WoodStepper

Woodman's Immaculate Maple Syrup Studio

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Getting Started :
www.woodmansimmaculatemaplesyrupstudio.be/woodstepper/WoodStepperGettingStarted.pdf

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1.What

WoodStepper is a sequencer/synthesizer/sampler having both audio and midi out.
The audio input sources can be the track audio, sampled audio (live/track recorded or from file) or the built-in VCO's.
The VCO notes can also be set by the Chordulator which finds chord notes in a live stream or recorded track.
WoodStepper consists of 4 independent 8-steps sequencers which can be linked to a 16, 24 or 32 steps sequencer.
Each sequencer can independently be set to Synth mode.
So WoodStepper can be used in any combinations of sequencers, synths and looper/samplers.
Each step can also send 4 midi messages (note on, CC, …) to 2 midi channels. Midi can be sent to the DAW and/or to External endpoints.
The audio part for each sequencer has a pitch (down) shifter, (Moog lowpass) filter with A(D)SR envelope, saturator, amplitude A(D)SR envelope and delay line which can all be set independently per step.
The VCO notes can be set by midi input and WoodStepper has a function to limit the notes produced by VCO + pitch shifters to a specified key and interval scale.

The app can be used stand-alone (device audio input and output) or as a plugin in a DAW.

• IOS plugin type : AUv3, IAA and stand-alone app.

• MacOS plugin type : AU, AAX, VST and stand-alone app.

• Has 4 independent 8-steps sequencers.

• Each of the 4 sequencers can be set to Synth mode, the steps can then be used to automate parameters while playing.

• Sequencers can be linked to form 16, 24, or 32 steps sequencer(s).

• Each sequencer can have a different timing.

• Steps can be disabled for non 4/4 patterns.

• Each step can send up to 4 midi messages (+ all previous notes off) on 2 midi channels

• Midi note-on values can follow a midi received ground note.

• Audio sources can be the track audio, sampled audio or 3 VCO's (per sequencer).

• Sampling (audio coming live or from the DAW track) can be armed (per sequencer) with a button or a midi in CC.

• Samples can also be loaded from file (sample files should be in the WoodStepper iCloud folder)

• Each sequencer has it's own gain, clipping led and brick-wall limiter.

• VCO's have the usual waveforms and can be modulated in various ways.

• Full polyphonic mode sends 4 subsequent note-ons to the 4 sequencers/synths.

- Para-polyphonic mode (per sequencer) sends notes 2&3 to the sequencer/synth VCO's 2&3, giving a maximum of 12 voices.

- Each sequencer/synth can set the range of receiving midi notes (which allows for up to 4 split keyboard regions).

- Each step has a pitch down shifter.

- Pitch shifters have a glide control.

- Pitch shifters can be set to a random value (out of a list of scales).

- Pitch values can be harmonically locked to the Just Scale or the Equally Tempered Scale.

- VCO + Pitch can be limited to a specified key + interval scale (e.g. C Major Pentatonic)

- Each step has a 4-pole Moog Lowpass filter with resonance and ASR envelope.

- Steps have an additional high-pass filter and a saturation control.

- All steps have an ASR amplitude envelope and a step gain.

- Each step has its own delay line with independent timing, feedback, and filtering.

- Step audio and delay can be panned independently per step.

- Sequencers can be started manually, started with the DAW transport, start after receiving a midi note or start audio gated.

- Sequencers can be stopped manually or after a number of bars have been played.

- A "Play 1 Step" button allows to fine tune step settings

- An "All Steps" button allows to set the same parameter value in all steps.

- Has a global Dry-Wet, Input gain and Output gain control.

- Presets can be stored in iCloud Drive (makes them available on all your devices).

- Presets can be switched with Midi Program Changes.

- Major controls can be set with Midi CC messages.

1.1 New & Bug fixes

V 1.1

- Controls (rotaries,…) can now also be changed when the sequencer is running.
- Added a "Reset to Default" in the presets menu.
- None of the Advanced settings are saved to a preset any longer
- Disabled step yellow led now stays on also when the sequencer is running.
- Added a "Harmonic Lock" button to the pitch shifter
- Added choice of "EqualTempered" or "Just" harmonic scale to Advanced settings.
- Added Oscillator Slew rate control for square and sawtooth waveforms.
- Added more Midi CC controls.

- Fixed a bug in saving/restoring the disabled steps.
- Fixed a bug in updating params with "Set All" on when sequencer is running

V 1.2

- Added graphic display of sampled audio
- Added Copy/Paste settings from 1 sequencer to another.
- Added delta frequency/note (-100 cents .. +100 cents) to the VCO.
- Added delta frequency/note (-100 cents .. +100 cents) to the pitch shifter.
- Samples are now aligned (left shifted) to the step start when "Sample Start" is > 0.
- Added "Adjust Step" popup to select step to adjust when sequencer is running.
- Added Key Note and frequency for the Just scale.
- Just scale is now also used in the VCO.

- Fixed pitch shifter bug for lower bpm values or higher step times (1 bar …).

V 1.3

- Added limit to key function (ensures the note produced by VCO + pitch is in the specified key + scale)
- Added user interval scale (Adv Settings)
- Adjust step when running now only shows the specified step parameters (and not the current running step)
- Pitch harmonic lock now also follows the limit to scale intervals (previously only when random was on)

- Delay lines now cleared when (re-)Started
- Fixed Pitch just after loading project
- Fixed VCO frequency bug when sample rate changed
- Fixed bug in Pitch delta rotary

V 1.4

- Added Octave-Up button in sampling.
- The pitch sequence of sampled sources can now also be modulated by keyboard notes. =>
- When running, the UI will now follow linked sequencers.
- Added new sequencer Start mode : Audio Gate (starts when audio level gets above threshold). =>
- Added new sequencer Stop mode : Stop after number of bars played.
- AUv3 now also has type "aumu" (instr) : can be inserted as a source.
- When not running, arrow keys cycle through steps and sequencers.

- Fixed bug in stereo sampling (channels were individually sampled).

V 2.0

- Each sequencer now has 3 VCO's (was previously only 1). =>
- New Chordulator source : finds chord notes (in live or recorded guitar, keys, …) and sends them to the VCO's in various ways (arpeggiator, …). =>
- MacOS version now has surround (and 3D) panning. =>
- Added Pulse Waveform to the VCO's.
- VCO 2 and 3 can set the Pulse Width.
- VCO 2 and 3 have a Pulse Width modulator.
- VCO 2 and 3 have individual panning.
- VCO 2 and 3 have Slew rate modulation for square and saw waveforms.
- Sampling panel now has a reverse button.
- Delays now have a modulator function (each step has it's own LFO).
- Midi out notes can now follow the VCO's (+ pitch shifter).
- When running a new sequencer mode allows to automatically select the next preset (in the same folder) after a number of bars .
- When running the "Play Step" button is replaced by a "Next Preset" button.

