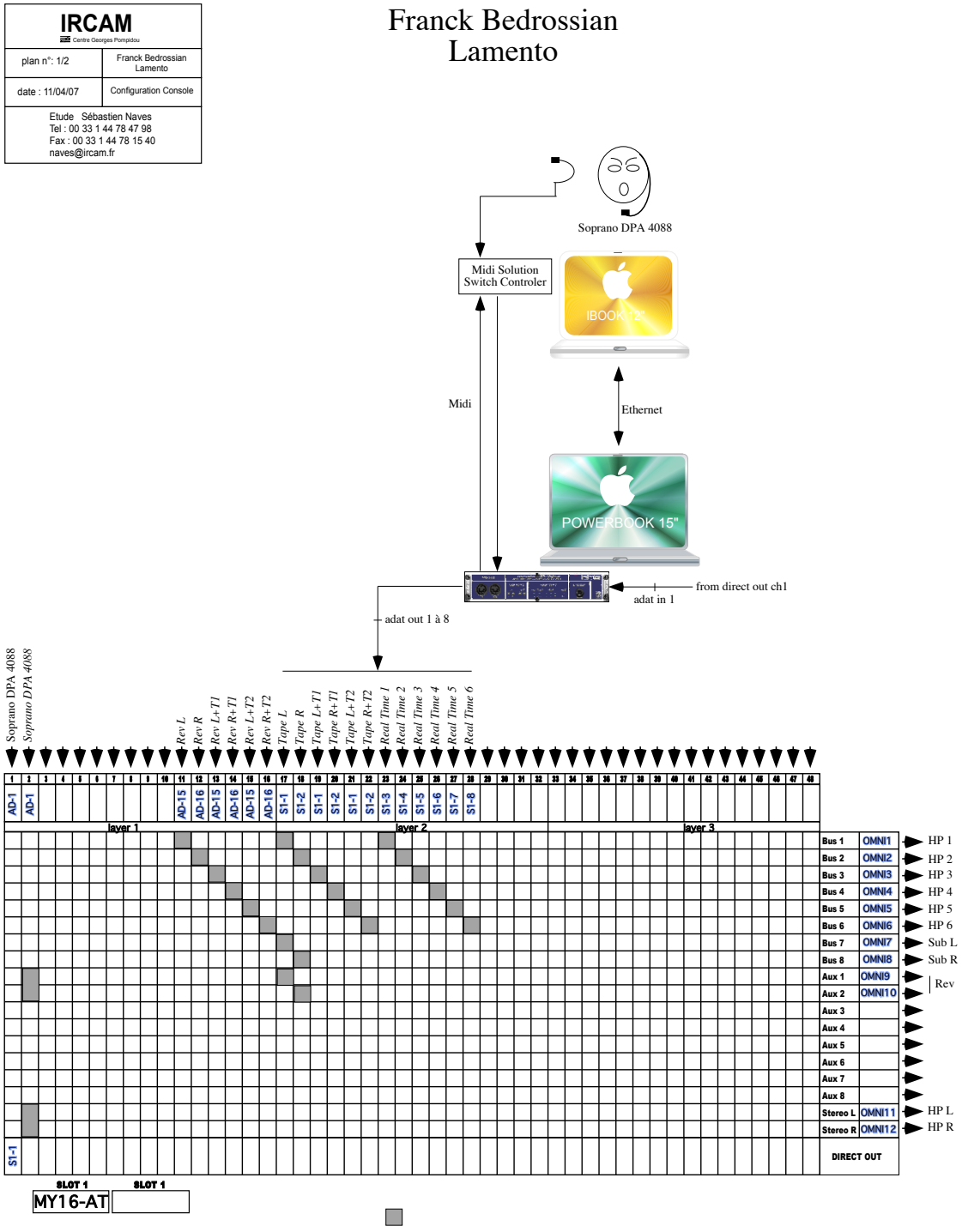
Lamento - F. Bedrossian / O. Pasquet

Version: Max8 (64bit) - May 2020 - Manuel Poletti @ IRCAM

Porting from Max7-32bit to Max8-64bit platform:

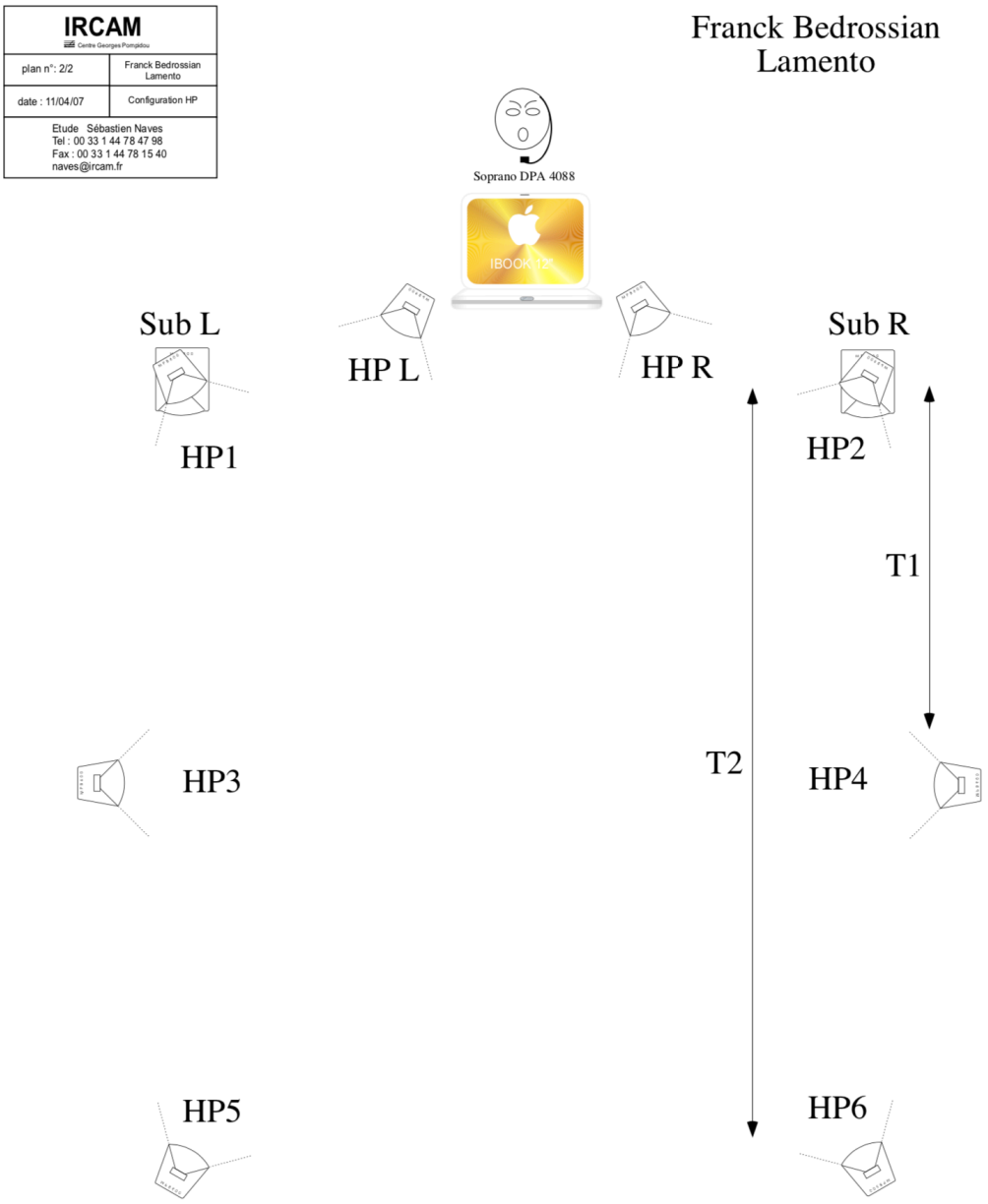
- tested in studio with simulation sources
- rewrote (simplified) visual clicktrack patch and OSC communication
- 64bit version of all involved Max external objects
- porting of reverb section to IRCAM Spat5
- fixed soundfile naming alphabetic order issue
- replaced MIDI-in pedal system
- wrote simulation training patch
- added instructions & comments in the patch
- added mixing facilities (harmonizer, player, reverb)
- fixed several dsp issues

Audio, loudspeakers & MIDI setups



Note : - soprano's mic is internaly splitted. One is for amplification.
The last is to feed computer.
- T1 & T2 are delays added to compensate distance front, side and rear speaker.

