filter 1/2 Vol. 1/4 Filter 1/2 Vol. min. min.

LFO max. Osc. 2 max. Line min.

Osc. 3 max. Osc. 4 max. Line R min. Line L

Power starve max. min.

Loop Start Loop End

# F Slightly faster

♩ = 80

64

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

*pp* *p* *mp*

*pp* *pp* *pp* *p*

*pp* *mp* *pp* *pp* *p* *pp*

very soft, but expressively  
mv  (until H)  
gva

msp, HBP bring out overtones

[High frequencies remain at constant volume]

[Play low notes rapidly, staying relatively within the given range and following the given contour]

g<sup>vb</sup>  
*pp* *mp* *pp*  
Ped.

Vol. min. min. min. min.

69 G:<sup>°</sup>7

Fl. *pp* *pp*

Cl. *pp* *p*

Vln. (8) *pp* *p*

Vc. *pp* *p* *p*

Perc.

Pno. *pp* *mf* *pp*

Res. Sound *pp* *mf*

LF0

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs Vol. min.

Ped.



77

Fl. *p* *mf* *pp*

Cl. *mf* *pp*

Vln. *mf* scratch

Vc. *p* *mf* scratch

Perc.

Pno. *p* *mf* *p*

Res. Sound

[Interact with contours and dynamics of piano.  
Filter swells will add "sharpness" to rumbles]

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Vol. Filter

Ped. min.

all air, no pitch  
fltz. **H**

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

# Transition into rhythm

15 sec.

The score is divided into two main sections. The first section, from measure 87 to the end, is a 15-second transition. The second section, starting at measure 87, is the main rhythmic section.

**Fl. (Flute):** Treble clef, 2/2 time signature. A bracket above the staff indicates a 15-second duration starting at measure 87.

**Cl. (Clarinet):** Treble clef, 2/2 time signature. A bracket above the staff indicates a 15-second duration starting at measure 87.

**Vln. (Violin):** Treble clef, 2/2 time signature. A bracket above the staff indicates a 15-second duration starting at measure 87.

**Vc. (Viola):** Treble clef, 2/2 time signature. A bracket above the staff indicates a 15-second duration starting at measure 87.

**Perc. (Percussion):** Treble clef, 2/2 time signature. A bracket above the staff indicates a 15-second duration starting at measure 87. The staff contains the text "[Resonance]".

**Pno. (Piano):** Grand staff (treble and bass clefs), 2/2 time signature. A bracket above the staff indicates a 15-second duration starting at measure 87.

**Res. Sound (Resonance Sound):** Treble clef, 2/2 time signature. A box highlights a tremolo effect with the text "[Adjust tremolo speed, eventually settling on given speed]". The staff shows a series of notes with asterisks above them, indicating a rhythmic pattern.

**LFO (Low Frequency Oscillator):** Treble clef, 2/2 time signature. The staff shows a continuous, high-frequency oscillation.

**Osc. 2-6 (Oscillators):** Treble clef, 2/2 time signature. Each staff shows a continuous, high-frequency oscillation.

**Drone Knobs:** Treble clef, 2/2 time signature. The staff shows a continuous, high-frequency oscillation. A bracket above the staff indicates a 15-second duration starting at measure 87. The text "Vol." is written above the staff, and "1/8" is written below the staff.

**Ped. (Pedal):** Grand staff (treble and bass clefs), 2/2 time signature. The staff shows a continuous, high-frequency oscillation. The text "Trem. Speed max." is written above the staff, and "4.5" is written below the staff. The text "Reverb Mix max." is written above the staff, and "min." is written below the staff.



# J Like a machine

♩ = 96

2x

K

3x

90

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

pp ————— p

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5 5/8

Osc. 6 6/8

Drone Knobs

Vol. → 1/4

Filter → min. → 1/8

Ped.

