

Live Performance, the Interactive Computer and the Violectra

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Arts & Humanities
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Fig. 1:
Violectra electric violin



Fig. 2: *schismatics* (2007, rev. 2010) for electric violin and computer: opening of movement I

schismatics
for solo electric violin and live electronics

Sam Hayden (2007)

♩ = 43	Scordatura:
	E
	A 1/4♯
	D
	G 1/4♯

Violectra (fingered)

(Sounding)

col legno - jeté (damp strings) *fff*

arco sul pont. flautando sul tasto *ffpp*

gliss. gliss.

sul pont. molto sul pont. (scrape) *ff*

7:4 7:4 3:4 5:4

Fig. 3:

schismatics (2007, rev. 2010) for electric violin and computer: symmetrical structure

I

quaver = 43

2'54"

col legno / jeté / scrape / flautando

VII

quaver = 47

3'55"

flautando / spicc./
hammer-on

II

quaver = 53

2'18"

pizz. / arco / flautando / hammer-on

VI

quaver = 59

2'10"

pizz. / arco / gliss.

III

quaver = 61

1'04"

scrape / tremolo

V

quaver = 67

0'45"

tremolo / gliss.

IV

quaver = 71

0'31"

jeté / col legno

Fig. 4:

3rd party sound analysis Max external objects added to the *schismatics* (2010) Max/MSP patch

- ◉ **analyzer~** (Tristan Jehan's analysis object outputs multiple perceptual features). Noisiness estimator (spectral flatness): 'noisiness':
0 = pure (sine) / 1 = noise (white).
- ◉ **yin~** (IRCAM Real Time Musical Interactions) outputs fundamental pitch estimation, signal amplitude and a periodicity or 'quality' factor:
1 = pure (sine) / 0 = noise (white).
- ◉ **envfol1~** (Envelope Follower from IRCAM *Jimmies* Library).
- ◉ **ll~** (Nick Collins' 'on the fly' machine listening and learning system; extracts features of input sounds, e.g. frequency content of spectrum, energy, brightness, noisiness, onsets etc., and discovers timbral clusters).
- ◉ **Onset detection** (via `bonk~`, timer & coll) for capture of temporal information (rhythm recorder). Records delta-times between live e-violin attacks, recalled in sequence as rhythmic series.

Fig. 5:

References for 3rd party Max/MSP externals:

- Collins, N. (2010). ll~, for Mac OSX, Max 5. Listening and Learning system for Max/MSP. <http://www.cogs.susx.ac.uk/users/nc81/code.html#Max>
- Jehan, T. (2008). analyzer~, version 1.4.1 for Mac OSX UB (Max/MSP external object). <http://web.media.mit.edu/~tristan/maxmsp.html>
- Schell, N. (2007). IRCAM IMTR-Analyse library. yin~
The module implements the YIN algorithm by Cheveigné and Kawahara outputting a fundamental pitch estimation, a periodicity factor and the signal energy.
http://imtr.ircam.fr/imtr/Max/MSP_externals
<http://forumnet.ircam.fr/>
- Settel, Z. (1994-98). IRCAM *Jimmies* library: envfol1~ / fshift1~ etc.
The *Jimmies* library is an historical collection of patches, abstractions and external objects developed for the MAX/FTS environment on the ISPW at the beginning of the 1990s, and assembled into a formal collection of tools by Zack Settel in 1993.
http://www.maxobjects.com/?v=libraries&id_library=59&id_platform=0&start=0

Fig. 6: II~ subpatch from *schismatics* (2010) Max patch

[[II_stuff]]

open /Users/sth23/Desktop/schismatics_complete/schismatics_complete.aif

II- TEST SOUND

RESET

p spare II~_commands

SECTIONS
(KEYS: 1-7)

1

II- comparison of complete and individual movement clusterings

II~ for schismatics individual movements

indexed color (0-255)

```

0.61146 0.021651 0.187474
0.059271 0.385759 0.049903
0.426727 0.051334 0.676835
0.198804 0.241173 0.017323
0.519351 0.382142
    
```

II~ for schismatics complete

indexed color (0-255)

```

0.389844 0.805768 0.582131
0.791939 0.628558 0.575111
0.629904 0.709025 0.775062
0.782166 0.566506 0.896712
0.509884 0.822561
    
```

Fig. 7: Analysis data from 3rd party Max/MSP external objects is mapped:

