

La Makina

Martin Matalon

Documentation and technical requirements

June 9th, 2008

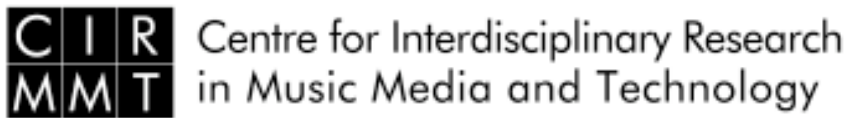
La Makina

Martin Matalon

Patch, sound design, and documentation: David Adamcyk

Acknowledgement

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McGill



Schulich School of Music
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la fondation Daniel Langlois
pour l'art, la science
et la technologie

Premiere Performance

March 6th, 2008 during the MusiMars Festival in Montreal, Canada

Sara Laimon, Piano

Kyoko Hashimoto, Piano

Fabrice Marandola, percussion

Aiyun Huang, percussion

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Important Note

This documentation assumes the reader has a basic knowledge of MaxMSP and of an audio sequencer (for example: Logic Pro, Digital Performer, Protools, etc.)

1-Technical Requirements

The following equipment is necessary for the performance of *La Makina*. Should you not have access to this exact equipment, adequate substitutes may be used.

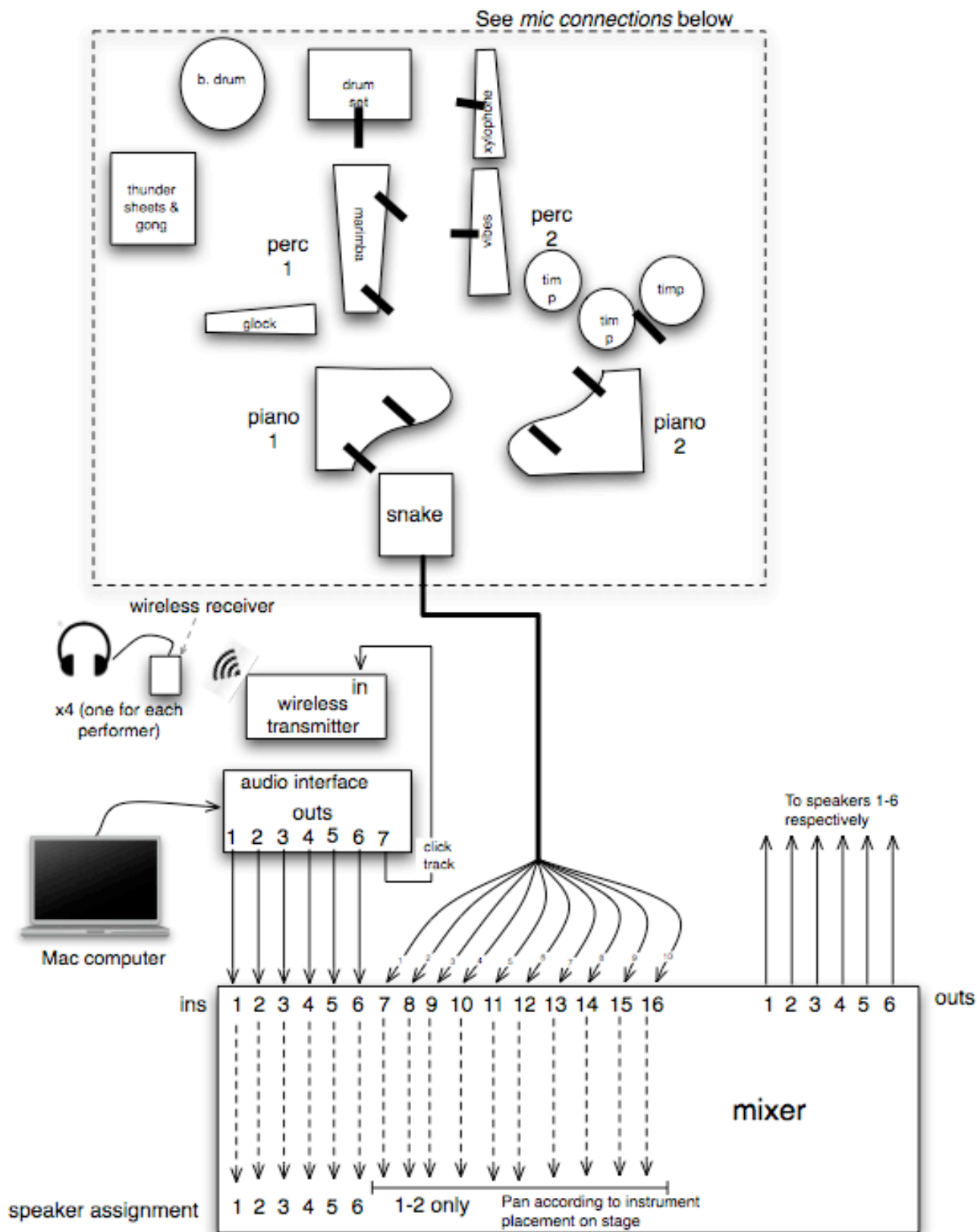
- Six self-powered speakers and cables (see diagram below for placement)
- Mics: 6 *Neumann 184* (two per piano, 1 for the vibraphone, 1 for the xylophone), 4 *AKG C-414* (two for the marimba, 1 for the drum set, and 1 for the timpani), plus cables
- 1 mixer with at least 16 inputs and 6 outputs (ex: *Mackie 24•8 mixer*)
- 1 16x4 XLR snake
- 1 *MOTU traveler* firewire interface
- 1 8x8 1/4" snake
- 1 *Shure* wireless monitoring system with 4 belt-pack receivers and head phones (ex: Shure PSM 400) Each performer may want a different type of head phone, so it may be good to have a few options to test out.
- 1 Mac computer (ex MacBook Pro 2.16GHz, 2 gig ram) with a working copy of Max/MSP 4.6.3*. Also, it is highly recommended to use the fastest available hard drive (7200rpm) as there are up to seven simultaneous 6 channel sound files to read from disk.

