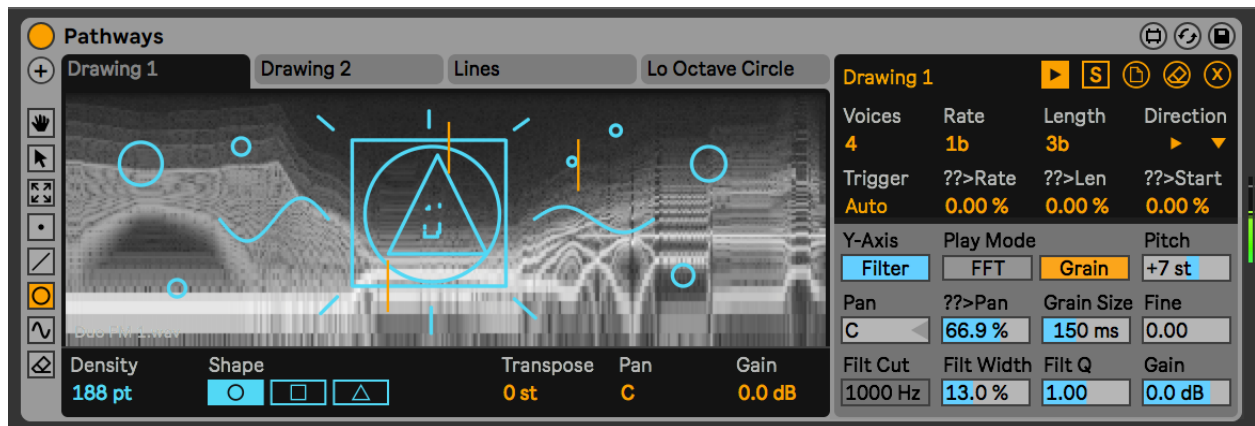


Pathways User Manual

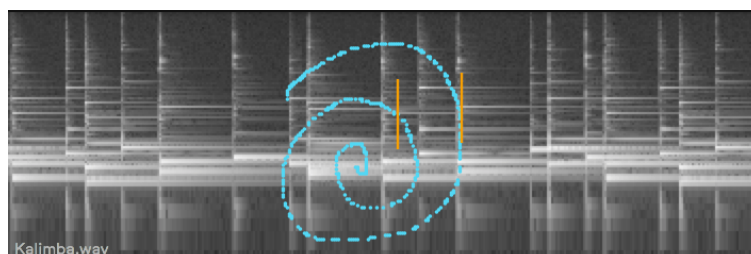


Pathways is a sample based Max for Live instrument that allows users to draw paths for sample playback over a spectrogram interface. It offers two playback modes that allow for variable rate of playback, and freezing, without altering pitch (described in the audio parameter section).

To Install: drop the entire folder called “Pathways” (NOT the folder “Pathways v.x.x.x”) into this location: “ableton/user library/presets/instruments/max instruments”

For basic use:

1. Drop a sample in the center of the interface where it says “Drop Sample Here”. A spectrogram of the dropped sample will then appear (note: long samples will have longer wait times for spectrogram rendering). To replace the sample, simply drop a new sample on the spectrogram.
2. Create a new layer to draw playback paths on.  To do this, click the “+” button in the top-left corner. This creates a new layer (you can create up to 8 layers). You can select a different layer to draw on by pressing the tabs that appear at the top after creating layers.
3. Draw playback paths on the spectrogram. You have various tools for drawing and manipulating the drawings.
4. Run Live’s transport to start playback (unless you have set the triggering of playback to an assignment MIDI note, more below).



Now I will break down the parameters and nuances by section below. First we will begin with the two groups of layer parameters that appear on the right side of the device. These parameters correspond to the currently selected layer and are unique for each layer so that they can have various behaviors and sounds.

Layer Actions



At the top of the layer parameters there is a section with primary actions for each layer. First we see the Layer's name which you can rename

to whatever you want. Next is the play button. Enabling this causes voice playback to be enabled for automatic or MIDI note triggering (more below). This button does not appear until you have drawn a playback path on the spectrogram. Next to it is a solo button so you may preview a layer individually. Next is a duplicate button, which creates a new layer that has all of the copied layer's settings and drawings. Next is a button to clear the drawings/playback paths. And the last button at the top is for deleting the layer.

