Sun Propeller

FOR VIOLIN AND ELECTRONICS

Nina C. Young

[Documentation and Technical Requirements]

[updated Mar. 7, 2013]

Sun Propeller
Nina C. Young

CONTENTS:

I. GENERAL INFORMATION:

Title:	*Sun Propeller*
Instrumentation:	violin and electronics
Year composed:	2012
Duration:	~9min.
Premiere:	March 24, 2012 – Emily Westell, Miller Theatre, New York, NY

II. PROGRAM NOTE:

The title, *Sun Propeller*, refers to the propeller-like rays of light that occur when sunbeams pierce through openings in the clouds. Scientifically, these columns of light that radiate from a single point in the sky are known as crepuscular rays. The actual phrase "sun propeller" is a literal translation of the Tuvan word for these sunbeams: *Huun-Huur-Tu* (also the name of a famous Tuvan folk singing group).

The idea for this work came while I was researching the music of Tuva. Their music, particularly the practice of throat singing, is a vocal imitation of natural surroundings (the sounds of babbling brooks, wind resonating against mountains, etc.) and is used to pay respects to the spirits of nature. This type of Tuvan music is built up upon a low drone-tone with overtones floating above. The music values timbre and vertical intervals over traditional melodic and harmonic principles. While Sun Propeller does not attempt to imitate Tuvan music in anyway, it borrows the concept of the static drone and timbre preference in the language used to write the violin and electronics.

III. CONTENTS OF PERFORMANCE PACKAGE:

- Score (with explanatory notes)
- Violin part (scordatura)
- Recording
- Max Patch (with necessary audio files and externals)
- Read Me
- Technical Rider

IV. CONTACT:

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V. ELECTRONICS

A. OVERVIEW:

Sun Propeller is scored for violin and electronics. The electronics component consists of live processing of the violin and triggered audio samples. The electronics are sonically comprised of a drone based on the overtone spectrum of D, then A, then D again (the drone timbrally transforms throughout the piece) and manipulations of the live violin sound (adjusting overtone spectra, harmonizers, ring modulation, etc.) The electronics are controlled using a Max/MSP patch. The piece was originally conceived for a quadraphonic array, but Stereo and 5-Channel versions of the patch are available upon request.
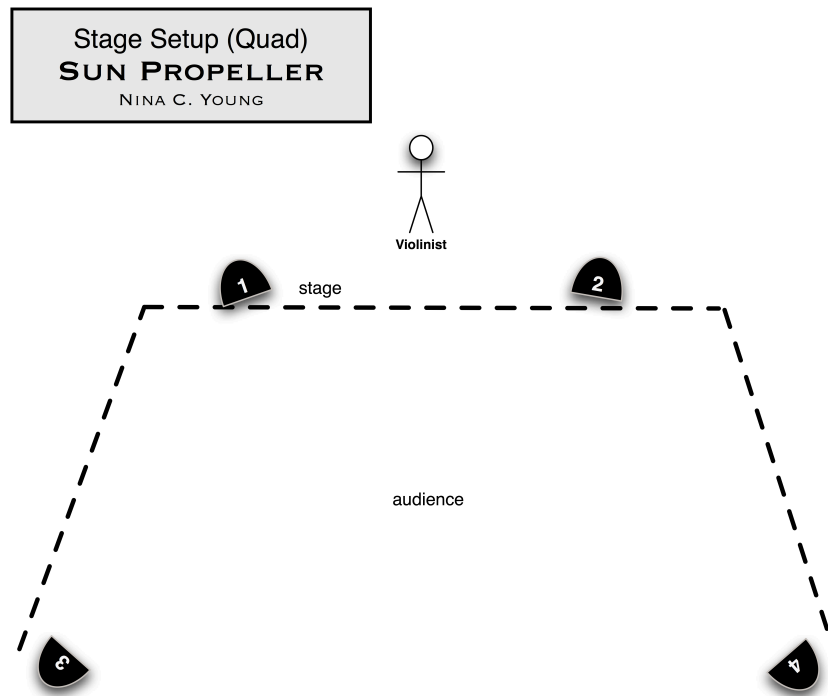
B. SYNCHRONIZATION:

The score contains cue numbers (in triangles below the violin part) that correspond to the Max Patch. These cues can be triggered in MaxMSP by the performer (using a foot pedal) or via the computer operator following along in the score (spacebar).