*The patch has not been tested on Max 5, nor has it been tested on versions earlier than 4.6.3.

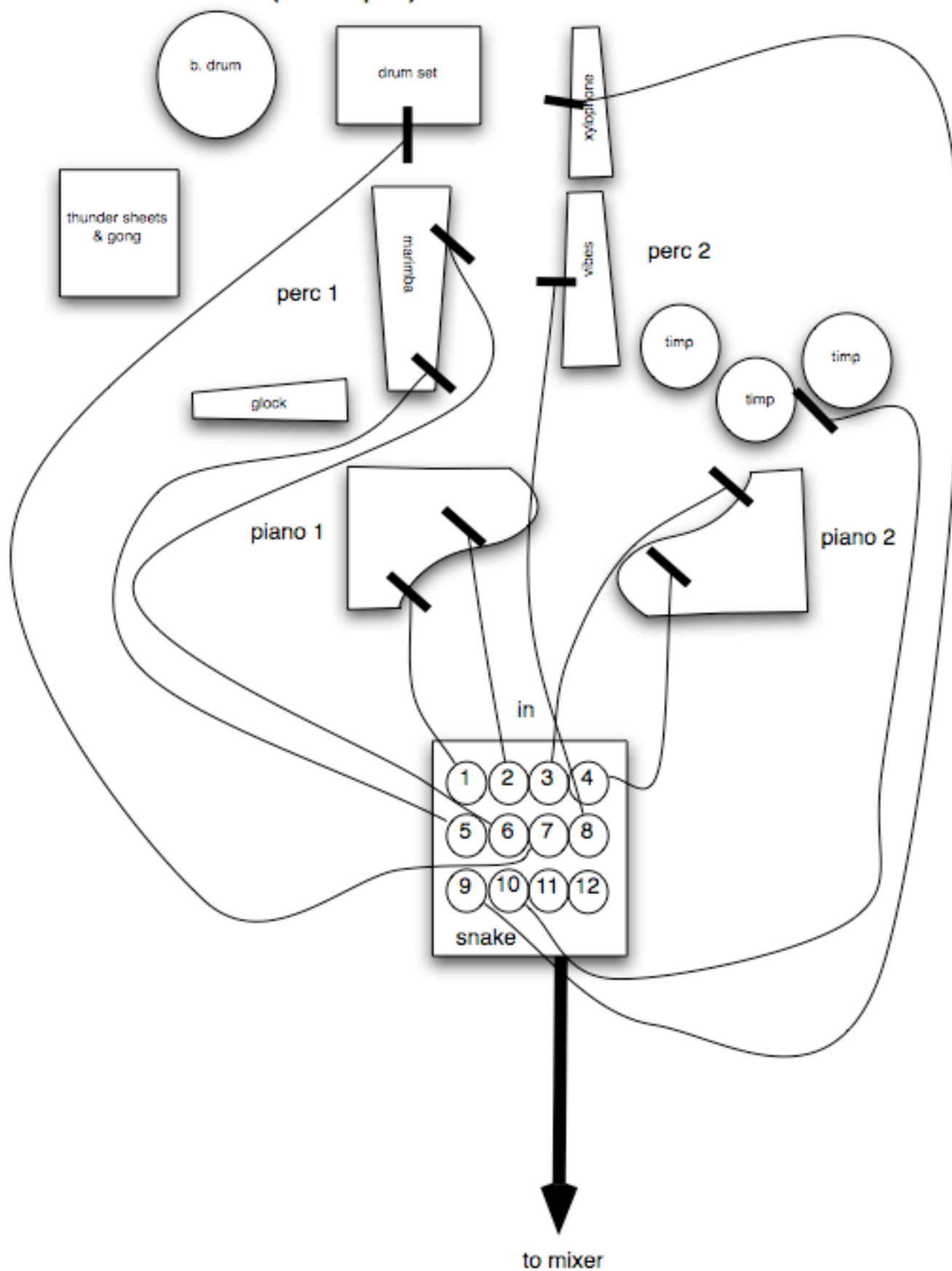
2-Setup

The following is a suggested setup for both the mixer and the stage placement. There is no real-time treatment in this piece, so the microphones serve only as amplification for the live instruments. The goal is not to make the instruments significantly louder, but rather to put the instruments in the same sonic space as the electronics, contributing to a better blend between the two.