(reference: Sébastien Naves, computer music designer @ IRCAM)

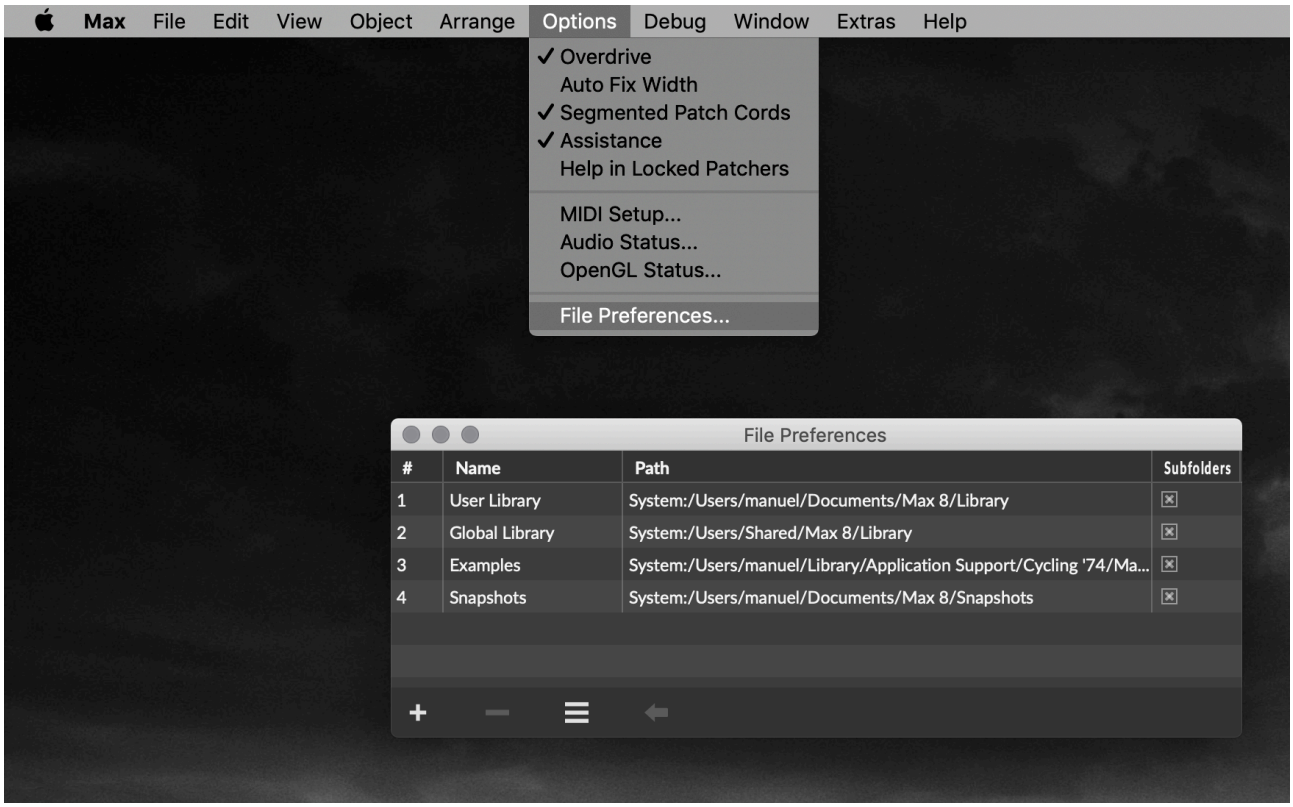


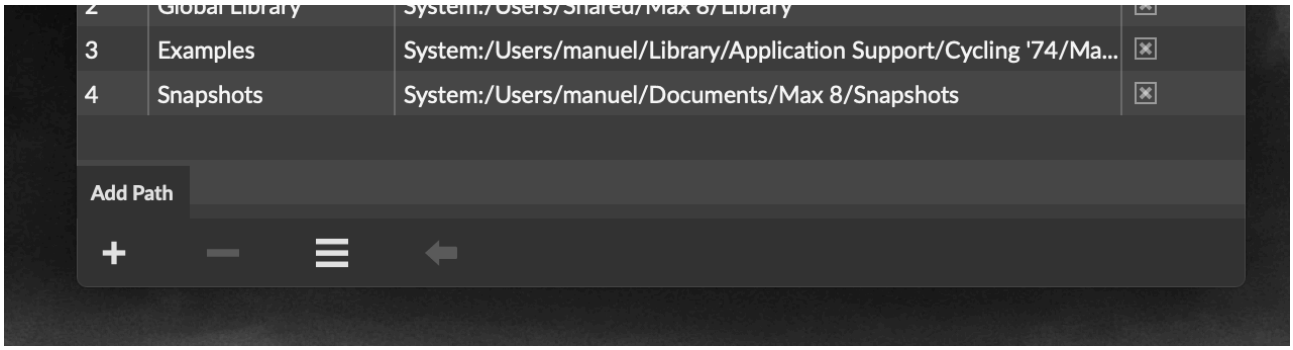
(reference: Sébastien Naves, computer music designer @ IRCAM)

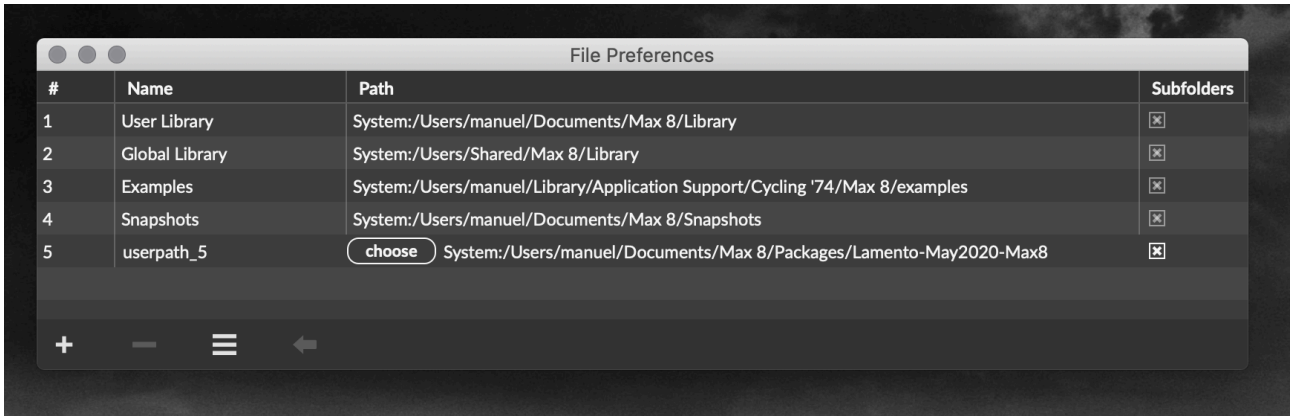
Software installation

Copy the content of the Lamento-May2020-Max8.dmg archive into both control-room/live-eletronics and stage/visual-clicktrack laptops.