V 2.1

- The Chordulator now has a Direct Midi Out function (independent from the step timing). =>
- Cpu load reduction of up to 50% when using Delays and the delay time is the same for all steps (new Advanced setting) =>
- Midi Out can now also be sent to the DAW (previously only to External midi), which makes WoodStepper now appear as a midi source in AUM. =>
- WoodStepper is now a visible (external or virtual) midi destination endpoint.

- fixed crash bug when using the Chordulator and Midi Out.
- fixed display of received midi notes.
- fixed display of Midi out settings when running.

V 3.0

Synthesizer mode : =>
- Each sequencer can be switched to synth mode both for VCO sources and the sample loop sources.
- The steps can then be used to have parameter automation along the bar(s) played.
- The VCO synth can be set to para-polyphonic mode (sending notes 2&3 to VCO's 2&3), which allows a maximum of 12 voices. =>
- The global polyphonic mode (between the 4 sequencers/synths) allows a maximum of 4 full polyphonic voices.
- Synth mode also works when the sequencer is not running (new Advanced setting).

- New Start Sequencer mode : a midi note received in a specified range, starts the sequencer. =>
- Each sequencer/synth can set the range of receiving notes (allows for up to 4 split keyboard regions). =>

- Samples (synth and sequencer) have new play back modes : random start, random slice, random reverse. =>
- Samples now have a "1 shot" setting (avoids repeating when the number of samples is smaller than step time in sequencer mode or holding the key in synth mode). =>

- Samples can now be loaded from file (.wav, .aif, .caf, etc). =>
- Sample files should be in the folder "samples" in the iCloud WoodStepper folder.
- In sequencer mode an offset can be set to select a part of the file (when the file duration is larger than the step time).

- Presets now have a "Made By" and comment field.

V 3.1

- Added MIDI note off STOP mode.
- Added MIDI All Notes off STOP mode.
- Added 1/16 triplet to timing.
- Added DAW BPM tracking (DAW button is now on-off in stead of push).
- Chordulator Midi Out can now follow the Arpeggiator.
- Midi Out follow input now has its own reference note (in the Midi Out panel). =>

- Fixed bug in Midi note Start mode : starting transport also started the sequencer.
- Fixed crash bug when setting Filter (bandpass) resonance to zero.
- iOS Files app can now copy/move single sample files into the WoodStepper iCloud samples folder (previously only a folder could be copied/moved)

V 3.2

- Added Ableton Link. =>

- Fixed a few small UI update bugs

V 3.3

- Added new sampling record modes : record on Step 1, record on Next Step, record when Armed, record when Midi Note on received. =>
- Added "ALT" button :
    when step led clicked, will mute in stead of disable the step
    when a parameter is changed, the same parameter will be updated in all sequencers
- Added playhead display in sample graphs :
    when Sampling is Armed, it displays the relative Step Time.
    otherwise it displays the current samples being played.
- Presets are now visible and can be set in the DAW preset menu (DAW dependent).
- Added Previous Preset button (visible when sequencer is running)

V 3.3.2

- Enable Ableton Link button state is now only stored in the session (and not in the presets anymore)
- Use 1 delay line per sequencer setting (Advanced Settings) is now on by default and stored in the presets.
- Fixed AU evaluation failure (Logic Pro plugin manager).
- Reset to default (preset menu) now loads the saved default (which was previously only loaded when a new plugin was instantiated)

V 3.3.3

- Fixed a potential crash in the delay section.
- Fixed a resizing bug in the Prev/Next Preset buttons.

2. Main window

Individual controls are explained below in section 4.

Most rotaries can be double clicked which will set a minimum value or toggle to the maximum value.

You have pressed the Question-mark button already as you are reading this manual.

3. Presets

User presets can normally be set via the DAW specific popup / controls. Those presets will be saved in a specific format and location dependant on the DAW.

User presets can also be set via WoodStepper's own popup in the header bar.
Factory presets can also be selected with this popup.

The WoodStepper User and Factory presets are made available to the DAW which can/will present them as factory presets.

The WoodStepper preset.json files are saved in your iCloud Drive (when enabled) or else in the app's local documents folder.
When saved to iCloud Drive the presets are automatically available (and synced) to all devices and all DAW's running WoodStepper and are obviously backed-up as well.

When iCloud Drive is enabled, previously local saved presets will also be shown in the preset popup with ".local" appended to their name. And when for some reason a new preset still has to be written to the local folder, this can be done by appending ".local" to the name typed in the text edit box.

When a preset is selected and any parameter is changed afterwards, the name of the preset will be marked with a * at the beginning and end to indicate the settings are now different than those from the saved preset. When this preset is re-saved the * 's will disappear again.

Groups (drums, Vocals, …) can be created by typing the group name followed by a ":" (colon character) followed by the preset name.

The current selected preset can be removed by selecting "remove" from the popup however NO "Are you sure" warnings/popups are given. (I am sure you are sure).

The User presets can also be selected by a Midi Program Change. In the Advanced panel the Midi channel and Program Change mode can be set :
- mode "Index" : program change number is the index in the preset list
- mode "Name" : add ".midiXY" to the preset name to select it with program change XY. (e.g. the preset with name "snaredrum.midi3" will be selected by program change 3.

4. Main Controls

4.1 Sequencer On-Off buttons

Enables/disables both the audio out and sending midi out messages.

Switching off does not stop the sequencer timing !

These buttons can be controlled with a midi in CC (pedalboard …)

4.2 Sequencer Gain rotaries

-30 … +30 dB

Each sequencer has its own clipping led and is limited at 0dB.
This allows to have 1 sequencer produce a distorted clipping sound and the others not.

Even when none of the sequencers is clipping, the final output can still clip (as the sequencers outputs are summed) which can be seen/controlled with the global output gain rotary.

4.3 Sequencer "Sampling Armed" buttons

When the sequencer audio source is set to "Sampled track" the button enables/disables the sampling. When enabled and the audio triggers/starts the sampling, the led just beside the button will light for the sampling duration (= the step time).
These buttons are duplicated in the "Source" side panel.

When the audio source is set to "Oscillator" the button enables/disables that the oscillator frequency will be set when a midi "Note-on" message is received (on the selected channel).