Mixer connections



Mic connections (example)



Mic connections and stage setup from premiere performance in Montreal (March 6th, 2008 MusiMars Festival)

Percussion 2

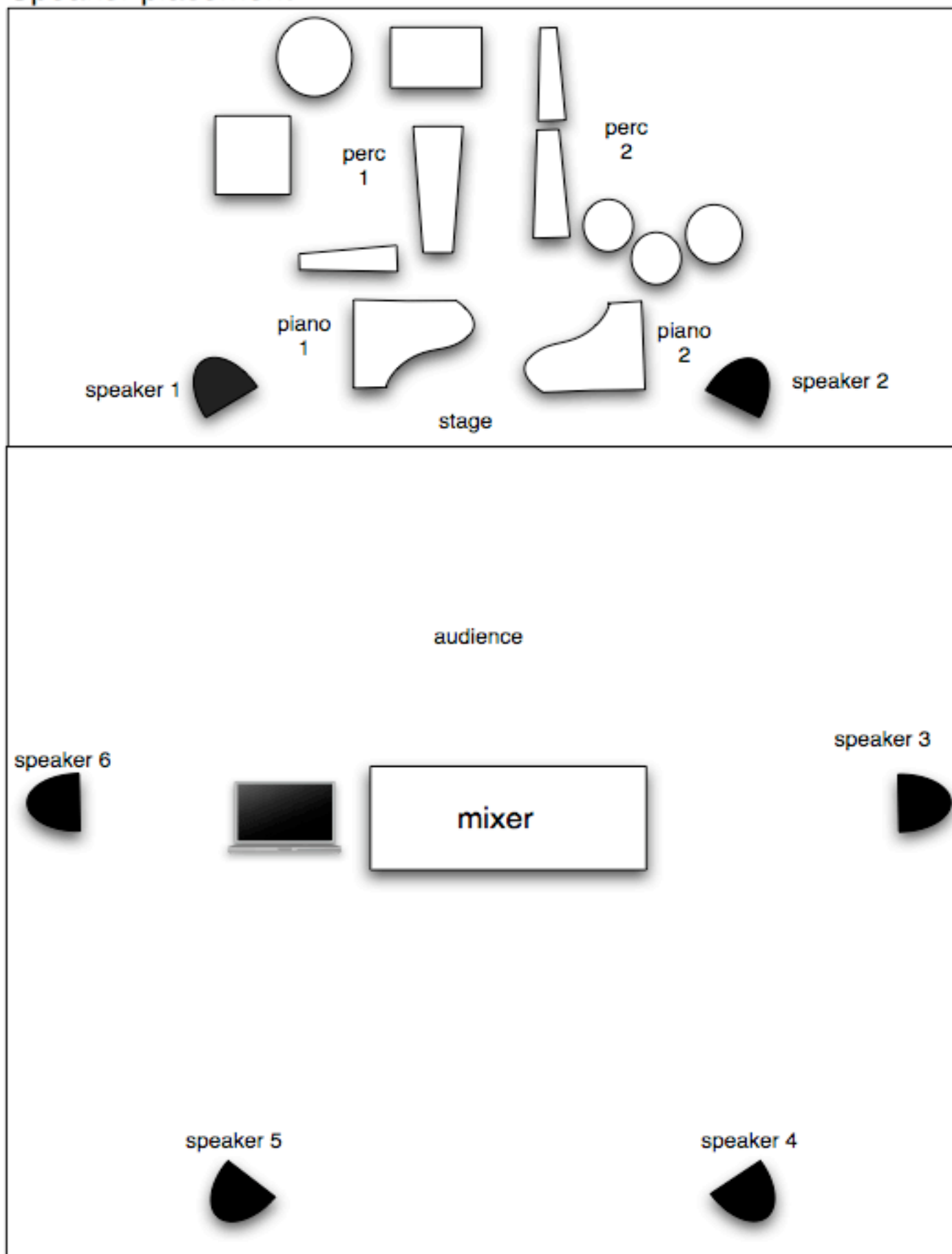
Percussion 1



Pianos 1 (left) and 2 (right)