In both machines, launch Max8, open the File Preferences pane under the Options menu, and add the path to the Lamento-May2020-Max8 folder that you just copied to Max's search path:

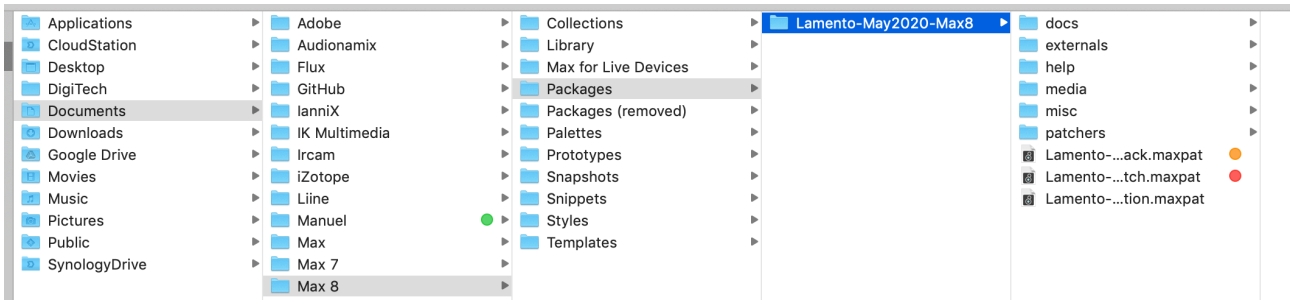






Installation alternative

As the folder is structured as a Max package, you may also copy it to the User/Documents/Max 8/Packages folder, and skip the File Preferences stage - Max will include the package to its search path:



The folder contains the following resources:

- **Lamento-ConcertPatch.maxpat**: main live-electronics Max patch, to be loaded in the control-room laptop

- **Lamento-Simulation.maxpat**: a training Max patch that permits the playing of the recording of the soprano voice, together with some synced events for the live-electronics.

  Note: in the original MIDI file that served for events triggering, several events seem to be sometimes slightly off-time.

- **Lamento-Clicktrack.maxpat**: visual clicktrack Max patch, to be loaded in the stage-laptop

- “docs” folder: contains this documentation, a technical setup document and two scores. The 2017 version of the score is a revision of the original score which integrates live-electronics events numbers.

- “externals” folder: contains 3d-party add-ons to Max, used by the live-electronics patch

- “help” folder: some help Max documents that provide some hints about the above 3d-party external add-ons

- “media” folder: contains all sound files used by the live-electronics patch

- “misc” folder: contains diverse media resources used by the live-electronics patch and an Ableton Live session which contains some reference media such as recordings of live-electronics, click-track and solo voice

- “patchers” folder: contains Max subpatchers use by the by the live-electronics patch

Stage laptop (visual clicktrack)

On the stage-laptop, navigate to the OS's Network preference pane and set IP adresses there for both machines. Avoid WiFi connections and go for manually-defined local networks, via a dedicated ethernet switch or even ethernet port to ethernet port between both machines.

Launch Max and open the **Lamento-Clicktrack.maxpat** document:

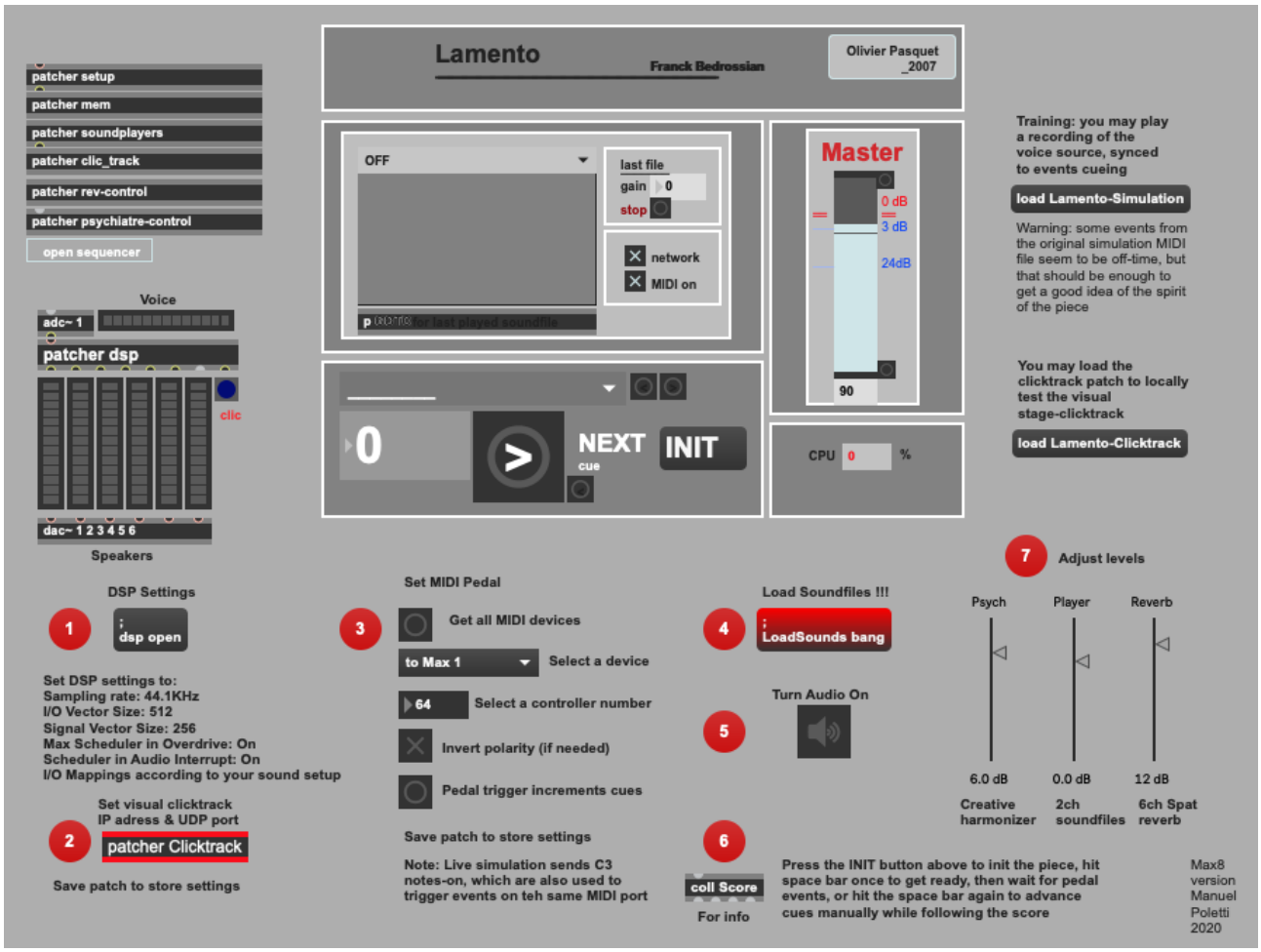
This patch will receive OSC bar/beat/pulse messages from the control-room laptop. Bar numbers correspond to events that are triggered by the MIDI pedal on stage. Beats and pulses correspond to some specific cues in the score, where beats/pulses are used as a countdown for the next cue.

You may select a UDP port where to receive OSC messages - default is 7400, which is fine. Avoid port numbers smaller than 5000 . The IP address of the machine is indicated in the patch, so you can enter that address in the dedicated space within the live-electronic patch, as described later in this document.

Note: set the patch to fullscreen and zoom-in (cmd-+) so that the singer may read numbers comfortably.