4.4 Start / Stop button

When the Start mode (Advanced settings) is set to "Manual", the 4 sequencers will start immediately. The Start button led will light green.

When the Start mode is set to "Play", the sequencers are armed (blinking green button led) but will only start running/playing when the DAW transport is started.
In this mode the sequencers will also stop when the transport is stopped.

4.4.1 Sequencer Start Mode popup (Advanced)

Start mode can be :

- Manual
- Transport Playing
- Audio Gate
- Midi note in

Manual : sequencers start running as soon is the Start button is on.

Transport Playing: sequencers start running when the Start button is armed (flashing green led) AND the transport is started.

Audio Gate : the sequencer will start when the (track) audio level gets above the threshold (in dB) set with the "Start Thresh" rotary. This could be used in a live setup where the audio input is fed with the snare or kick so that the sequencer is perfectly in sync with the drummer.

Midi note in : in this mode 2 extra popups will be visible to select the note range and when a midi note-on is received in this range, the sequencer will be started.

4.4.2 Sequencer Stop Mode popup (Advanced)

Stop mode can be :

- Default : when the Stop button is pressed for Manual and Audio Gate start modes or when the transport stops for the transport start mode.
- Stop after playing a number of bars.
- Go to next preset (after a number of bars) : this can be used in a live gig to automatically switch to a next song part. The next preset is only taken from the same folder as song parts will normally be grouped in a song folder.
- Midi Note Off : Stop when same note which started the sequencer, is released
- Midi All Notes Off : Stop when all midi notes are released.

4.5 "Play Step"button / "Previous & Next Preset" buttons

When the sequencers are stopped no audio (or midi out messages) are sent to the output.

This button allows the selected step (of 1 sequencer) to continuously produce audio which can help in fine-tuning the step parameters.

When the sequencer is running the useless "Play Step" is replaced by "Prev" and "Next Preset" buttons which allows to quickly select the prev/next preset (song part …) in the same folder.

4.6 Adjust Step popup

When the sequencer is running and you want to control only 1 specific step, this popup allows to select that step.

When set to "Cur" and a rotary is tweaked, the new parameter values will go to the current running step.

4.7 BPM controls

0 .. 800 bpm.
Will switch off the DAW button (when on).

4.7.1 DAW button

Toggle button. When on, WoodStepper will (continuously) follow the DAW bpm.

When Ableton Link is enabled, this button will be replaced with a "Link" button.

4.7.2 TAP button

Allows to set the bpm by … surprise … tapping.
Will switch off the DAW button (when on).

4.8 Step Parameter panel buttons

The 8 buttons on the bottom will each show a specific side panel with the appropriate parameters.

Buttons/panels are :

- Timing
- Source
- Pitch
- Envelope
- Filter
- Delay
- Panning
- Midi Out

Except for the Timing all other panels only show the parameters of 1 sequencer : the current selected one.
The selected sequencer number is shown on top of the panel and all controls have the specific sequencer colour : blue, green, cyan, magenta.
The current sequencer can be selected by :

- clicking on a step led (when the sequencer is NOT running)
- enabling a sequencer
- clicking on the top button in the side panel

Changing a control in the side panel normally only affects the current selected step.

However when the top right button "All Steps" is on (flashing red led) all steps will get the same value for this parameter.

When 2 sequencers are linked the "All Steps" will also change the other (non-selected) sequencer depending on the setting "Link All Steps" in the Advanced panel.

When the sequencer is running, changing parameters will be set in the step which is playing at that moment. This allows to distribute a range of a parameter over the 8 steps fast and easily. Of course if an exact value is wanted on a step, it may be better to stop the sequencer, select the step and then set the parameter.
Also note that when clicking/touching a rotary and holding it, will set the current value in all the steps being played.

When running and the current displayed sequencer belongs to a linked set, the UI (displayed controls) will follow the current sequencer being played.

4.9 Dry-Wet rotary

0 … 100%

At 0% only the original audio is heard, at 100% only the sequencers output signals are heard.

4.10 Output Gain rotary

-30 .. +30 dB

When the output signal becomes > 0dB, the output clip led will go on.

This can easily happen when more than 1 sequencer is producing audio as all the sequencer outputs are summed.

The output clip led and gain rotary are also present in the Advanced panel.

4.11 Sequencer LED's

The 8 leds per sequencer can be touched (iOS) / clicked (MacOS) and have the sequencer's specific colour (blue, green, cyan, magenta)

Sequencer NOT running :

touching a non selected led sets the current sequencer and step.

touching again the same led (ALT button off) :

the led becomes yellow : this step is now disabled and will be skipped when the sequencer is running.

touching the same led (ALT button on) :

the led becomes red: this step is now muted but the timing is not changed

touch again the yellow or red led : the step will go back to the enabled/unmuted state (independent of the state of the ALT button).

Sequencers RUNNING :

the current step of each sequencer will light in the sequencer's specific colour (blue, green, cyan, magenta) and all other leds will be off except for the disabled steps which will remain on (yellow leds) and the muted steps which will remain red.

touching a led will only allow to disable/enable or mute/unmute (ALT) that step.

On MacOS the leds can be selected by using the arrow keys as well.

4.12 Copy / Paste menu

Allows to copy all the current sequencer settings to one of the others. Can be useful for AB-ing 1 specific parameter and have all the other parameters be the same.

4.13 ALT Button

When on, it serves 2 purposes :

- clicking a (selected) step led will now Mute the step in stead of disabling it.
- changing a sequencer/step parameter will update the same parameter in all sequencers.

5. Timing panel

5.1 Bar popups

Defines the step time (fraction of a bar).
Has all the common beat values (1/4 , 1/8, …) including dotted notes.
1/4 corresponds to the BPM time.

5.2 Link buttons

Each button links 2 sequencers.

Link 12 on will make a 16 steps sequencer.
When link 12 is on and link 23 is also on, you get a 24 steps sequencer.

Linked sequencers still keep their own timing.

5.3 Repeat popups

When 2 sequencers are linked, repeat numbers can be set for those 2 sequencers which define how many times a sequencer cycles before moving to the next.

6. Source panel

6.1 Source button & Synth button

6.1.1 Source button

Clicking moves to the next sequencer. The sequencer number is displayed beside this button and the controls will change colour to reflect the current selected sequencer.

6.1.2 Synth button

When on, this sequencer becomes a synth and will only produce audio when a (midi) note-on is received.

The range of midi notes (and midi channel) to which this synth (or sequencer) responds is set in the Oscillator panel (even if the Source is not set to Oscillator(s)).

