

Michaël Levinas

Rebonds

1993

portage 2020
2020



The setup and the execution of the electroacoustic part
of this work requires a Computer Music Designer (Max expert).

Table of Contents

Table of Contents	2
Work related information	3
Performance details	3
Detailed staff	3
Realisation	3
Useful links on Brahms	3
Version related information	4
Documentalist	4
Realisation	4
Upgrade Motivation	4
Comment	4
Other version(s)	4
Electronic equipment list	5
Computer Music Equipment	5
Audio Equipment	5
Files	6
Instructions	7
Presentation:	7
AUDIO and MIDI Setup:	7
Software installation	7
Initialization routine	8
System calibration and tests	8
MIDI tests	8
Audio Tests	9
Locate the piano sound in space	9
Balance between Pianos and Resonances	9
The 16th-tone Piano	9
Adjustment of the resonances parameters	9
Quick test - Playing the Piece:	9
Details - About the pedals (documentation for the performer)	9
Volume	10
Bend	10
Sustain	10
Addendum : more details (Tom Mays)	10
Patch presentation - RESONATORS Configuration	10
Patch presentation - Velocity Correction	11
Patch presentation - Sample Keygroup Editor	11
Program note	13

Work related information

Performance details

- June 11, 1993, France, Paris, Maison de Radio France

Publisher : Lemoine

Detailed staff

- flute (also piccolo, alto flute), clarinet (also E-flat clarinet), 2 pianos, violin, cello

Realisation

- Tom Mays

Useful links on Brahms

- [Rebonds for ensemble \(1992-1993\), 10mn](#)
- [Michaël Levinas](#)

Version related information

Documentation date: April 7, 2020

Version state: valid, validation date : April 9, 2020, update : May 6, 2021, 3:09 p.m.

Documentalist

Etienne Demoulin (Etienne.Demoulin@ircam.fr)

You noticed a mistake in this documentation or you were really happy to use it? Send us feedback!

Realisation

- Etienne Démoulin (Computer Music Designer)
- Tom Mays (Computer Music Designer)

Version length: 15 mn

Default work length: 10 mn

Upgrade Motivation

Update for Max8

Documentation update

64 bit version of the resonator~ max object

Comment

Not tested in concert

Other version(s)

- [Michaël Levinas - Rebonds - RebondsMax6 \(May 13, 2014\)](#)
- [Michaël Levinas - Rebonds - maxmsp5-version-untested \(April 29, 2010\)](#)
- [Michaël Levinas - Rebonds - transfert_mustica_ftp \(April 14, 2010\)](#)
- [Michaël Levinas - Rebonds - OSX Update \(Oct. 1, 2005\)](#)

Electronic equipment list

Computer Music Equipment

- 1 MacBook Pro - *Apple Laptops* (Apple)
OSX 10.13
- 1 Max/MSP - *Max* (Cycling74)
Tested on Max8
- 1 Fireface 800 - *Sound Board* (RME)
- 1 KX 88 - *MIDI Keyboard* (Yamaha)
Or Kurzweil PC88 [Heavy touch] [88 keys]
- 1 Footswitch / Sustain Pedal - *Footswitch / Sustain Pedal*
- 1 Volume Pedal - *Volume Pedal*
Plugged in the keyboard

Audio Equipment

- 4 Microphone - *Microphone*
2 for each piano (Ex.: AKG C451 or KM 140)
- 1 Amplifier - *Amplification*
- 2 Loudspeaker - *Loudspeakers*
Stereo, in front of the audience
- 1 Mixing Console - *Mixing Console*
4 line inputs (max dacs), 4 microphone inputs, 2 Outputs (stereo), stereo reverb