Control-room laptop (live-electronics)

On the control-room laptop, launch Max and open the **Lamento-ConcertPatch.maxpat** document:

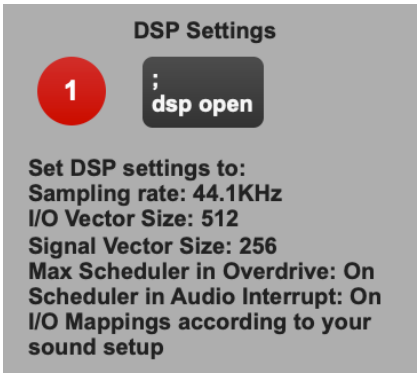


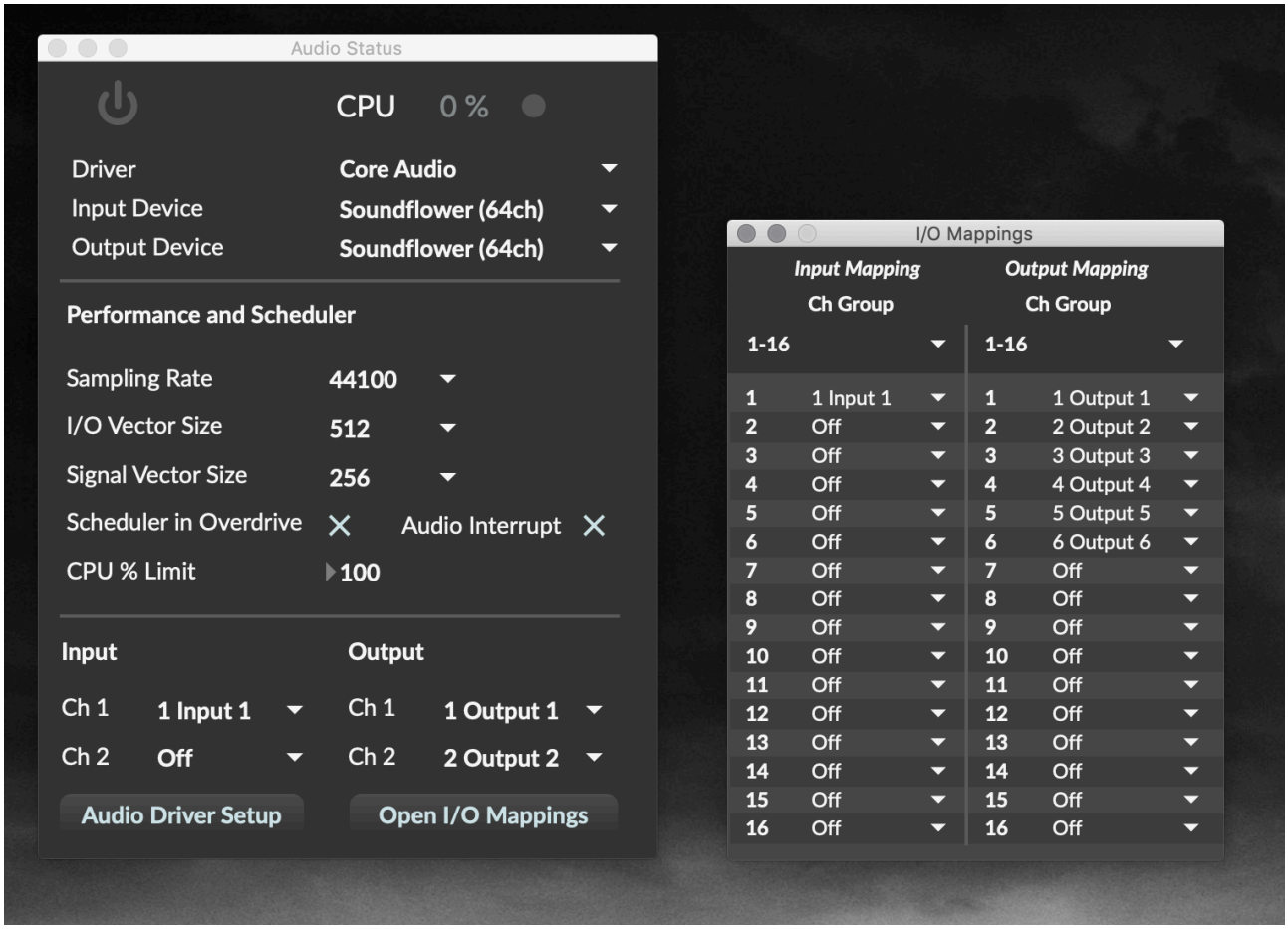
- upper-left subpatchers contain some patch resources that you shouldn't need to use
- middle-left "patcher DSP" subpatcher contains all DSP resources - mainly: 1 voice-harmonizer, 1 stereo soundfile player, and a 6 channel reverberator
- central UI contains different historical resources. You should only have to use the INIT button and the Master gain slider.
- below parts contains inline instructions to run the patch
- middle-right sliders offer a simple way to adjust the different DSP modules: harmoniser, player and reverberation
- upper-right buttons open:
  - the clicktrack patch, to be used only for local tests
  - the simulation patch, for ear-training

Note: if the Max console displays any error message, then you have an installation problem. Please follow all above installation steps again.

Follow in-line instructions

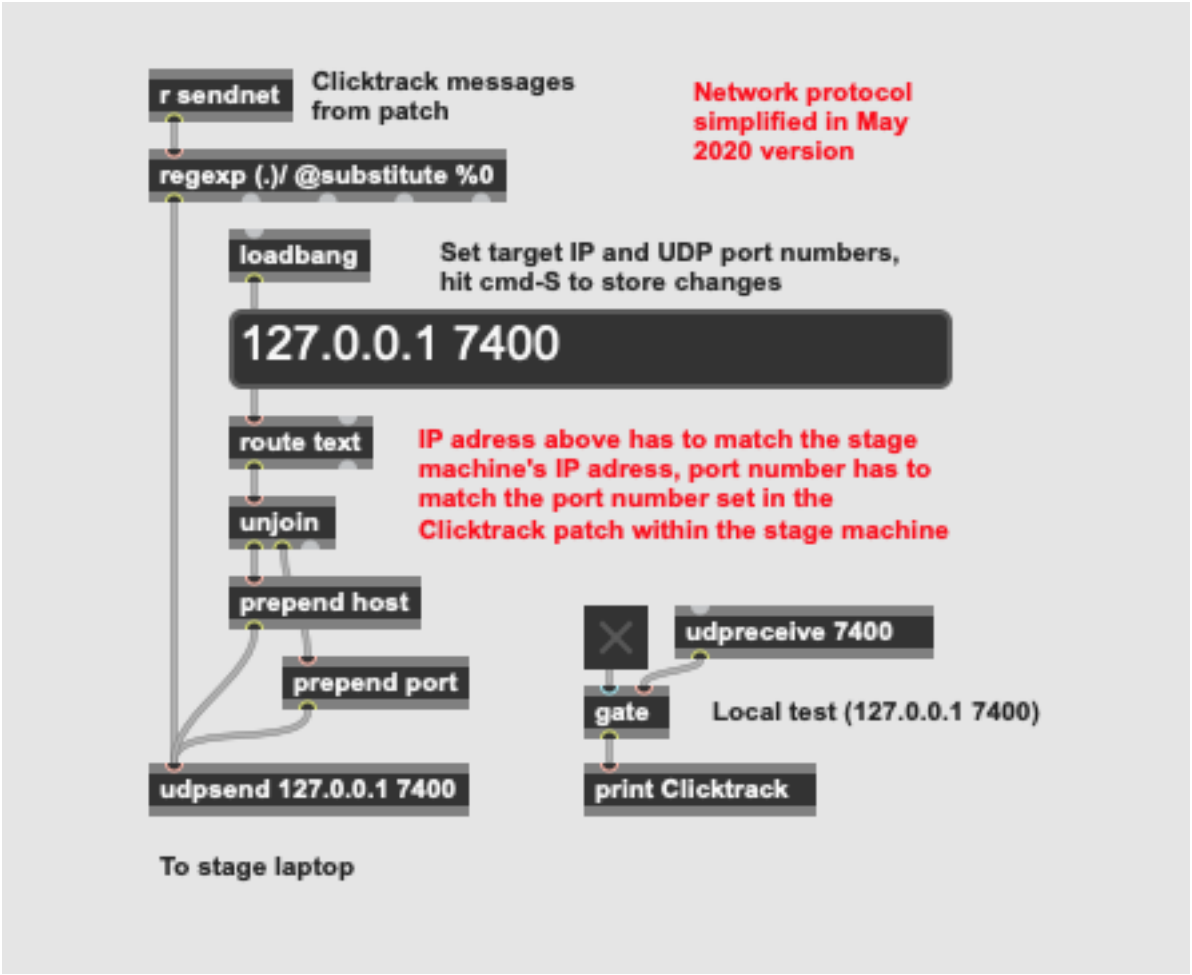
1) Open Max Audio Status and set DSP settings as following:





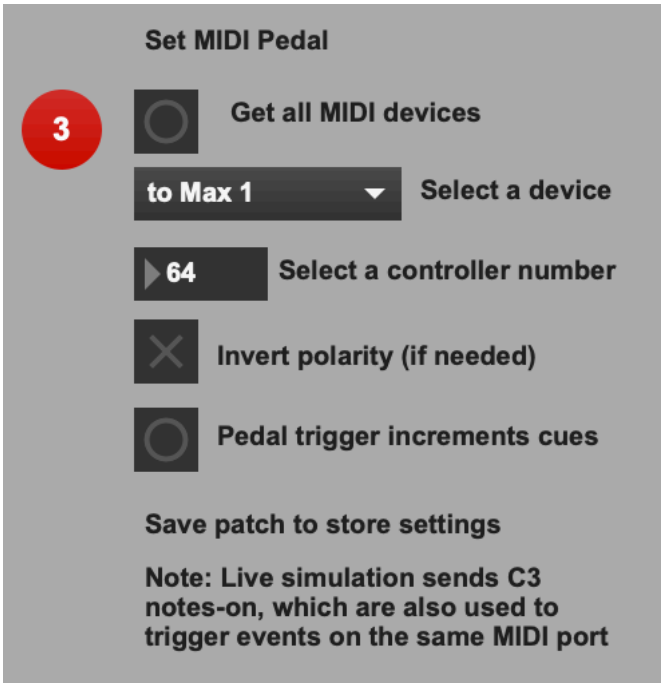
- Driver: Core Audio
- Input Device: your sound board
- Output Device: your sound board
- Sampling rate: 44.1KHz
- I/O Vector Size: 512
- Signal Vector Size: 256
- Max Scheduler in Overdrive: On
- Scheduler in Audio Interrupt: On
- I/O Mappings: in the above example, input 1 will receive the voice signal, and outputs 1 to 6 will send the 6 audio channels of live-electronics to the corresponding speakers

2) Open the Clicktrack patcher:



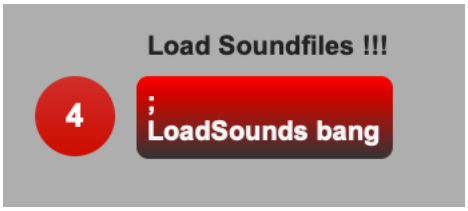
You may enter the IP address of the stage-computer here and a UDP communication port number (7400 is fine). Hit cmd-S to store settings.

3) Set MIDI pedal:

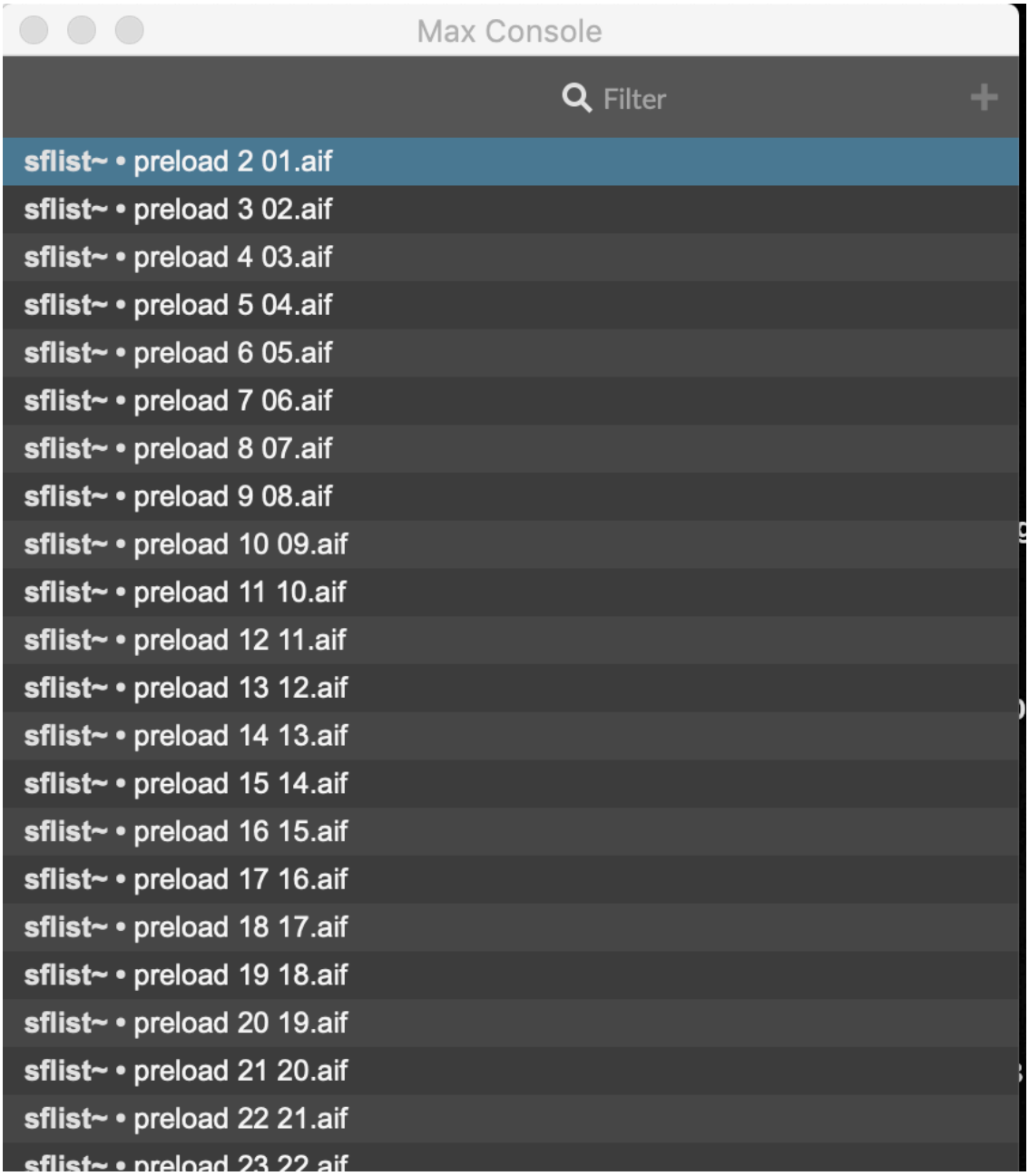


- hit the uppermost button to display all actual MIDI input devices in the popup
- from the popup, select the MIDI input device which your MIDI pedal on stage is connected to
- select the MIDI controller number used by your MIDI pedal (generally number 64)
- invert pedal polarity in case pedal sends messages when released
- hit cmd-S to store MIDI settings