Synth mode also works when the sequencer is not running which could be used in a live setup where the sequencer(s) have to kick in at a later moment.

In Synth mode the Pitch shifter is disabled as the VCO frequencies/notes are now completely determined by the midi in note-on's.

The Envelope parameters now become the expected ADSR where the time units are now in seconds (while in sequencer mode they are a percentage of the step time).

6.2 Source Mode popup

Audio sources can be :

- Off
- Track audio
- Sampled track audio
- File Samples
- Oscillator (VCO)
- Oscillator 2 (VCO 2)
- Oscillator 3 (VCO 3)
- Chordulator

The Synth mode is not possible and displayed in Track Audio and Chordulator modes.

6.3 Sampled track controls

6.3.1 Sampling Armed button

Needs to be on for the sampler to be active.
This button is duplicated in the main Control window on the right of each sequencer and can also be controlled with a midi in CC message.

When sampling is active the red led (left of this button) will light.

6.3.2 Clear button

Erases the current samples in this sequencer.

6.3.3 Recording popup

Defines when the sampling will start (after being Armed).

Recording modes can be divided in 2 groups :

Armed button will stay on after sampling :

- Gate : audio level > threshold
- Step 1 : running sequencer reaches first step
- Midi Note On : channel and range are set in the Oscillator section

1 Shot modes (Armed button will be disarmed after the sampling) :

- Gate
- Step 1
- Midi Note On
- Next Step : as soon as the next step is reached
- Armed : immediately after the Armed button is switched on.
- Step SeqNr : step 1,2,3,4 for sequencer 1,2,3,4
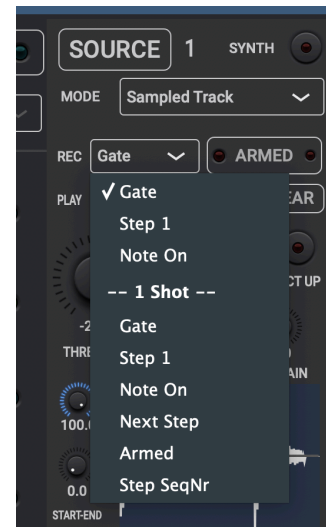
Obviously the sequencer has to run for the Step modes to work.
The Gate, Armed and Midi note modes can also be used when the sequencer is not running.

The sample time is defined by the step time.

6.3.4 Play back popup

Play modes can be :

- Normal
- Reverse
- Random Reverse
- Random Start
- Random Slice

The random modes kick in each new step (sequencer mode) or each new midi note-on (synth mode).

Random Start will use the same samples (determined by Start and End) but each time begin at another sample in that range (and then consequently loop around).

Random Slice only works when a part (slice) is selected by having a Start > 0% and/or End < 100%. In this case the slice duration is kept the same but a different part of the samples will be played.

6.3.5 First step button

When on, new samples will become active on the first step (of the next cycle).
Otherwise the new samples will be a active on the next step.

6.3.6 Octave Up button

When on, the sampled data will be transposed 1 octave up. This is done after the sampling so the original samples are kept which allows to toggle the button many times without losing or degrading the original samples.

When the button is on before the sampling is done, the sampling time will be doubled (2 times the step time) as 1 octave up is equivalent as going 2 times faster and hence will halve the original sample time. This ensures that there is audio for the whole step time.

When the button is switched on after the sampling is already done (sampling time = step time), only the first half of the step time will contain audio.

6.3.7 Threshold (Gate recording mode)

-60 .. 0 dB

When the audio level gets above the Threshold, sampling will start

6.3.8 Hysteresis (Gate recording mode)

0 .. 60 dB

Defines how much the audio level has to drop below the Threshold before new sampling can take place.

6.3.9 Sustain (only in sequencer mode)

0 .. 100s

When not set to 0, the samples will decrease in level to reach 0 after the sustain time.
This is more meant for live playing when you don't want the sample to continue forever.
This sustain is **not** related with the A(D)SR settings.

6.3.10 Sample Start and End rotaries

Allows to define a window on the samples which will be heard.
The samples are still all kept in memory so these settings can be changed without having to resample.
When the start is set larger than zero, the samples will be left shifted to align with the step boundary.

6.3.11 Sample Graphic Display

Displays the samples in the current step time. So if the step time is set to a smaller value after sampling, not all samples will be visible.
Clicking once in the display will zoom-in. Double clicking will jump back to the zoomed-out display.
The values of the Start and End rotaries can be seen as dimmed samples.

When running and the step time is larger than 0.4s (BPM = 150), the playhead will be shown.

When the Armed button is on, the playhead will display the relative step time (so goes from the left edge to the right edge, as the graph length corresponds to 1 step). This can help to synchronise the recording especially for larger step times (looper …).
When not armed (so sampling has been done), the playhead shows the samples currently being played. For example in reverse playing mode, the playhead will aslo go backwards.

6.3.12 "1-SHOT" button

When on, the samples will not be repeated when the last sample is reached.

This could occur in sequencer mode when the Start and/or End are set to use only a part (slice) of the recorded or loaded samples within the step time.

In synth mode it can occur when the key is being pressed (and not released) and all samples have been played.

6.4 Oscillator 1 (VCO) controls

6.4.1 Frequency (note) rotary and popup

The rotary can set inter note frequencies.
Use the popup to set an exact
note value.

6.4.2 Oscillator waveform

The usual waveforms :

- Sine
- Square
- Triangle
- Saw down
- Saw up
- Noise
- Pulse

6.4.3 Oscillator Level

-50 .. 0 dB

6.4.4 Frequency modulation

0 .. 100Hz

6.4.5 Modulation Depth

0 .. 100%

6.4.5 Armed button (sequencer mode only, hidden in synth mode)

When on, the oscillator frequency (note) will be set by the received midi in note.

When "Polyphonic midi in" (Advanced panel) is on, subsequent received notes, meaning the previous note(s) is not released yet, will go to the next sequencer with audio source set to VCO.

This button is duplicated in the Main panel for each sequencer.

6.4.6 Delta frequency rotary

-100 … +100 cents
Allows to (de)tune all the note values generated by the VCO.

6.4.7 Midi Channel

Can be set per sequencer/synth. This setting is also used by the other Sources for this sequencer.

6.4.8 Midi Note Range

Sets the range to which this sequencer/synth will respond. This allows to have up to 4 keyboard regions which all drive another sequencer/synth.
This setting is also used by the other Sources for this sequencer.

6.4.9 Use Velocity button.

When on, the keyboard velocity will set the Oscillator level.