Muffle strings and drag bow across string without lifting off  
Blend in with electronic sound as best as possible  
Light bow pressure

*p*  
(first time only)

Detailed description: This is a musical score for a piece titled 'Like a machine'. The score is written for a variety of instruments and electronic elements. It begins with a tempo marking of 90 beats per minute and a 2/2 time signature. The score is divided into two main sections: a first section marked '2x' and a second section marked '3x', with a key signature change indicated by a box labeled 'K'. The instruments include Flute (Fl.), Clarinet (Cl.), Violin (Vln.), Viola (Vc.), Percussion (Perc.), Piano (Pno.), Resonance Sound (Res. Sound), LFO, Oscillators 2-6 (Osc. 2-6), Drone Knobs, and Pedal (Ped.). The Resonance Sound part features a dynamic range from *pp* to *p*. The Drone Knobs part shows volume and filter changes over time. The Violin part includes a specific performance instruction: 'Muffle strings and drag bow across string without lifting off Blend in with electronic sound as best as possible Light bow pressure' and a dynamic marking of *p* for the first time only. The score concludes with a double bar line and repeat dots.

94 **L** **2x** **M** [Crescendo over entire rehearsal mark] **3x**

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

Muffle strings and drag bow across string without lifting off  
Blend in with electronic sound as best as possible  
Light bow pressure

*p*  
(first time only)

msp

Filter  
1/8 → 1/2

**N** **2x** **O** **2x**

Fl. first time only

Cl. first time only

Vln. *p* *mp* scratch

Vc. *p* *mp* Increase bow pressure until Reh. N to create pitchless, scratch sound

Perc.

Pno.

Res. Sound *mp*

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs Vol. 1/4 1/2 Filter 1/2

Ped. Reverb Mix min. 1/2 1/2

Detailed description of the musical score: The score is divided into three main sections: 'N', 'O', and '2x'. Section 'N' consists of two measures. Section 'O' is a single measure. Section '2x' consists of two measures. The Flute (Fl.) and Clarinet (Cl.) parts have a 'first time only' marking at the start of section 'O'. The Violin (Vln.) and Viola (Vc.) parts feature a dynamic increase from *p* to *mp* across section 'N', with a 'scratch' sound effect indicated by 'x' marks in section 'O'. The Resonance Sound (Res. Sound) part has a constant *mp* dynamic. The Drone Knobs section shows the Volume knob increasing from 1/4 to 1/2 and the Filter knob increasing from 1/2 to 1/2. The Pedal (Ped.) section shows the Reverb Mix knob increasing from 'min.' to 1/2.

This musical score page includes the following parts and markings:

- Fl. (Flute):** Features a dynamic marking **P** in a box at the start of the first measure. In the final measure, it has a **8va** marking above a note and a dynamic marking **p** that transitions to **f**.
- Cl. (Clarinet):** Mirrors the flute's dynamic marking **p** to **f** in the final measure.
- Vln. (Violin):** Consists of a rhythmic pattern of 'x' marks with accents (**v**) in the first two measures, followed by a sustained line in the last two measures.
- Vc. (Violoncello):** Similar to the violin, with a rhythmic pattern of 'x' marks and accents in the first two measures, and a sustained line in the last two measures.
- Perc. (Percussion):** Shows a series of rests across all measures.
- Pno. (Piano):** Shows a series of rests across all measures.
- Res. Sound (Resonance Sound):** Consists of a rhythmic pattern of asterisks (**\***) in the first two measures, followed by a sustained line in the last two measures.
- LFO (Low Frequency Oscillator):** Shows a continuous, high-frequency oscillating waveform across all measures.
- Osc. 2, 3, 4 (Oscillators 2, 3, 4):** Each shows a continuous, high-frequency oscillating waveform across all measures.
- Osc. 5, 6 (Oscillators 5, 6):** Each shows a series of rests across all measures.
- Drone Knobs:** Includes a volume control line that starts at **3/4** and transitions to **1/2** at the first measure boundary.
- Ped. (Pedal):** Includes a control line that starts at **max.** and transitions to a lower level at the first measure boundary.

