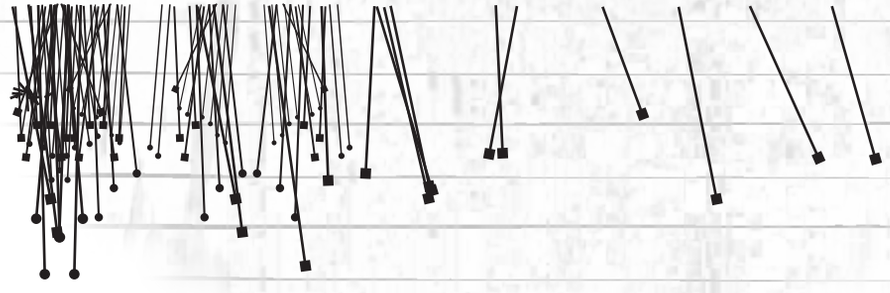
alexander Schubert

laplace tiger

for percussion, motion sensors, live-electronics and -video



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PROGRAM NOTES

Alexander Schubert:
Laplace Tiger (2009) 14'
For drum kit, arm-sensors, live-electronics and live-video

The use of sensors at the forearms of the player allows the complete control of the live electronics and the structuring of the piece. Furthermore the player's movement is the exclusive source material for the live video. With the gestures of the arms the percussionist is able to control the electronic processing of the acoustic drum sounds in real time. This allows a great flexibility in playing and especially focuses on the bodily origin of the complex musical events. In combination with the video, which is augmenting the movements of the player, this approach offers a very expressive instrument both appealing due to its musical possibilities and the renewed role of the performer.

Based on these technical possibilities I tried to realize a piece that works like a huge convolution. The acoustically played material is temporarily shifted, processed and then interweaved through the motions of the performer. Apart from this sound synthesis is playable with the sensors to extend the musical language of the drum set. But the idea is that both the processed sounds and the additional elements are all controllable by and hence linked to the movement of the player - focusing the generation of sound as much on the physical presence of the player as possible. The pyramiding of sound shreds, live-electronics and the percussion itself aims at a highly condensed performance somewhere between contemporary classical music and electronica.

The title of the piece is inspired by the "laplace demon" - a thought experiment describing a model using total determination. This is to evoke the question of how a system of this complexity is totally reproducible - which it is not in this case. The concept of the piece is a very structured progression of about 100 scenes, which are clearly defined - but within these cells there is a great amount of freedom for the performer on a micro level. This allows the interpreter to react to and play with the fine details and nuances arising from slight gestures and to have the freedom to develop the interlacing between the acoustic drumming and the folded, temporarily shifted processing.

Tech Rider

TECHNICAL EQUIPMENT

Standard technical equipment needed:

- Drum kit:Kick drum, Snare, Hi-hat, Stand Tom, Hanging Tom, Crash Cymbal, Triangle, Woodblock
- 4 microphones for amplification: Bass drum, snare, 2 overheads (including tripods + cables)
- Stereo-PA (or more channels)
- Audio mixer (Microphone-inputs with Phantom power)
- (Audio)-Monitor on stage
- Projector (VGA) (+ long VGA-cable)
- Canvas for projection (at least 4 meters wide - preferably wider)
- Spot light (with a diameter of about 2 meters) for the drum kit and percussionist
- music stand

Additional equipment:

- midi-footswitch
- a fast(!) macbbok pro (or similar)
- USB-webcam (including tripod - e.g. basedrum-microphone-tripod)

Software:

- Max/MSP/jitter (Runtime version is sufficient) [cycling74.com] *runtime version is free*
- Osculator [osculator.net] *~15,00 €*

Additional equipment needed for longer distances:

- bluetootch dongle
- usb-repeater-cables

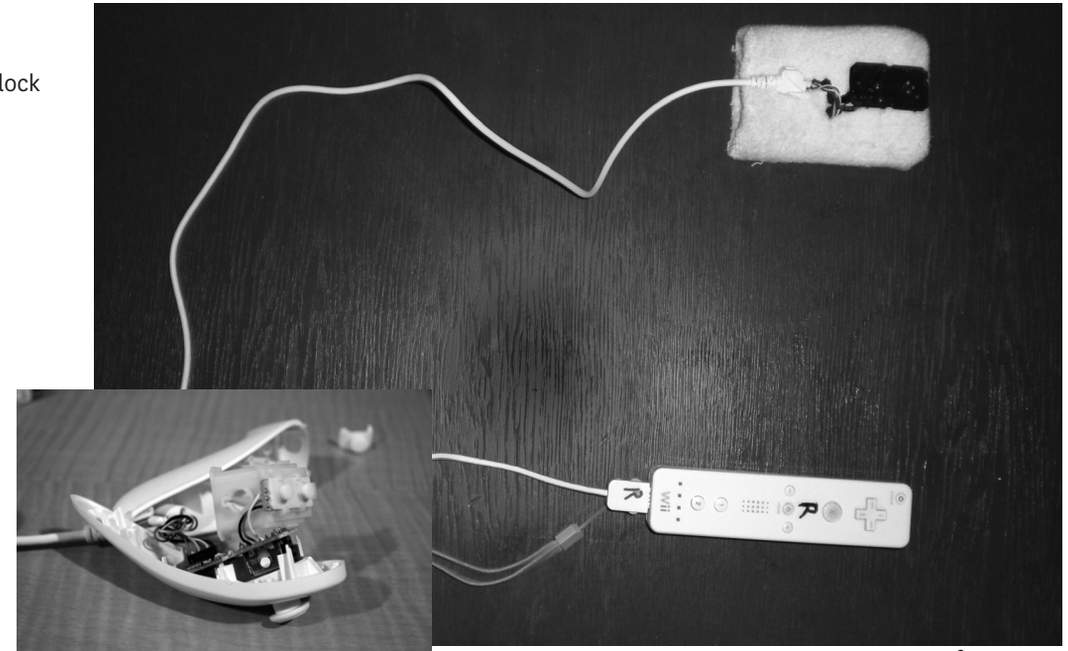
SENSORS

All the above equipment is really more or less standard and shouldn't be hard to get a hold of.
The sensors need to be "custom made" - but as they rely on cheap entertainment devices it is very simple to build them.
For the sensors on the foreamrs you will need:

- 2 Nintendo-Wii-Remotes *~30,00 € per piece (replicas/imitations are much cheaper)*
- 2 Nintendo-Wii-Nunchuks *~10,00 € per piece (replicas are cheaper too)*
- *2 sweatbands (for wrists)*
- *1 Nintendo screwdriver*
- *plasti dip or glue or something similar*

The photo on the next page shows how the setup looks for one arm. To "build" this you take the Wii-Nunchuk controller and open it with the screwdriver. You take all the plasic away. Cut the wires that lead to the knobs (with scissors). Remove the joystick box (with soldering iron). Done!
Now you can use plasti-dip or something similar to cover the whole board with plastic so it's not so damageable. The board has a few holes - be sure they remain visible.
Now sew the board on a sweatband and you're ready!
Connect the cable of the board to the wii-remote and all is done.

You can either do this yourself or contact me (Alexander Schubert) and I can provide a set of sen



sensor for one arm

disassembled nunchuk

EXPLANATIONS

Basic Principle:

The performer wears the sensors on the arms. They capture accelaration (and thereby also orientation: up/down/left/right). These signals are send by Bluetooth to the computer. This can be send to the bluetooth receiver of the computer directly. If the distance is larger than 5m (depending on the receiver), then a bluettoth receiver as a usb-dongle must be used which can be extended with usb repeater cables.
The bluetooth signal is picked up in any case by the program Osculator. This has to be installed and the file "laplace-tiger.oscd" has to be loaded. This program sends the data as OSC-data to Max-MSP. Max/MSP uses this data to do the live-electronics / processing and triggering of external sounds.
In different parts of the piece the movement of the arms has different effects on the processing. This is explained in the score.
The piece is devided into 77 cues. Depending at which point in the piece you are, going from one cue to the next can either be done by one of the following: strong movement of the arm (hitting a drum or in the air), pressing the footpedal or at two point it proceedds automatically after a giben time. Which mode applies is notated in the score.
The USB-video-camera is located above the snare and toms, so it picks up the movement of the upper body of the performer, but should be placed that the audience can clearly see the player. The video signal is processed by the jitter-patch (all in one big max/msp/jitter-patch) in different ways - depending on the cue in the piece. Though the video is based on the movement of the player the percussionist shouldn't think about the video while playing, as it works

Explanation of setting up:

The performer is located in the middle of the stage with the drum set. Behind him is the projection canvas. A spot should illuminate the player - the rest of the stage and hall should be as dark as possible.

A camera is positioned in front of the performer capturing his upper body and the radius neccessary to pick up his arms in all directions. The strength of the spot light has to be carefully adjusted so that the ballance between the player and the projection is correct and so that the camera has enough light to create the video.

The drum kit is amplified with 4 microphones (Kick drum, snare, 2 overheads). The sum of the inputs should be send to input 1 of the computer sound interface. You can also just place one additional overhead mic and connect it to input 1 of the sound card (this may be easier!).

The basedrum should be send alone to input 2.

The drum kit should have a rather clean, jazzy sound (with smaller drum diameters).

A midi-Footpedal should go from the computer to the drumkit (placed next to hi-hat). This is normally done with a 1/4-jack cable which can be as long as you like.

Problems with Distance and Bluetooth / Video:

The Wii controllers send the data to the computer through bluetooth. This signal is picked up by the program Osculator and it sends the OSC data to MAX/MSP.

As the distance bluetooth can send is limited to a rather short range (5 meters to be really safe), it might be necessary to expand the range. The easiest way to do this is to use a bluetooth-usb-dongle. This device (~20€) can be plucked to a usb connection and then receives the USB data (instead of the built in receiver in the computer). This dongle can be plucked into a USB-extension-cable (it has to be an active repeater cable) - and through this the distance between the computer and performer can be greater, if necessary. There are repeater-cables up to 25 meters.

If the performer has the computer on stage this is not neccessary!

This also applies for the USB-camera, which is USB 2.0, and also needs a repeater cable if the distance from the computer is longer than the cable of the camera. If the performer has the computer on stage this is not neccessary as well!

SOFTWARE COPONENTS

Install **Osculator** [osculator.net] and activate it either with your license (*~15,00 €)* or with a shared license (contact me). During the the installation it will ask to install "perfect pairing" - let it do that. Then open the file "laplace tiger.oscd". Click on the "Wiimote drawer" and connect the right Wiimote first and then the left one. Do this by pressing both buttons (1+2) on the wii-remote untill they start blinking - then wait untill they are connected. Sometimes the first connecting is a bit complicated (you might need to go to the bluetooth device properties or restart the computer). Make sure bluetooth is on. This is complicated only once. Then it's always easy.

In the Wii-Remote-drawer in Osculator the right Sensor should have the ID 1 and the left sensor the ID 2. If this should be different you can change this in the Maxpatch too.

Basically all this file does is: Root the incoming signal to OSC-signals that go to localhost at port 9000 and can be received by udpreceive.

To stop the connection press the „Power"-Button of the Wii-Remote for about 2 seconds.

ADJUSTING THE PATCH

1. Strong Movement triggers

Set the thresholds accordingly (see chapter "strong movements")

2.video brightness

Set the brightness so that the performer can be seen well in the preview window in the max-patch.

3. volumes

if the sound file (tape) or othre volumes of sections should need adjusting this can be done in the max-patch-window.

4. Audio Inputs

Make sure you got the whole drum kit on input channel 1 and the basedrum alone on channel 2. The volume of the kit should be close to the red (in the meter~object).

The setting will be saved when you save the patch.

TROUBLE-SHOOTING

1. Osculator

Open the Osculator program. Open the "Lapalce Tiger.oscd" File.

2. Max/MSP/Jitter

Open the MAX/MSP/Jitter (Runtime) and open the file "Laplace Tiger.maxpat".

3. Connect sensors

Connect the right and then the left wii-remote (by clicking buttons 1+2).

4. Check if everything works:

a) Audio Input: Is the audio-input working in the max-patch?

b) Are the sensors connected?
Do the values arrive at Osculator?
Do the values arrive at Max?

c) Do strong movement of the arms trigger the movement detection (MOV-Triggers in the Max-patch)?

d) Is the Foot-Switch working?

e) Is the video-signal arrivig at Max?

LAPLACE TIGER
TECHNICAL SETUP

Alexander Schubert
For drum kit, arm-sensors, live-electronics and live-video
(2009) 14

TECHNICAL EQUIPMENT

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- Monitorspeaker on stage
- 2 additional microphone stands
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- Spot light (with a diameter of about 2 meters) for the drum kit and percussionist
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EXPLANATION OF SETTING UP:

The performer is located in the middle of the stage with the drum set. Behind him is the projection canvas. A spot should illuminate the player - the rest of the stage and hall should be as dark as possible.
A camera is positioned in front of the performer capturing his upper body and the radius neccessary to pick up his arms in all directions. The strength of the spot light has to be carefully adjusted so that the ballance between the player and the projection is correct and so that the camera has enough light to create the video.
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The drum kit should have a rather clean, jazzy sound (with smaller drum diameters).
A midi-Footpedal should go from the computer to the drumkit (placed next to hi-hat). This is normally done with a 1/4-jack cable which can be as long as you like.