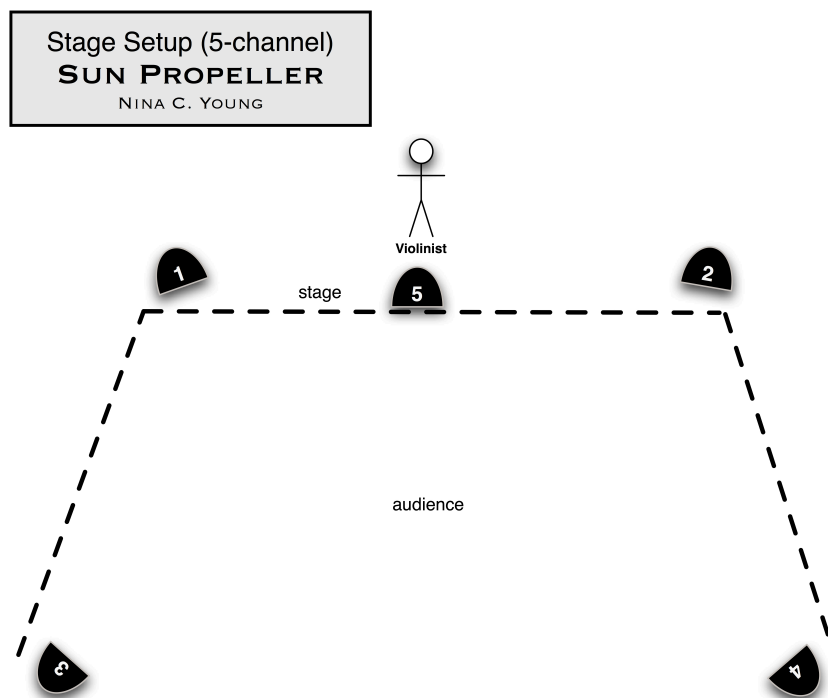### C. EQUIPMENT LIST: (QUADRAPHONIC VESION)

- Macbook Pro (10.6 or higher) running fully licensed Max 6 (6.0.4 or higher) [the Audio Unit DSP will <u>not</u> work in Runtime].
- 1 condenser microphone (preferably DPA 4099V – violin mic, DPA 4088 – headset mic, or equivalent)
- 4 self powered loudspeakers and stands
- 1 audio interface (ex: MOTU Traveler) – minimum 1 input, 4 outputs
- 1 midi foot pedal
- 1 midi interface
- 1 mixer (min. 1 microphone input, 5 line inputs, 4 outputs)
- 1 stage monitor (if necessary)
- necessary cables, snakes, etc.

D. STAGE LAYOUT:

1. Quadraphonic Version

Stage Setup (Quad)
SUN PROPELLER
NINA C. YOUNG

Violinist

1   stage   2

audience

3   4

2. 5-Channel Version

Stage Setup (5-channel)
SUN PROPELLER
NINA C. YOUNG

Violinist

1   stage   5   2

audience

3   4

3. Stereo Version

Stage Setup (Stereo)
SUN PROPELLER
NINA C. YOUNG

Violinist

1

2

stage

audience
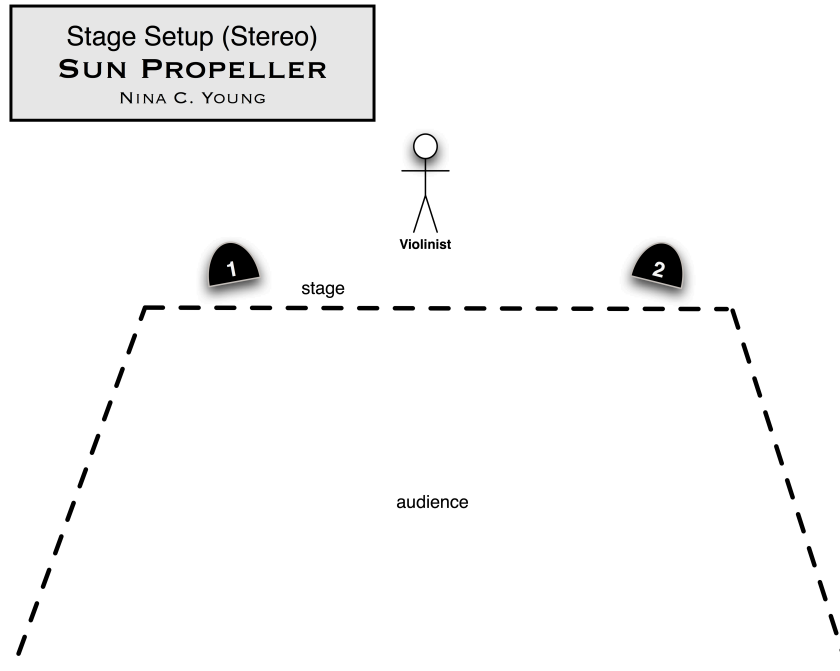
E. AUDIO CONNECTIONS (QUAD VERSION):