6.4.10 "Step 1 Only" button. (sequencer mode only)

When on, midi input (changing the VCO note) will only be allowed during step 1.

6.4.11 Para-polyphonic button (synth mode only, replaces the Step 1 Only button)

When on, subsequent (meaning note 1 is still on) notes 2 and 3 will be sent to this synth's VCO 2 and 3. Apart from the chordulator, this is the only way to have the 3 VCO's play independent notes.
This way the synth becomes 3 voice para-polyphonic with the same parameters for filter, ADSR, etc, but with possible different settings for the VCO's like waveform and modulations (hence the para)
When all 4 synths are set to para-polyphonic and the global (Advanced Settings) polyphonic mode is on, a total of (4 times 3 =) 12 voices are possible.

When 2 or 3 notes are on and 1 of them is released (note-off), this last one will still be played until all notes are released. However if another note is played in stead of this last one (and the other are still on), this new note will take over and be played. This allows for a melody to be played while having 1 or 2 notes on at the same time and yet have a nice chord release.

6.5 Oscillator 2 & 3 (VCO) controls

VCO 2 and 3 follow the note (frequency) of VCO 1 but can be set a number of octaves up or down. The delta rotary still allows to detune from the followed note.
All other parameters are independent from VCO 1.

6.5.1 Frequency (note) octave popup

Allows to set 4 octaves up or down or switch off this VCO.

6.5.2 Oscillator waveform

The usual waveforms :

- Sine
- Square
- Triangle
- Saw down
- Saw up
- Noise
- Pulse

6.5.3 Oscillator Level

-50 .. 0 dB

6.5.4 Modulation Frequency

0 .. 100Hz

6.5.5 Frequency Modulation Depth

0 .. 100%

6.5.5 Delta frequency rotary

-400 … +400 cents

Allows to (de)tune all the note values generated by the VCO.

6.5.6 Panning rotary

This panning is independent from the step panning and can be used to create a stereo sound, for example by panning VCO2 to the left and VCO 3 to the right.
The panning is only active when the Stereo Mode (in the Advanced panel) is set to "True Stereo".

6.5.7 Pulse Width rotary

0 .. 100%
Obviously only active when the waveform is set to Pulse.

6.5.8 Modulation rotary

The modulation type depends on the waveform :

Sine, Triangle and Noise : Amplitude Modulation
Pulse : Pulse Width Modulation
Square and Sawtooth : Slew rate Modulation

The LFO frequency is shared with the Frequency modulation LFO.

6.6 The Chordulator

When audio is sent to WoodStepper (live or track recorded), the Chordulator tries to find the 3 chord notes being played by guitar, keys or other instrument.
When found the 3 notes can be used in various ways to drive the 3 VCO's.
When only 1 or 2 notes are found, the other is set to an octave of the found one.
The analysis parameters are common for all sequencers but the chord usage parameters can be set independently.

6.6.1 Armed Button

As long as Armed is on, the Chordulator keeps analysing and refreshing the chord notes.
This button is duplicated in the main Control window on the right of each sequencer.

6.6.2 Search Range popups

Could be used for example to exclude bass notes from being found as chord notes.

6.6.3 Reset

Resets the chord notes

6.6.4 Threshold

-60 .. 0 dB

Only audio with a level above the threshold will be analysed.

6.6.5 Destination Mode popup.

Once the chord notes are found, this setting determines how they will be used :

- Arpeggio :
  The chord notes are cycled through and sent each in turn to VCO 1.
  All channels get the same note.

- Arpeggio Stereo
  The chord notes are cycled through per channel and sent to VCO 1 :
  note1 -> L , note 2 -> R , note 3 -> L , note1 -> R , …

- Step Arpeggio
  The chord notes are cycled per sequencer step and sent to VCO 1 :
  step1 -> note 1, step2 -> note 2, step 3 -> note 3, step 4 -> note 1 , …

- Note 1
  Only note 1 is used and sent to VCO 1

- Note 2
  Only note 2 is used and sent to VCO 1

- Note 3
  Only note 3 is used and sent to VCO 1

- Notes 1,2,3 to VCO 1,2,3
  Each note is sent to another VCO

6.6.6 Sustain

0 .. 100s

When not set to 100s the VCO levels will decrease in time to reach zero after the time set.
When the Chordulator is Armed and a new chord is found the sustain is restarted.

6.6.7 Arpeggio Speed

1 .. 100Hz

Determines the note cycling speed in the Arpeggio and Arpeggio Stereo modes and is independent from the BPM.

6.6.8 Midi Out popup

When the chordulator finds new notes, note-on midi commands can be sent immediately independent from the step timing.

The mode allows to send the 3 chord notes or only 1 of them.

In normal mode a note-off command is sent when previously a note-on was went and then the new note-on is sent. So this is like pressing a note on a keyboard and holding it until a new note is found.

In the On-Off modes a note-on is immediately followed by its note-off. This has the effect of very briefly pressing a key leading to more percussive sounds.

The midi channel and velocity sent can also be set.

6.7 File Samples

6.7.1 File selection popup

All sample files which reside in the folder "samples" (and its subfolders) in the WoodStepper iCloud folder will be shown in the popup and can be selected.

When the file's sample rate does not match the app or plugin sample rate a conversion will be done.

In synth mode the display will show the entire file.

In sequencer mode, only a timespan = the step time is shown, which means that if the file duration is longer than the step time, only a part of the file will be visible. In that case an offset rotary will be visible which allows to select the part of the file you want.

6.7.2 Start and End rotaries

These work the same as in the Sampled Track source mode.
They select a part of visible samples to be played.

So in synth mode, any part of the file can be selected (hence no offset rotary).
In sequencer mode only a part of the step time can be selected.

6.7.3 Play back popup

Is the same as for the Sampled Track source : see section 6.3.11

6.7.4 "1-Shot" button

Is the same as for the Sampled Track source : see section 6.3.10

6.7.5 Octave Up button

Is the same as for the Sampled Track source : see section 6.3.4

6.7.6 Reference Note popup.

Synth mode :

The difference between the incoming midi note and this reference note, determines the interval (ratio) the samples will be up/down sampled (pitched).

Sequencer mode :

(in versions < 3.0 , the reference note was taken from the Pitch "Limit Key" popup)

Here the samples are not up/down sampled but the Pitch shifter is changing the pitch.
The difference between the incoming midi note and this reference note, is used to shift the pitch intervals themselves (which can take the Limit Key and Scale settings into account).

