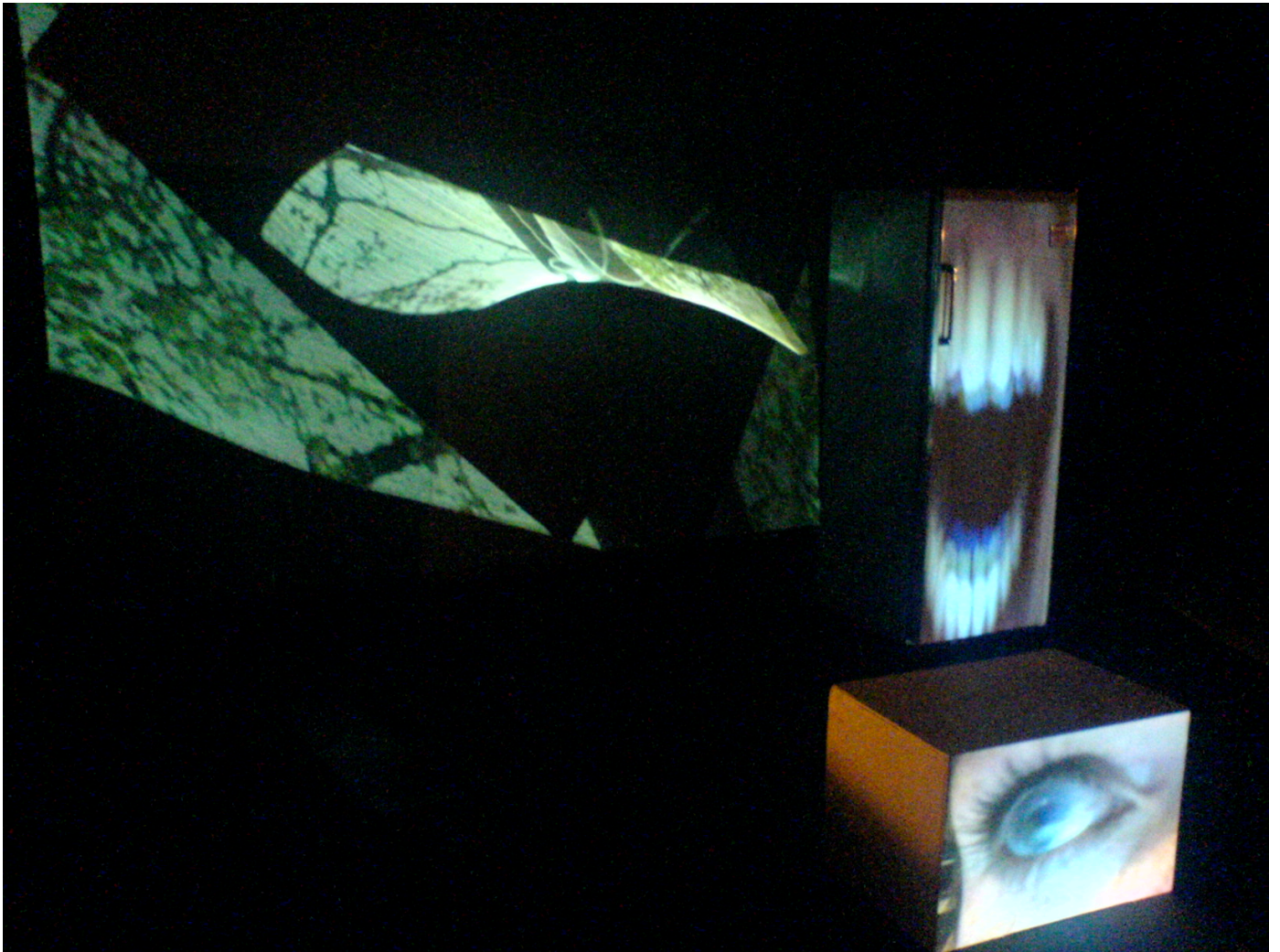


videoprojectiontool by hc gilje  
<http://hcgilje.com>



documentation of v 3.1, april 2009

## **about**

The initial version of Videoprojectiontool was developed during a workshop I gave for students of scenography, choreography and directing at KHIO in Norway june 2007, and further developed for the workshop I had at the medialab prado in Madrid may 2008.

The workshops were an introduction of working with video as a tool for creating and transforming spaces: to thinking of video as light, and how you can mask a projection to project on multiple objects and surfaces within the projector's projection angle and to exploit the depth of field in video projectors.

With further development in 2009 Videoprojectiontool has evolved into a powerful and flexible application.

The software, built in max/msp with jitter from cycling74, is made to work for both max osX and windows xp/vista.