Speaker placement

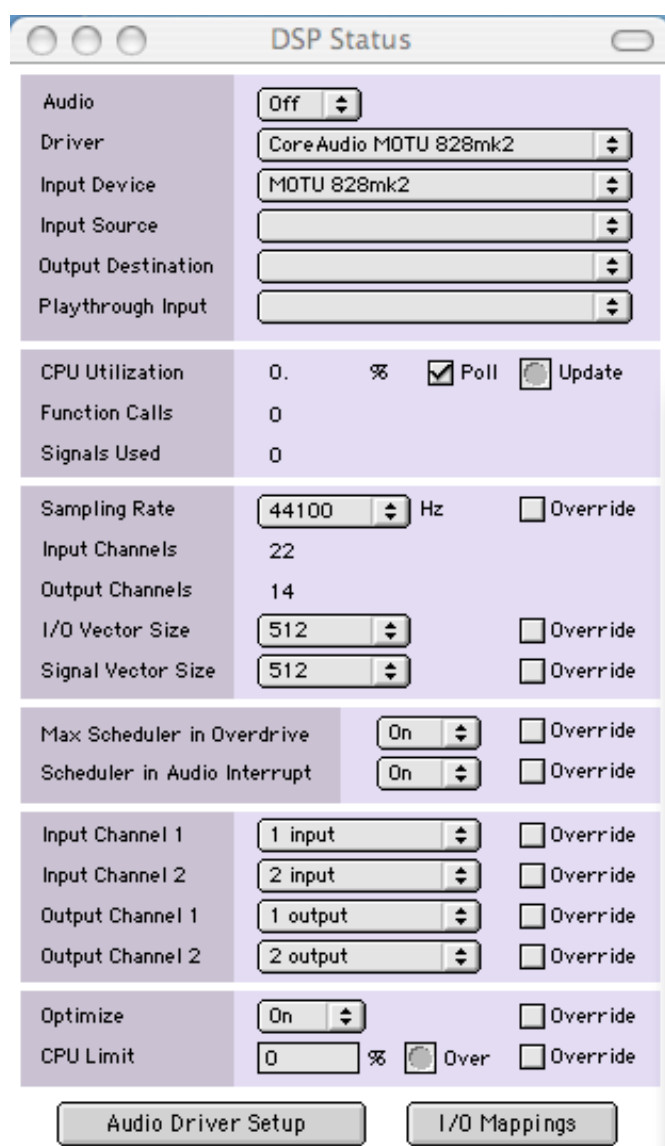


3-The Patch

The electronics of La Makina are a set of sound files coordinated to the performers with the help of a click track. In order to provide the maximum amount of flexibility, the Max/MSP patch was designed to resemble an audio sequencer, like Logic or Digital Performer. Each track (there are 18 in total) plays its own sound file and has its own volume control, which can be automated in order to compensate for different hall acoustics, thus achieving the best overall mix possible.

3.1-Loading

-Start off by starting MaxMSP. Make sure that the correct audio device has been selected, and that the inputs/outputs are properly mapped.



DSP Status

Audio: Off

Driver: CoreAudio MOTU 828mk2

Input Device: MOTU 828mk2

Input Source:

Output Destination:

Playthrough Input:

CPU Utilization: 0. % ☒ Poll

Function Calls: 0

Signals Used: 0

Sampling Rate: 44100 Hz ☐ Override

Input Channels: 22

Output Channels: 14

I/O Vector Size: 512 ☐ Override

Signal Vector Size: 512 ☐ Override

Max Scheduler in Overdrive: On ☐ Override

Scheduler in Audio Interrupt: On ☐ Override

Input Channel 1: 1 input ☐ Override

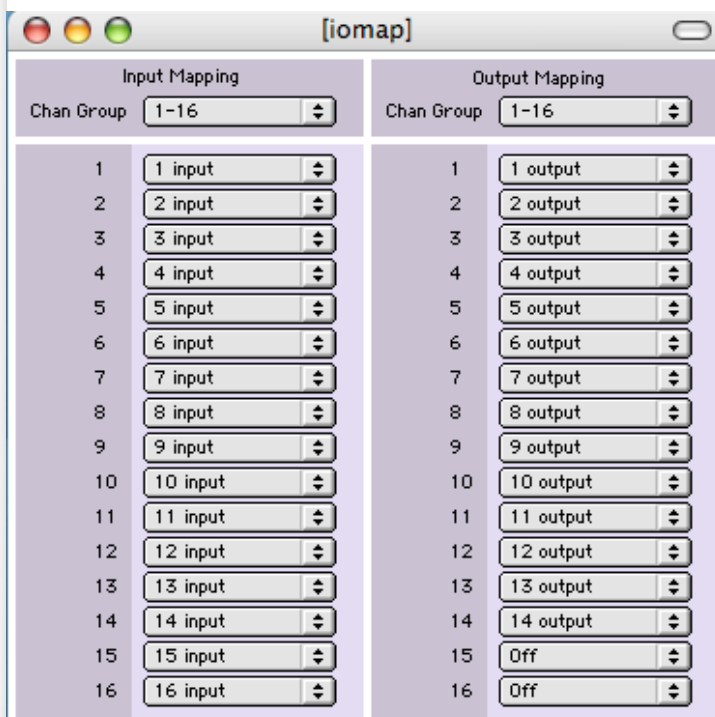
Input Channel 2: 2 input ☐ Override

Output Channel 1: 1 output ☐ Override

Output Channel 2: 2 output ☐ Override

Optimize: On ☐ Override

CPU Limit: 0 % ☐ Override



[iomap]