Files

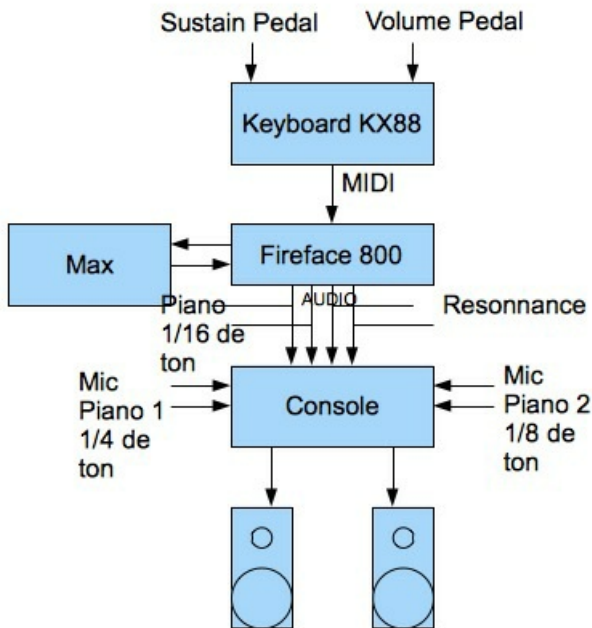
File	Type	Author(s)	Comment
rebonds-2020	Patch		
Rebonds	Score	Levinas/Lemoine	
Record	Audio file(s)	Ensemble L'itinéraire/aeon	

Instructions

Presentation:

This max patch simulates a 16th-tones piano with resonators. The mix between the sampled piano and its resonances should be carefully adjusted (see the calibration and tests section below).

AUDIO and MIDI Setup:

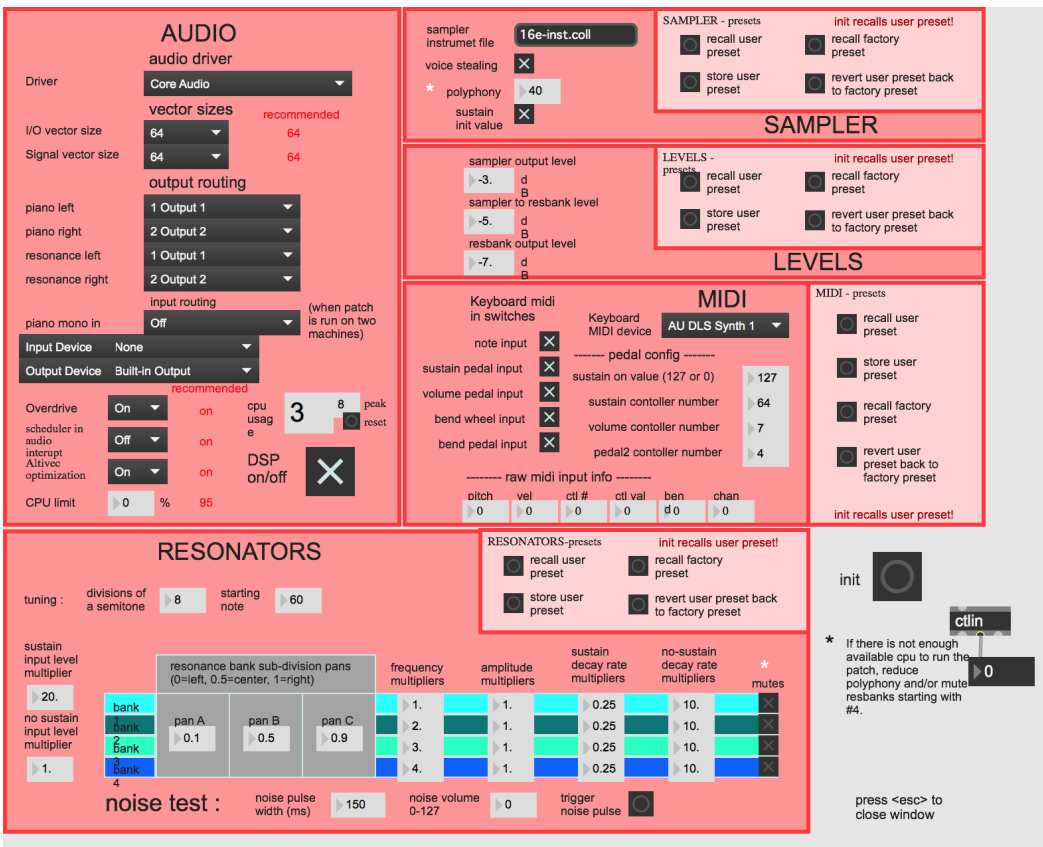


Software installation

1. Download *Rebonds2020.dmg* on your computer. Open it. Copy the *Rebonds* folder in your computer.
2. Open Max 8 and choose *.../Rebonds-2020* in *Options/Files Preferences*
3. Open *Rebonds2020.maxpat*



4. Check that there is no warning in the max windows, if it's the case, correct the path in *Files Preferences*, close the patch and restart from step 2_._
5. Double click on *p config* and choose your audio and MIDI configuration (see below : "Patch Presentation - Audio configuration).