Voice Playback Settings

Voices	Rate	Length	Direction
6	2b	4b	◀ ▶
Trigger	??>Rate	??>Len	??>Start
Auto	0.00 %	0.00 %	0.00 %

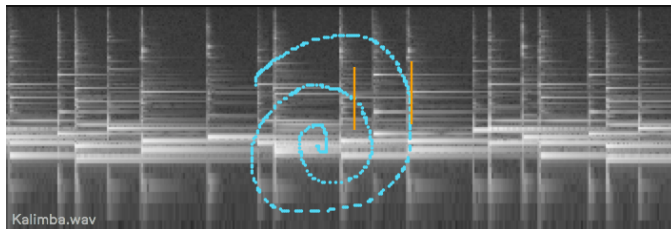
Below the actions is a section of parameters that determine the voice playback settings and behavior for the layer. "Voices" sets the maximum number of voices that can exist at one time in the layer (up to 12). "Trigger" sets how a new voice will be created:

either (Auto) for automatically creating a voice at a set rate, or you can assign the trigger of a voice to a specific MIDI note pitch (ie "C3"). "Rate" sets the interval for triggering a new voice in the case of "Trigger" mode set to "Auto". These intervals are in synced times (1b = 1 bar, 4n = quarter note, etc). "??>Rate" adds randomness to the "Rate" parameter for variance in rates. "Length" sets how long a voice will take to play through the whole drawn playback path. The playback path that you draw on the spectrogram is actually made of points. Each point is a position for the playback back to go to. So if "Length" is set to "2b" (2 bars), then it will take 2 bars for the voice to playback through every point on the drawn path. Keep this in mind for the explanation later about quantizing the number of points for certain drawing tools to achieve common timing divisions. "??>Len" adds randomness to "Length" to get different playback lengths. "Direction" sets the direction the voice traverses the drawn playback path. Options are forward, backward, forward backward and backward forward. "??>Start" adds a set degree of randomness to where a new voice may start from on the path (this will also affect the length of time a voice exists for).

Now I will mention some important behaviors based on these parameters in context of automatic triggering. "Rate", "Length" and the randomization parameters will determine the number of voices playing at once. Let's say for example both "Rate" and "Length" are set to "1b"

or 1 bar, then there will only be 1 voice playing at a time. This is because it takes a voice 1 bar to complete the playback path and a new voice is created every 1 bar. However if “Rate” was set to 2n (a half note, or half a bar), then there will be 2 voices as it takes each voice 1 bar to finish the path and a new voice is created every half of a bar.

Voice Audio Settings



Before we get into the audio settings let's reflect on how playback is happening in Pathways. In this picture we can see the sample spectrogram in the background, the playback pathway drawing (in blue) and two playheads from two voices (in orange-yellow). As described before, the

lines that are the voices will go to each point in the blue playback path. Wherever the voice is at any point on the spectrogram in terms of the horizontal position (X), corresponds to the point in the sample that the voice is playing at that moment. In other words, the X position of the playhead corresponds to sample playback position. As for the vertical position (Y), it differs based on a setting described below. But by default, the Y position corresponds to the center frequency of the filter cutoff, and it matches with the frequencies on the spectrogram. Matching the X and Y positions of the playhead to the sample position and frequency of the spectrogram allows for an intuitive sense of sample playback.