Input Mapping

Chan Group: 1-16

1	1 input
2	2 input
3	3 input
4	4 input
5	5 input
6	6 input
7	7 input
8	8 input
9	9 input
10	10 input
11	11 input
12	12 input
13	13 input
14	14 input
15	15 input
16	16 input

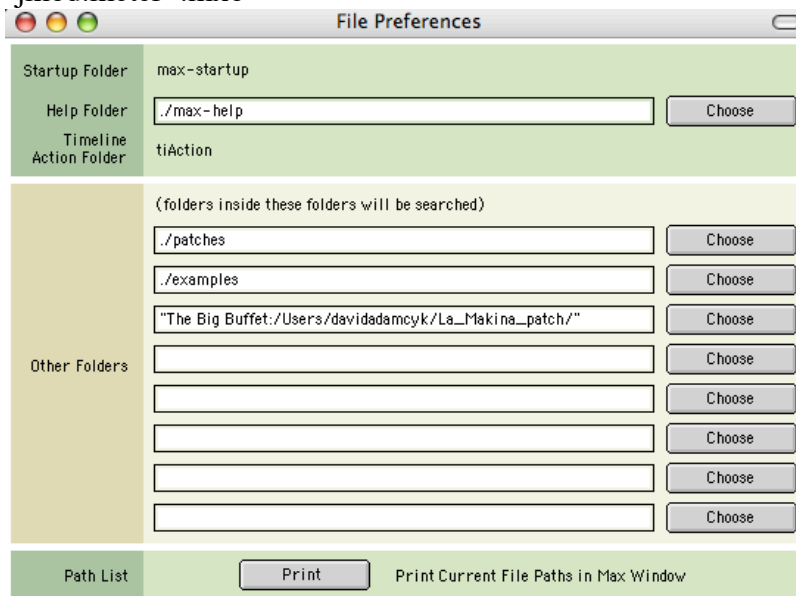
Output Mapping

Chan Group: 1-16

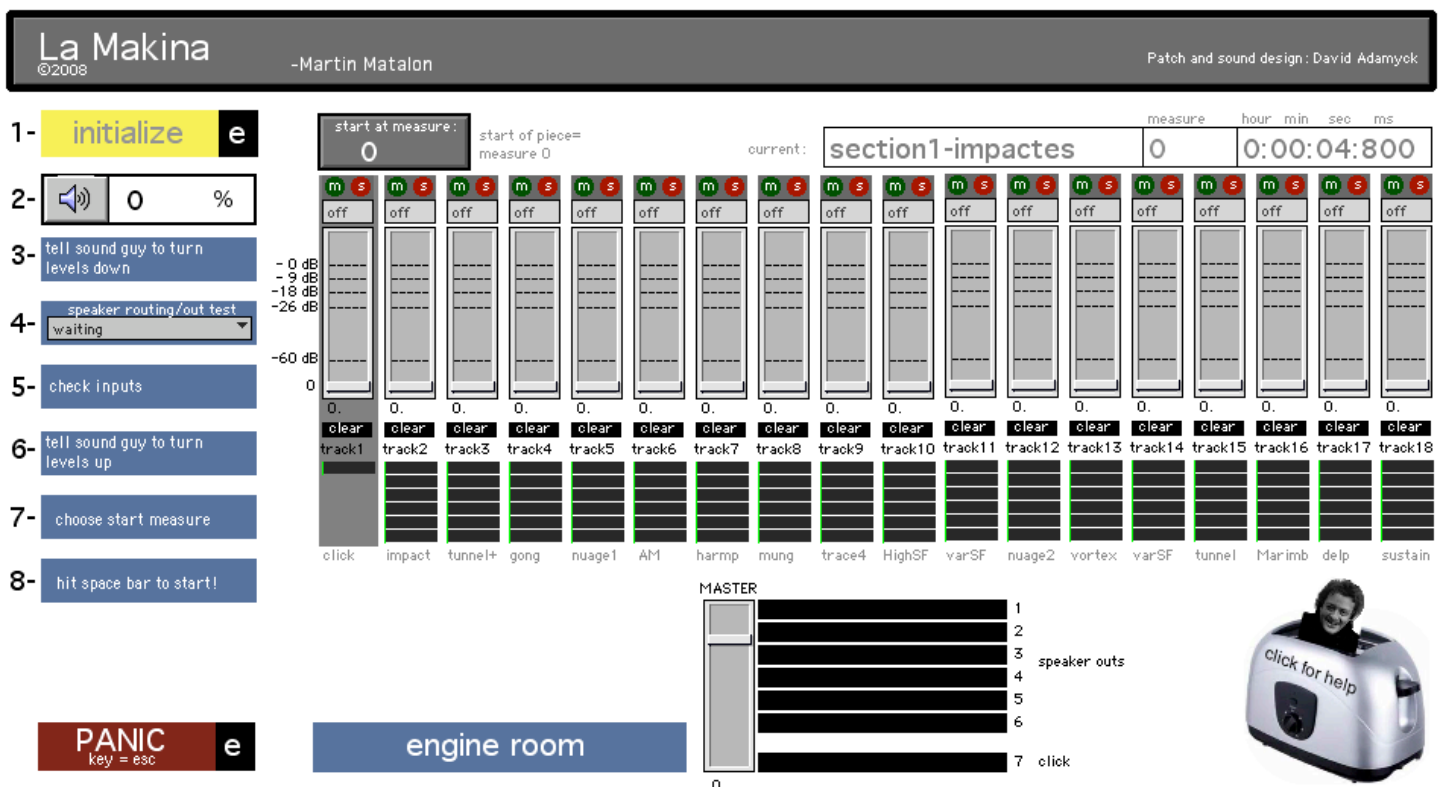
1	1 output
2	2 output
3	3 output
4	4 output
5	5 output
6	6 output
7	7 output
8	8 output
9	9 output
10	10 output
11	11 output
12	12 output
13	13 output
14	14 output
15	Off
16	Off