Mixer connections for:
SUN PROPELLER
NINA C. YOUNG

Violinist

DPA headset mic
(input 1)

MIDI foot pedal

monitor

stage

audience

Mac OSX 10.6.8
MaxMSP 6

ins   1

Audio Interface

1   2   3   4   6

to speakers 1-4, stage monitor (6)

ins   1   2   3   4   5   6   aux send   1   1   2   3   4   6   outs
                                              (pre)

aux   1

speaker assignments   1   2   3   4 1&2 6

INS:
ins 1 - 4: electronics (sf + live processing)
in 5: violin mic (with eq + reverb from mixer)
in 6: electronic mix-down for stage monitor

AUX:
aux 1: violin input (pre fx) to computer

OUTS:
outs 1 - 4: soundfiles + live processing
outs 1 & 2: optional sound reinforcement
out6: performer stage monitor

MIXER

*violin sound reinforcement may not be necessary

F. LIVE MIXING INSTRUCTIONS:

The violin and electronic sounds are meant to blend together. While the audio engineer should not be timid with the volume of the electronics, it is important that the violin is heard throughout – and thus the performer may need to be amplified and diffused through the front stereo pair. Gentle reverb may be applied to the amplified violin sound in the case of an overly dry space. Please note that the piece begins and ends quietly.

The loudest section of the piece occurs at m.36. When doing a sound check it is important to check the balance from m.23 through m.50.

Please listen to the recording available at the following website and use that a reference for live-mixing: http://ninacyoung.com/NinaCYoung-site/Listen/Mixed/SunPropeller.html

G. INSTALLATION OF SOFTWARE:

MaxMSP 6 (Full Version, not Runtime) must be installed on a MacBook Pro (minimum OSX10.6). All of the necessary patches, files, and externals to run *Sun Propeller* are available in the Performance Folder.

Before opening the patch, install the Audio Unit externals that are used in the patch. The 3 .component files can be found in the subfolders of Young_SunPropeller_V.6/patch/DSP:

- MNSpectralDroneMaker.component
- MNSpectralGlidingFilters.component
- MNSpectralGranulation.component

Place these files in your computer's library: Library/Audio/Plug-Ins/Components. Optionally, one can install the full SoundMagic Spectral plug-in package using the easy-install found in Young_SunPropeller_V.6/patch/install/SoundMagic Spectral Beta 6.

Open Max. Go to Open/File Preferences and select the Patch folder:

Young_SunPropeller_V.6/patch

Make sure that any other versions of SPAT in the Max directory are disengaged (only use the SPAT that comes with this patch). Quit Max.

Please contact Nina C. Young for any Research Group codes that may be required.

H. SOFTWARE OPERATION:

Once all hardware connections are made, start Max and open the patch. Check to make sure that there are no error message in the Max window (command-M).