Problems with Distance:

The setup is really easy if the computer is close (5m maximum) from the drum kit / performer. If the distance is larger then the bluetooth signal (from the wii-remote to the computer) is too weak to be stable.
In that case a bluetooth dongle is neccessary which is plucked to the macbook after USB-repeater cables (not simple USB-extension cables). Up to 2 USB-repeater cables can be used with a length of 5m each. So the maximum distance between computer and drumkit is 10 meters!
This also applies for the USB-camera which is USB 2.0 and can only be repeated two times as well, so that for this the maximum distance is 10 meters too. If you use repeater cables for both you need a total of 4.

IF the distance to the mixing desk is **longer** than 10 meters - then it is possible to place the computer on stage / next to stage / close to the stage too.
That doesn’t change the setup - it only means that the person controlling the laptop cannot be the same person who controls the levels at the mixing desk.

LAPLACE TIGER

TECHNICAL SETUP

SETUP FOR COMPUTER ON STAGE

canvas

MATERIAL NEEDED FROM VENUE:

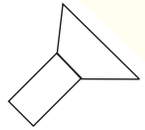
- *4 microphones for drum kit*
- *monitor speaker for performer*
- *2 additional microphone stands*
- *music stand*
- *stand for drum sticks*
- *spot light*
- *canvas + projector*
- *all audio cables*

MIXING DESK CHANNELS:

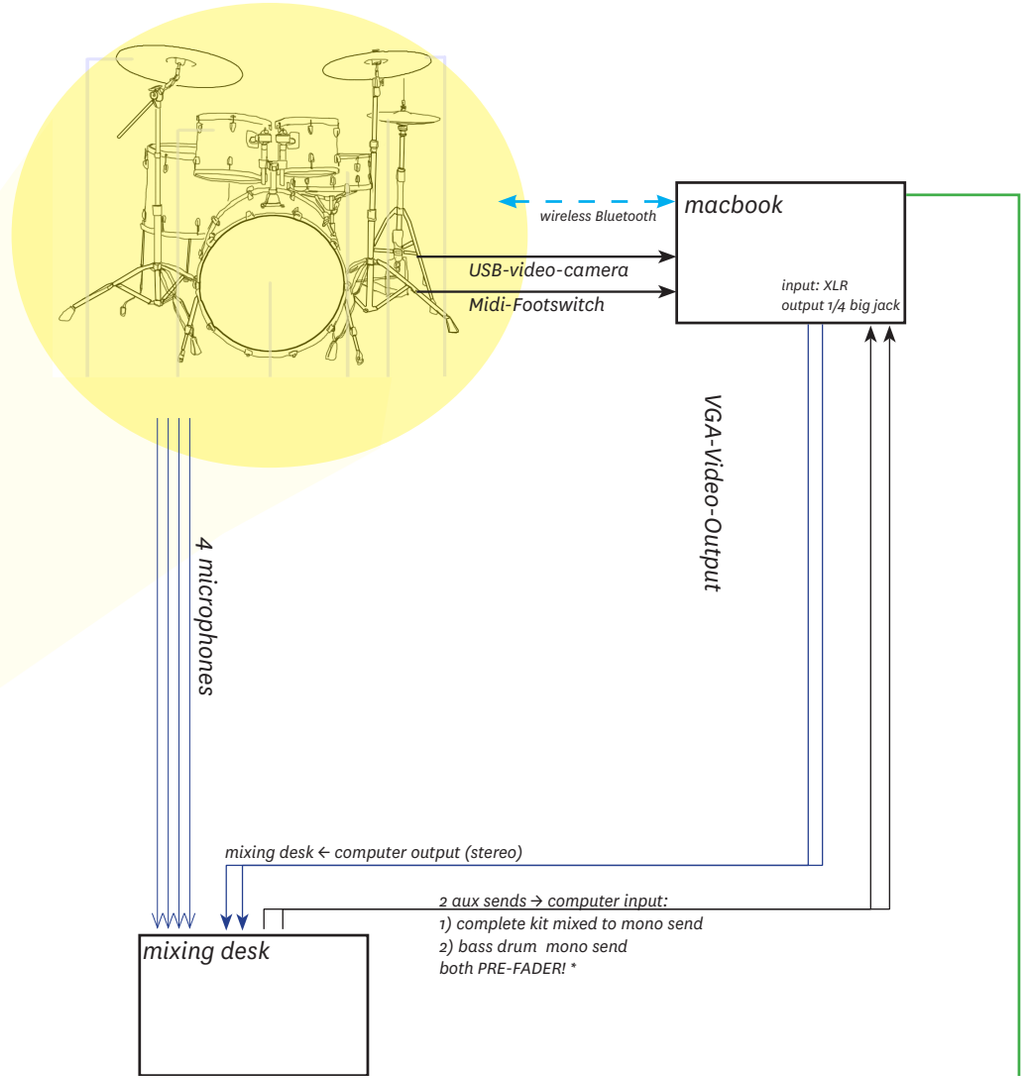
- *4 Inputs from Drum Kit*
- *2 Inputs from computer*
- *2 AUX sends to computer (complete drums mixed to AUX1 + bass drum to AUX2 -both PRE-FADER)**

MATERIAL BROUGHT BY PERFORMER:

- *midi foot switch*
- *sensors*
- *laptop*
- *usb camera*



spot light



LAPLACE TIGER

TECHNICAL SETUP

SETUP FOR COMPUTER AT MIXING DESK

MATERIAL NEEDED FROM VENUE:

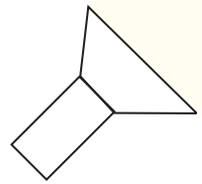
- *4 microphones for drum kit*
- *monitor speaker for performer*
- *2 additional microphone stands*
- *music stand*
- *stand for drum sticks*
- *spot light*
- *canvas + projector*
- *all audio cables*

MIXING DESK CHANNELS:

- *4 Inputs from Drum Kit*
- *2 Inputs from computer*
- *2 AUX sends to computer (complete drums mixed to AUX1 + bass drum to AUX2 -both PRE-FADER)**

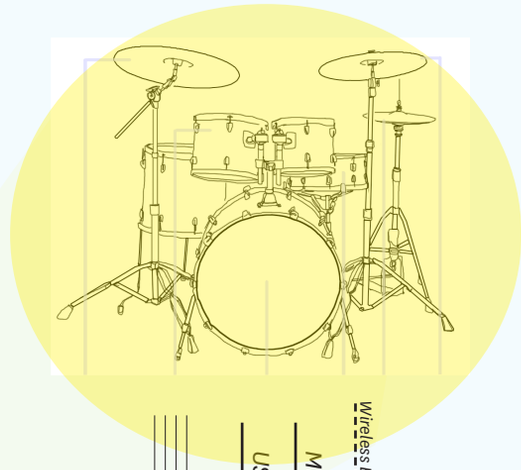
MATERIAL BROUGHT BY PERFORMER:

- *midi foot switch*
- *sensors*
- *laptop*
- *usb camera*
- *USB repeater cables*
- *Bluetooth-Dongle*



spot light

canvas



4 microphones

USB-video-camera (with repeater cable)

Midi-Footswitch (1/4 jack cable)

Wireless Bluetooth

Bluetooth-Dongle

mixing desk ← computer output input

aux send → computer input

mixing desk

macbook

VGA-Video-Output

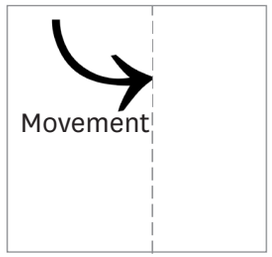
projector

maximum distance between computer and drumkit depends on the length of the repeater cables used

**You can also connect two additional micro-phones directly to the computer (overhead to channel 1 and bass dum mic to channel 2 - in order to aviod sending via AUX)*

CONCEPT OF “STRONG MOVEMENTS”

A lot of the piece is based on strong movements. Especially of the right arm.
When a strong movement occurs the corresponding “Strong MOV”-Trigger in the max-patch flashes.
It is important to set the threshold for this one in a way - and to learn to play the piece in a way - that it is possible to deliberately trigger by maiking a conscious strong move. It should at the same time be possible to play everything on the drumkit without triggering. So it is neccessary to find a ballance between playing and setting the threshold accordingly to allow a more or less unrestricted playing and to be able to trigger always when intended and not by accident. Play around and see what works best: In general: Hitting the drum with a stiff wrist leads to the best results to create a trigger.
This effect can triggered too by a very strong movement in the air (this can be used willingly - but be careful when moving your arms to change the electronic processing that the movement is not too strong so that a next cue is triggered).
This trigger is used in different audio modules and is very often used to progress from one scene to the next (if the foot switch is not used). Mostly it triggers an effect (e.g. loop player) and goes to the next cue (which mostly means playing a sound file and often changing the video).



indication of going to next cue by strong movement in graphical score

NOTATION CONCEPT

Acoustic drum kit playing is notated above the horizontal line in the graphical score. Electronic processing based on gestural control is below the line. Sound files are displayed as wave forms on the horizontal line. The video is indicated in the background.
The graphic notation is just a way to visualize the written concepts - it’s NOT supposed to be played directly as drawn (i.e. if there are four lines it does NOT mean you’re only allowed to play four notes!). The Table score might be much more handy to learn the piece!

There os also a live-computer score (on screen next to the drum kit) indicating the current cue and the following three ones (it is suggested that you use this for the performance!). You can also edit the cue names so you can name them in a way that is convenient for you!

Besides that knowing the score BY HEART is extremely helpful!

AUDIO MODULES

Beat Slicer
in cues 2-9 and 71
Used at the beginning of the piece.
In the “record”-sections material is recorded (cues 2,4,6,8). In the following cues the material played back based on gestural control by the arm movements. Height of the arms influences the pitch of the samples. Strong movements start playback. strength of movement influences volume.

Loop Player
in cues 13-16, 17-32, 35-45, 49-52,57, 61-70, 72
Hitting a drum with a “strong movement” (see above) records a very short (~100ms) loop and plays it back right away. The arm positions influence loop lengths, loop start points and panning. In the silent part the same module is used but with different setting (longer loops, more quiet).

Shreds
in cues 11, 53, 59
Strong arm movements trigger sounds. Loud drum hits trigger sounds too (volume thresholds). Basedrum is distorted.

Reverse Player
in cue 33
Acoustic playing reversed by right hand movement.
After playing a short phrase (just a few notes) trigger the reverse playing (with a strong gesture of the right arm). This leads to a reverse playback of the previously played material.
Distort the sound by holding the right arm upwards.
Filter the sound by tilting the left arm (up and down).
Sometimes just „reverse play „ a single note and repeat that. Work with pauses!
Sometimes blend the reversed sound with the acoustic sound (one leading into the other). Sometime do precisely the opposite.
Add short „screams of joy“ from time to time.
Work with feedback if possible be retriggering the distorted recording/playback.

Single Reverse
in cue 34 and 47
Produce a certain sound in the previous cue (cymbal hit in cue 33 and scream in 46) - then press the footswitch to go to the next cue (34 or 47 respectively) - this will then play back the sound played before in reverse.

Installation Walkthrough

SETTING UP:

0. Introduction

In the following paragraphs I will explain everything you need to set up the piece. This may look like a lot – but it is actually all written down pretty precisely so it looks more than it is.
Also, some of the things described are set correctly by default and need not to be changed. Also, all the parameters need only to be adjusted once and then can be saved.

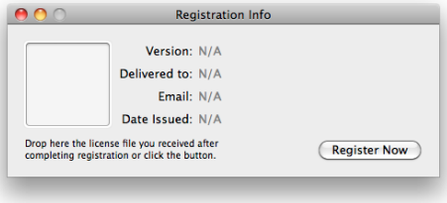
1. Connect Sensors:

1.a Install and Authorize the Osculator Program

Install **Osculator** [www.osculator.net] and activate it either with your license (*~15,00 €)* or get in contact with the composer for a shared license. During the installation It will ask to install "perfect pairing" during the installation - let it do that.

Start the program Osculator. 

Go to the Menu: Osculator → Registration info. A dialog will open:



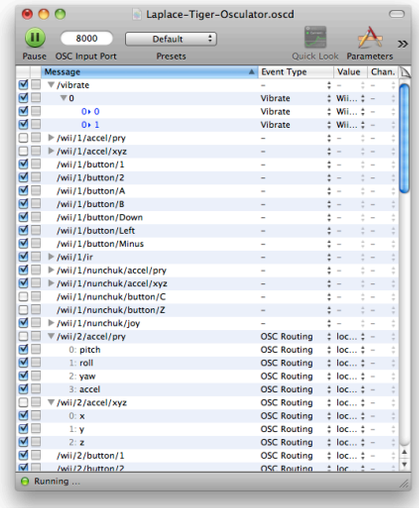
Go to the registration file in the finder and drop the file (move) in the rectangle in the registration dialog above. Now the software is registered and ready to use.