It works with 8 layers of video which can be placed in a 3D space (openGL). Each layer can be scaled, positioned, rotated, distorted, tinted and masked individually, and accept quicktime video files, live camera feed and a live drawing tool as sources.

There are 8 quicktime source modules, each accepts a folder of videos.

The live module can use any camera recognized by your system (quicktime on mac, directx on windows)

The drawing tool is mainly intended as a way of creating a rough mask for the objects you want to project on, which can be edited in a image-editing application for smoother and nicer-looking masks if needed.

The application contains a powerful preset and cuelist storage system, making it possible to make complex transitions between scenes.

Videoprojectiontool supports OSC for communication across computers and applications.

For inspiration you could take a look at my blog, <http://hcgilje.wordpress.com>

hc gilje, april 2009

## **System requirements**

Mac: Mac PPC or Intel machine running OS X 10.4 or later, with QuickTime 7.1 (or later), an OpenGL-compatible graphics card, and OpenGL 1.4 (or later).

windows: xp or vista with QuickTime 7.1 (or later), an OpenGL-compatible graphics card, and OpenGL 1.4 (or later).

**about hc gilje**

HC Gilje works with realtime environments, installations, live performance, set design and singlechannel video.

Gilje has presented his work through different channels throughout the world: in concert-venues, theatre and cinema venues, galleries, festivals and through several international dvd releases, including 242.pilots live in Bruxelles on New York label Carpark and Cityscapes on Paris-label Lowave.

He was a member of the video-impro trio 242.pilots, and was also the visual motor of kreutzerkompani.

In october 2006 Gilje started a 3 year position as a research fellow at Bergen National Academy of the Arts, Norway, exploring how audiovisual technology can be used to transform, create, expand, amplify and interpret physical spaces.

Born 1969 in Kongsberg, Norway. Educated at the intermedia department of Kunstakademiet in Trondheim 95-99.

# Quick overview

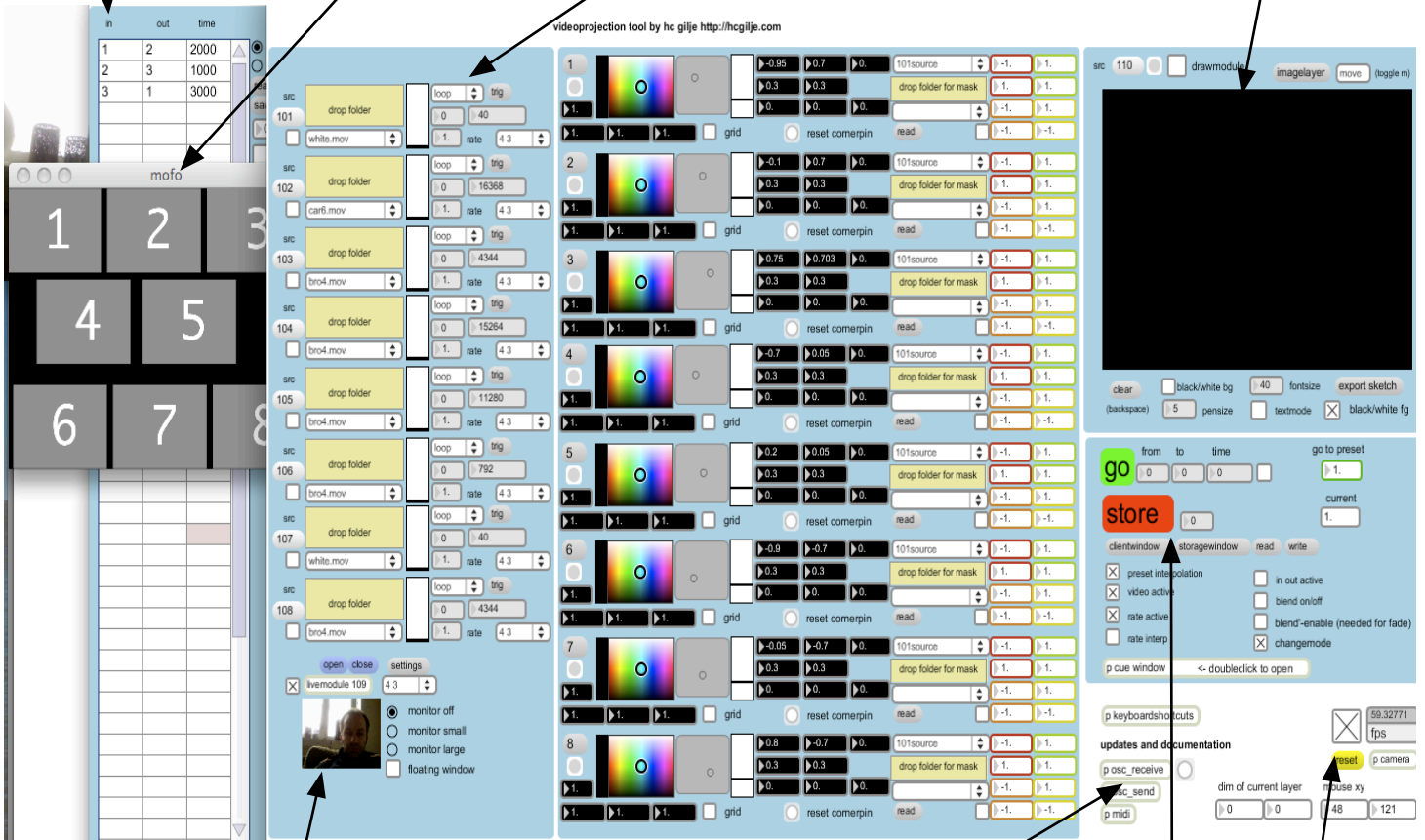
sequencer:

list of transitions between presets

output window  
drag to 2nd monitor/projector

8 movie sources, each source  
with a folder of movie clips

draw module



live source

OSC and MIDI support

on/off toggle

store and play back  
presets

8 layers of videoplanes which  
can be scaled, positioned, rotated and distorted in a 3D space

**Getting started:**

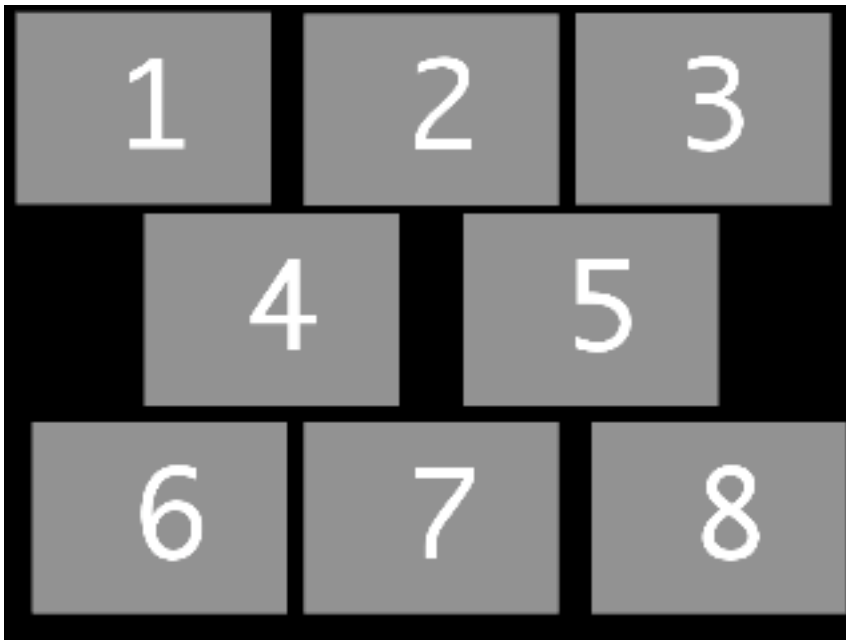
Drag the output window to the 2nd monitor and enter fullscreen mode by hitting the escape key.

Drag your quicktime video folders to the drop folder areas in the source section.

Activate the video sources and the master switch (by clicking on the corresponding check boxes).

You should see eight videoplanes arranged something like below (but without the numbers).

If you don't see this press the yellow reset button and wait 10-15 seconds.



The specific functions of each part of the application is documented in the rest of this document, and some functions are there for you to discover.

One good thing to know is that the videoplanes are stacked on top each other: plane 1 is at the top, plane 8 at the bottom, so sometimes a plane/layer might be hidden underneath another plane.

Sometimes it is also a bit easy to confuse which plane/layer you are modifying. A quick way to check this is by pressing *i* on your keyboard, this will identify the planes on the output window (the projector).