Open the patch and locate the main patcher window. The follow the instructions below.
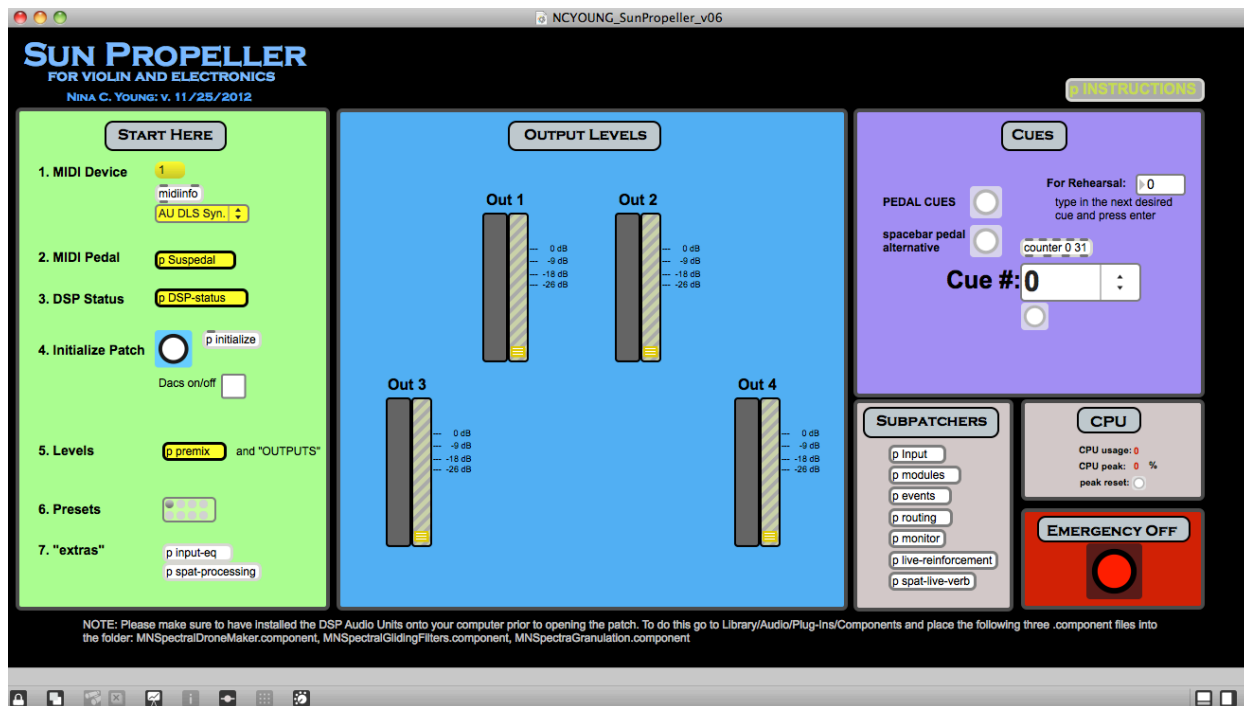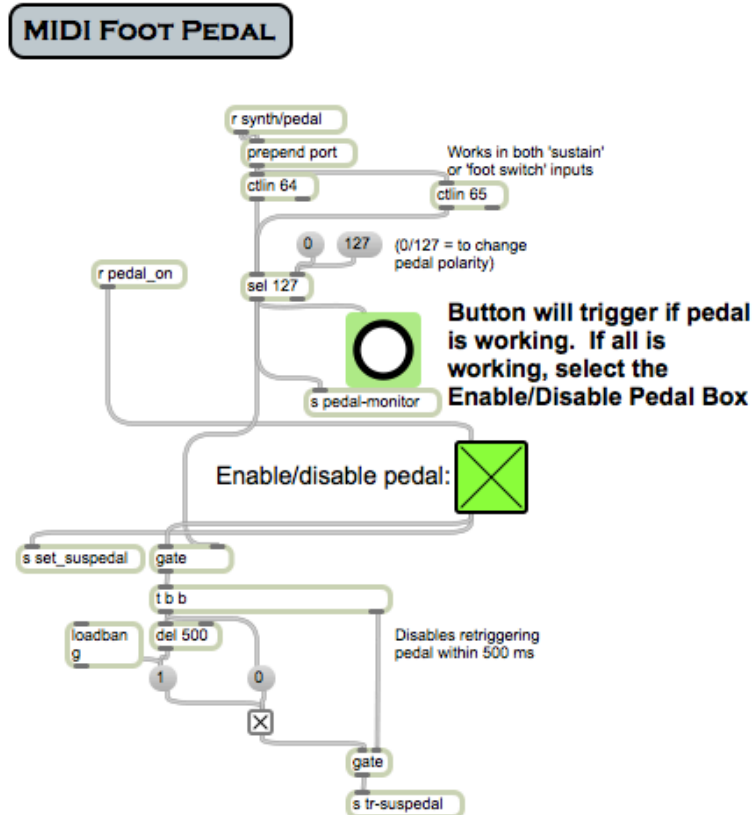

1. **MIDI Device.** Make sure the MIDI Device is connected and selected. Click on the yellow "1" to populate the MIDI device list. Using the pull-down menu (in yellow) select the desired MIDI device.
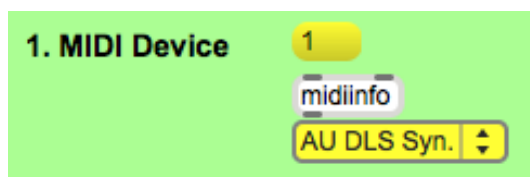
2. **MIDI Pedal.** Check to make sure the MIDI pedal is working. Open the yellow "p Suspedal" subpatcher.

Test the foot pedal. The button will flash yellow each time the pedal is clicked. If it is working and you wish to use the foot pedal during the performance, enable the foot pedal by toggling the green square.

*Pedal polarity can be adjusted by clicking the grey "0" or "127" ovals in the subpatcher.

If the pedal is not working, please check MIDI connections in the Mac's Audio MIDI Setup, make sure the correct MIDI device was selected in step 1, check the MIDItester in Max's "Extras". Restart the patch if necessary.