4) Load soundfiles

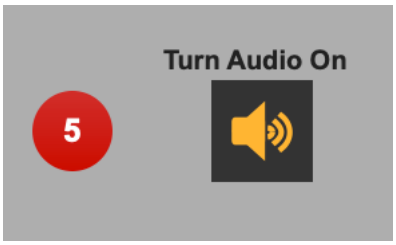


Loads all stereo soundfiles. You may monitor loading messages in the Max console:



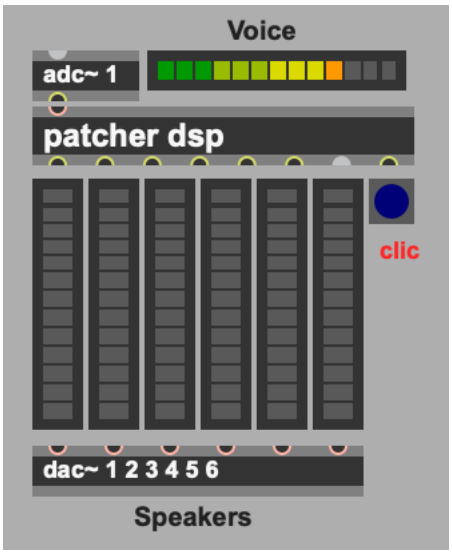
Note: if the Max console displays any error message, or doesn't display the above, then you have an installation problem. Please follow all above installation steps again.

5) Turn Audio on

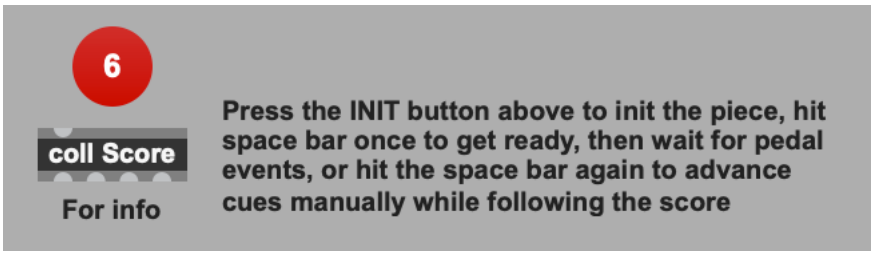


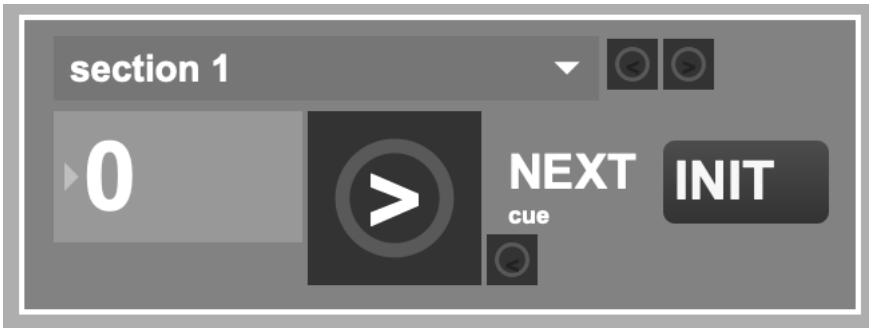
This enables all DSP tasks in the patch.

Adjust the level of the voice microphone so that you get a sufficient signal in the input level meter~:



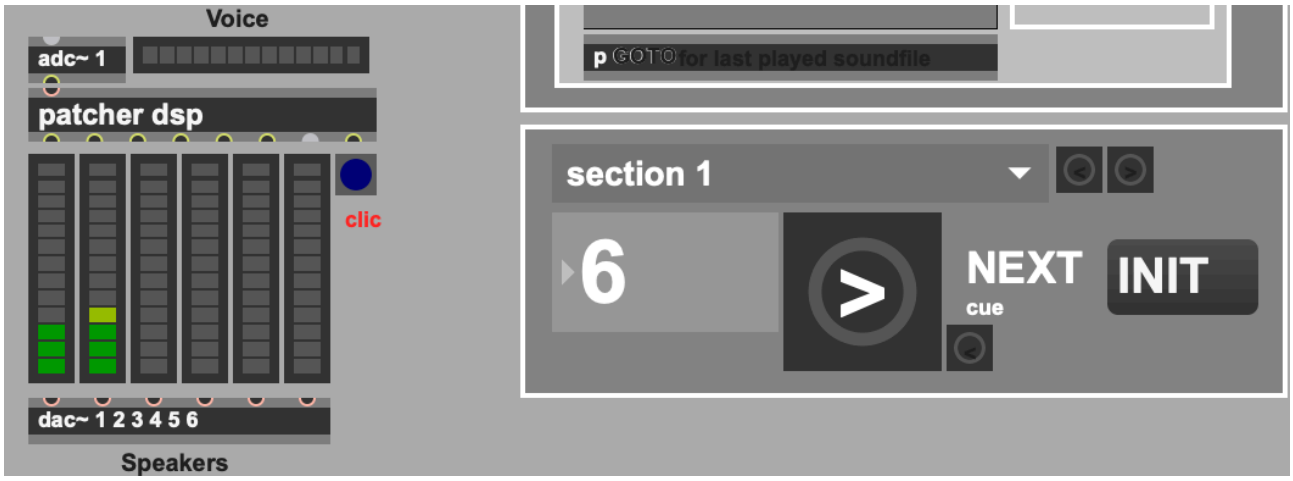
6) Hit the INIT button then hit the space-bar once:



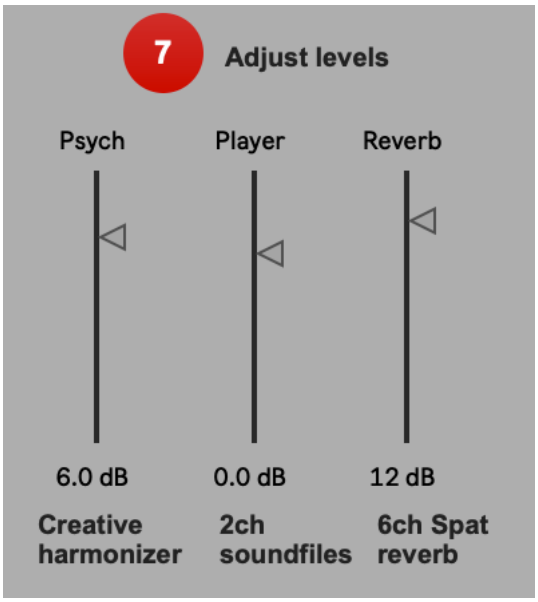


The section popup flashes, indicating that the piece is ready to run, and that the patch is waiting for the next event.