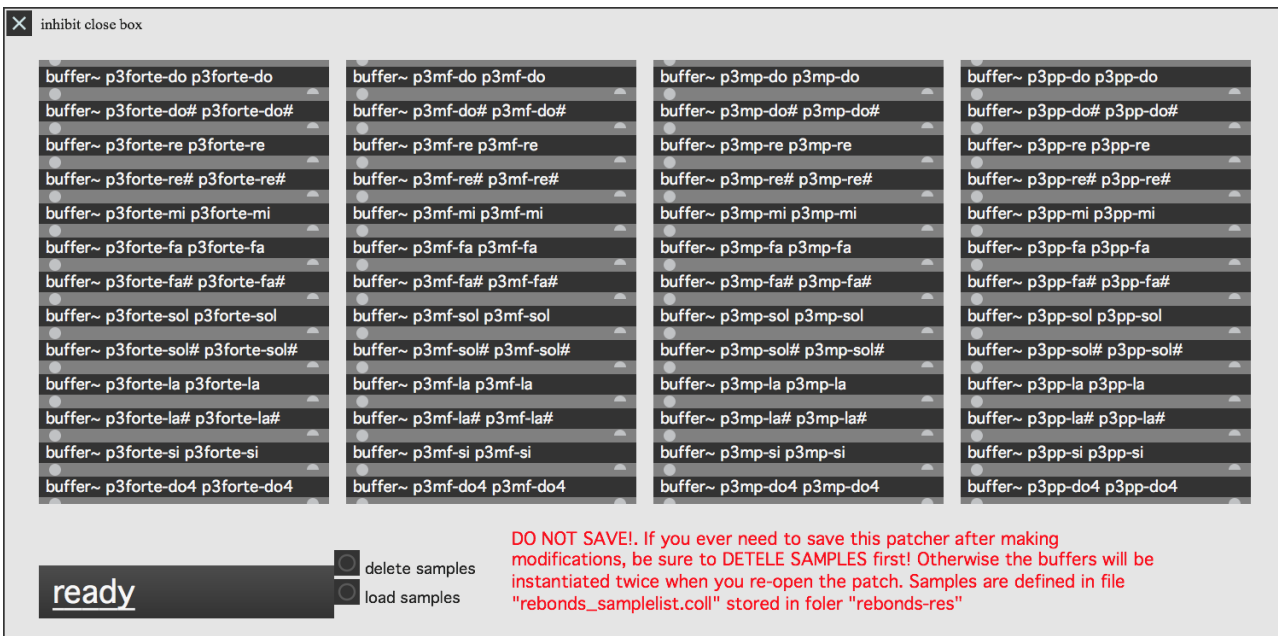


Initialization routine

When you open the patch:

0. Check IOVS and signalVS (must be 64) and samplerate (must be 44100Hz)
1. Click on *Load samples* (to be done only once in each session)

The window *Rebonds-sample* go in front of the screen and the *buffer~* objects appear:



2. Click on *Init* on the main window
3. Click on *DSP on/off* on the main window

System calibration and tests

MIDI tests

After the setup process, test the MIDI input sent by keyboard to the subpatcher “Display>MIDI keyboard input display”.

Check:

- sustain pedal
- volume pedal
- pitch bend controller
- keys

If you have any further problems, check the MIDI configuration in the window configuration.

Don't forget that the keyboard should be on MIDI channel 1.