For any other trouble shooting concerning the program please also refer to the documentation of the software online.

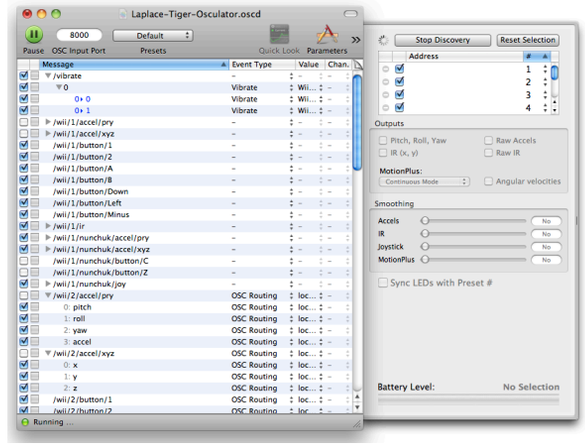
1.b Connecting the Sensors

To connect the sensors you need to start the program Osculator.

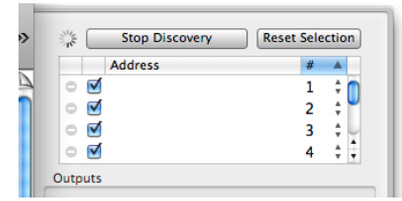
Then open the file "Laplace-Tiger-Osculator.oscd".
This will open this dialog:



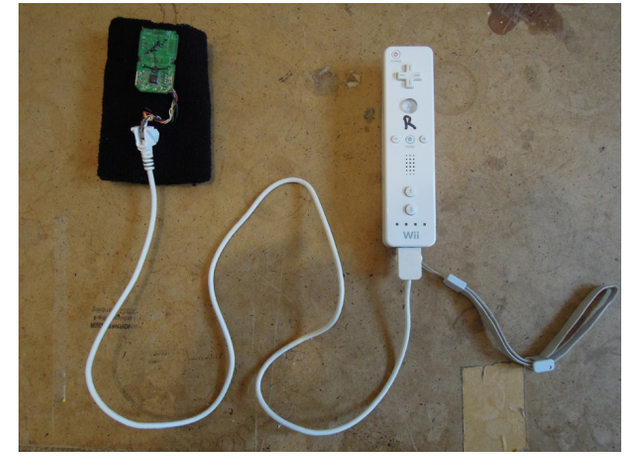
Click on the "»" button in the upper left corner to open the side bar:



The program will automatically try to connect to a Wii right away:

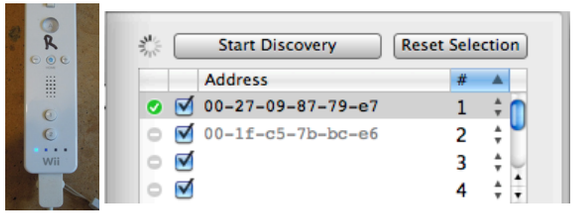


The wii-remote needs two AA-batteries. Put them in and connect the sensor-wrist-bands to the wii-remotes.

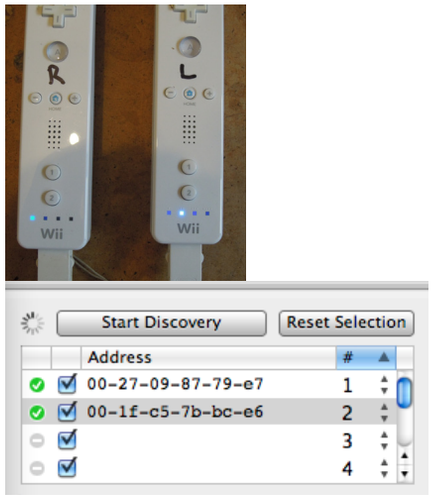


Now you have to press the buttons (1) and (2) of the right wii-remote together to connect.
The lights of the remote will start flashing:

After a few seconds just the first LED will be lit (not flashing). This means that it was detected as the first (right) wii-remote. This will also be indicated in the sidebar of the Osculator program:



Now it will look for the left Wii automatically (but only if the mx patch is already open – otherwise you have to press "Start Discovery" to tell the program to look for the second Wii remote). Once you have done that press buttons (1) and (2) on the left Wii remote. It will start flashing as well and then will only light the second LED (not blinking). Also the Osculator program shows you that it has connected to the second Wii:



Now everything is set up.

To wear the sensor wrist band: Put it on your arm in a way that - the sensor is on top of your wrist (in „normal" playing situation – so that when you perform a down-stroke on a drum the sensor would be horizontal when hitting the drum):

- the cable goes in the direction oft he arm.

2. Other hardware

A few other things need to be connected to the computer:

2.a Microphones:

Two microphones are needed: One for the complete kit, positioned above the hanging tom and one for the bass drum.
Additional microphones to amplify the kit in the hall should be used as well but are not needed for the processing.
The main overhead microphone should be in input 1 and its level should be set, so that it doesn't clip, but so that there is not too much headroom. The base drum microphone goes into input 2 and the level should be set in the same way.
You therefore need a sound card interface with 2 microphone inputs.

2.b Midi Footswitch

A midi footswitch, which can be connected to the laptop in several way (directly to the sound card or through a midi keyboard or similar)

2.c An external USB camera

The USB video camera is needed only if you do the piece with video projection. It should be placed above the hanging tom as well – in a way that it captures the upper body of the performer.

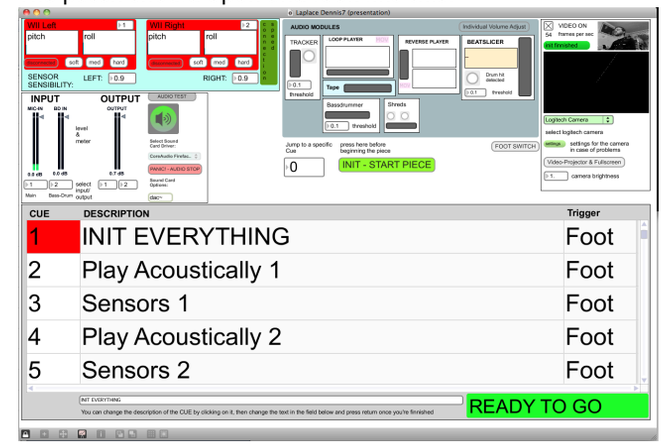
2.d VGA-Video-Adapter

If you use the video projection then you need a VGA-video adapter for the projector plugged to your mac.

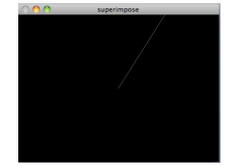
3. MAX-Software

3.1 General

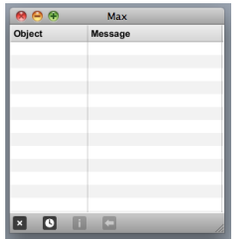
Once everything is connected you can start the max program. For this you need the Max 5 runtime (make sure it's 5 and not max 6!!!)
The sensors can be connected after that as well – and can be disconnected and reconnected at any point.
The patch should open and look like this:



A second window also opens for the video projection – more on this later:



To check if all the components are there and installed press the keys "CMD + M" top open the max window.

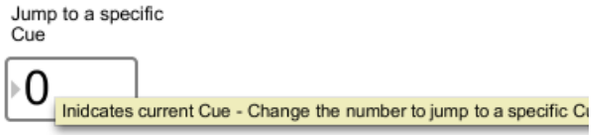


This should look like this and there might be some messages – but there should be NO red messages – if there are that means there are some components or files missing. Please get in contact with me about this!
There is one red message though that might pop up saying “cellblock: can't edit the index of a coll entry.” – you can ignore that one.

The patch is organized in 5 main parts:

- Sensors
- Audio Modules
- Input / Output
- Video
- Score

In the next sections I will describe how the individual sub-patches work.
In general you can hover the mouse above each element in the patch and a small yellow box will appear explaining the functionality of the element:



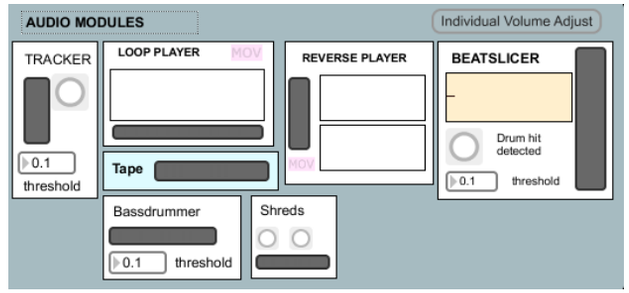
3.2 Sensors

There are two boxes, which are red in this picture. They turn green when the sensors have been connected (like described above).
Also there’s a box that indicates if the connection speed is fast enough (green in this picture) – this one should be green, otherwise it’s too slow (it can turn red if you don’t move the sensors – that’s ok – but it should be green when you move the arms).

The boxes labeled “pitch” and “roll” indicate the orientation of the sensors (pitch: up/down, roll: turn left/right).
The buttons “hard”, “med and ”“soft” flash when a strong trigger-movement is performed with the right hand.
The hard trigger of the right hand is the MAIN TRIGGER in the piece - so make sure you adjust the sensibility correctly. This is done directly with the "sensor-sensibility-value".

Setting up the sensibility:
Set the sensibility for both arms individually in a way that a strong movement of the arm / hit on the drum with a stiff wrist is detected (the button flashes) – but also in a way that it shouldn’t trigger when playing in a normal way on the drum kit.

3.3 Audio Modules

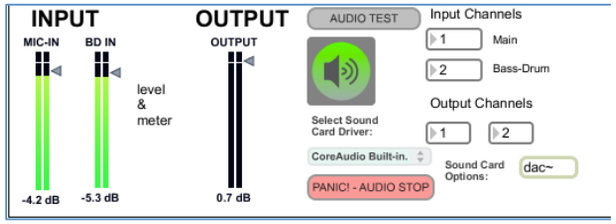


This sub-patch shows the individual audio modules used in the piece. They turn green when they are active – and red, when they are in recording mode. They are just for troubleshooting.
There are three numbers to set up the volume thresholds for three modules. The value should be set ok by default but can be changed in order to make it work better:

1) Beat Slicer:
   You can adjust the audio-volume-threshold for the recording and detection of samples here. Set this to value that the lamp almost always blinks when you hit a drum. At the beginning of the piece not every hit might lead to a blink - as it is much quieter and at the end, when you play loud, it might blink very fast - this is OK.
2) Bass-Drummer
   Set the volume-threshold for the bass drum trigger. This value specifies how loud the bass drum signal needs to be in order to let the signal through and then distort it. Set it to a value that it doesn't trigger when another drum is hit and so that only the bass drum will cause a trigger. If the input volume of the bass drum is set correctly then a value of 0.6 should be fine.
3) Tracker
   Use this number to adjust the audio threshold to detect attacks. It should be set in a way that it plays a sound when you hit a drum (doesn't have to trigger each single time) but make sure that it's not too sensible so that it doesn't trigger all the time.

Individual Volume Adjust:
Click to adjust individual volumes of the Modules (Normally NOT Needed). You can change this if for example all volumes are ok, but the bass drum module is always too loud.

3.3 Input / Output



Here you set up the general properties of the patch.

1) Input
   a. Mic IN
      Adjust the input volume in a way that the level is just under odB.
   b. BD IN
      Same, but for bass drum.
2) Output
   Adjust the output volume here.
3) Audio Test
   Press this to produce a beep sound on the left and right speaker to test if audio is working
4) Speaker Symbol
   Press this to turn on the audio (should be green)
5) Sound Card Menu
   Here you select your external sound card (not the onboard card!)
6) Panic
   Stops all audio.
7) DAC~
   Lets you adjust sound card parameters (like buffer size etc.) – use this incase the audio glitches or similar.
8) Input / Output Channels
   Set the input/output channels of the sound card. (The main mic is normally input channel 1, the bass drum input channel 2, and output channels are normally 1 and 2 (stereo)).

3.4 Score

The score tells you where you are in the piece and can be used as the main score during the performance.
The score includes cue number, name of the cue and the trigger needed to go to the next cue.

Name:

You can change the name of a cue by clicking on the cue name, the name appears in the box below and can be edited. Pressing "enter" saves it.

Trigger:

This indicates if pressing the foot pedal or pressing the foot switch is needed to go to the NEXT CUE! This means e.g. in cue 11:

At THE END of cue 11 you press the foot switch to go to cue 12 !

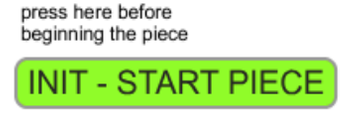
Blocking:

All cues have a minimum duration. This means the trigger is blocked for a certain amount of time. In most cases this is roughly a second. This is done to prevent accidental triggering. The button in the right lower corner shows if the system is blocked or ready:

Jump to Cue:

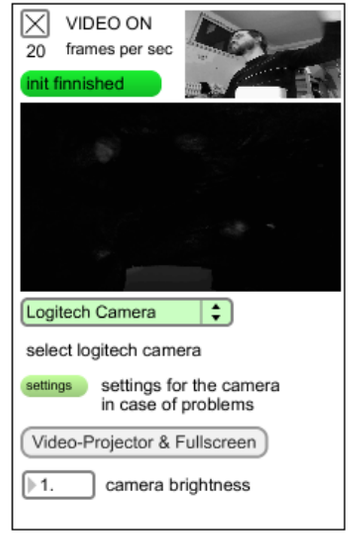
When rehearsing you can enter a cue number to jump to a specific part in the piece when rehearsing.