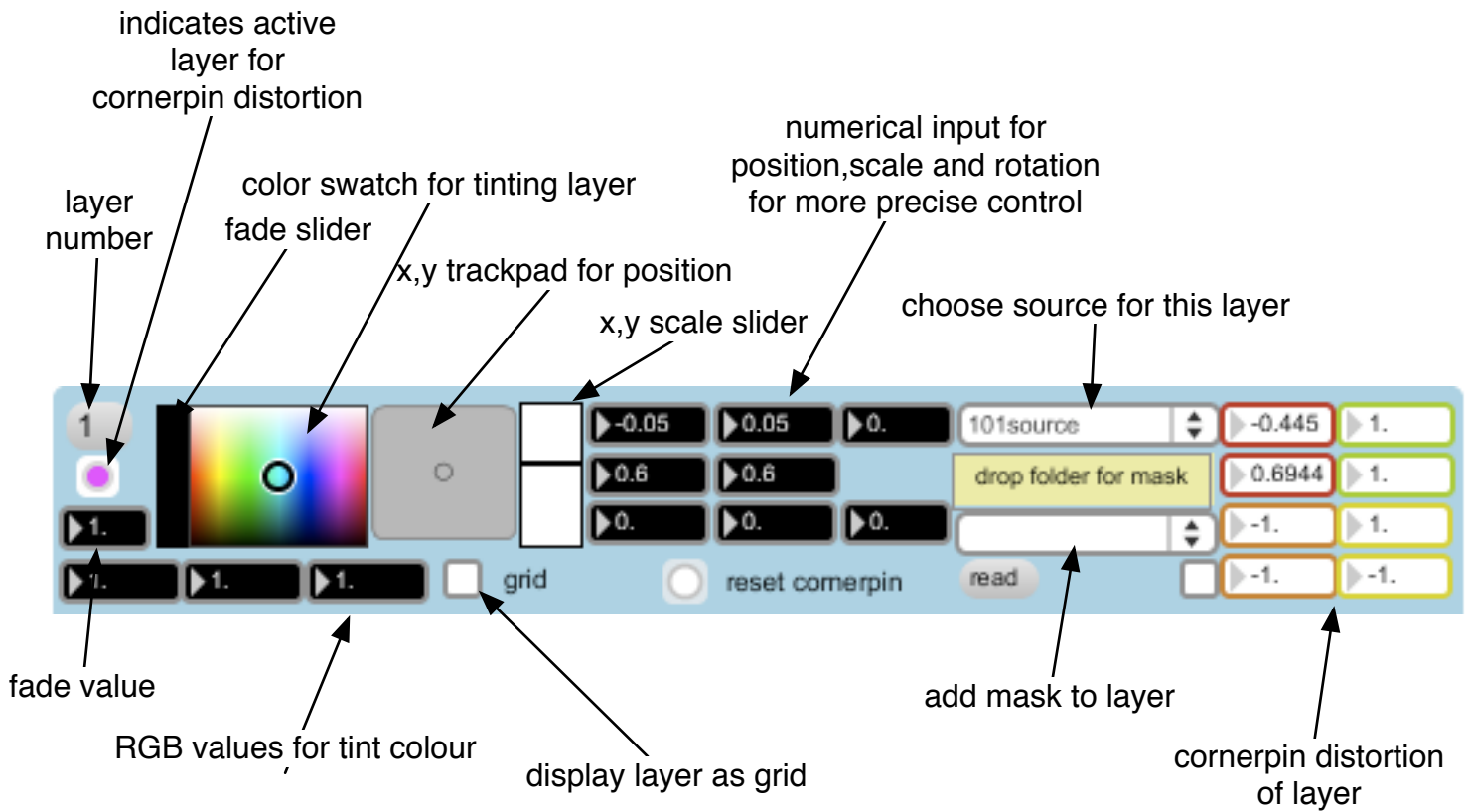
**Troubleshooting:**

if you don't see anything happening after following the instructions above:

make sure there that you haven't moved the application out of the original folder, then it will not find the presetfile (the file ending with .xml)

If you get a flickering screen on your 2nd monitor if you are using windows, this is an issue with your graphic card drivers and OpenGL.

## the individual layer



# The quicktime source modules, labelled 101 to 103

The image shows three source modules (101, 102, 103) in a QuickTime interface. Each module has a 'src' label, a 'drop folder' area, a file name field, and a control panel. Module 101 is active, with a checkmark in its 'src' field and a highlighted control panel. Module 102 has an unchecked 'src' field. Module 103 has an unchecked 'src' field. Annotations include: 'drag folder with quicktime clips here' pointing to the 'drop folder' area of module 101; 'select clip from dropdown menu' pointing to the file name field of module 101; 'this part can be ignored for most users' pointing to the control panel of module 101; 'click to activate source' pointing to the 'X' icon in the 'src' field of module 101; 'loopmode' pointing to the 'loop' button of module 102; 'trigger clip when loop off' pointing to the 'trig' button of module 102; 'slider for rate' pointing to the 'rate' slider of module 102; 'rate of clip' pointing to the 'rate' field of module 102; 'in/out point for clip' pointing to the '0' and '7752' fields of module 101; and 'resolution of clip' pointing to the '4 3' field of module 101.