7. Pitch panel

7.1 Pitch button

Clicking moves to the next sequencer. The sequencer number is displayed beside this button and the controls will change colour to reflect the current selected sequencer.

7.2 All Steps button

When switched on (flashing red led) any parameter being changed is set in all steps of this sequencer.

When the Advanced setting "Link Set All Steps" is on, also the steps in the linked sequencers will be updated.

7.3 Enable button

Easily enable/disable the pitch shifting.

7.4 Pitch rotary

Defines the pitch : left position is 1 octave down.

7.5 Octave down button

When enabled 1 extra octave down is added to the pitch value.

7.6 Glide rotary

0 .. 100%

Defines the amount of the step time used to glide to the next pitch value.

7.7 Random button

Generates random pitch values.

7.8 Limit Scale popup

Allows to limit intervals to the selected scale.
When not set to "Free" :

- Turning the Pitch rotary (and harmonic lock on) will snap to the intervals in the selected scale.
- When Random is on, values will be limited to the intervals in the scale selected.

The popup contains a "User scale" item which is defined in the Advanced panel.

7.9 Limit Key popup

7.9.1 Source is set to Oscillator (VCO)

When the **VCO** is used as audio source the final note produced, is the VCO note + the Pitch interval. When the Key is specified and the final note is NOT in the set of notes defined by the key + scale intervals, then the pitch value is adjusted to make the final note shift to the closest one in the set.

Example :

Suppose you are playing in the key of C with a Major Pentatonic Scale.
Possible notes are then : C, D (major 2nd), E (major 3d), G (fifth), A (major 6th)   (+- octaves).

And suppose the VCO note is set to C and the step Pitch interval is set to "Major third".
This produces an E which is in the set of possible notes.

The VCO note is now set to E (midi keyboard input for example…)

When the Key limit is set to "Free" the note produced is E + major third = G# which is not in the set anymore !

However when the Key limit is set to "C" the pitch will be adjusted so that the note produced will be G which is the closest note in the allowed set.
In other words any note played on the keyboard will produce a note in C major pentatonic.

Remark : the Pitch value displayed will not reflect this adjusted pitch, as the step Pitch value (stored in the preset) itself is not changed.

7.9.2 Source is set to Sampled Track

In this case modulating the whole (pitch) sequence can't be done as in the VCO case by simply changing the VCO frequency (note) by a received keyboard note.

However modulation can now be done by shifting the pitch values themselves.
The shift is determined by the received keyboard note relative to a reference note.
The reference note is now (v3.0) set by the Reference Key popup in the File Samples panel (see 6.7.6), which also enables the modulation.
The range of shifting is limited to 2 octaves as it uses the pitch shifters.
When a modulated pitch value gets out of range, it is wrapped around

Example :

Ref Key popup set to "C4" :

E4 is played on the keyboard : all pitch values will go up with a major third.
Step pitch value was set to max 1.0 (= no shift) -> the modulated value will be : octave down + maj third

A3 is played on the keyboard : all pitch values will go down with a minor third

7.10 Delta LR rotary

When the input is stereo and the stereo in mode (Advanced panel) is set to "True Stereo", this defines the difference in pitch setting between L and R .

7.11 Harmonic Lock button

When "on" the Pitch rotary snaps to the closest harmonic interval.

When "off" the pitch interval is free. The closest interval is still displayed but appended with a ***** (star) to indicate the pitch is between 2 intervals.

7.12 Delta pitch rotary

-100 … +100 cents

When the pitch shifter is harmonically locked, this delta can be used to deviate from the fixed harmonic values.

8. Envelope panel

Controls the classic A(D)SR amplitude envelope.

Sequencer mode   Synth mode

8.1 Attack rotary

Sequencer mode :

0 .. 100%.
Relative to the step time.

Synth mode :

0 .. 10s

8.2 Sustain Amount rotary (Sequencer mode)

0 .. 100%.
Relative to the step time.

8.3 Decay Time rotary (Synth mode)

0 .. 10s

Time to evolve from the Attack Level (Gain Rotary) to the Sustain Level.

8.4 Sustain Level rotary (Synth mode)

-60 .. 0 dB

Relative from the Gain level.

Level reached after Attack and Decay time have passed.

8.3 Release (End) rotary

Sequencer mode :

0 .. 100%.

Relative to the step time.

Defines where the release will end !
When Attack + Sustain would already be larger than this, the attack and sustain time will be reduced.

Synth mode :

0 .. 40s

Time to evolve from the Sustain Level to silence when the key (midi note-off) is released.

8.4 Step Gain

-60 .. 0 dB

9. Filter panel

9.1 High pass filter frequency rotary

50Hz … 20kHz

independent from the Filter Type popup.

9.2 Saturation rotary

0 .. 100%

independent from the Filter Type popup.

9.3 Filter type popup

Type can be :

- Off
- Moog 4-pole low pass filter
- 2 pole band pass filter
- 2 pole high pass filter

9.4 Filter frequency rotaries

Frequency 1 is the cutoff when the envelope is at 0, frequency 2 is the cutoff when the envelope is at 100%.

9.5 Resonance

0.. 10

Above 3 the filter can start to oscillate !

9.6 Filter ASR envelope rotaries

Defines the cutoff frequency between Frequency 1 and Frequency 2.

10. Delay panel

10.1 Send rotary

0 .. 100%

The amount of the signal sent to the delay line.

10.2 Feedback rotary

0 .. 100%

The amount of the delay line out sent back to the delay line in.

10.3 Delay time popup

Defines the delay time (fraction of a bar).
Has all the common beat values (1/4 , 1/8, …) including dotted notes.
1/4 corresponds to the BPM time.

10.4 Delay time rotary

Allows to set a deviation from the discrete bar values set in the popup.

10.5 Delay high-pass and low-pass rotaries

Filters the delayed signal.

10.6 Delay saturation

0 .. 100%.

10.7 Delay Modulation

Depth : 0 .. 100%.
LFO Frequency : 0.1 .. 200Hz

11. Stereo Panning panel

11.1 Audio LR panning

-100% is Left
+100% is Right

11.2 Delay LR panning

-100% is Left
+100% is Right

12. Midi Out panel

12.1 Midi out messages

The 4 messages consist of the command popup, the note/controller popup and the velocity popup.
Message 1 has i's own midi channel popup, message 2,3 and 4 share the same channel.

The command popup has the known values like Note-on , Note-off, CC, etc but also has some meta values :

- All notes off (translated to CC 123)

- Follow VCO (+ pitch) : this translates to a "Note-on" where the note value is determined by the current VCO note + the current pitch shift value. This allows to send out midi notes which are constrained by the "Scale" and "Key" options in the Pitch panel or which can be random when the Pitch panel random button is on.