Y-Axis	Play Mode	Pitch
Filter	FFT	Grain
Pan	??>Pan	Grain Size
C	66.9 %	150 ms
Filt Cut	Filt Width	Filt Q
1000 Hz	13.0 %	1.00
		Gain
		0.0 dB

Here are the parameters that control the audio settings of the voice. The top-left parameter “Y-Axis” sets how the Y position of the voice playhead is mapped. As just mentioned above, by default it is controlling the filter cutoff, and in this picture we see it is set to “Filter”. However, if we set this parameter to “Pan”, then instead the Y position corresponds to panning. This means that when a voice playhead is

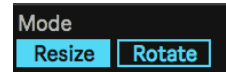
towards the bottom it will be panned to the left, and towards the top it is panned to the right. The other filter and panning parameters are affected depending on the “Y-Axis” mode, which I will mention as we go. Below “Y-Axis” is “Filt Cut”, which sets the center filter cutoff frequency (when Y-Axis mode is in “Filter”, this is disabled). The filters are a pair of Highpass and lowpass filters. “Filt Width” sets the distance between the pair of LP and HP filter cutoffs based on the center cutoff frequency, if set to 100% the filters are bypassed. “Filt Q” sets the resonance or Q of the filters. “Pan” sets the panning of the voice (this is disabled when Y-Axis mode is in “Pan”). “??>Pan” sprays the voices in terms of panning to spread the stereo space (this is disabled when Y-Axis mode is in “Pan”). “Play Mode” chooses between the two different playback modes for the voice. “FFT” playback mode uses a phase vocoder to playback the sample. This mode takes place in the frequency domain and has a certain “spectral” quality to it. “Grain” playback mode uses 3 grains with a short grain size that play in equally spaced phases at the point of the

voice playhead. “Grain Size” sets the size of the grains when “Play Mode” is set to “Grain”. “Pitch” and “Fine” transpose the playback pitch while “Gain” sets the... gain.

Drawing Tools



Now that we have a clear understanding on how playback works in Pathways, we can better understand some details of the drawing tools. The top tool allows you to zoom and offset the display of the spectrogram (functionality works like zooming/offset displays in Ableton such as the clip or arrangement view). The second tool (pointer) allows you to drag and move a drawing. The third tool allows for transformation of a drawing, the two options are for “Resizing” and “Rotation”. The fourth tool (dot) is a free draw tool for drawing new playback path points. The (/) tool is a line tool, when you hold shift it locks to major angles. The third tool from the bottom (circle) is a shape tool with options for drawing ellipses, rectangles and triangles. When you hold shift for these, it snaps the shapes to their equilateral forms. The second to last tool is for drawing sine wave shapes, it has an option Cycles (the number of periods) and Phase (starting phase). The last tool is an eraser, which has a size option.



For the 3 shape tools (line, shapes, and sine wave) there are a few additional options. One is the parameter called “Density” which sets the density of points that are used to create the shapes. Now for the most tricky part of the entire device to describe: the functionality for drawing these shapes when holding Ctrl or Cmd. When Ctrl or Cmd is held when drawing these shapes, the number of points used to create the shapes are quantized to certain major divisions. For example, if you were drawing a line and the program determined that based on the “Density” parameter, the line would take 64 points to draw. Then you drew another line of a similar length, but it took slightly more points to draw, such as 72. Now let’s say you had the voice “Length” set to “1b” (1 bar), so that it would take 1 bar to playback these two lines. However, let’s say you wanted each line to take EXACTLY ½ a bar (a half note) to play, well you would have a problem because one line is 64 points and the other is 72 points, despite them visually looking very similar in size. So here is where the Ctrl + Cmd comes to save the day. Since it quantizes the number of points to major divisions, if these lines were instead drawn while holding Cmd or Ctrl then they would both have 50 points, creating an equal division of 1 bar. And this behavior applies for drawing any of these shapes. So, if you want to have your shapes be a common division of the “Length” (ie ¼, ⅓, ½, etc), then you must hold Ctrl or Cmd when drawing EVERY shape. This won’t work if you only held Ctrl or Cmd for one shape and not another. This is how you can get perfectly synchronized events in your playback with the clock, because in this device timing is based off of the number of points in a path instead of a grid.

Global Parameters

Transpose	Pan	Gain
+11 st	C	0.0 dB

Lastly we have the global parameters for the device underneath the spectrogram. “Transpose” transposes the pitch of all of the drawing layers. “Pan” and “Gain” are the master panning and

volume for the device.

Thank you so much for getting Pathways! I hope it’s a lot of fun and helps in your sound creations! To check out more of what I do and more of my audio devices go to:

<http://dillonbastan.com>

There you will also find info for contacting me in case of issues, etc.