drag folder with quicktime clips here

select clip from dropdown menu

this part can be ignored for most users

src 101 drop folder

bro4.mov

loop 0 7752 1. rate 4 3

trig

click to activate source

102 drop folder

bro4.mov

loop 0 4344 1. rate 4 3

trig

loopmode

trigger clip when loop off

src 103 drop folder

car6.mov

loop 0 16368 1. rate 4 3

trig

slider for rate

rate of clip

in/out point for clip

resolution of clip

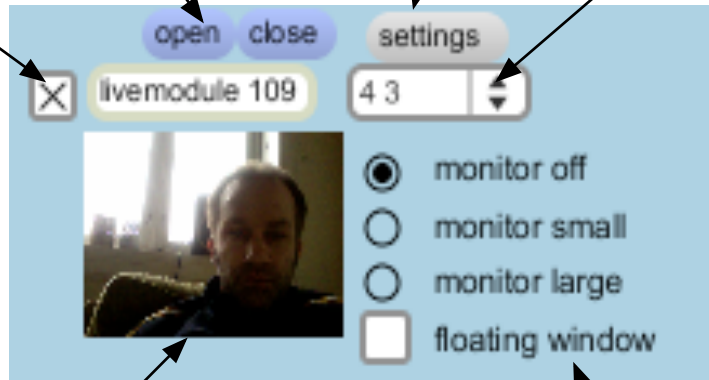
## live sourcemodule (109source)

after having activated the module click on open  
to open the connection to a live camera

access to the settings dialog, to make  
adjustments to your source or select a  
different source than the default

click to activate the module

resolution of incoming videostream



monitor of live camera  
if you don't get a image, make sure you  
have activated the module and opened  
the connection to the camera

a separate monitor window for live camera  
which can be very useful if you use the camera to  
zoom in on the part of the projection you are  
working on for more accurate masks/mapping



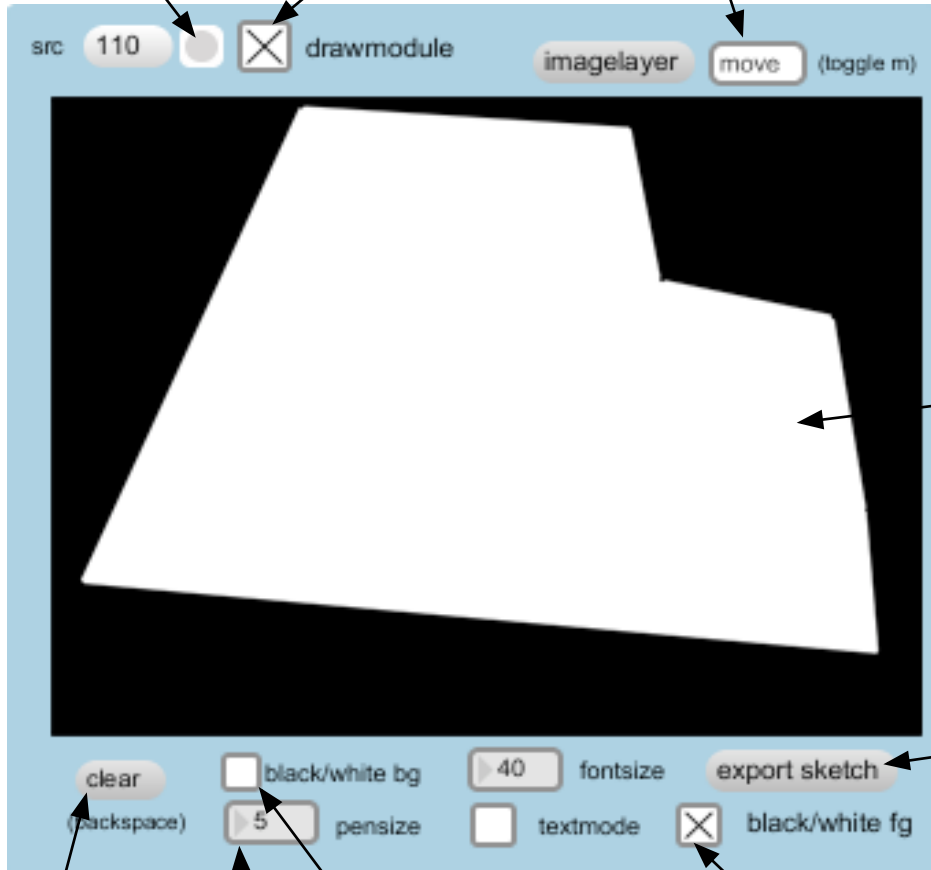
## drawmodule (110source)

toggle behaviour of cursor (keyboard shortcut: m)  
move: when clicking inside drawwindow,  
the drawingcoordinate is moved, but without drawing  
line: when clicking a line is drawn between current  
position and last position

indicates if layer is active for  
drawing directly on  
second monitor

click to activate drawmodule

select 105source in the layer  
you want to draw in



click/drag inside  
window to draw

click to save the drawing  
so it can be used as a  
mask png or jpeg are ok  
formats

click to clear all content

size of drawingtool

toggle background colour  
on:black  
off:white

toggle foreground colour  
on:white  
off:black  
useful for erasing mistakes

### To draw directly on the projected output follow these instructions:

1. make the drawing layer active by pressing the "d" key, the layer indicator turns purple
  2. position and scale your layer over the physical object/surface you want to work on
  3. indicate the top left corner of the layer by holding down the "q" key and clicking on the corner.
  4. indicate the bottom right corner by holding down "s" while clicking on that corner.
- You will see the dimensions of the current layer in the bottom right corner of the patch.