(8)

Fl. *p* *f* *p* *f*

Cl. *p* *f* *p* *f*

Vln. *f*

Vc. *f* String II

Perc.

Pno.

Res. Sound [LFO only]

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs  $\frac{3}{4}$

Ped. Trem. Depth max.

HBP, some pitch until Reh. "R"  
Diamond noteheads indicate placement of finger on string

HBP, some pitch until Reh. "R"  
some noise

Q

(8)

The score is divided into two systems by a dashed line. The first system includes Flute (Fl.), Clarinet (Cl.), Violin (Vln.), Viola (Vc.), Percussion (Perc.), and Piano (Pno.). The second system includes Resonance Sound (Res. Sound), LFO, Oscillators (Osc. 2-6), Drone Knobs, and Pedal (Ped.).

**Flute (Fl.):** Melodic line with dynamics *p* and *f*.  
**Clarinet (Cl.):** Melodic line with dynamics *p* and *f*.  
**Violin (Vln.):** Melodic line with dynamics *msp* and *ff*.  
**Viola (Vc.):** Melodic line with dynamics *msp*.  
**Percussion (Perc.):** Rhythmic accompaniment with dynamics *f*.  
**Piano (Pno.):** Chordal accompaniment with dynamics *ff*.  
**Resonance Sound (Res. Sound):** Includes a section labeled "[White noise]".  
**LFO, Osc. 2-6, Drone Knobs:** Continuous low-frequency oscillations.  
**Pedal (Ped.):** Pedal point with a dynamic marking of *min.*

(8)

Fl. *p* *f* *p* *f* *p* *f* *p* *f*

Cl. *f* *p* *f* *p* *f* *p* *f* *p* *f*

Vln. *ff*

Vc. *ff*

Perc.

Pno. *8vb* *8vb* *8vb*

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

Ped.

(8) R 10 sec.

Fl. *p* *f* *p* *f* *p* *f* *p*

Cl. *p* *f* *p* *f* *p* *f* *p*

Vln. *f* *p*

Vc. *f* *p*

Perc. *f* *p*

Pno. *mf*

Res. Sound

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Half-step trills - each octave trill at different irregular speeds

(trill speed)



# S Airy

$\text{♩} = 96$

(1/2 air, 1/2 pitch)

The score is arranged in a vertical stack of staves. The top two staves are for Flute (Fl.) and Clarinet (Cl.), both in 2/2 time. The Flute part begins with a whole note G4, followed by a half note A4, and a half note B4. The Clarinet part begins with a whole note G3, followed by a half note A3, and a half note B3. The Violin (Vln.) and Viola (Vc.) parts are in 2/2 time. The Violin part begins with a whole note G4, followed by a half note A4, and a half note B4. The Viola part begins with a whole note G3, followed by a half note A3, and a half note B3. The Percussion (Perc.) staff is empty. The Piano (Pno.) staff shows a complex texture with many notes and rests. The Resonance Sound (Res. Sound) staff shows a series of notes with a tremolo effect. The LFO (Low Frequency Oscillator) staff shows a series of notes with a tremolo effect. The Oscillators (Osc. 2-6) staff shows a series of notes with a tremolo effect. The Drone Knobs (Drone Knobs) staff shows a series of notes with a tremolo effect. The Pedal (Ped.) staff is empty.

Fl.  $\text{♩} = 96$

Cl. 1/2 air, 1/2 pitch

Vln. *p* String I mst *pp* *p* String II 3

Vc. *p* String I mst *pp* String II

Perc.

Pno.

Res. Sound *pp*

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs Filter 3/4 Vol. min. min.

Ped.

T

*tr*

Fl. *mp* *p* *mp* *p* *mp*

Cl. *mp* *p* *mp* *p* *mp*

Vln. *pp* *p* *norm.*

Vc. *p* *pp* *p* *norm.*

Perc.