3. **Audio Interface/DSP.** Ensure that the correct Audio Interface is selected. Open the subpatcher "p DSP-status".
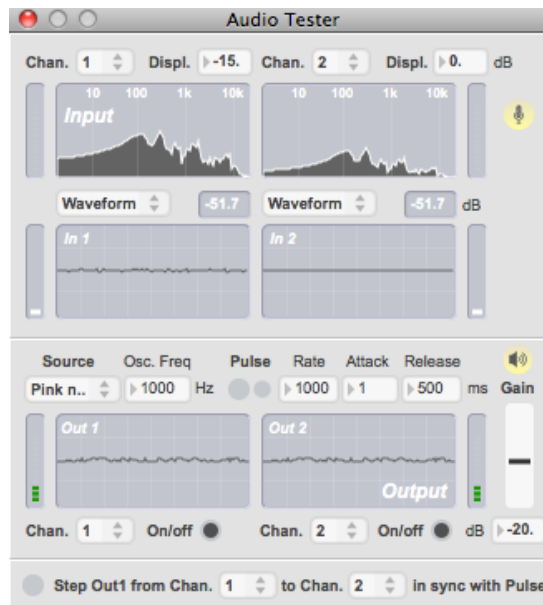
Select the appropriate Driver, Input Device, and Output Device that matches your Audio Interface.
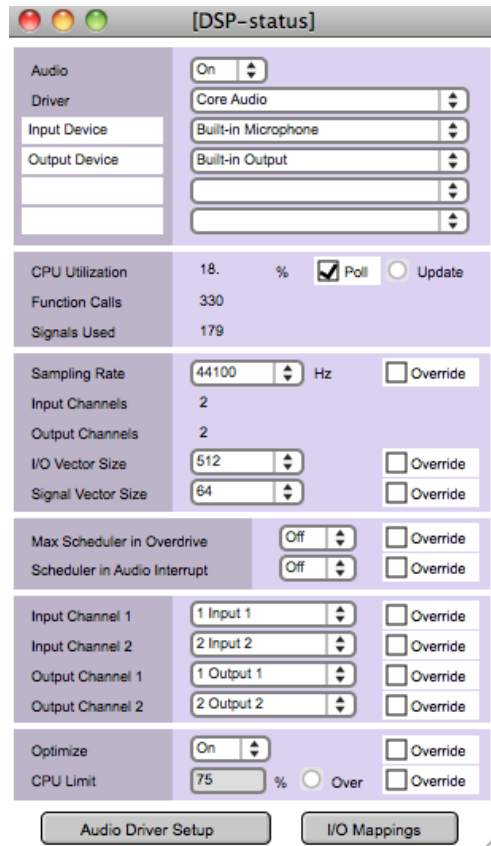

a. Run a speaker test. In the "extras" menu, select Audio Tester. Check that signal is coming in through Input Chanel 1 and run a pink noise test through all four speakers, making sure all signal connections are functional and spatialization is correct.

4. **Initialize the Patch.** Initialize the patch by clicking the blue button. This turns audio on (dacs), recalls saved presets, turns on the pedal, and preloads audio files.

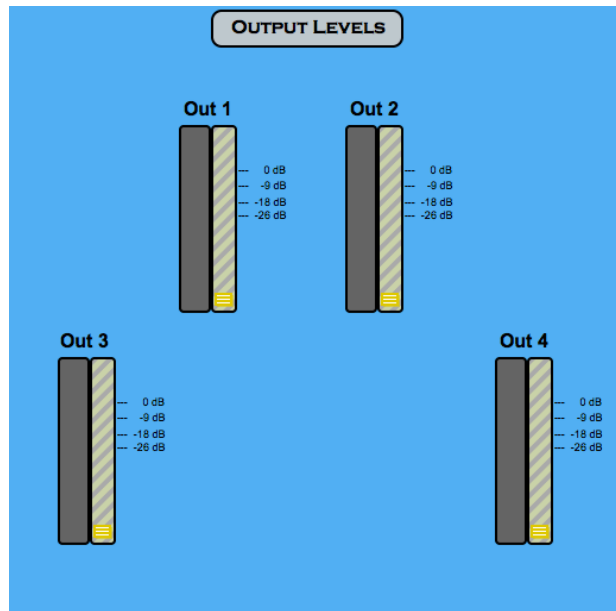5. **Levels.** Check (and adjust) levels in the subpatcher "p premix".
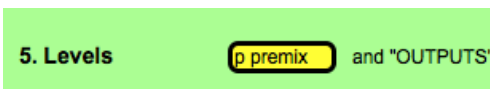
This subpatcher contains the controls for Soundfile, Live Processing, and Violin Input levels. It is recommended to keep this subpatcher open during performance to adjust levels if necessary.
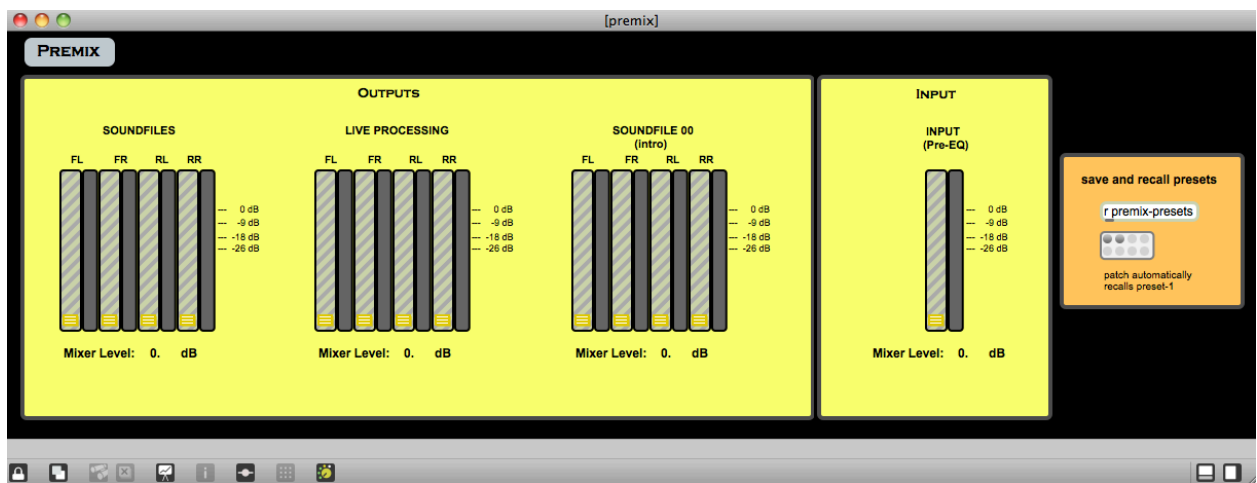
a. The Soundfiles Mixer controls the premix levels of all of the soundfiles triggered in the piece.