INIT:



Press here to reset everything and jump to the beginning of the piece.

3.5 Video



This sub patch lets you adjust the video part of the piece. If you do not use the video projection turn off the video!!

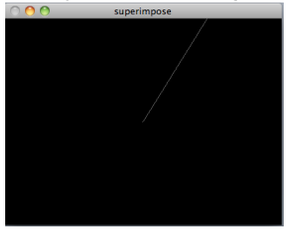
The frames per second show how fast the video is. It should be around 30fps most of the time and not below 15 fps for most of the time. If that is the case, then the computer's not fast enough and the video should be turned off, so that the audio and sensors will work fine. Because if the computer's too slow the video will take all the CPU and the sensors will stop working correctly.

The upper right box shows the video camera input, to help set up the camera. The box below shows a slow, lo-fi version of the projection – to check if everything's running ok.

In the menu you have to select the external video camera you use (e.g. a Logitech camera).

You can adjust the brightness of the camera if it's too bright or dark in the hall.

The video projection is shown in a separate window called "superimpose" which should be behind the main patch window by default.

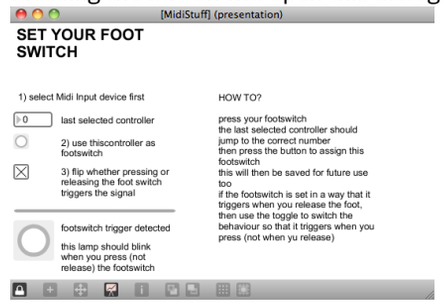


In order to have the projection running you need to do:
1) connect the projector
2) disable "mirroring" in the Apple monitor settings
3) move the video window (labeled "superimose") to the projection screen (second monitor – away from your laptop screen)
4) press the "escape button" to go to full screen

3.6 Miscellaneous

3.6.1 Foot Switch:

Press this button to set up your foot-switch. This is needed as depending on what foot-switch you use the midi channel and number differ.
Pressing the button will open this dialog:



To enable your footswitch:

- Press your footswitch the last selected controller should jump to the correct number
- Then press the button to assign this footswitch this will then be saved for future use too
- If the footswitch is set in a way that it triggers when you release the foot, then use the toggle to switch the behavior so that it triggers when you press (not when you release)

On the right side there's also a menu that lets you select a foot switch that is not midi-based, but which sends a key information. Some USB-foot-switches do that – proceed as explained above.

3.6.2 Save Parameters:

If you change any values/parameters in the patch you can save these to make them your default values. These values are automatically loaded when opening the patch the next time. You can also load the preset manually. The lowest button indicates whether the presets have been saved correctly. If you open the patch for the first time this might not be the case as no preset file has been written yet.

When you start the patch for the first time you need to manually place the files Laplace-Preset.txt and Laplace-Solo-Score.txt in the root directory of your hard drive.

The preset file is stored in the root directory of your mac: e.g. "MAC:/Laplace-Preset.txt".

3.6.3 Saving edited Score:
The score is always saved automatically when edited and can be found at "Mac:/Laplace-Solo-Score.txt".

Graphic Score

1. Introduction (Beatslicer)

1 *(15")*
init

begin piece by pressing footswitch

2 *(15")*
RECORD

Sparse, quiet, acoustic
Acoustic minimal drums, snare with snares off. Don't use cymbals or long decays. Work with short phrases separated by pauses.

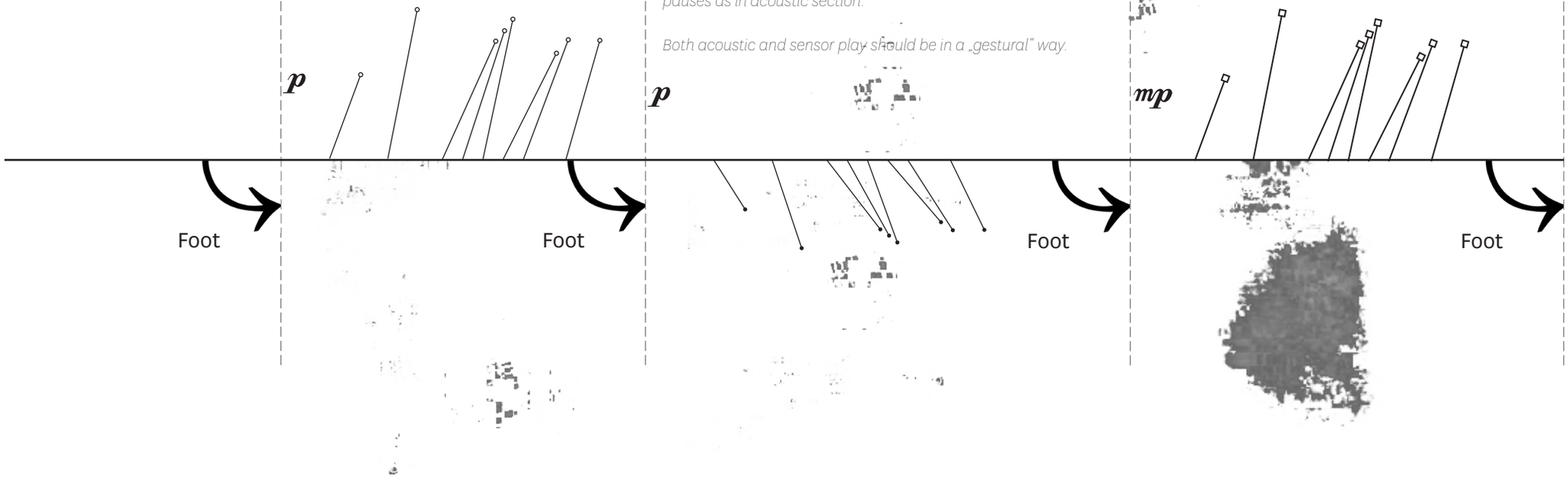
3 *(15")*
PLAYBACK - through gestural control

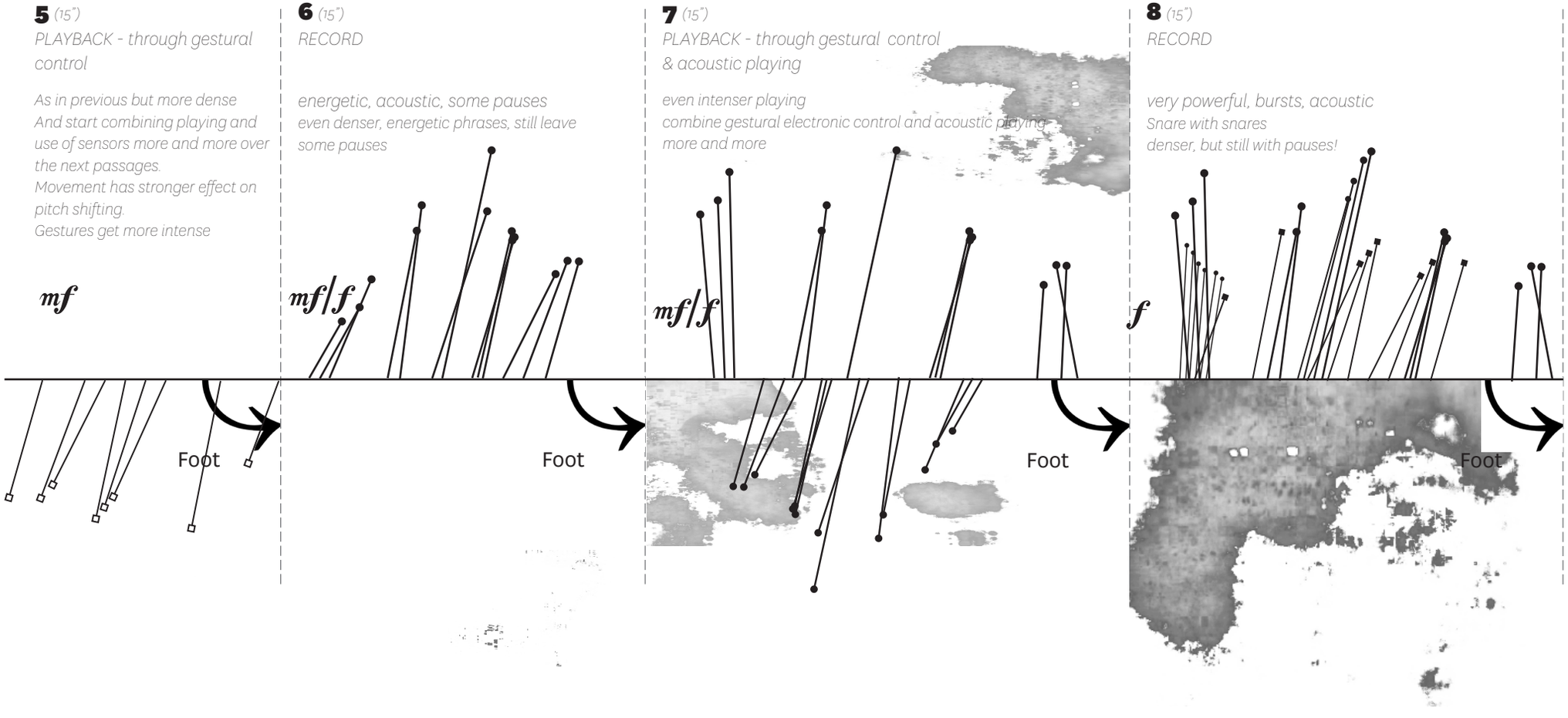
Play with samples with sensor (right arm triggers previously recorded samples, left arm posture determines pitch) – the movements only lead to little pitch shifting (more from the next playback passage on).
Try to blend smoothly from acoustic playing to sensor playing (with a little roll for example) – continue phrasing and use of pauses as in acoustic section.

Both acoustic and sensor play should be in a „gestural" way.

4 *(15")*
RECORD

sparse, acoustic, more powerful
as in cue 2, but a little stronger
Snare with snares
More dense, but still with pauses!




5 (15")
PLAYBACK - through gestural control
As in previous but more dense
And start combining playing and use of sensors more and more over the next passages.
Movement has stronger effect on pitch shifting.
Gestures get more intense
mf
Foot
6 (15")
RECORD
energetic, acoustic, some pauses
even denser, energetic phrases, still leave some pauses
mf/f
Foot
7 (15")
PLAYBACK - through gestural control & acoustic playing
even intenser playing
combine gestural electronic control and acoustic playing more and more
mf/f
Foot
8 (15")
RECORD
very powerful, bursts, acoustic
Snare with snares
denser, but still with pauses!
f
Foot

2. Shreds

9 *(15")*
PLAYBACK - gestures & acoustic playing

As in previous but more dense
In this part play acoustically and use sensors to same amount → to create a dense and chaotic sound
crescendo till end of this part
Additional tape, build up, crescendo to next part
At the end crescendo snare roll leading to next part