Hit the space-bar again to trigger different events. You should see soundfile signals playing through the two first output level meters and hear the corresponding audio in the front speakers:



7) Adjust levels

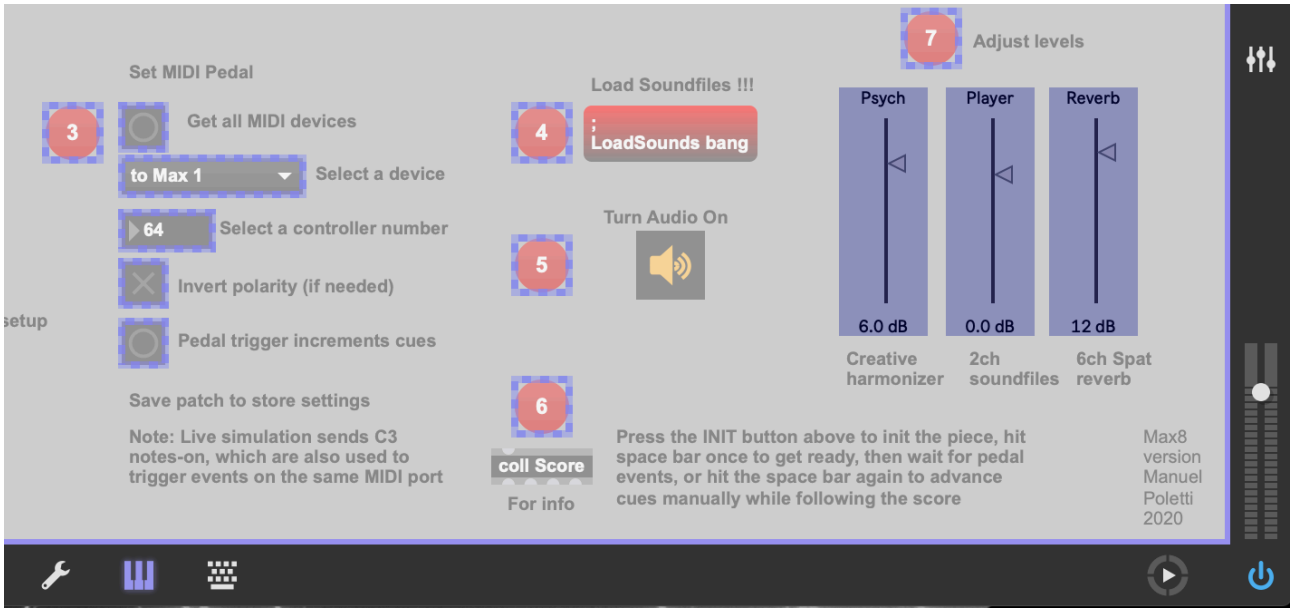


You may adjust the master levels of each DSP module: harmonizer, player and reverberation. The stored levels were set during monitoring sessions performed in studio - feel free to tweak them. If you hit cmd-S, levels will be restored on next launch of the patch.

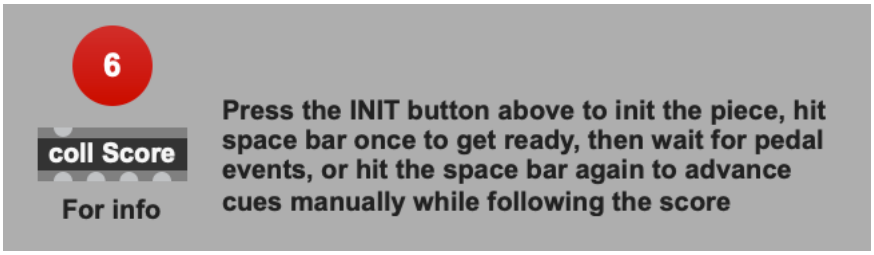
Particularly, the “Psych” level (real-time harmonizer) will need to be adjusted during rehearsals.

MIDI mixing:

If you own a MIDI mixer such as a BCF2000, you may MIDI-map the mixing sliders. Enable the small keyboard icon at the bottom of the toolbar of the patcher, select one of the sliders covered by a translucent blue color, and move one controller on your mixer:



About score events



Double-click on the “coll Score” object to display its text content:

Score

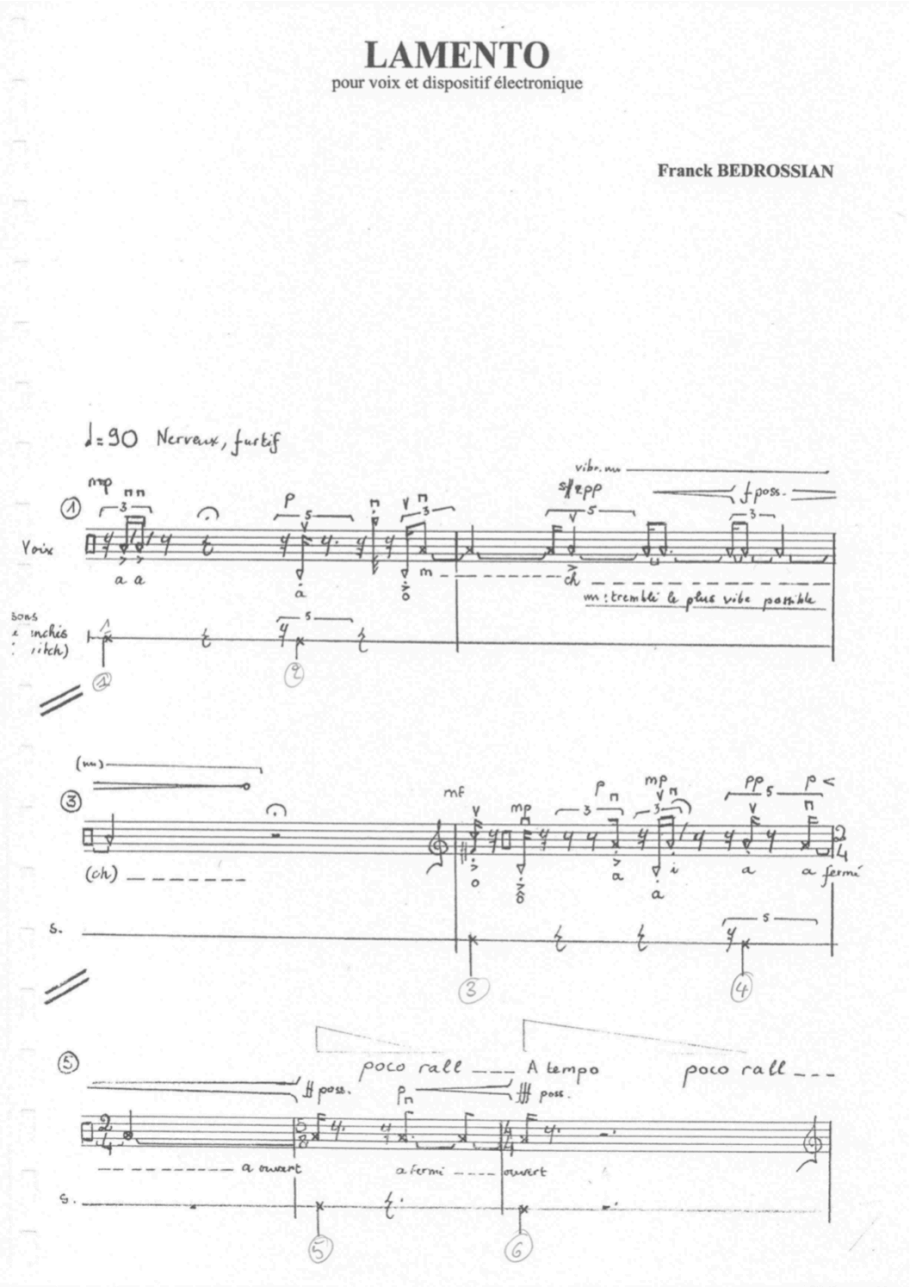
```
1, sndgain 103 1revgain 0 snd 1.aif;
2, snd 2.aif;
3, 1revgain 50 2000 snd 3.aif;
4, sndgain 80 snd 4.aif;
5, snd 5.aif;
6, snd 6.aif;
7, sndgain 75 snd 7.aif;
8, snd 8.aif 1psytrnz 1 1psytrsped 500 1psytrtrnx 100 1psytrpitcn 100 1psytrpitcx
9, snd 9.aif 1psytrgain 0 200;
10, snd 10.aif;
11, snd 11.aif;
12, snd 12.aif;
13, snd 13.aif;
14, sndgain 60 snd 14.aif;
15, snd 15.aif;
16, snd 16.aif 1psytrsped 500 1psytrtrnx 100 1psytrpitcn 100 1psytrpitcx 100 1psyt
17, snd 17.aif 1psytrgain 0 1000;
18, snd 18.aif 1psytrtrnx 300 1psytrpitcn 50 1psytrpitcx 200 1psytrgain 90 200;
19, 1psytrgain 0 200 sndgain 75 snd 19.aif;
20, snd 20.aif voice2rev 10 400;
21, snd 21.aif;
22, snd 22.aif;
23, snd 23.aif;
24, sndgain 85 snd 24.aif 1revgain 65 2000 voice2rev 50 400;
25, sndgain 75 snd 25.aif 1revgain 50 2000;
26, voice2rev 0 snd 26.aif 1psytrtrnx 300 1psytrpitcn 50 1psytrpitcx 200 1psytrgai
27, snd 27.aif 1psytrgain 0 200;
28, snd 28.aif 1psytrtrnx 300 1psytrpitcn 50 1psytrpitcx 200 1psytrgain 78 200;
29, snd 29.aif 1psytrgain 0 200;
30, snd 30.aif;
31, snd 31.aif 1psytrtrnx 300 1psytrpitcn 50 1psytrpitcx 200 1psytrgain 90 200;
```