1. to (conditionally) turn live sampling inputs on/off
2. to alter control envelopes for sample playback (play~)
3. to trigger sample playback envelopes (play~)
4. to (conditionally) turn delays on/off
5. to probability controls which select which live samples are to be played
6. to trigger random sample playback (groove~)
7. to control sample playback speeds (groove~)
8. to control frequency shifting (proportional to amplitude envelope)
9. to auto-select DSP configurations (sound processing effects)

Fig. 8: Main Max/MSP patch from *schismatics* (2010)

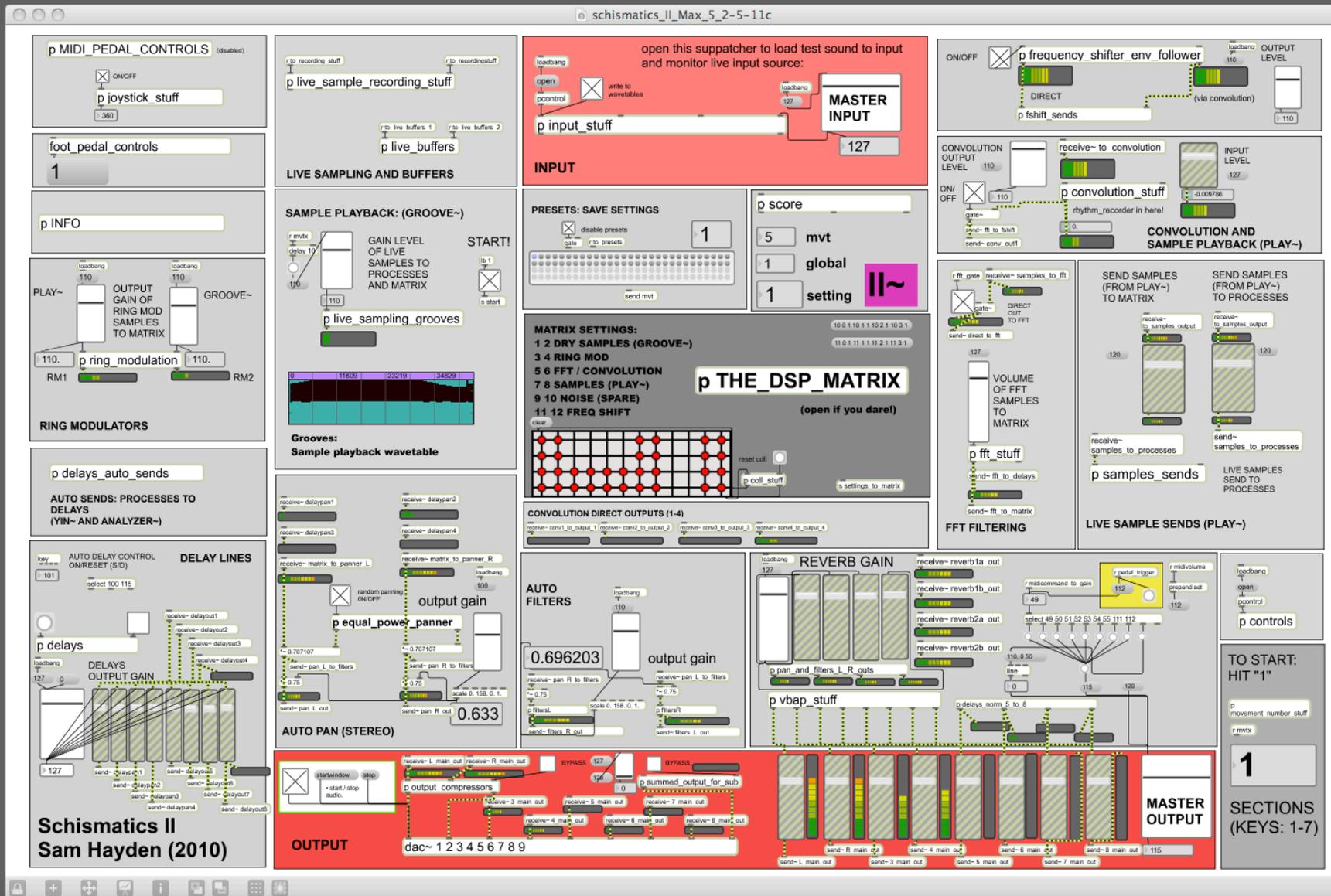


Fig. 9:
Project website

<http://www.dur.ac.uk/music/intcompviolproject/>