b. The Live Processing Mixer controls the premix levels of all of the live DSP in the piece.

c. The Soundfile 00 Mixer controls the levels of the introductory soundfile that is triggered when the performer walks onto the stage (while they are setting up to play).

d. The Input Mixer controls the level of the violin input before it reaches the EQ.

e. Levels can be saved using the presets in the orange box (shift-click the appropriate circle to save the state of the subpatcher). Preset-1 is recalled when the patch is initialized (step 4).

Output Levels are adjusted in the main patcher:

OUTPUT LEVELS

Out 1

— 0 dB
— -9 dB
— -18 dB
— -26 dB

Out 2

— 0 dB
— -9 dB
— -18 dB
— -26 dB

Out 3

— 0 dB
— -9 dB
— -18 dB
— -26 dB

Out 4

— 0 dB
— -9 dB
— -18 dB
— -26 dB

6. **Presets.** To save levels post-rehearsal, shift-click in the first preset of the "premix" subpatcher as described above. To save main Output Levels in the main patcher, shift-click in the first preset. This state will be recalled when the patch is initialized.

6. Presets

7. **Extras:**

7. "extras"

p input-eq
p spat-processing
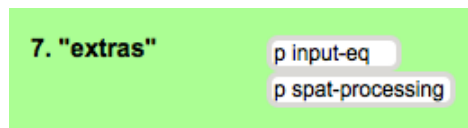
a. For input EQ use the subpatcher "input-eq". This can be used to roll off bass rumble or to assist with a feedback issue.

b. To adjust SPAT (Spatlialization) use the "spat-processing" subpatcher. Make sure that no other instances of SPAT are located within the Max directory.

8. **Cues.** The patch is synchronized through a series of 31 cues that are stepped through be either the performer (foot pedal) or the patch operator (space bar).
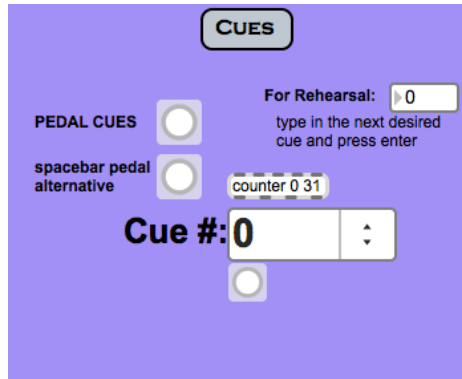

In either case the patch operator should make sure the cues are being stepped through appropriately. Should a problem arise, the cues may be readjusted by typing in the next desired cue number and pressing enter, or the cue should be selected from the pull-down menu. This method may also be used in rehearsal to conveniently repeat or step-ahead through passages.

In performance the first cue (Soundfile 00) is triggered as soon as the performer enters the stage (and triggers the foot pedal) while he/she is still setting up to play. This soundfile loops until the performer is ready to begin with Cue 1.