This represents the live-electronic score, under the form of event numbers followed by messages to the different modules:

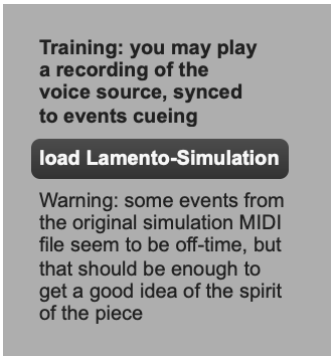
- snd: triggers a soundfile
- sndgain: sets the level of the soundfile
- 1revgain: sets the level of the reverb
- 1psytrgain: sets the level of the harmonizer
- voice2rev: sets the level of the voice sent to the reverb
- 1psytrnz, 1psytrsped, 1psytrtrnx, etc, are settings for the harmonizer
- etc

Note: please do not modify any of the score text!!

Event numbers (i.e. pedal triggers) are referenced as round numbers in the score (2017 version), which can be found in the “docs” folder:



Simulation



You may load a simulation patcher file, which allows for monitoring a recording of the voice recorded at the piece's premiere. To play the simulation, re-do the initialisation steps: hit the INIT button, hit the space-bar once (section popup flashes) and hit play on the soundfile UI:

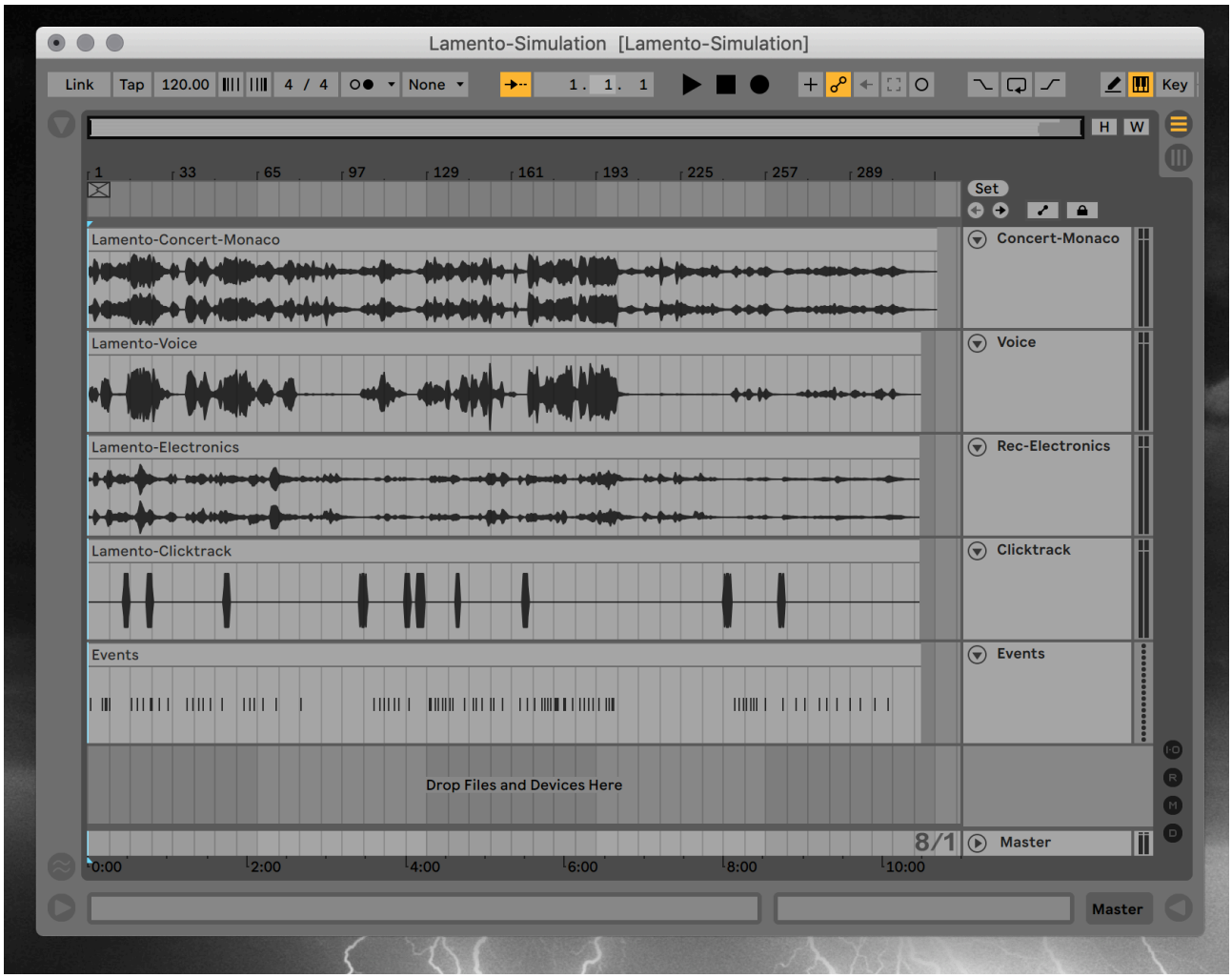
You should see events increasing together with the playing of the soundfile. You may adjust the following levels:

- "ToElec": voice signal to live-electronics
- "ToRev": voice signal to reverb (comfort reverb)
- "ToDacs": voice signal to speakers

If you set the blue "Current event" box to a given event number, the playing position in the soundfile will adjust accordingly.

It is also possible to use an external simulation source (such as the Live session provided in the "misc" folder). Select the input adc to the desired number and adjust the input level for the voice.

Sound reference: Ableton Live session



If you own a copy (authorized or in demo mode) of Ableton Live, you may open the session provided in the “misc” folder of the package, which contains the following documentation resources:

- Lamento-Concert-Monaco.aif: recording of the premiere
- Lamento-Voice.aif: recording of the solo voice at the premiere (used for simulation)
- Lamento-Clicktrack.wav: audio recording of the click track
- Lamento-Electronics.wav: stereo recording of the live-electronics
- MIDI track that represent score events

This session may be useful to get used to the structure and sound of the piece, and to the real time harmonization.

If you don’t own any copy of Live, you may also drag the soundfiles into your preferred DAW. Files may be found in the misc/Lamento-Simulation Project/Samples/Imported folder.

Documentation: Manuel Poletti @ IRCAM - May 2020