Pno.

Res. Sound

LFO  
Osc. 2  
Osc. 3  
Osc. 4  
Osc. 5  
Osc. 6

Drone Knobs

Power Starve min. max. Trem speed 4.5 max.

Ped.

(1/2)  $\xrightarrow{\quad}$  full sound  
 Fl. *pp*  $\xrightarrow{\quad}$  *mp*  $\xrightarrow{\quad}$  *p*  $\xrightarrow{\quad}$  *mp*

(1/2)  $\xrightarrow{\quad}$  full sound  
 Cl. *pp*  $\xrightarrow{\quad}$  *mp*  $\xrightarrow{\quad}$  *p*

(norm.)  $\xrightarrow{\quad}$  msp  
 Vln. *mp*  $\xrightarrow{\quad}$  *p*

(norm.)  $\xrightarrow{\quad}$  msp  
 Vc. *mp*  $\xrightarrow{\quad}$  *p*

Perc.

Pno. *p*

Res. Sound

LFO  
 Osc. 2  
 Osc. 3  
 Osc. 4  
 Osc. 5  
 Osc. 6

Drone Knobs

Ped.

Detailed description of the musical score: The score is for a piece in 3/2 time. It features several staves: Flute (Fl.), Clarinet (Cl.), Violin (Vln.), Viola (Vc.), Percussion (Perc.), Piano (Pno.), Resonance Sound (Res. Sound), six Oscillators (Osc. 2-6), Drone Knobs, and Pedal (Ped.). The Flute and Clarinet parts are highly melodic, starting with a half-note triplet and a quarter-note triplet, then moving to a half-note triplet and a quarter-note triplet, and finally a half-note quintuplet. The Violin and Viola parts are sustained, with dynamic markings of mezzo-piano (mp) and piano (p). The Percussion, Piano, Resonance Sound, and Pedal parts are mostly silent, with some percussive markings. The Oscillators and Drone Knobs are also mostly silent, with some oscillating patterns in the LFO and Osc. 2-6 staves.

rit.

$\text{♩} = 86$

The musical score is arranged in a vertical stack of staves. From top to bottom, the staves are:

- Fl. (Flute):** Treble clef, 4/4 time. Notes:  $\text{Bb}^4$ ,  $\text{Bb}^4$ ,  $\text{Bb}^4$ ,  $\text{A}^4$ ,  $\text{A}^4$ ,  $\text{A}^4$ . Dynamics:  $pp$ .
- Cl. (Clarinet):** Treble clef, 4/4 time. Notes:  $\text{E}^4$ ,  $\text{E}^4$ ,  $\text{D}^4$ ,  $\text{D}^4$ ,  $\text{C}^4$ . Dynamics:  $mp$ ,  $pp$ .
- Vln. (Violin):** Treble clef, 4/4 time. Notes:  $\text{D}^5$ ,  $\text{E}^5$ ,  $\text{F}^5$ ,  $\text{G}^5$ ,  $\text{A}^5$ ,  $\text{B}^5$ ,  $\text{A}^5$ ,  $\text{G}^5$ ,  $\text{F}^5$ ,  $\text{E}^5$ ,  $\text{D}^5$ . Dynamics:  $mp$ ,  $pp$ .
- Vc. (Viola):** Bass clef, 4/4 time. Notes:  $\text{D}^4$ ,  $\text{E}^4$ ,  $\text{F}^4$ ,  $\text{G}^4$ ,  $\text{A}^4$ ,  $\text{B}^4$ ,  $\text{A}^4$ ,  $\text{G}^4$ ,  $\text{F}^4$ ,  $\text{E}^4$ ,  $\text{D}^4$ . Dynamics:  $mp$ ,  $pp$ .
- Perc. (Percussion):** Treble clef, 4/4 time. Notes:  $\text{C}^4$ ,  $\text{C}^4$ . Dynamics:  $p$ ,  $pp$ . Includes a box labeled "Vibraphone".
- Pno. (Piano):** Treble and Bass clefs, 4/4 time. Notes:  $\text{C}^4$ ,  $\text{C}^4$ . Dynamics:  $p$ . Includes a trill section with a dashed line and the text "(8va both trills)".
- Res. Sound (Resonance Sound):** Treble clef, 4/4 time. Notes:  $\text{C}^4$ .
- LFO (Low Frequency Oscillator):** Treble clef, 4/4 time. Notes:  $\text{C}^4$ .
- Osc. 2-6 (Oscillators):** Treble clef, 4/4 time. Notes:  $\text{C}^4$ .
- Drone Knobs:** Treble clef, 4/4 time. Notes:  $\text{C}^4$ .
- Ped. (Pedal):** Treble clef, 4/4 time. Notes:  $\text{C}^4$ .