9. **Subpatchers.** All of the subpatchers, not yet mentioned, are located here.
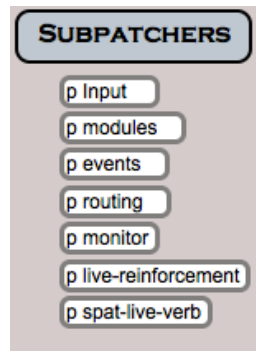
a. **p input.** Violin input comes through this subpatcher. It also offers the option of a running a soundfile through the patch as a mock-up.
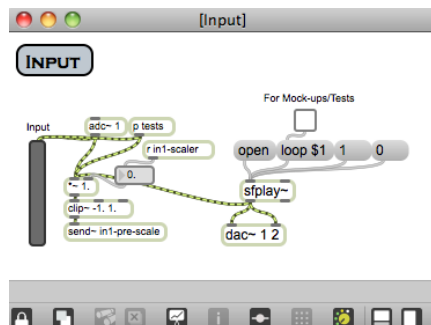
b. **p modules.** [do not adjust] Contains the soundfile players and DSP modules used during the piece.

c. **p events.** [do not adjust] Contains the series of events that are triggered throughout the piece.

d. **p routing.** [do not adjust] Audio signal routing and presets.

e. **p monitor.** Should a monitor be desired, this can be used to send a mix of channels 1-4 to a stage monitor (output 6), the level of which can be adjusted here. (In previous performances of this work, this has never been necessary). To use, toggle the box and adjust the output level accordingly.
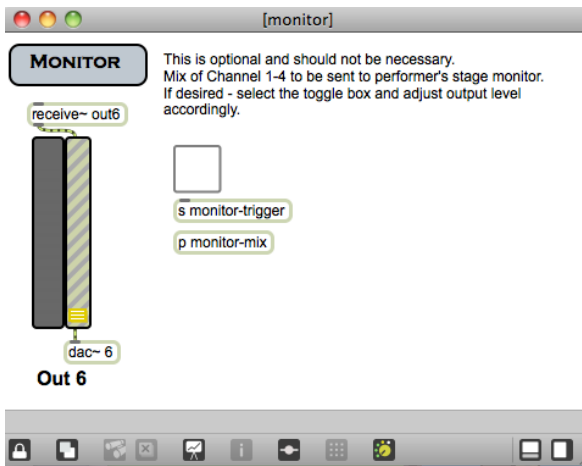
f. **p live-reinforcement.** The violin should sound natural and yet be balanced with the electronics (and not overpowering) thus sound reinforcement must be used with caution. If sound reinforcement is necessary, it is HIGHLY RECOMMENDED to do so through the mixing console if the equipment permits (see page 6). If not this subpatcher may be used.
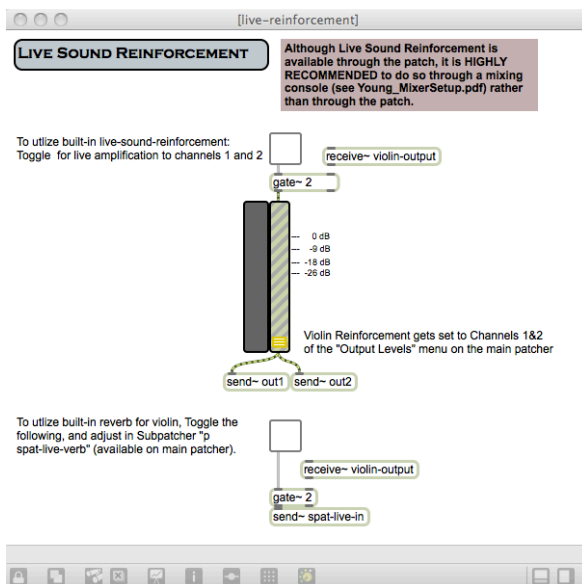
    i. Toggle for live-sound reinforcement of channels 1 and 2 and adjust the level as necessary. The Violin Reinforcement then gets sent to Channels 1 & 2 on the main patcher.

    ii. If reverb is also desired, toggle the lower box and adjust reverb (as necessary) in the subpatcher "p spat-live-verb".