- Record : will wait for a midi note-on to come in and then set the popup to Note-on so that next received note-on goes to the next message in Record mode.

12.2 All previous notes off button

When enabled a note-off will be sent for each previously sent note-on.

12.3 Follow midi in button + Reference Note popup

When enabled, all notes will be shifted with an interval = midi note in - reference note.
The reference note can be set (differently) per sequencer but not per step.

The received midi in note is displayed in the Main panel per sequencer.

When "Polyphonic midi in" (Advanced panel) is on, subsequent received notes, meaning the previous note(s) is not released yet, will go to the next sequencer.

Attention : if you want midi to be received from the DAW itself (DAW keyboard …), switch on the "DAW midi" button in the Advanced panel otherwise WoodStepper listens to external midi events.

12.4 Enable button

Easily enable/disable sending midi out for this step.

13. Advanced Panel

The Advanced panel can be made visible by pressing the "Advanced" button.

Most settings in the Advanced panel are NOT saved in a preset but in the DAW's project settings.

The User scale and key note/frequency are stored in the preset.

13.1 Allow Synths when not running

When off, synths will only produce audio when the sequencer is running.

13.2 Polyphonic midi input

See section 12.3 and 6.4.5

13.3 Link Set All Steps

See section 7.2

13.4 Stereo Input mode

When inserted on a stereo track, it is still possible that the audio signal is mono in which case some DAW's send the same mono signal to L and R.
Another common use case is when sending a live mono instrument (guitar , vocal) to the DAW which receives real audio only on 1 of the 2 input channels.

Therefore the Input Mode allows to select and process only 1 channel which saves 50% cpu time.

Mode can be :

- L
- R
- L + R
- True Stereo

Only in True Stereo mode the 2 L and R channels are processed independently. This also allows to use the deltaLR settings.

13.5 Sequencer Start and Stop modes

See section 4.4.1

13.6 Input gain rotary

-30 .. +30 dB

13.7 Midi Program Change and CC input controls

The midi channel popup is only for the PC and CC in messages, NOT for the note-on (off, …) messages in the VCO or Midi out sections. Those use the midi channel popup in the Source / Oscillator panel

13.8 DAW Midi button

If you want midi to be received from the DAW itself (DAW keyboard, midi track on which WoodStepper is inserted, …), switch on this button otherwise WoodStepper listens to external midi events.

## 13.9 Midi Send buttons : External and DAW

The Midi Out panel and the Chordulator Midi Direct Out can send midi notes and/or commands.

When "External" is on, midi can be sent to devices (hardware synths, …) or apps outside the DAW.
When "DAW" is on, the midi out is handled and routed by the DAW itself.

Example midi routing in AUM which has 2 WoodStepper plugins and with WoodStepper stand-alone also running :
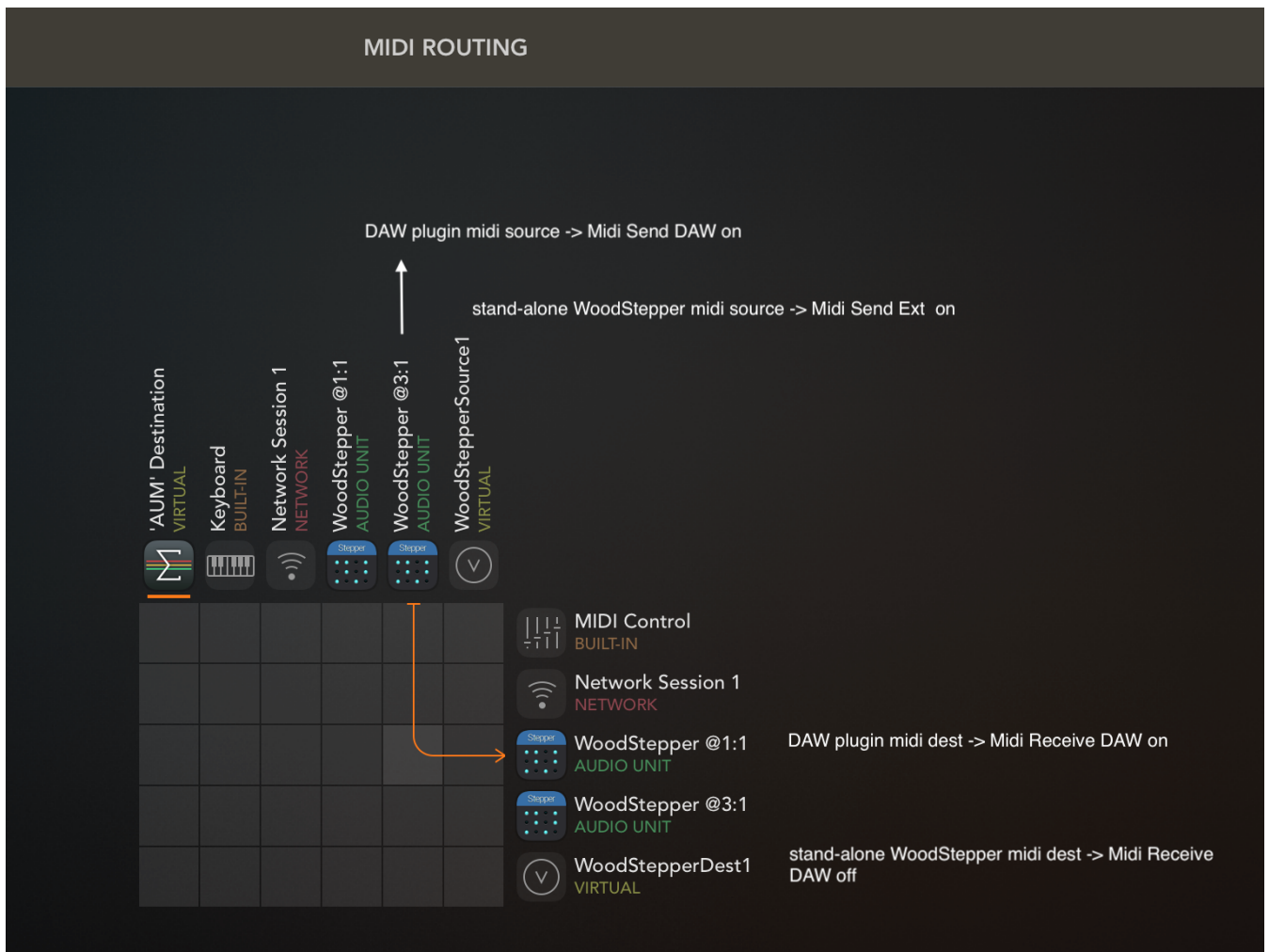
13.10 Harmonic Scale popup

Allows to choose between the "Equal Tempered" scale or "Just" scale used in the pitch values when harmonic lock is on.