You are now ready to draw directly on the projection.  
Please watch the videotutorial to learn more.



## masking layers

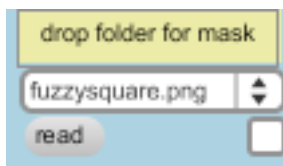
There is an option to add a mask to each layer.

The procedure is similar to selecting a video sourcefile: First drag your maskfolder (keep this folder inside the same folder as the application) over to the dropfolder area. Then select your mask from the dropdown menu, and activate it by clicking on the checkbox below the dropdown menu.

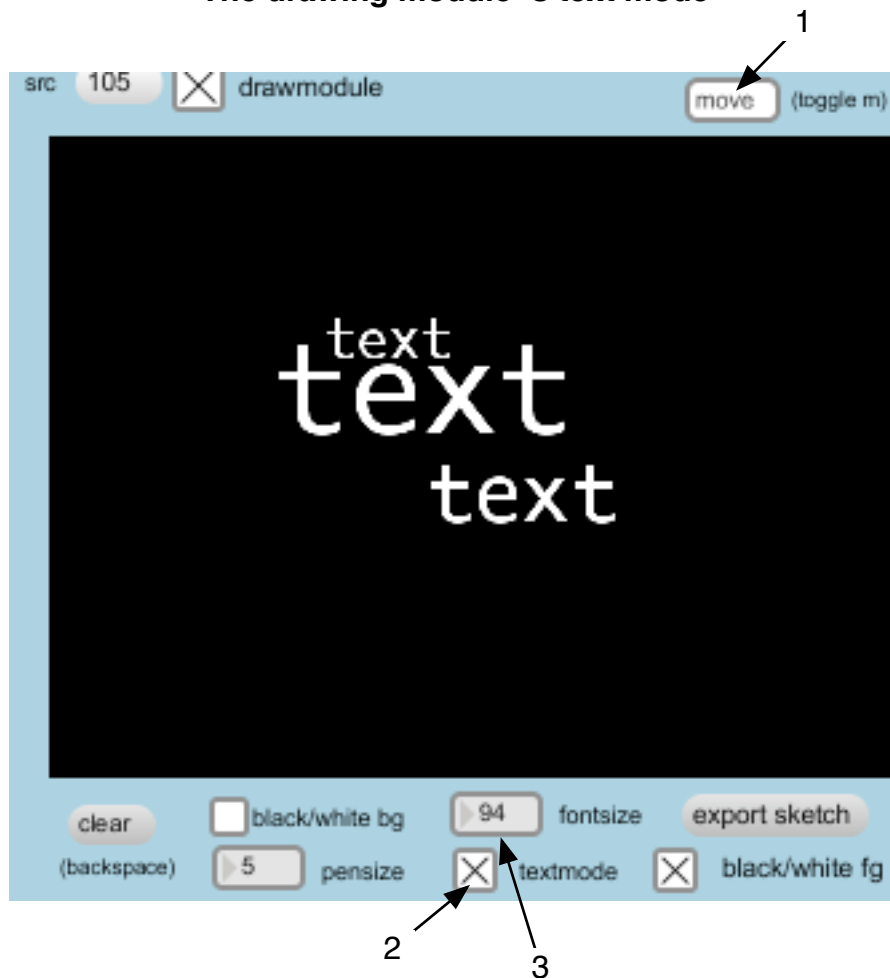
Alternatively you can read a mask in directly by clicking on the read button. This mask will not be remembered by the preset system however (but is less cumbersome when testing out a mask).

Another thing to remember: Each time you make a new mask you need to update the dropdown menu by dragging the maskfolder to the drop area.

NB! The preset system remembers sources (both videos and mask) based on its placement in the menulist, not based on its name.



## The drawing module 's text mode



You can use the drawing module to type text directly into a layer:

1. Make sure the move/line toggle is set to move.

2. Activate the textmode (this disables keyboard shortcuts, so make sure to deactivate textmode when you are finished).

You click in the window where you want to write.