-Next, put the La_Makina_patch folder into your file preferences. It is best to remove any other file preference which might contain either duplicates or alternate versions of the 3rd party externals. The following three 3rd party externals are used:

-timex.mxo
-hr.div~.mxo
-jmod.meter~.mxo



-Close Max then launch Max again, and open the file La_Makina (contained in the La_Makina_patch folder). The patch should look this:



Make sure there are no error messages in the Max window.

3.2- dac~

Depending on the audio interface you are using, you might need to change the dac~ output arguments. You can access the dac~ by clicking on the 'engine room' button.

3.3-Initialization

On the left hand side of the patch, in yellow and blue, you will find the initialization sequence. These are the steps that must be done to ensure that everything will work smoothly, especially come concert time:

1- initialize e

This initializes all the faders, reads the automation files, sets the faders to 'read' mode (more on this below), and loads all the sound files into their respective sfplay~'s. To begin, click the yellow initialize button, and you will see all the faders go up to 0dB. If, from some reason, you have to edit part of the initialization (which you should not have to) you can click on the **e** and the init patcher will come up. **DON'T CHANGE ANYTHING UNLESS YOU REALLY KNOW WHAT YOU ARE DOING!**

2- 0 %

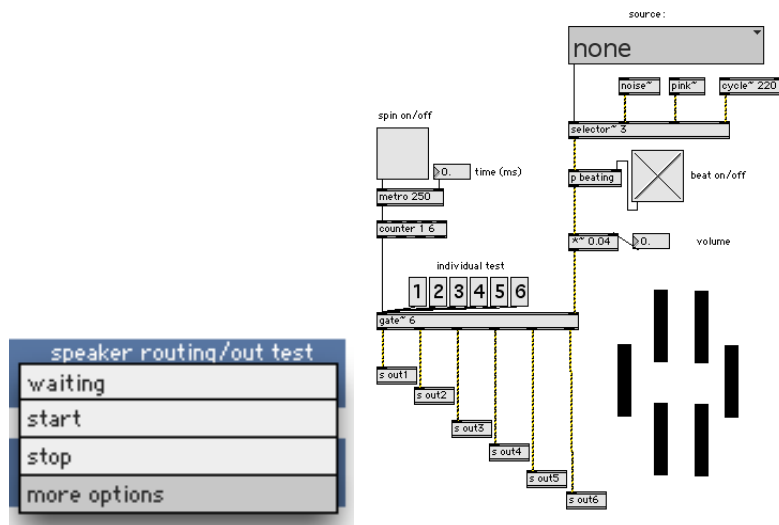
Next click on the DSP button. On my MacBook Pro 2.16GHz Core Duo, the CPU load rises to about 15%, but I think my computer has a mental problem...On all other similar computers the CPU load rises to about 8%.

3- tell sound guy to turn levels down

This step is more for concert time. It is just to remind you and the sound engineer to mute the mixer outs before doing the pre-performance speaker/routing test. If you don't do this, then the audience will hear the test!

4- speaker routing/out test waiting

This is the speaker/routing test. Click on the drop-down menu and select 'start'. A white noise pulse will begin, progressively moving from speaker 1 to 6 (around the audience). Once you see that the mixing board is correctly receiving the pulse, click on the drop-down menu and select stop. During setup before the concert, you can also select 'more options' from this menu. A window will appear giving a wider range of options, such as different signal types, pulse on/off, auto-rotation, or individual selection of speakers.



