YAN MARESZ - METALLICS (1995) for solo trumpet and live electronics
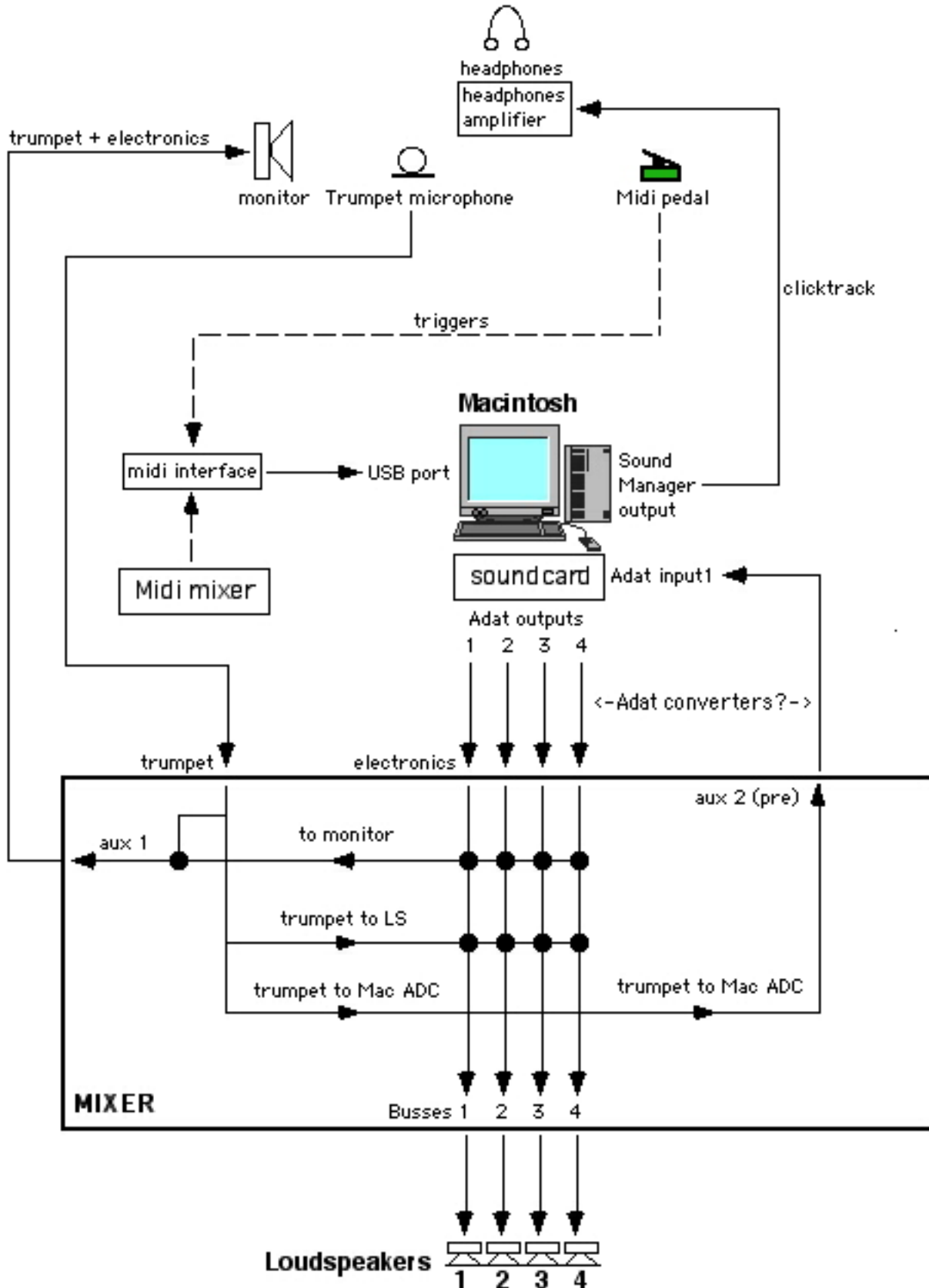Production: IRCAM
Real time version running under Apple Macintosh

- first patch version on NEXT/IRCAM-ISPW by Xavier Chabot
- ported to Cycling74 Max/MSP by Manuel Poletti (2001) - contact: <manuel.poletti@ircam.fr>

Yan Maresz – Metallics (2001)   Audio & Midi connections

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REQUIRED PERSONAL

- 1 trumpet player
- 1 sound ingeneer
- 1 musical assistant for score and electronics following

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LIVE ELECTRONICS SYSTEM REQUIREMENTS

sound diffusion:

- 1 digital mixing console - type Yamaha 01V/03D/01V with Adat option card
- 4 separate loudspeakers (i.e.: 500W per channel) - for a quadraphonic effect + appropriated P.A.

on stage:

- 1 microphone - for the trumpet - + 1 stand
- 1 monitor loudspeaker - for the player to monitor the sound diffusion - + appropriated P.A.
- 1 headphones amplifier + 1 headphone - for the player to hear the clicktrack
- 1 sustain midi foot pedal - for the player to trigger midi events - connected to the input of the Midi interface
- optional: 1 16 channels midi mixing console - type: Peavey...

computer hardware:

- 1 Apple Macintosh G4 533 MHz or higher
- 1 Apple compatible screen 17 inches
- 1 PCI soundcard - type: Korg 1212 I/O, MOTU 24/08, RME Hammerfall, Didgidesign Digi001, etc... - that supports at least 1 digital input (Adat format) and four separate digital outputs (Adat format)
- 1 standard USB/midi interface - type: Midisport, MOTU MicroExpress, etc... - that supports at least two midi inputs

software:

- Mac OS 9.0.4 or later
- 96 Mb of RAM
- 160 Mb of free hard disk space
- Opcode OMS 2.3.8 installed on the hard disk
- Cycling74 Max/MSP installed on the hard disk - versions : Max 3.6.2/MSP 1.7 - if you don't own them, you can still play the MetalX patch using the Max/MSP runtime, so called "MaxMSPplay", that comes with the CD-ROM, but you won't be able to edit the patch.
- Ircam CD-ROM containing all necessary MetalX Max/MSP patches/soundfiles libraries

* stage, audio, midi setups:
please see the graphic documentation that came with the package.

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ABOUT THE PIECE AND THE SETUP

The trumpet is playing through a microphone.
The microphone signal is sent both to the four loudspeakers and to the sound inputs of the Mac, where it will pass through various effects such as delays, reverbs, filters, harmonizers, spatializers, chorus...then it is sent back to the four loudspeakers and mixed together with the trumpet signal.
The effects signals are ran in real time under the Max/MSP software.
MSP calculates the effects signal while Max sends events to the effects, in order to modify their behavior all along the piece.

The writing of the piece brings a constant interaction between the player and the electronics, so the

electronics are calculated according to what he's playing.
For best results it is recommended for the player to play the written rythm as "sharp" as possible.
Two technical ways are proposed to find a good balance between a better "accuracy", for more live feeling, and a better "efficiency", for more preciseness, according to the trumpet player.

1) first possibility:

Events are triggered by the trumpet player him(her)self, using a midi sustain foot pedal.
Events are notified inside the musical score, so (s)he can synchronize them to his/her playing.
The musical assistant should follow the score and verify that the player doesn't miss any event.
He has the possibility to correct the errors, using the Mac keyboard, or by clicking with the mouse into the Max patch.
Some parts of the piece need that the events are triggered synchroneously with some soundfiles, so, for those parts, a clicktrack is sent to the player via headphones.
That's a better way to keep the maximum of liveness for the piece.

2) second possibility:

Events are triggered by a midifile wich is automatically loaded with the Max patch.
While the events are automated inside the patch, the midifile sends a continuous clicktrack to the player via headphones.
This way, nor the player nor the musical assistant have to care about the regularity of triggers, or of events mismatches.
That's a better way to keep the maximum of efficiency.

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ABOUT THE SOUND DIFFUSION

The trumpet signal is sent equally to the four loudspeakers.
Each of the four sound outputs of the Mac are sent separatly to one of the four speakers (out1 to ls1, out2 to ls2, out3 to ls3, out4 to ls4).
One should find a good balance between the trumpet and the electronics signals, keeping in mind that electronics are a constant and essential part of the piece, and that one should hear the different signals (live & electronics) like sounding all "together".
The four loudspeakers must be turned in order to form the most regular squared quadraphony around the audience (please see the graphic setup documentation).
The sound result must be a constant and omnipresent energy.
In very "dry" rooms, the sound ingeneer should inject both the trumpet and the electronics signals into a slight reverb effect, whose output should be diffused into each of the loudspeakers, in order to compensate eventual sound "holes".The reverb parameters should be set in accordance to the size of the room, in order to keep a realistic effect.

The only source that is really directional is the real acoustic sound from the trumpet.

Some electronic effects can variate their behavior, according to the trumpet player, the microphone and the P.A. that are used, or the room where the piece is performed.
For those reasons, the musical assistant has the possibility to re-mix every sound effect that comes from the Mac separatly, either by using an external midi mixing console, either directly inside the patch by using the mouse.
Generally, (s)he won't have to do much mixing during the piece, only some global and slight corrections.