g. **p spat-live-verb.** Live reverb is probably not necessary and should only be used in a very dry space. Mild reverb can be applied through the mixing console or hardware. If not available, then this patcher provides reverb sent to channels 1 and 2. It must be toggled in the subpatcher "p live-reinforcement" (see step 9.f.ii).
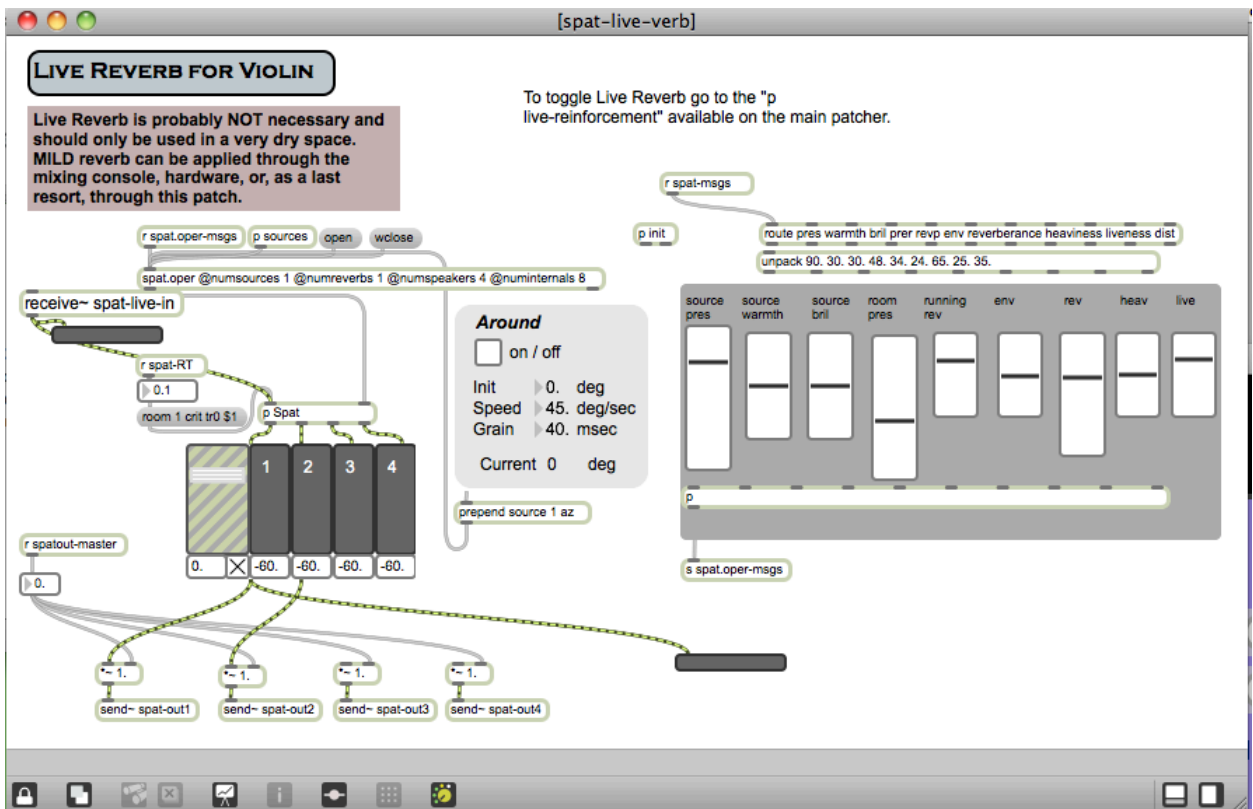
10. Emergency Off. Turns off all processing and audio.

I. PERFORMANCE:

I highly suggest restarting Max and running the piece "fresh" in concert. Re-triggering the cues multiple times after rehearsals can occasionally lead to "pops" and "clicks" in the live processing (problems that are avoided with a re-launch of the program).

Cue-0 should be triggered by the computer technician of the performer as soon as possible in the performance. This cue contains two looping sound files of violin-bow-noise. The purpose of this cue is to "mask" the awkward stage set-up inherent in electro-acoustic works with live performers. Cue-0 allows the technician to make sure the sound is working and to check that the MIDI pedal (if being used) is, in fact, triggering cues. Please use one of the two scenarios in starting the piece:

1. Performer triggering cues with MIDI pedal: If the performer is triggering cues with the MIDI pedal, he/she should press the pedal immediately upon walking on stage. (see Step-3, subpatcher "p Suspedal"). Once the pedal connection has been confirmed, the performer triggers the pedal once more to start Cue-0 (the looping soundfile). At this time the performer can make final adjustments, re-arrange the music on the stand, connect to the microphone (if using a wired headset mic), enter the proper headspace, etc. Cue-01 is on loop, and thus in theory could go on forever. Once the performer is comfortable and ready to perform the piece, all they have to do is begin to play and trigger Cue-01.

2. Technician triggering cues with "spacebar": The technician should trigger Cue-0 just as the performer walks on stage. The performer then can take time to set-up and prepare for performance. As the performer's bow touches the violin to begin the first bowed note, the technician should trigger Cue-01.

Cues follow in consecutive order. The technician should follow along in the score in the case of a missed cue. Should the performer or technician miss or advance a cue, use the "For Rehearsal" text box to type in the next desired cue and press enter. The next trigger will instantiate that cue.