Audio Tests

Activate the toggle DSP on/off and play some notes with the keyboard

Locate the piano sound in space

To make the setup easier, set the autoplay in the Interactive panel to **1** and the velocity to **70**

In the mixer device cut the volume of the resonators

The stereo image of the direct piano must be as wide as possible (low notes to the left, high notes to the right). Use pan and speaker position to give the feeling that the piano sound is coming from the KX88

The piano sound must not be “attached” to the speaker! In this diagram, the distance between the 2 speakers is used to create a wide virtual space. The main purpose is to simulate an acoustic piano mixed with the 2 other pianos

Balance between Pianos and Resonances

Set the level of the resonance to a minimum **10** or **11** seconds. The effect must be heard but subtle. You should not hear a “Lost in Space” effect ! In the Interactive panel, disable the autoplay. Play any sample from the MIDI keyboard, the sound must disappear after 7 seconds and the resonators continue for 3 or 4 seconds more. If the durations are too long or if you have the impression of hearing “Star Wars”, decrease the level of the resonances (config patcher, level section).

Staccato notes can be simulated by activating the toggle sampler/res sustain of the interactive panel.

The 16th-tone Piano

Adjust the 16th-tone piano to balance it with the acoustic pianos

1. Set the acoustic pianos mics to have a good amplification in the speakers used by the 16th-tone piano. Use similar pan.
2. Play the 16th-tone piano with the other; then with the two pianos simultaneously. At the same time, set the direct piano output equalizer parameters to produce a “spatial and timbral/harmonic” mix. Play especially tremolo, sostenuto around the F (middle of the 1/16 of a tone piano)
3. Adjust the location of the speakers and the panoramics if necessary

Adjustment of the resonances parameters

If the sound of the resonances is too poor, you can change them. Open the sub-patcher config>RESONATORS

To save the modifications, click on the button “store user preset” in the part RESONATORS - presets

Quick test - Playing the Piece:

After the initialization routine:

- press any note on the keyboard. If the signal is sent to the mixing console, that means it works.
- test the pedal
- The patch is ready !

Details - About the pedals (documentation for the performer)

Volume

To have optimum control of the dynamic on this piano, a volume pedal has been added. The performer must adapt his style to the sensitivity of the pedal to find the dynamic of this piece.

Bend

In this version, the sampler is integrated in the patch. That allows you to activate the pitch bend only for certain keys of the keyboard. There is a bend zone in the left part of the keyboard (between F1 and G#0).

The Bend pedal works only in this area. This allows you to play as far as the bass C by pressing slowly the pedal, leave the pedal pressed, then continue to play in the right side of the keyboard.

At the end of the resonance time of the note, release the pedal. In this way, medium et treble notes are not affected by the pitch.

Sustain

The sustain is used continuously. The patch implement this functionality (cf. toggle sampler/res sustain locate in display>Interactive panel).

Addendum : more details (Tom Mays)

Patch presentation - RESONATORS Configuration

- Tuning: resonators are tuned with the samples (in 16th-tone)
- divisions of a semitone: 8 division of the half-tone
- starting note: 60 for central C
- Sustain input level multiplier: 20, when sustain is activated the resonances are longer so you will need more volume
- No-sustain input level multiplier: 1, when sustain is disable the resonances are shorter so you will need less volume
- Resonance bank sub-division pans: each bank of resonators is composed of 3 parts to create 3 panoramic positions
- Frequency multipliers: each bank is related to an harmonic range on the piano (Frequency multiplier = harmonic)
- Amplitude multipliers: amplitude of each bank
- Sustain decay rate multipliers: coefficient of decay of the resonators during the sustain
- No-sustain decay rate multipliers: coefficient of decay of the resonators without sustain
- Mutes: each bank can be stopped to get more CPU load. If you use a powerful macintosh you can activate all 4 banks (desactivate the toggle mutes)

Noise test:

- noise pulse width: timing in millisecond of the noise pulse
- noise volume: volume of the noise
- trigger noise pulse: click here to activate noise pulse in the resonators

RESONATORS

tuning : divisions of a semitone starting note

sustain input level multiplier no sustain input level multiplier

resonance bank sub-division pans (0=left, 0.5=center, 1=right)

bank	pan A	pan B	pan C
1	0.1	0.5	0.9
2			
3			
4			

noise test : noise pulse width (ms) noise volume 0-127 trigger noise pulse

RESONATORS-presets

recall user preset recall factory preset

store user preset revert user preset back to factory preset

init recalls user preset!

frequency multipliers	amplitude multipliers	sustain decay rate multipliers	no-sustain decay rate multipliers	* mutes
1. 1.	1. 1.	0.25	10.	<input type="checkbox"/>
2. 2.	1. 1.	0.25	10.	<input type="checkbox"/>
3. 3.	1. 1.	0.25	10.	<input type="checkbox"/>
4. 4.	1. 1.	0.25	10.	<input type="checkbox"/>

Patch presentation - Velocity Correction

In the INTERFACE part of the main window, click on the velocity input corrections button.