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INSTALLING THE METALX CDROM - PLEASE FOLLOW EACH STEP

The Metallics package comes with a CDRom so called "MetalX_2001_for_MSP".
This CDRom is Macintosh formatted and contains all the files that you
need to run the Max/MSP patch, attempting that you have a standard
Mac OS 9.0.4 , Sound Manager (latest) and Opcode OMS 2.3.8 installed
on your Mac.

Inside the CDrom you will find the following files and folders:

- this documentation
- two graphical setups documentations
- one application called: MaxMSPPlay
- one folder called: audiodrivers
- one folder called: externals
- one folder called: max-startup
- one folder called: MetalX_lib
- two Max files called: MetalX_MSP.pat
- one application called: Install OMS 2.3.8

- "Max/MSP" - "MaxMSPPlay":

The MaxMSPPlay application is a runtime version of Max/MSP that
allows you to play any Max patch, without the possibility to edit its
content.

If you don't own a Max/MSP license, copy the whole content of the
CDRom somewhere on your Hard Disk, and use this application to run
the MetalX patch.

If you own a standard Max/MSP install, create a new folder inside the
folder containing the Max application, copy the "MetalX_MSP.pat" file
and the "MetalX_lib" folder into it.
Then you need to configure Max preferences.

Configuring Max Preferences:

Call the folder you've just created whatever you like.
Then launch Max, go to the "Options" menu, select "File Preferences"
and fill one of the blank space with the name of the folder you've
created before, precedeed by a ":" sign (with no space between).
If you already have some other paths already listed in your
Prefereneces Files, then it's a good idea to desactivate them
temporarily for the time that you want to perform the piece.
This avoids possible conflict names between max files.
No need for that to erase the listed folders, just delete each ":"
sign before each directory name.
Always keep ":max-startup" and ":externals" untouched.
Then click OK and quit Max.

- "Audiodrivers":

This folder contains some audiodrivers for different soundcards.
The audiodrivers make a link between Max/MSP and your soundcard,
allowing the input audio signal coming out from your mixing console
to be routed through the card towards Max/MSP, and vice-versa the
ouput audio signal going out of Max/MSP to be routed through the
cards towards your mixing console.
So the Mac behaves like a kind of multi-effects device.
The folder contains a bunch of the most currently used soundcards audiodrivers.
Choose the appropriate one according to your soundcard and drag it
onto the folder that contains either the Max/MSP or the MaxMSPPlay
application, depending of the aplication you're using.
Having the audiodriver place at the same level as MaxMSP (or
MaxMSPPlay) will make the card active the next time you launch Max
(attempting that your card is well installed and configured).
Only one audiodriver at a time can be made active!
So keep them all in their original folder and just drag the one you
need onto Max's folder.

Description:

Direct I/O MSP Audiodriver: use this if you own a Digidesign I/O card
such as the Digi001
StudI/O 10 ch MSP Audiodriver: use this if you own a Studer 10ch card
StudI/O 16 ch MSP Audiodriver: use this if you own a Studer 16ch card
ASIO MSP Audiodriver: use this if you own a ASIO compatible card such
as the MOTU 24/08 or the RME Hammerfall
1212 I/O MSP Audiodriver: use this if you own a Korg 1212I/O card

- "externals" and "max-startup" folders:

These folders contain the standard necessary files for running
Max/MSP or Max/MSPPlay.
If you own Max/MSP they are already in your Max folder, if you use
MaxMSPPlay, just leave them where they are.

- "MetalX_lib" folder:

This folder contains all the necessary soundfiles and max files to
run the "MetalX_MSP.pat" patch.
If you own Max/MSP this folder must be listed in the Max Preferences,
if you use MaxMSPPlay, just leave all where it is.

-"MetalX_MSP.pat":

This is the patch itself that you will open to run Metallics.
Always keep a copy somewhere.

WARNING: DON'T REMOVE ANY OF THE FILES OR FOLDERS DESCRIBED ABOVE,
OR
THE PIECE MAY NOT WORK AT ALL !!!

- "Install OMS 2.3.8":

OMS 2.3.8 Installer.
Useful if you don't have a copy of OMS.
If you install, you will have to restart your computer

Before launching MaxMSP or MaxMSPPLAY, you need to set the memory of
the application.
Don't allow less than 30 Mb to MaxMSP or MaxMSPPLAY, since the patch
requires 20 Mb of free RAM space.
Once you're here, Max should be ready to run the patch.