10 *(5")*
Bass Sound

electronic
tape

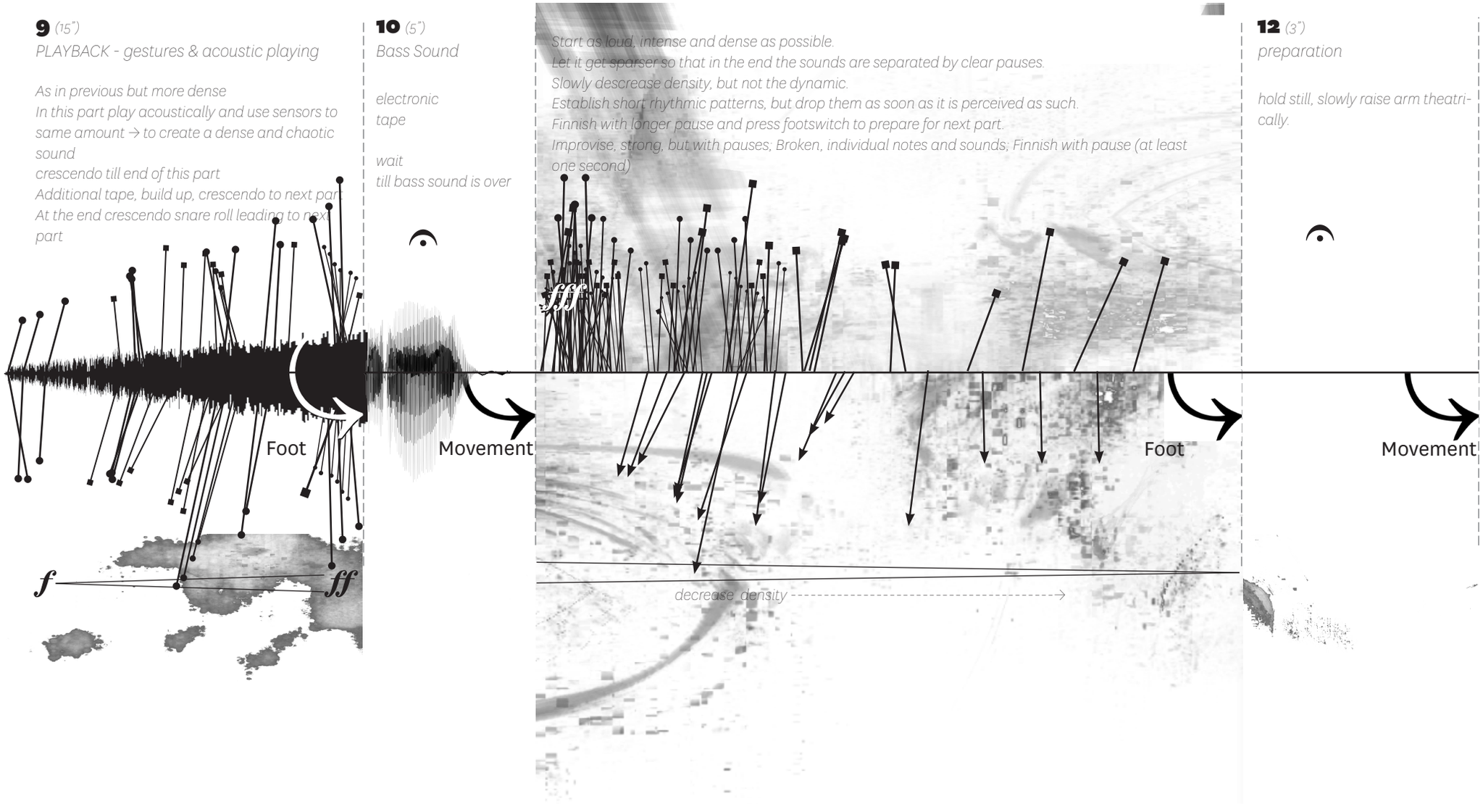
wait
till bass sound is over

11 *(45")*
shreds

Start as loud, intense and dense as possible.
Let it get sparser so that in the end the sounds are separated by clear pauses.
Slowly descrease density, but not the dynamic.
Establish short rhythmic patterns, but drop them as soon as it is perceived as such.
Finnish with longer pause and press footswitch to prepare for next part.
Improvise, strong, but with pauses; Broken, individual notes and sounds; Finnish with pause (at least one second)

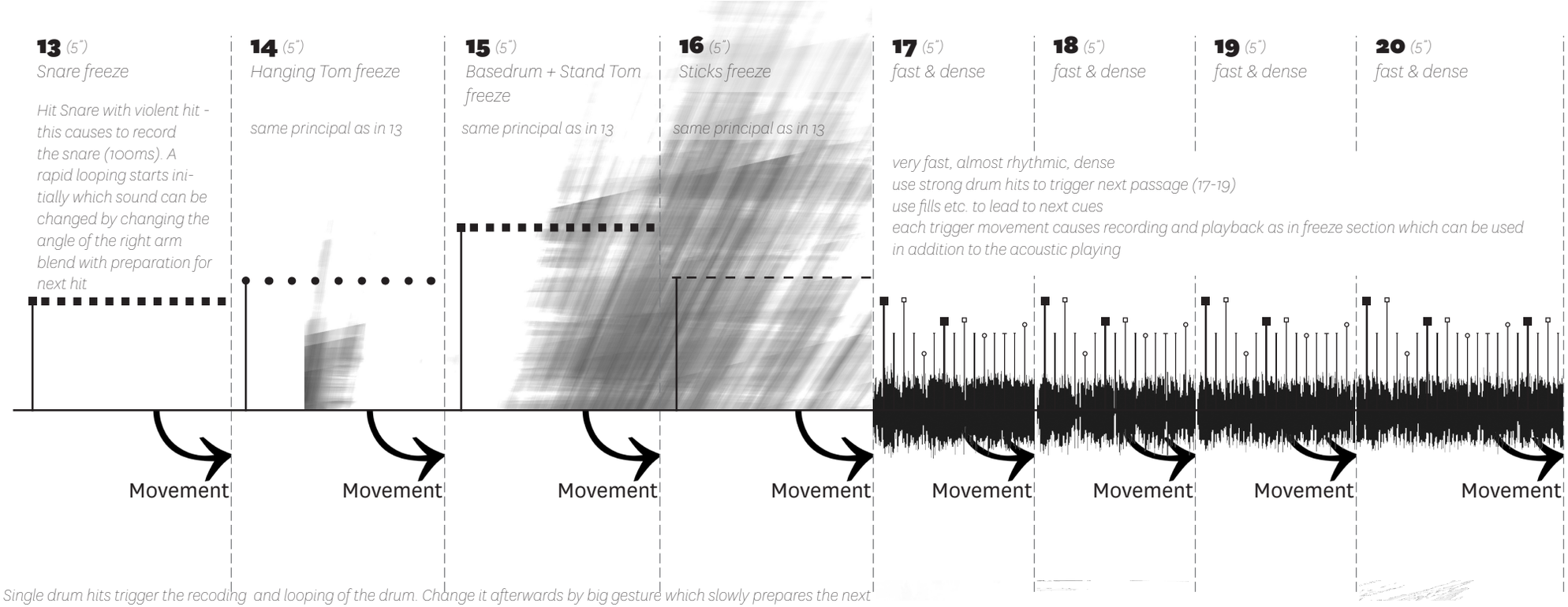
12 *(3")*
preparation

hold still, slowly raise arm theatrically.



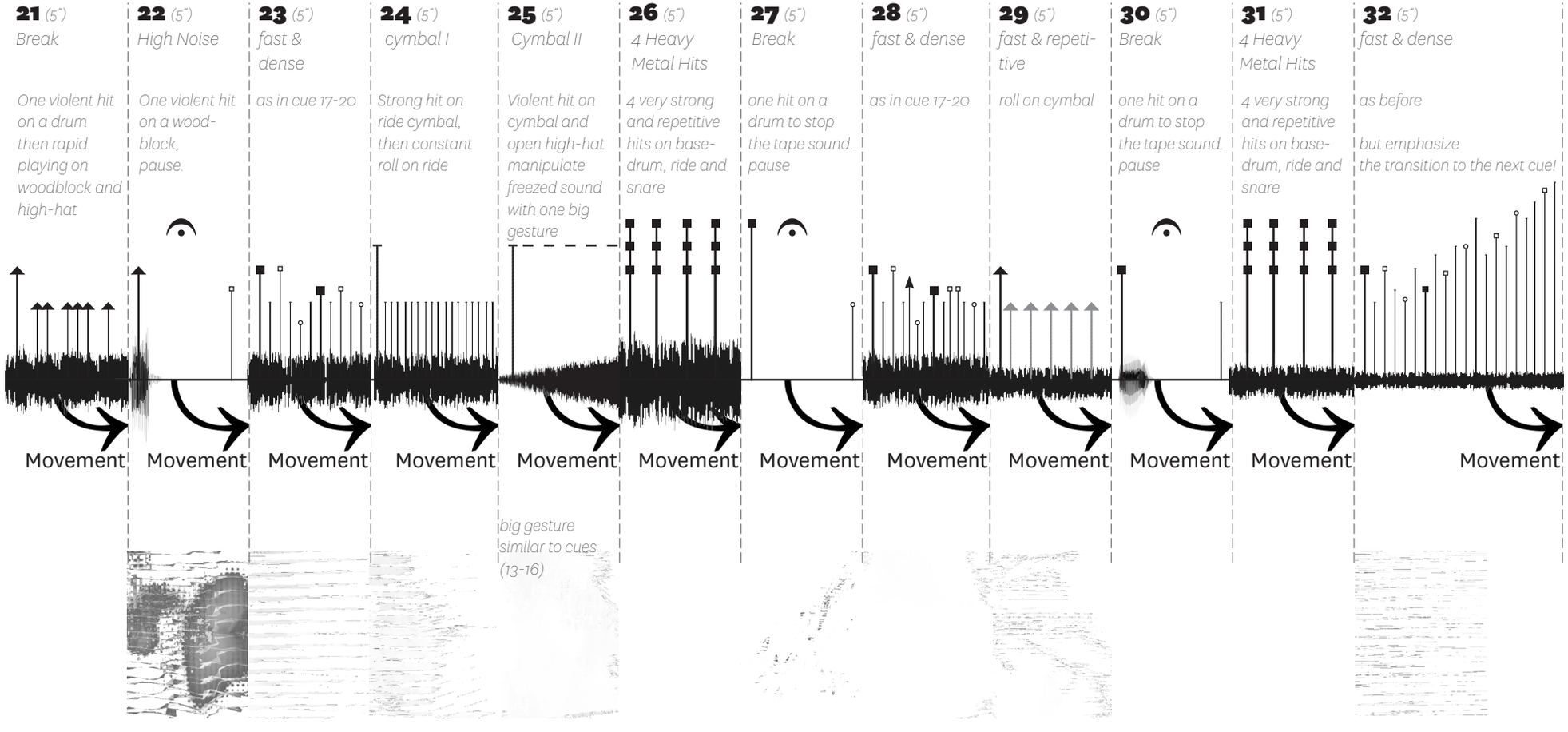
3. Drum feezes

Subsequences



Single drum hits trigger the recoding and looping of the drum. Change it afterwards by big gesture which slowly prepares the next hit (cue). No additional playing on the drums.,Just one big gesture manipulating the sound.

For cue 17-32 (and later 35-45) Each strong movement triggers a new looping and an additional tape. But new tapes are only triggered when 2 seconds have passed from the previous trigger (so it might be possible to create a new loop without starting a new tape in these 2 seconds). This part is made up of 16 tapes.
Progress through the tapes rather fast, about 3 seconds for one tape, occasionally longer.
Each time you progress to a new cue, besides playing a new tape the drum hit is recorded and later changed in the same way as in cue 13-17.

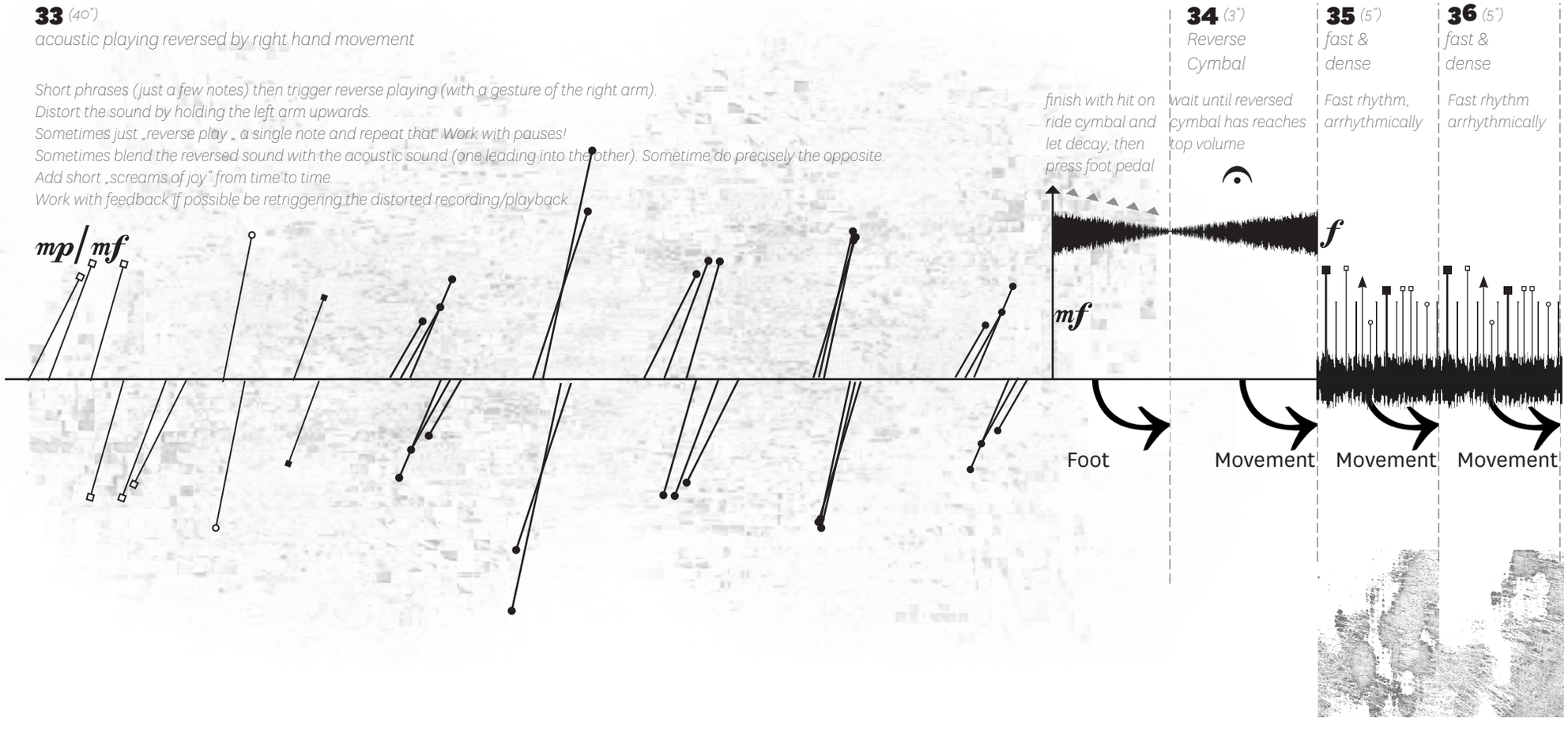

21 (5")
Break
One violent hit on a drum then rapid playing on woodblock and high-hat
22 (5")
High Noise
One violent hit on a wood-block, pause.
23 (5")
fast & dense
as in cue 17-20
24 (5")
cymbal I
Strong hit on ride cymbal, then constant roll on ride
25 (5")
Cymbal II
Violent hit on cymbal and open high-hat manipulate freezed sound with one big gesture
26 (5")
4 Heavy Metal Hits
4 very strong and repetitive hits on base-drum, ride and snare
27 (5")
Break
one hit on a drum to stop the tape sound. pause
28 (5")
fast & dense
as in cue 17-20
29 (5")
fast & repeti-tive
roll on cymbal
30 (5")
Break
one hit on a drum to stop the tape sound. pause
31 (5")
4 Heavy Metal Hits
4 very strong and repetitive hits on base-drum, ride and snare
32 (5")
fast & dense
as before
but emphasize the transition to the next cue!
Movement
Movement
Movement
Movement
Movement
Movement
Movement
Movement
Movement
Movement
Movement
Movement
big gesture similar to cues. (13-16)