The response curve of the velocity has been set to have the best response from the KX88 keys. This should allow you to play pianissimo, then increase to 127 without pressing the keys too hardly.

- Vel scale factor: multiplier factor of volume values where 1 = no change (default = 1.2).
- Velocity curve factor: curve definition. Positive for exponential, negative for logarithmic (default = 1.4).

VEL - presets (Cf.: SAMPLER Configuration).

note: KX88 keys take too much force to reach vel 127. This scaling allows velocity to reach 127 with less force.

vel scale factor (recommended around 1.2)

velocity curve factor (recommended around 1.4)

pos = exponential; neg = logarithmic; 0 = linear

graphic representation of velocity curve

vel in

vel out

press <esc> to close window

VEL-presets

recall user preset

store user preset

recall factory preset

revert user preset back to factory preset

init recalls user preset!

Patch presentation - Sample Keygroup Editor

In the INTERFACE part of the main window, click on the “open instrument editor” button

Simple Sample Instrument Editor

keygroup

save change


revert to saved

instrument data file

pitch lo <input type="text" value="9"/>	pitch hi <input type="text" value="16"/>	amp scale (0 - 99) <input type="text" value="99"/>	env att ms <input type="text" value="0"/>
vel lo <input type="text" value="97"/>	vel hi <input type="text" value="127"/>	amp veltrk amt (-99 to 99) <input type="text" value="99"/>	env dec ms <input type="text" value="0"/>
sample <input type="text" value="p3forte-do"/>	pan fol lo ptch <input type="text" value="24"/>	pan fol hi ptch <input type="text" value="112"/>	env sus dB <input type="text" value="0"/>
root pitch <input type="text" value="12"/>	pan fol lo pos (-99 to 99) <input type="text" value="-99"/>	pan fol hi pos (-99 to 99) <input type="text" value="99"/>	env sus dec ms (-1 = infinite) <input type="text" value="-1"/>
detune (+/- cents) <input type="text" value="-20"/>	filter freq <input type="text" value="1000"/>	filter veltrk amt (-99 to 99) <input type="text" value="35"/>	env rel <input type="text" value="80"/>
tuning numerator <input type="text" value="1"/>	filter keytrack on/off <input type="checkbox"/>		env amt (0-99) <input type="text" value="99"/>
tuning denom <input type="text" value="16"/>			
loop on/off <input type="checkbox"/>			
bend range <input type="text" value="0."/>			

press <esc> to close window

11/13

© IRCAM 

This documentation is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Program note

Rebonds est fondée sur le principe de la superposition de trois modes écrits pour trois pianos accordés différemment : l'un sur le principe du tempérament, l'autre en relation de quarts de tons et le troisième en seizièmes de tons. L'intérêt de ces superpositions ne se résume pas à l'utilisation paradoxale des battements. Ce qui me semblait essentiel était la relation enharmonique des différents modes qui provoque lors de la rencontre micro-intervallique des unissons et des battements complexes.

Rebonds utilise deux principes d'écriture. Le premier élucide la signification du titre : il s'agit d'une polyphonie par rebondissements à l'unisson de lignes écrites en canon selon les principes que j'ai déjà développées dans *Préfixes* et dans mes *Trois études pour piano*. Le second principe est celui de l'ornementation. Le piano en seizièmes de tons ornemente des unissons de la flûte, du violon, du violoncelle et de la clarinette.

La forme de l'œuvre est conçue en boucle fermée ou spirale. Le système tournoyant qui se referme donc sur lui-même procède de la superposition des modes micro-intervalliques. La forme n'est donc pas conçue comme une évolution directionnelle mais comme un système clos.

Michaël Levinas.

Version documentation creation date: April 7, 2020, 12:19 p.m., update date: May 6, 2021, 3:09 p.m.