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CONFIGURING THE MAC

MAX/MSP calculates a complex set of real time sound signals, with
multi inputs/outputs sound routing, receives and sends midi events,
displays graphics, etc...
All this takes a lot of the power of the CPU of the Mac processor
when playing large patches such as Metallics.
That's why it's always a good idea, when performing a live piece in
front of an public audience, to minimize the risk of crashes of the
machine, due to CPU overloading, or extensions conflicts.
The best method is:
- disactivate AppleTalk (old Max enemy)
- open the "Extensions Manager" control panel and create a new configuration
- disactivate ANY exotic extension (Ram or CPU doubler and so on)

- disactivate any extension that is not required for running the
basic MacOS (internet, firewire...)
- disactivate all graphic features (Date...)
- keep the QuickTime package activated
- keep the USB extensions activated
- keep your midi USB interface driver(s) activated
- keep Sound Manager activated
- activate OMS

Restart your computer.

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LAUNCHING THE "MetalX_MSP.pat" PATCH

Launch MaxMSP or MaxMSPPlay FIRST.
Never double-click on the patch if you have several versions of Max installed.
The one that would be launched would be the the last one you've
installed (can be a 68k version, for example - bad thing).
When Max is launched and if no error message appears in the Status
window, then double-click on the "MetalX_MSP.pat" file.
Watch the Satus window.
If the Max Preferences are set correctly, you should see something like:

scale/NExT v1.0 for MSP
fline: v0.1 - G. Eckel IRCAM 1994
fbpe: v0.1 - G. Eckel IRCAM 1994
qlist 2.0 - a new version of an old object
Copyright © 1994, Regents of the University of California.All Rights reserved.
finished, 18 lines
listiter -> 256
mixor~: version 1.06 (lemouton)
LCD Object by Michael Lee, Steve Ellison, David Zicarelli
copyright © 1991-97 Regents of the University of California. All Rights Reserve
- Spat~ externs lib (2.0): amp~ -
- Spat~ externs lib (2.0): pw~ -
- Spat~ extern lib (2.0) : 8b-reverb~ -
- Spat~ extern lib (2.0): c8_early~ -
- Spat~ externs lib (2.0): panr4~ (beta)-
soundfiles: preload 2 metalx01*+rev
soundfiles: preload 3 metalx02*opens
soundfiles: preload 4 metalx03*cups
soundfiles: preload 5 metalx04*straights
soundfiles: preload 6 metalx05*harmons
soundfiles: preload 7 metalx06*new6
soundfiles: preload 8 metalx07*scale-down
soundfiles: preload 9 metalx08*Monster
soundfiles: preload 10 metalx09*whisperchord
soundfiles: preload 11 metalx10*glisses
soundfiles: preload 12 metalx11*rips
soundfiles: preload 13 metalx12*Dev6withAcresc
soundfiles: preload 14 metalx13*WHAdd1
soundfiles: preload 15 metalx14*WHAdd2
soundfiles: preload 16 metalx15*wabemol/rev+
soundfiles: preload 17 metalx16*heavywa1
soundfiles: preload 18 metalx17*heavywa2
soundfiles: preload 19 metalx18*new
Spat-2.0: IRCAM (Sept 2000) MAX-MSP Version
seq: reading: MetalX_clicktrack/events.mid

If the Max Preferences are NOT set correctly, you should see something like:

* error: nqlist-del: No such object
* error: Linc: No such object
* error: boost: No such object
* error: stgain1~: No such object
note: no coll file metalx-sounfiles.coll
* error: 1gain~: No such object
* error: mixor~: No such object
* error: gain1~: No such object
* error: rev4~.abs: No such object
* error: wahrbank8~: No such object
* error: qgain1~: No such object
* error: harmonizer-cor~: No such object
* error: harmonizer-tables~: No such object
* error: delay~.abs: No such object
* error: stchorus1~.abs: No such object
* error: 1gain~: No such object
* error: stmix1~: No such object
* error: tone1~: No such object
* error: wahrbank16~: No such object
* error: polysampler12~: No such object
* error: gate2~: No such object
* error: sampwrite~: No such object
* error: Spat_OPer: No such object
* error: boost2: No such object
* error: early8~: No such object
* error: spat~: No such object
* error: Spat_: No such object
* error: wahbankA-to-dacs-boost: no such object
* error: wahbankB-to-dacs-boost: no such object

This means that Max cannot find these objects, wich are in fact the
patch files present in the "MetalX_lib" folder.
Additional error message concerning un-found soundfiles may appear.
Reconfigure your preferences until there's no error message at all.

Once you're there you're ready to go.

For any question, please contact <manuel.poletti@ircam.fr>