3. You can adjust the fontsize as well.

This can be saved in the same way you would do with a mask

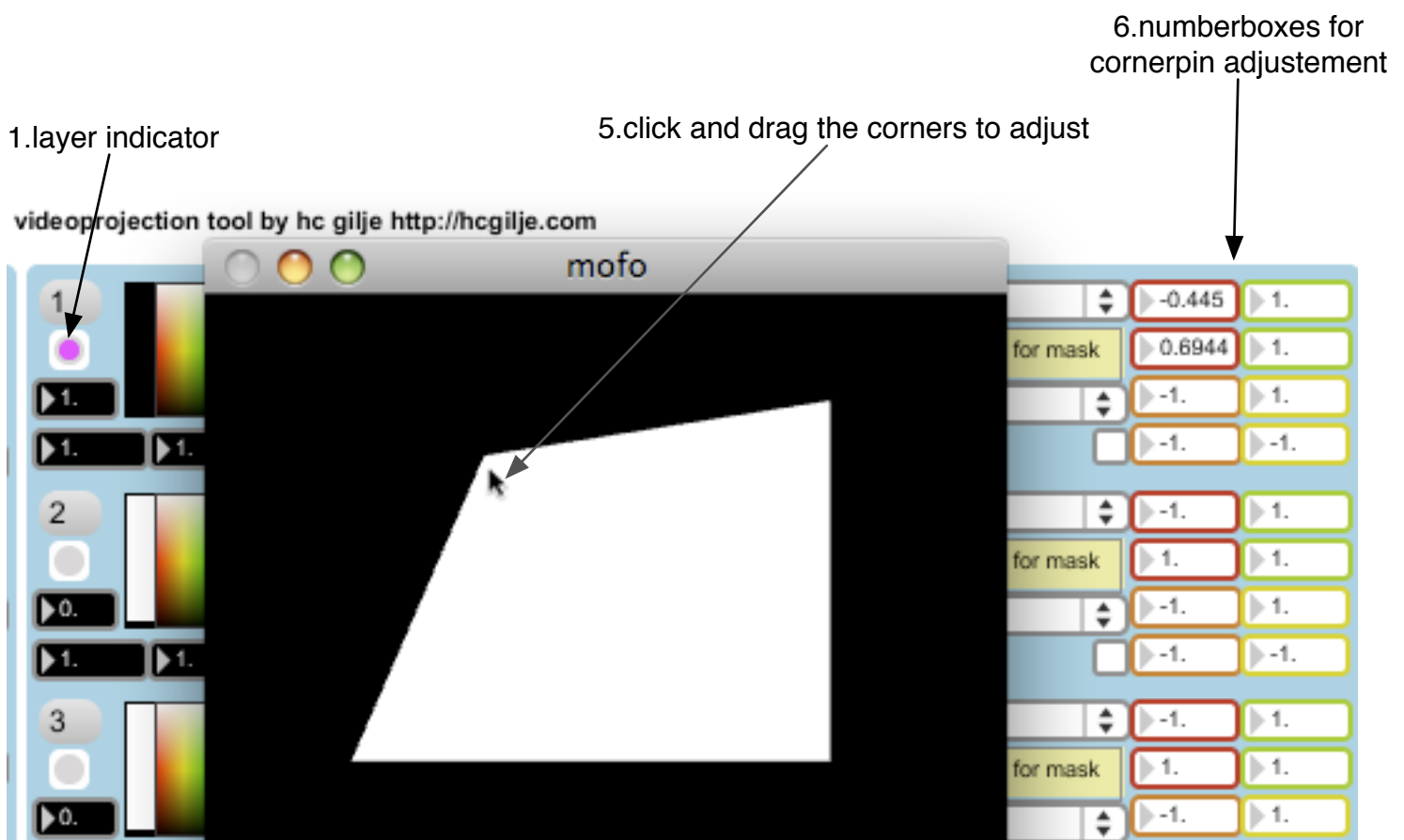
## Cornerpin distortion

To cornerpin distort a layer follow these instructions:

- 1.press key 1-8 corresponding to the layer you want to work on. The layer indicator will turn purple for the active layer.
- 2.Scale and position the layer to fit as close to the shape you want to project onto.
- 3.while holding down the "q" key click in the top left corner of the layer.
- 4.While holding down the "s" key click in the bottom right corner of the layer.
- 5.You can now click and drag in the four corners of the layer to distort it.
- 6.Alternatively you can use the number boxes.

Default values are: top left -1 1, top right 1 1, bottom left -1 -1, bottom right 1 -1

Check out the video tutorials for more info.