# U Warmly

30-45 sec.

**Fl.** *mf* Dramatic vibrato  
Vibrate at consistent speed that is different from rest of ensemble

**Cl.** *mf* Trill at consistent speed that is different from vibrato speeds of rest of ensemble

**Vln.** *mf* Vibrate at consistent speed that is different from rest of ensemble

**Vc.** *mf* Vibrate at consistent speed that is different from rest of ensemble

**Perc.** *mf* With soft mallets

**Pno.** *mf* (8) (tr) (pedal)

**Res. Sound** [Chord] *mf*

**LF0** *mf*

**Osc. 2**

**Osc. 3**

**Osc. 4**

**Osc. 5**

**Osc. 6**

**Drone Knobs** Vol. min. → 5/8 [Slight adjustments] Power Starve max. → min. Filter 1/2 → min.

Trem. Depth = min.  
Trem. Speed = max.  
Octave = (-1, -2)

**Ped.** All pedals on

# V Transition to noise

15 sec.

The score is organized into several sections:

- Fl. (Flute):** Shows a tremolo pattern in the upper register. Below the staff is a line graph with a peak and a tail, and a breath indicator (x) with a line graph showing an inhale.
- Cl. (Clarinet):** Shows a tremolo pattern in the lower register. Below the staff is a line graph with a peak and a tail, and a breath indicator (x) with a line graph showing an inhale.
- Vln. (Violin):** Shows a tremolo pattern in the upper register. Below the staff is a line graph with a peak and a tail.
- Vc. (Violoncello):** Shows a tremolo pattern in the lower register. Below the staff is a line graph with a peak and a tail.
- Perc. (Percussion):** Shows a tremolo pattern in the lower register. Below the staff is a line graph with a peak and a tail. The text "L.V. until resonance dies out" is written below the staff.
- Pno. (Piano):** Empty staff.
- Res. Sound:** A thick horizontal line representing a resonance sound. A box with two asterisks (\*) is positioned above the line, with an arrow pointing to it from the text "[Transition to noise with Power Starve]".
- LFO:** Empty staff.
- Osc. 2-6:** Six oscillators, each with a tremolo pattern.
- Drone Knobs:** A line graph showing "Power Starve" decreasing from "max." to "min." and "Filter" increasing from "min." to "max.".
- Ped. (Pedal):** Empty staff.

# W Rumble and noise

15 sec.