4. Reverses

5. Subsequences II

33 *(40")*
acoustic playing reversed by right hand movement

Short phrases (just a few notes) then trigger reverse playing (with a gesture of the right arm).
Distort the sound by holding the left arm upwards.
Sometimes just „reverse play „ a single note and repeat that. Work with pauses!
Sometimes blend the reversed sound with the acoustic sound (one leading into the other). Sometime do precisely the opposite.
Add short „screams of joy" from time to time.
Work with feedback if possible be retriggering the distorted recording/playback.



34 *(3")*
Reverse Cymbal

finish with hit on ride cymbal and let decay, then press foot pedal

wait until reversed cymbal has reaches top volume

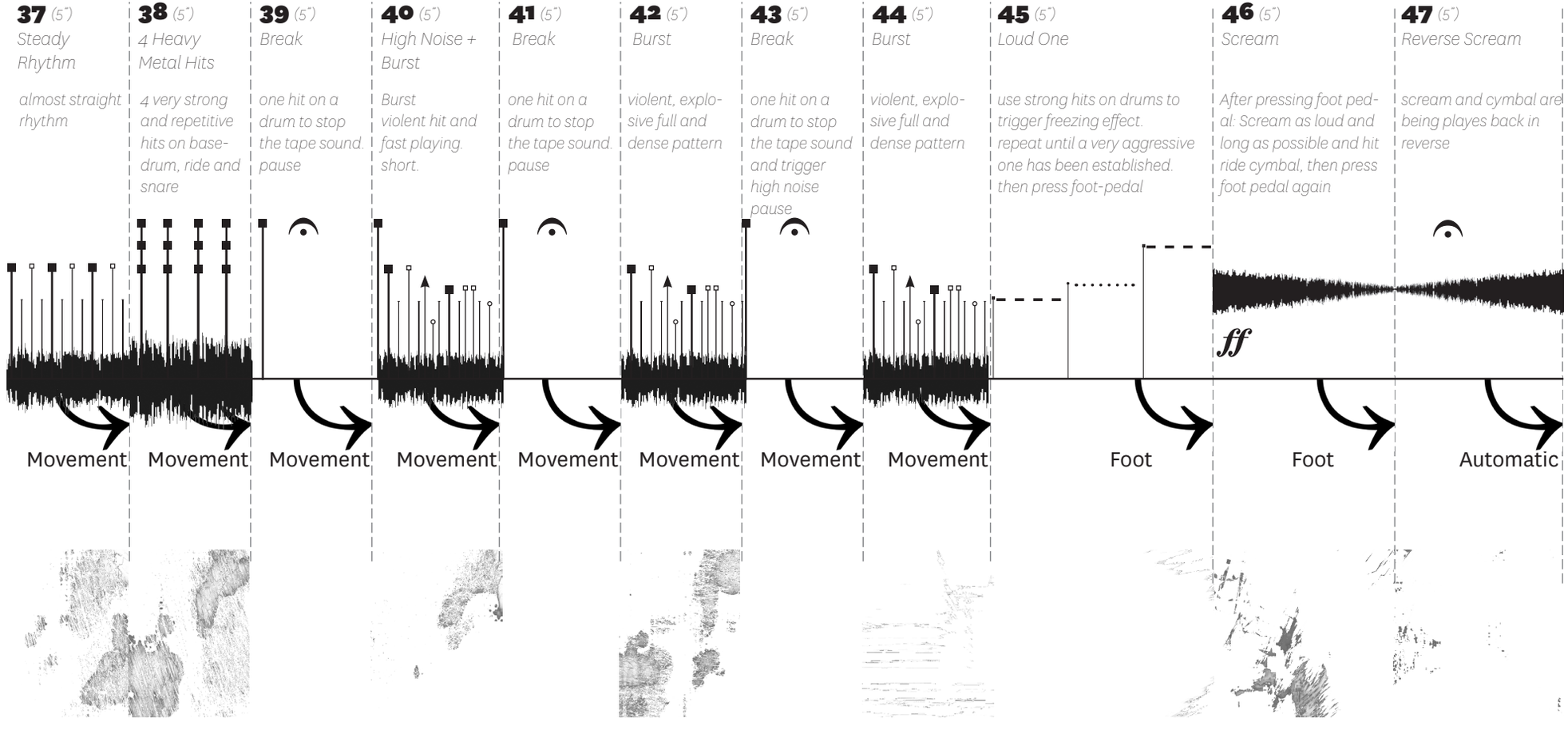
35 *(5")*
fast & dense

Fast rhythm, arrhythmically

36 *(5")*
fast & dense

Fast rhythm arrhythmically

6. Scream


37 (5")
Steady Rhythm
almost straight rhythm
38 (5")
4 Heavy Metal Hits
4 very strong and repetitive hits on base-drum, ride and snare
39 (5")
Break
one hit on a drum to stop the tape sound. pause
40 (5")
High Noise + Burst
Burst violent hit and fast playing. short.
41 (5")
Break
one hit on a drum to stop the tape sound. pause
42 (5")
Burst
violent, explo-sive full and dense pattern
43 (5")
Break
one hit on a drum to stop the tape sound and trigger high noise pause
44 (5")
Burst
violent, explo-sive full and dense pattern
45 (5")
Loud One
use strong hits on drums to trigger freezing effect. repeat until a very aggressive one has been established. then press foot-pedal
46 (5")
Scream
After pressing foot pedal: Scream as loud and long as possible and hit ride cymbal, then press foot pedal again
47 (5")
Reverse Scream
scream and cymbal are being playes back in reverse
ff
Movement
Movement
Movement
Movement
Movement
Movement
Movement
Movement
Foot
Foot
Automatic

7. Shreds IIa

48 *(30")*
shreds

same as first shred part (cue 11), but not so long.
Start really dense and rapid - but then get sparse pretty quickly, deconstruct a rhythm.
At the end only single hits.
Then samll crescendo leading to next cue.

Jazz-Subsequences II

49 *(5")*
slow, steady
jazzy

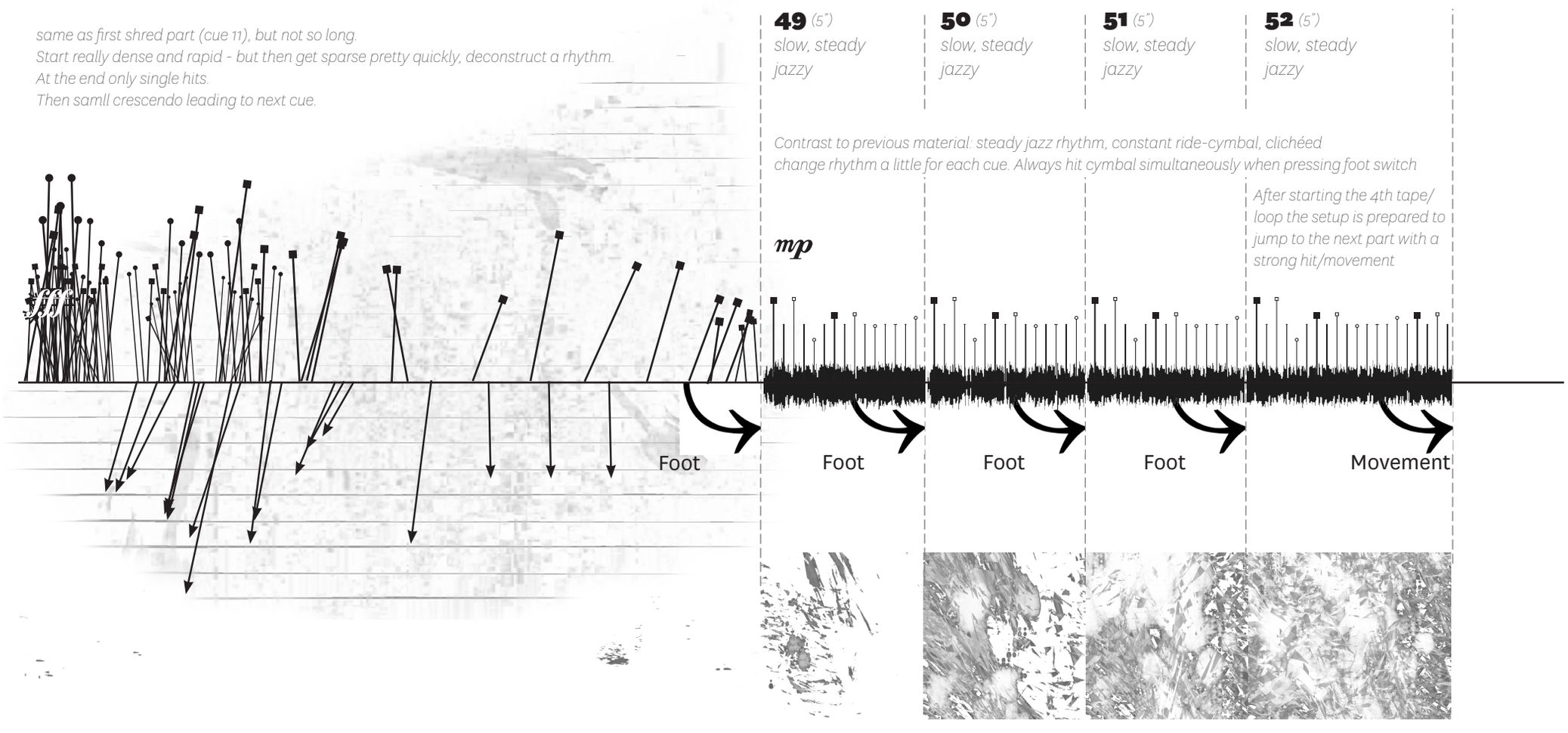
50 *(5")*
slow, steady
jazzy

51 *(5")*
slow, steady
jazzy

52 *(5")*
slow, steady
jazzy

Contrast to previous material: steady jazz rhythm, constant ride-cymbal, clichéed change rhythm a little for each cue. Always hit cymbal simultaneously when pressing foot switch