5- check inputs

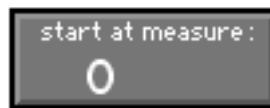
This is another simple reminder to make sure that the mics on stage are working.

6- tell sound guy to turn levels up

The last reminder: un-mute the outs on the mixer.

7- choose start measure

In a concert situation, select 0 in the 'start at measure' section of the patch. In rehearsals, select the measure number where you wish to start.



FYI: Measure 0 is in fact a count-in measure for the performers. The piece actually starts at measure 1.

8- hit space bar to start!

Self-explanatory. Hit the space bar, and the click track will start. When the 'current measure' box reaches 1, the first sound file should play out of track 3. (Hitting space bar again will stop playback)

3.4-Patch Operation

Once the init sequence has been completed, operating the patch is very easy (it essentially corresponds to steps 7 and 8 in the init sequence). Simply **scroll up or down to the desired measure number in the 'start at measure' box**, and **hit the space bar to start and stop**. You can also type-in the measure number from which to start from, but remember to hit 'enter' before starting playback to validate your choice. You will see in the upper right hand corner of the patch, that the 'current' section is updated when you choose another start bar.



IMPORTANT: Please note that playback must be stopped before selecting another start measure. Also, it is important to leave a little time (~1 second) between choosing a start measure, and starting playback. This is to make sure the sound files have enough time to load properly.

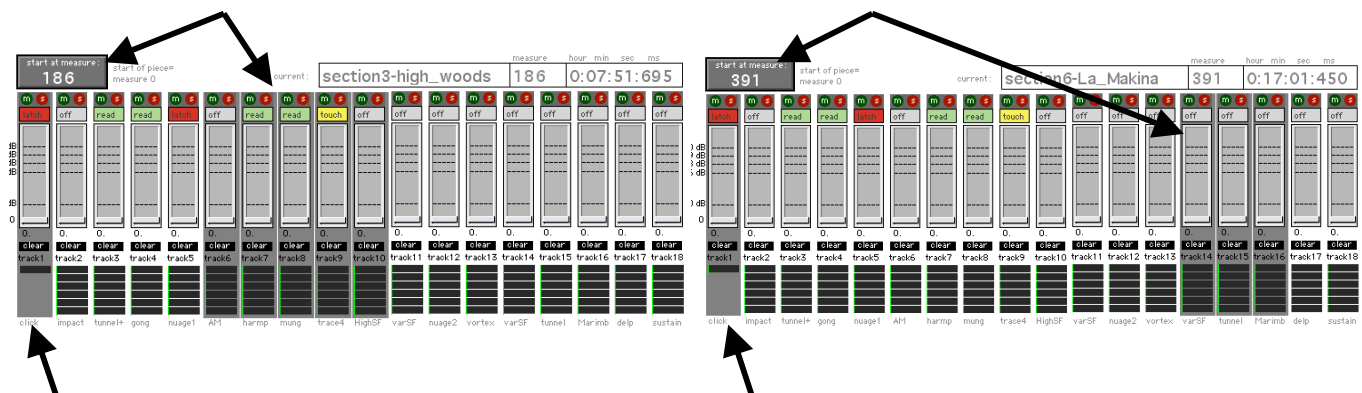
3.3-The Tracks

Each sound file has its own track. In order to provide the maximum amount of flexibility, the tracks were designed to resemble those in an audio sequencer, like Logic or Digital Performer. Each track (there are 18 in total) plays its own sound file, and the volume control for each track can be automated.

The diagram illustrates a track control interface with the following labeled components:

- Mute and solo:** Two circular buttons at the top left, one labeled 'm' (mute) and one labeled 's' (solo).
- Automation mode drop-down menu:** A green button labeled 'read'.
- Volume fader:** A vertical slider control with a white knob and horizontal dotted lines representing volume levels.
- Value of fader in dB:** A numerical display showing '0.'.
- Clear automation button:** A black button labeled 'clear'.
- Track name:** The text 'track2'.
- Meters:** A vertical stack of five horizontal bars representing the audio waveform.
- Rough description of the contents of the sound files played on this track:** The text 'impact'.

In addition, the track will be highlighted in dark grey when it is reading a sound file. Not all sound files play at the same time, so this can quickly tell you which tracks are active. You can see which tracks are active at different moments in the piece by changing the value of the ‘start at measure’ box. Note that track 1 remains constantly highlighted, because it is playing the click track which runs through the entire piece. Examples:



3.4-Automation & Track Modes

The volume faders of each track can be automated. This means that, in any section of the piece and when playback is on, you can record the way you move the faders, and these movement will then be repeated automatically the next time you play the same section. The automation data is saved to files located in the 'automation' folder inside the La_Makina_patch folder. This data cannot be edited graphically. **When you first load the patch, the automation file are set to 0dB for the entirety of the piece.**

Track automation works exactly as it does in Logic Pro. There are five modes: off, read, touch, latch, and write. These can be accessed by clicking and holding the 'off' button, and selecting the desired mode from the drop-down menu. By default, all tracks will be set to 'read' when you load the patch.