The score is written in 4/4 time and includes the following parts:

- Fl. (Flute):** sharp exhale, *f* (forte) dynamic.
- Cl. (Clarinet):** sharp exhale, *f* (forte) dynamic.
- Vln. (Violin):** flautando, like a whisper, gradually increase bow pressure, *mf* (mezzo-forte) dynamic, scratch.
- Vc. (Violoncello):** flautando, like a whisper, gradually increase bow pressure, *mf* (mezzo-forte) dynamic, scratch.
- Perc. (Percussion):** Gong.
- Pno. (Piano):** piano rumble, L.V. (Loud Volume), *pp* (pianissimo) to *mf* (mezzo-forte) dynamic, *grb* (grainy rumble) effect.
- Res. Sound (Resonance Sound):** [Transition to "flutter"] effect.
- LFO (Low Frequency Oscillator):** LFO.
- Osc. 2-6 (Oscillators):** Osc. 2, Osc. 3, Osc. 4, Osc. 5, Osc. 6.
- Drone Knobs:** Trem. Depth + Bias (min. to max.), Vol. (1/2 to 3/4).
- Ped. (Pedal):** Ped.

# X Flutter

♩=76

Blend with electronic sound as best as possible  
fltz. →

3

*p*

Blend with electronic sound as best as possible  
fltz. →

*p*

*mp*

*mp*

pizz.

*p*

pizz.

*p*

Snare with brushes  
[Drag brushes around surface of drum head in circular pattern]

*pp*

[ord. roll]

*p*

3

The musical score is arranged in a vertical stack of staves. From top to bottom, the staves are: Flute (Fl.), Clarinet (Cl.), Violin (Vln.), Viola (Vc.), Percussion (Perc.), Piano (Pno.), Resonance Sound (Res. Sound), LFO, Oscillator 2 (Osc. 2), Oscillator 3 (Osc. 3), Oscillator 4 (Osc. 4), Oscillator 5 (Osc. 5), Oscillator 6 (Osc. 6), Drone Knobs, and Pedal (Ped.). The time signature is 4/4. The Flute and Clarinet parts feature triplet markings and dynamic markings of *p* and *mp*. The Percussion part includes a snare part with brushes and a [ord. roll] section. The Piano part is mostly silent. The Resonance Sound part consists of a series of sustained notes. The LFO and Oscillator parts are represented by horizontal lines with vertical pulses. The Drone Knobs and Pedal parts are also mostly silent, with the Pedal part having an 'Octave (-1, -2)' instruction.



Fl. *p* *p* *mp* > *p* *p*

Cl. *p* *mp* > *p* *mp* *p*

Vln. *p* *mp* *p*

Vc. *p* *mp* *p*

Perc. *pp* [ord. roll] sim. *p* *pp*

Pno. *p* *8va* *pp* *8va*

Res. Sound

LF0

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs *1/8* Vol. (min) Filter Trem. speed max.

Ped. (+2, -2)

Fl. *p* *mp* *p* *mp* *p* *mp*

Cl. *p* *mp* *p* *mp*

Vln. *mp* *p*

Vc. *mp* *p*

Perc. *p* *pp* *p* *pp*

Pno. *mp* *p*

String I ord. *mp* *p*

String I ord. *mp* *p*

["Noise", will alternate between muffled and sharper noise depending on filter setting]

Res. Sound L.V. Reverb

LFO

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Reverb Mix

Drone Knobs Filter Vol. min. min.

Ped.

# Y Shimmering

30 sec.

Fl.

Cl.

Flautando  
Natural harmonics, Strings I + II, accent notes to bring out small patterns  
norm. → msp

Vln.

(*pp* < *p* > *pp*) →

Flautando  
Natural harmonics, Strings I + II, accent notes to bring out small patterns  
norm. → msp

Vc.

(*pp* < *p* > *pp*) →

Perc.

Pno.

Res. Sound

High frequencies, very close together, steady rhythm from tremolo

(*pp* < *p* > *pp*) → *mp*

LFO (LFO = Line)

Osc. 2

Osc. 3

Osc. 4

Osc. 5

Osc. 6

Drone Knobs

1. Osc. 2, Osc. 3 → Line R

2. Osc. 5, Osc. 6 → Line L

3. Power Starve max., Trem. Speed max. → 4

Vol. min. → 1/2 → min.

Filter

Vol. 1/2 → min.

Trem. Depth max. → min.

Ped.