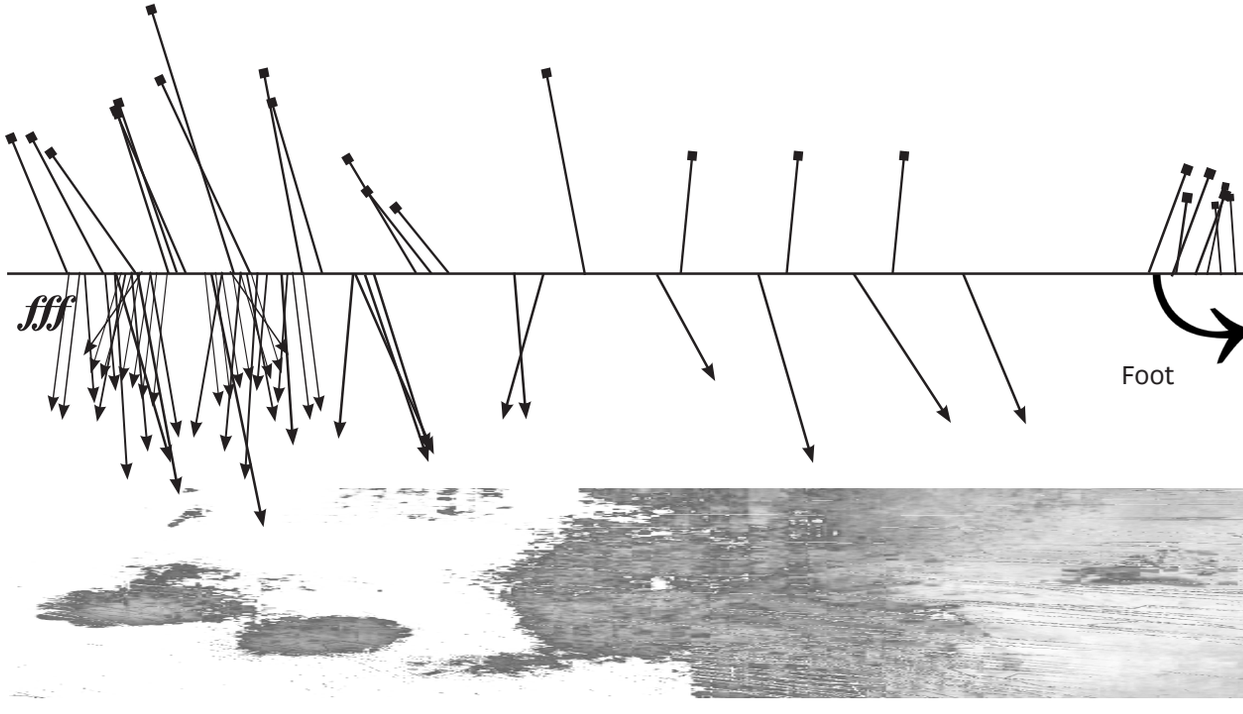
After starting the 4th tape/ loop the setup is prepared to jump to the next part with a strong hit/movement



Shreds IIb

53 *(20")*
shreds

same as shred part before (cue 48), but even shorter
begin already rather sparse in comparison to previous shred parts and at the end only single hits.
Then small crescendo leading to next cue – triggered it with the footswitch



Three Blows

54 *(5")*
Blow 1

Wait for the tape to thin out a little before starting with the fill leading to the next passage.

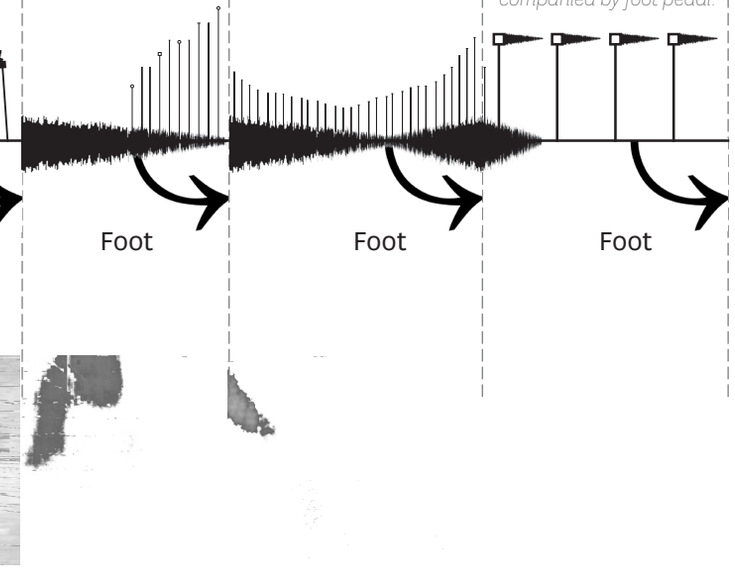
55 *(5")*
Blow 2

Wait for the tape to thin out a little before starting: the tapes stops with a repeated note that has a decrescendo and then a crescendo. Follow it with a snare roll and go to next part.

56 *(5")*
Blow 3

Wait for the tape to thin out a little before starting:

„Count the next blow in" – each hit is accompanied with a beep from the computer, just hit something 4 times (sticks, closed hihat) - 4th hit accompanied by foot pedal.



Silence

57 *(1'35") [fixed time]*

explosion

Starts with long explosive sounds
hit snare for looping sound right away, play with this sound for ~10 seconds and then move arms strongly in the air to empty buffer.

Then: Change to soft mallets quickly and once the tape gets less start playing n the cymbals and some small fills.

quiet freezing

Loop player: Hitting a drum triggers the recording of a short loop (but much longer then the one in the previous sections). Hit new notes from time to time and then play with the sensors to change the sound. Still sometimes play acoustically listening to the tape.
To change the sound of the loop player: right arm loop-length and offset (basically parameters for speed of repetition).
Left arm: filtering for the upper half and distortion for the lower half.

58 *(20")*

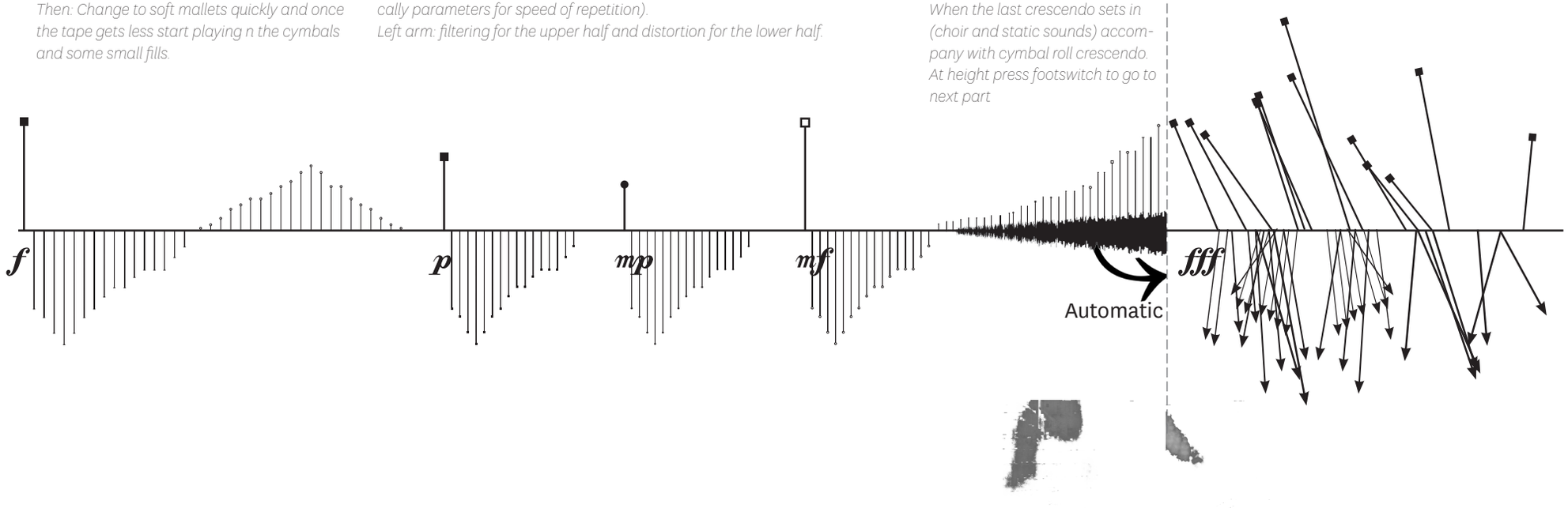
Crescendo

The silent part finishes with choir sound and then there are separated harsh sounds. Improvise with sticks to these sounds – but just a few notes.
When the last crescendo sets in (choir and static sounds) accompany with cymbal roll crescendo. At height press footswitch to go to next part

13. Finale

59 *(5")*

Shred Drums -
very fast very dense.
And really short!



Subsequences

60 *(5")*
Bass Sound

electronic tape

wait till bass sound is over

61 *(5")*
fast & dense

62 *(5")*
fast & dense

63 *(5")*
fast & dense

64 *(5")*
fast & dense

very fast, almost rhythmic, dense
use strong drum hits to trigger next passage (as in cues 17-19)
use fills etc. to lead to next cues
each trigger movement causes recording and playback as in freeze section which can be used in addition to the acoustic playing

65 *(5")*
Break

Stop by hitting sticks against each other then pause

66 *(5")*
Burst

violant, explo-sive full and dense pattern

67 *(5")*
High Noise

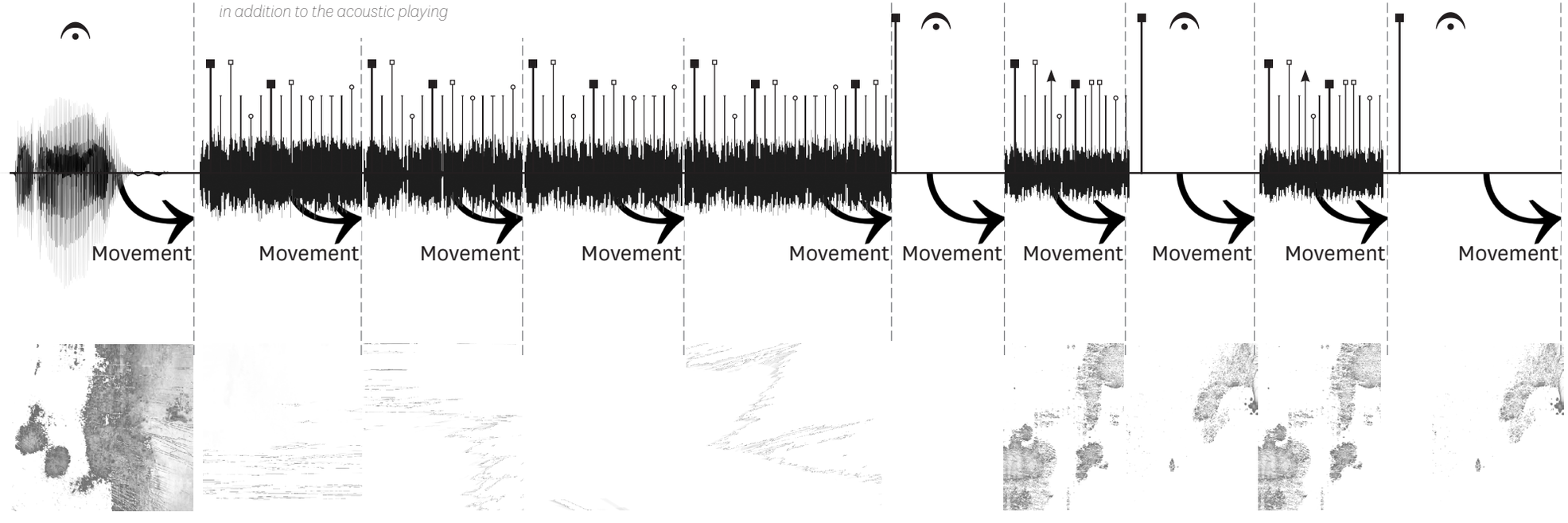
One violent hit on a wood-block, pause.

68 *(5")*
Burst

violant, explo-sive full and dense pattern

69 *(5")*
High Noise

One violent hit on a wood-block, pause.