In the off mode, there is no automation, and you can move the fader as you wish.



In the *read* mode, the fader will read the automation file. If you try to move a fader while playback is on, it will automatically return to the current position in the automation file (0db if nothing has been previously recorded). This is a safe mode as nothing can ever be overwritten.



In touch mode, as soon as you touch the fader, any movement you make will be recorded until you let go of the fader. Once you let go of the fader, the fader will go back to the previously recorded position. If nothing has been previously recorder, it will go back to its initial value of 0dB. Note that if you are in touch mode and that you don't touch the fader, no automation will be recorded, and the track will simply read any previously recorded automation data.



The latch mode is very similar to the touch mode, except that the fader will stay in the position where you let it go. This position will continue to be recorded until you stop playback or select another operation mode. Just as it is in *touch* mode, no automation will be recorded, unless you actually move the fader.



The write goes one step further than the latch mode: once playback is stopped, the position the volume fader is in will **replace** any other data from that point to the end of the piece. **Be careful when in write mode, as you can delete previously recorded automation data.**

Important

Remember that the touch, latch, and write modes only start recording once you start moving the fader.

Switching automation modes while playback is on is OK between the read, touch, and latch modes. But switching from the write mode to any other mode might prove to be a little unpredictable. Thus, it is best to switch to and from the write mode only when playback is off.

Track automation data is automatically saved every time playback is stopped. If need be, you can restore the default automation settings (0dB throughout the piece) by clicking on the 'clear' button. Note that this cannot be undone!!



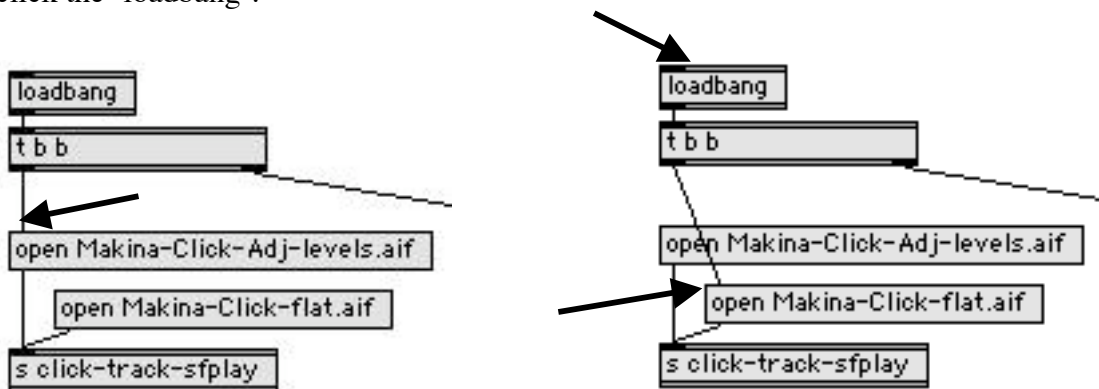
If ever you forget how the automation modes work, you can click on the ‘Matalon in the toaster’ image at any time, and a help window will appear containing most of the above explanations.



3.5-Click Track (on track 1)

The audio file used for the click track already has volume changes built in to make it quieter in certain sections, and thus avoid the problem of having the audience hear the click during the concert (there are also volume boosts in loud sections to help the performers). These volume levels are the ones that were actually used in the premiere performance of the piece in Montreal. So, in theory, they should/could also work in other performances. However, if these levels are not satisfactory, then you can change the click track file to a version with a constant volume, and automate the volume changes as needed using the above mentioned automation features.

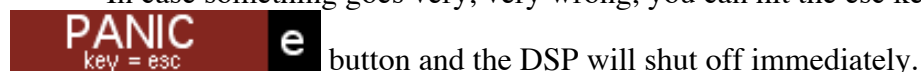
To change the click track file, click on the **engine room** button, and then double-click on the **p click-track&main-clock** patcher. At the top right of this patcher, simply reconnect as shown, and then double-click the ‘loadbang’:



FYI: -Makina-Click-Adj-levels.aif -----> click track with built-in volume changes
-Makina-Click-flat.aif-----> click track with constant volume

3.6-Panic

In case something goes very, very wrong, you can hit the esc key on the keyboard, or click on the



3.7-Recommendations

-Familiarize yourself with the automation modes before actually starting to rehearse.

-One automation strategy might be to put all the faders on write mode for the first complete reading of the piece. Once you have a basic set of levels, then switch to the touch or latch mode (depending on the situation) to make further refinements.