# preset module

from preset x to preset y, in z milliseconds, click go to start transition

click to continuously loop between two presets

The interface is divided into several sections:

- Transition Section:** A green 'go' button is followed by three input fields labeled 'from', 'to', and 'time', each containing the number '0'. To the right is a checkbox and a 'go to preset' button containing '1.'. A dashed box encloses the 'go' button and the three input fields.
- Storage Section:** A red 'store' button is followed by an input field containing the number '5'. A text box above it says 'to store the current settings you must give enter a number, and then click store'.
- Settings Section:** A row of buttons: 'clientwindow', 'storagewindow', 'read', and 'write'. Below them is a list of settings with checkboxes:
  - preset interpolation
  - video active
  - rate active  rate interp
  - in out active
  - blend on/off
  - blend'-enable (needed for fade)
  - changemode
- Current Preset Section:** A 'current' label above an input field containing '1.'. A text box above it says 'last preset retrieved'.

to retrieve a preset, type in a number and hit return/enter

to store the current settings you must give enter a number, and then click store

last preset retrieved

preset storage  
clientwindow: current settings  
storagewindow: list of presets with its values  
read: read in a files with presets  
write: save the presets you have created

different settings mostly related to playback of presets  
exceptions are the two blend settings,  
related to how layers are combined.  
For most cases it works best to leave these settings with  
the default values

## sequencer (cuelist)

editmode:doubleclick on cells to enter data  
from -- to -- time

1	2	3000	<input checked="" type="radio"/> edit
			<input type="radio"/> play

playmode: by clicking on a row the numbers  
are transferred to the corresponding numberboxes next to go,  
and the transition is triggered

1	2	3000	<input type="radio"/> edit	<b>go</b> from to time ▶ 2 ▶ 3 ▶ 5000
2	3	5000	<input checked="" type="radio"/> play	
3	4	2000		

additional cuelist keyboard commands:

n-play next cue in list

b-play previous cue in list

r-reset to first element in cuelist

1	2	3000	<input checked="" type="radio"/> edit
2	3	4000	<input type="radio"/> play
3	4	2000	read list
5	6	7000	save list
6	8	1000	▶ 5
			⊗

you can read and save the cuelists

1

2

you can make the cues play back automatically:

1.Select how many elements in the cuelist you want to include in the sequence

2.enable automatic sequence playback (disable to stop sequence)

3.to start sequence press the spacebar on your keyboard

## Open Sound Control (OSC)

In the bottom right part of the patch you will find the osc\_receive, osc\_send and midi modules. Open Sound Control is a crossplatform communications platform supported by many applications, making it easy to either communicate between two applications on the same computer, or between computers in a network.

With OSC support in videoprojectiontools you can now sync several computers and communicate with a OSC-able application (which can run as a background application), opening up a lot of possibilities both for multiple projector setups but also for working with sound, lights etc.

The implementation so far for OSC includes preset and sequence(cuelist) access, layer fades, pos x and y, scale x and y, and videotracks selection from the individual sources. Doubleclick on the osc\_receive module to see the structure for the osc messages.

the port for osc messages to videoprojectiontools is 6666.

to access individual cues, use /preset  
to access entries in the sequencer use /sequence

the basic structure for the osc routing is as follows: /layer1, /layer2 etc  
and then you can add an attribute and value for a particular layer: /fade 0.5  
so the complete message would be /layer1/fade 0.5

By looking at the clientwindow in the preset section, you can see the appropriate names, so for instance if you wanted to control scale\_x of layer 5 you would send the message  
/layer5/scale\_x 0.3

If you look at the included template for osc implementation in maxmsp, the above message would be translated to layer5::scale\_x 0.3

To send preset and sequence data to another computer or application, you need to set up host ip and port information:

Doubleclick on the osc\_send module to configure the setup.

OSC send on/off

enter ip adress of receiver, then hit the host button

**host**

enter port number on the receiving end: 6666 if communicating with the videoprojectiontools app on another computer

click on the testbutton to see if the OSC data is coming through to the other end

**test**

Enter the ip adress in the number boxes and click "host".

To communicate with videoprojectiontools on another computer, use port 6666.

If you want to send info to a application on the same computer as the videoprojectiontools is running on, choose another port number.

Turn osc-send on by clicking in the checkbox.

Test the connection by clicking on "test".

If you are using videoprojectiontools on the receiving end, the little light next to the osc-receive module should light up everytime you press "test". If you are using other applications the osc message is /check test.

## MIDI

For MIDI only layer fades are supported at the moment.

The midi implementation basically maps midi messages to the osc messages.

If you want to expand the midi possibilities, one option would be to map midi to osc in your favourite application and then send osc to videoprojectiontools.

There are a few osc and mid templates for maxmsp included in the application download.

Make sure you have installed the latest midi drivers for your operating system. Go to the options menu in the videoprojection tool application and select midisetup. Find you midi interface and select a as the abbreviation.

Currently the midi implementation is looking for midi controller values mapped to different midichannels, so on my controller knob 1 sends midi channel 1 with values from 0-127, knob 2 sends midi channel 2 with values from 0-127 etc.