End

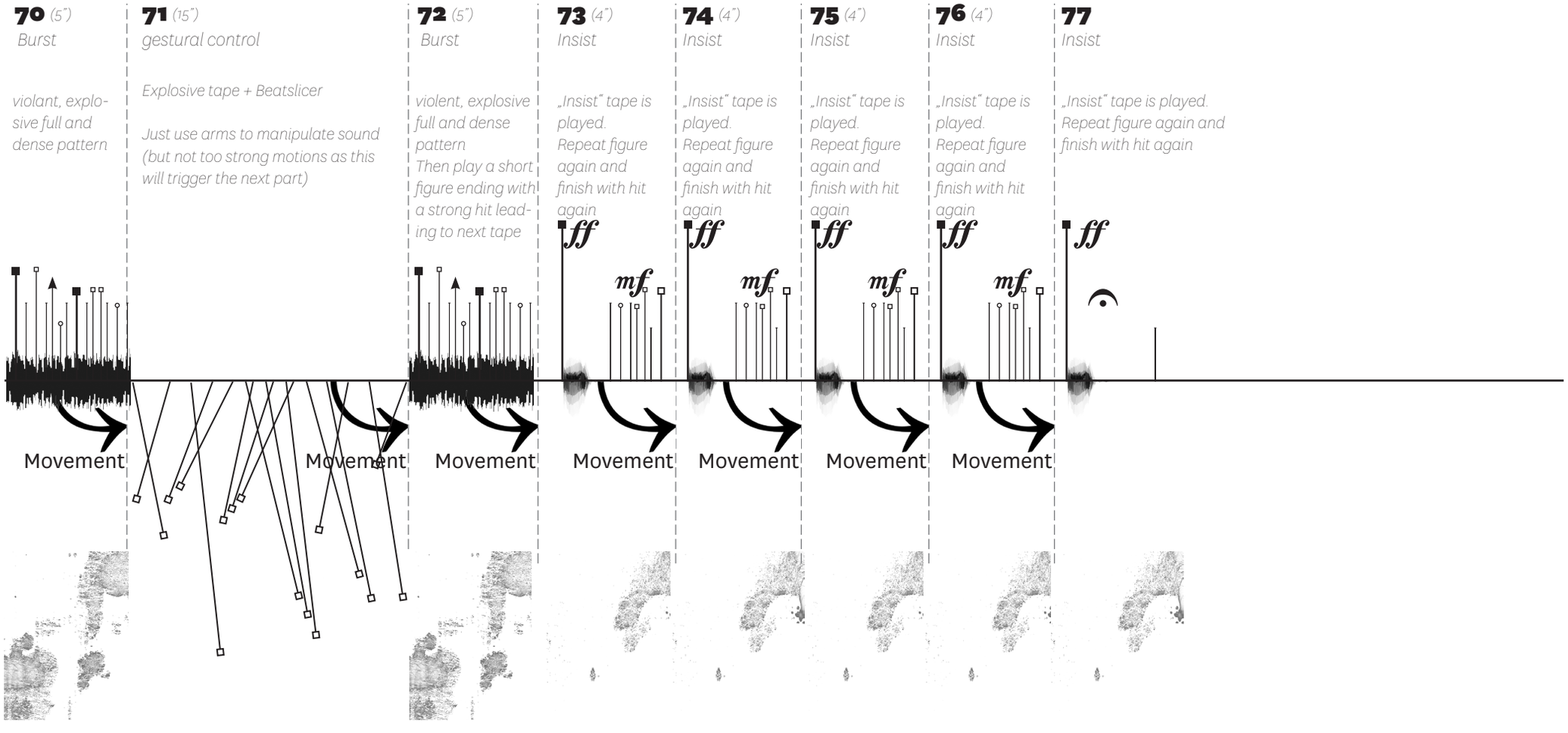

70 (5")
Burst
violant, explo-
sive full and
dense pattern
71 (15")
gestural control
Explosive tape + Beatslicer
Just use arms to manipulate sound
(but not too strong motions as this
will trigger the next part)
72 (5")
Burst
violent, explosive
full and dense
pattern
Then play a short
figure ending with
a strong hit lead-
ing to next tape
73 (4")
Insist
„Insist" tape is
played.
Repeat figure
again and
finish with hit
again
74 (4")
Insist
„Insist" tape is
played.
Repeat figure
again and
finish with hit
again
75 (4")
Insist
„Insist" tape is
played.
Repeat figure
again and
finish with hit
again
76 (4")
Insist
„Insist" tape is
played.
Repeat figure
again and
finish with hit
again
77
Insist
„Insist" tape is played.
Repeat figure again and
finish with hit again
ff
mf
Movement

Table Score

Alexander Schubert - Laplace Tiger (2009)
For drum kit, sensors, live-electronics and –video
TEXT SCORE

SCENE	CUE	Trigger	Time	Sensor / Technical	Description
0. INIT					
	1	**FOOT**		Start piece with footswitch	
1. BEATSLICER					
1.1 Rec I	2	FOOT	10”	Recording samples from live playing	Introduction, just acoustic drums Acoustic minimal drums, snare with snares off. Don’t use cymbals or long decays. Work with short phrases separated by pauses.
1.2 Sensors I	3	FOOT	10”	Play with samples with sensor (right arm triggers, left arm pitch) – only little pitch shifting	Try to blend smoothly from acoustic playing to sensor playing (with a little roll for example) – continue phrasing and use of pauses as in acoustic section. Both acoustic and sensor play should be in a „gestural“ way.
1.3 Rec II	4	FOOT	10”	Recording samples	Snare with snares More dense, but still with pauses!
1.4 Sensors II	5	FOOT	10”	See 1.3 but with more pitch shifting	As in previous but more dense And start combining playing and use of sensors more and more over the next passages
1.5 Rec III	6	FOOT	10”	Recording samples	More dense
1.6 Sensors III	7	FOOT	10”	See 1.7	When playing simultaneously only short phrases acoustically
1.7 Rec IV	8	FOOT	10”	Recording samples	More dense
1.8 Sensors IV	9	FOOT	20”	See 1.7 Go to next section with Foot switch!	Additional tape, build up, crescendo to next part In this part play acoustically and use sensors to same amount -> to create a dense and chaotic sound At the end crescendo snare roll leading to next part

2. TAPE * SHREDS					
Tape Interlude	10		10”	Tape with „drum and bass“ bass sound starts; wait for the tape to play a few seconds until it thins out a little	
Shred Drums	11	FOOT	10’	Then start playing filling the pauses, not too dense; rather with individual sounds. Let it get sparser so that in the end the sounds are separated by clear pauses Finnish with longer pause and press footswitch to prepare for next part	Improvise, strong, but with pauses Broken, individual notes and sounds Finnish with pause (at least one second)
	12	MOV	3’	Finnish with longer pause and press footswitch to prepare for next part	
3. LOOP BUFFER FREEZE					
Hold Buffer I Static	13 14 15 16	MOV MOV MOV MOV	20”	Just hit single drums and trigger the looping and change it afterwards, not additional playing, just one big gesture manipulating the sound	1. Snare 2. Rack tom 3. Bass and standing tom 4. Sticks After starting the stick-loop „count in“ the next passage with the hi-hat (only three hits) use left arm to make sure you don’t trigger the next part to early
3. LOOP BUFFER PROGRESSION					
					Each strong movement triggers a new looping and an additional tape. But new tapes are only triggered when 2 seconds have passed from the previous trigger) so it might be possible to create a new loop without starting a new tape in these 2 seconds). This part is made up of 16 tapes. Progress through the tapes rather fast, about 3 seconds for one tape, occasionally longer.
4 Loops, fast and dense	17 18 19 20	MOV MOV MOV MOV		Tape sound layers	Full speed, complex rhythm,, on all instruments

Break	21	MOV		5	Stop with snare to start break Play on hi-hat and woodblock only, fast fragmented
1 high noise	22	MOV		6	Hit woodblock to trigger high noise (or just gesture in the air!) Just hi-hat and woodblock
Fast and dense	23	MOV		7	As in Cues 17-20
Cymbals	23	MOV		8	*Strong hit on ride cymbal, then constant roll on ride*
1 cymbal Sensor only	25	MOV		9	Hit cymbal and hi-hat strongly and manipulate cymbal only (without playing) – lead in one big gesture to next part, create tension
Steady-Hits	26	MOV		10	Four steady 80bpm hit on bass drum, snare, cymbal
Break	27	MOV		11	Hit on one drum to stop the tape sound
Fast Dense Noisy	28	MOV		12	Fast and dense
Cymbals	29	MOV		13	Hit cymbal and play really fast on cymbal afterwards
Break	30	MOV		14	Stop with snare (or other drum) to start break Play on hi-hat and woodblock only, fast fragmented
Steady Hits	31	MOV		15	Four steady 90bpm hit on bass-drum, snare, cymbal
Fast Rolls Noisy	32	MOV		16	Hit snare and other drum for loud buffer and play fast rolls → dense, static Finnish with single hit on snare to go to next part and finish this one. Count in last hit with hi-hat or similar
4. REVERSE PLAYER					
	33		35”	Short phrases (just a few notes) then trigger reverse playing (mostly with a gesture in the air rather than hitting a drum). Distort the sound by holding the right arm upwards!	Sometimes just „reverse play „ a single note and repeat that. Work with pauses! Sometimes blend the reversed sound with the acoustic sound (one leading into the other). Sometime do precisely the opposite. Add short „screams of joy“ from time to time.
	34	FOOT	5”	Finnish with strong cymbal hit, after sound decayed press footswitch – this reverses the cymbal, at height of reversed volume begin with next part	

5. LOOP BUFFER II					
Length about 30”					
1. Fast & Dense	35	MOV			Fast rhythm
2. Fast & Dense	36	MOV			Fast rhythm
3. Steady Groove	37	MOV			Almost Steady rhythm, but not really monotone
4. Steady Hits	38	MOV			Four steady 90bpm hit on bass-drum, snare, cymbal
5. Break	39	MOV			Stop with snare to start break
6. Burst	40	MOV			Fast, burst, energetic, loud
7. High Break	41	MOV			Hit woodblock, closed hi-hat or sticks to stop and trigger high sound
8. Burst	42	MOV			Fast, burst, energetic, loud
9. High Break	43	MOV			Hit woodblock, closed hi-hat or sticks to stop and trigger high sound
10. Burst	44	MOV			Fast, burst, energetic, loud
11. Off	45	MOV		The last tape is a „drum and bass“ bass sound.	You can then create a loud and strong loop (without additional playing). If it doesn’t work the first time try again until you get one. Let it sound a bit then use footswitch to go to next part
6. SCERAM					
Scream	46	FOOT	5”	Press footswitch simultaneously	One long scream and cymbal – let it decay
	47	Auto matic	5”	Reverse play it by pressing footswitch This automatically lead to the next part which starts once the complete scream is played back backwards.	

7. SHREDS II					
Hardcore Jazz – movements to electronic sounds	48	FOOT	1'20''	Left arm movement trigger piano chords, right arm movement triggers electronic sounds. Bass drum is amplified a lot; each instrument hit is assigned to a random „click and cut" sound	Start with a really fast complex beat (starting with double bass). Repeat once or twice, then fragment it to pieces with more and more pauses. Use the elements individually too – separated. Go back to a much slower beat with the repetition of the beat always being delayed and the notes come later than expected. Build this up from the individual notes – but let it remain far from a steady beat, rather try to create the expectation of a beat.
8. LOOP INTERLUDE					
4* Hold Buffer	49 50 51 52	FOOT FOOT FOOT MOV	'	Trigger 4 looping and tapes with footswitch. Do this simultaneously with hitting „bell part" of hi-hat and cymbals, racks and sticks only (mp)	Trigger the tapes and loops gently then immediately start playing a fast but rather silent rhythm, repeat in variations 4 times After starting the 4th tape/loop the setup is prepared to jump to the next part with a strong hit/movement
0. SHREDS II B					
	53	FOOT	'	Same as before (technically)	Start strongly and dense, but let it get less quickly. (For the whole shred things: they work best when the individual events are clearly audible and separable) Then make it more dense, crescendo to the next Blows-Tape – trigger it with the footswitch
10. THREE BLOWS					
Blow 1	54	FOOT	20''	Trigger the next blow with the footswitch	Wait for the tape to thin out a little before starting with the fill leading to the next passage.

Blow 2	55	FOOT	20”	Trigger the next blow with the footswitch	Wait for the tape to thin out a little before starting: the tapes stops with a repeated note that has a decrescendo and then a crescendo. Follow it with a snare roll and go to next part.
Blow 3 + Beep	56	FOOT	20”	Trigger the next blow with the footswitch	Wait for the tape to thin out a little before starting: „Count the next blow in“ – each hit is accompanied with a beep from the computer, just hit something 4 times (sticks, closed hi-hat).
11. SILENT PART					
	57	Auto matic	20”	Starts with long explosive sounds	Change to soft mallets quickly and once the tape gets less start playing n the cymbals and some small fills.
Long loop player part		Auto matic	1’35” Fixed time!	Loop player: Hitting a drum triggers the recording of a short loop (but much longer then the one in the previous section). Hit new notes from time to time and then play with the sensors to change the sound. Still sometimes play acoustically listening to the tape. To change the sound of the loop player: right arm loop-length and offset (basically parameters for speed of repetition). Left arm: filtering for the upper half and distortion for the lower half.	Then use the loop player. Snare without snares

12. PREPARE FOR FINALE					
	58	FOOT	30” Fixed time!	The silent part finishes with choir sound and then there are separated harsh sounds. Improvise with sticks to these sounds – but just a few notes. When the last crescendo sets in (choir and static sounds) accompany with cymbal roll crescendo. At height press footswitch to go to next part	Snares back with snares
13. FINALE					
Shred drums	59	FOOT		Go to next with Footswitch	Dense, start with a fast, complex beat. Deconstruct really fast.
Off	60	MOV		Bass tape sound	No playing, just one hit to start the next passage
4 Loops	61 62 63 64	MOV MOV MOV MOV		4 loops with tape	4 loops/tapes with fast and complex
Off	65	MOV		Stop with sticks	
1 loop	66	MOV		Strong hit triggering, and then continue to play quickly (short!)	
High → off	67	MOV		One stick hit to stop loop and trigger high sound (stops after 1 second on its own)	
1 loop	68	MOV		Strong hit triggering, then continue to play quickly (short!)	
High → off	69	MOV		One stick hit to stop loop and trigger high sound (stops after 1 second on its own) Play short fill leading to tape	
Tape	70	MOV		Explosive tape starts and a repeated note remains	After tape has begun go to a snare roll and do a crescendo together with the tape leading to next tape
Tape 2 + Beatslicer	71	MOV		Explosive tape + Beatslicer Just use arms to manipulate sound (but not too strong motions with right arm, as this will trigger the next part) When done hit snare loudly	
Last loop	72	MOV		Loop, manipulate with arms, no playing. Then play a short figure ending with a strong hit leading to next tape	
Insist tape	73	MOV		„Insist“ tape is played. Repeat figure again and finish with hit again	
Insist tape	74	MOV		Repeat	
Insist tape	75	MOV		Repeat	
Insist tape	76	MOV		Repeat	
End tape	77	-		Last tape sound finishes the piece	