In the Equal Temper scale all note to next note ratios are the same : the 12th root of 2 = 1.05946. In the Just scale the ratio depends on the interval and is based on rational numbers.

Interval ratios for the 2 scales :

	Unison	Minor Second	Major Second	Minor Third	Major Third	Fourth	Dim Fifth	Fifth	Minor Sixth	Major Sixth	Minor Seven	Major Seven	Octave
Equal Temper	1.0	1.05946	1.12246	1.18921	1.25992	1.33483	1.41421	1.49831	1.58740	1.68179	1.78180	1.88775	2.0
Just	1.0	25/24	9/8	6/5	5/4	4/3	45/32	3/2	8/5	5/3	9/5	15/8	2.0
Just	1.0	1.0417	1.1250	1.2000	1.2500	1.3333	1.4063	1.5000	1.6000	1.6667	1.8000	1.8750	2.0

Attention : changing the scale will NOT update existing step pitch values. It will only take effect when new pitch values are set.

The scale set is also used to convert an incoming midi note number to the VCO frequency.
For the Just scale this requires to also set a reference (key) note and frequency.

13.10.1 Key Note and Key Note frequency

The frequency for a keynote is the reference frequency set and then multiplied or divided by a power of 2 to get to the wanted octave. For the other notes the Just scale intervals are applied on the closest key note.

13.11 Slew rate rotary

0 .. 100%

Sets the slew rate of the oscillator square and sawtooth waveforms.

The slew rate is the steepness of the vertical transitions.

100% would make the square waveform into a triangle.

13.12 Use 1 Delay line / Sequencer button

As each step can have its own delay time, this requires to have a delay line per step.
This means that worst case, 4 sequencers * 8 steps * 2 channels (L&R) = 64 delay lines are
running each with their own lowpass, high pass and saturation units.
Needless to say this is using quite a bit of CPU resources.

However often the same delay time is used for all steps so in that case 1 delay line is enough.
When this setting is on, WoodStepper checks if all the delay times in this sequencer are the same
and if that is the case only uses 1 delay line, thereby reducing the cpu load with up to 50% !

The only drawback is that also the lowpass and high pass filter are used with the same settings.
Other settings like Send, Feedback and Saturation can still be set per step.

14. Running on iOS (iPad, iPhone)

The WoodStepper app supports IAA (Inter App Audio) which allows audio host apps (supporting IAA) to use the WoodStepper.
Without a host app the use case for the WoodStepper standalone app could be to use your iOS device as a "hardware sequencer/looper" sending and receiving audio via the mic/headphone connector or via some audio docking station and sending out midi to hardware synths.

The WoodStepper app also contains the AUv3 audio unit plugin. Host apps using the AUv3 plugin will present the WoodStepper UI in their own window which usually can be resized. The WoodStepper UI will scale to follow the resizing.

The number of channels will normally be limited to stereo.

14.1 Presets

Presets can be loaded/saved via WoodStepper's preset popup.
The preset.json files are saved in iCloud Drive when enabled or else in the app's local Documents folder.
When saved to iCloud Drive the presets are automatically available (and synced) to all devices running WoodStepper and are obviously backed-up as well.

When iCloud Drive is enabled, previously local saved presets will also be shown in the preset popup with ".local" appended to their name. And when for some reason a new preset still has to be written to the local Documents, this can be done by appending ".local" to the name typed in the text edit box.

To Enable iCloud Drive you should be signed-in in iCloud (normally the case when you also want Contacts, Calendars, Mail, etc to be synced to iCloud) and the iCloud Drive switch should be on. Under iCloud Drive all apps using iCloud Drive are listed and obviously WoodStepper should be on as well (which it is by default).

One-level groups are possible by typing the group name followed by a ":" (colon character) followed by the preset name.

Presets for the AUv3 plugin can also be provided by the host app or can be saved/loaded via WoodStepper's popup as described above. Currently multi-level popups (groups) are not supported here.

The User presets can also be selected by a Midi Program Change. In the Advanced panel the Midi channel and Program Change mode can be set :

- mode "Index" : program change number is the index in the preset list
- mode "Name" : add ".midiXY" to the preset name to select it with program change XY. (e.g. the preset with name "snaredrum.midi3" will be selected by program change 3. This method is preferred as the selection will not change when presets are added or removed.

14.2 UI Zoom

Especially when used as AUv3 plugin in a host app, it can happen that the window in which the WoodStepper plugin is presented is too small (and sometimes can't be resized)

Pressing the "WoodStepper" logo (top left) will zoom in 3 steps to a maximum size.
Next press will cycle back to the un-zoomed state.

When zoomed the UI can be panned by dragging in any spot which is not a control.

15. Running on MacOS

The standalone WoodStepper app downloaded from the Mac App Store can be used as such but mainly acts as the license for all WoodStepper plugins (AAX , AU , VST).

This means there is no limit to the number of Macs on which you can run WoodStepper (as long as the standalone app is in the Applications folder).

Due to Mac App sandbox security, you have to download the plugin(s) from my website, un-zip the file(s) and move it/them to the normal plugin folder :
- for AAX : /Library/Application Support/Avid/Audio/Plug-Ins
- for AU : /Library/Audio/Plug-Ins/Components
- for VST : /Library/Audio/Plug-Ins/VST

When the standalone app is not present, the plugins will run in trial mode : every 60s the audio will be silent for 3s.

15.1 Running in Logic Pro

When inserted in an audio track and starting the sequencer without the transport playing, WoodStepper will not run because Logic Pro is optimising cpu processing and does not call the audio processing in a plugin which is an effect (and not a generator) when nothing is being played (or even when playing but no audio is on the track).

Options to get WoodStepper running (without the transport playing) :

- enable Software monitoring AND the input monitoring on the WoodStepper track
- insert a "generator" plugin (e.g. Logic's own TestOscillator) on the track and disable it (unless you want the TestOscillator's output). Just the mere fact that a (even disabled) generator is on the track will cause Logic to call all plugins audio processing !

16. Surround and 3D Panning Panel

On MacOS when the plugin is inserted on a track with more than 2 output channels, the normal stereo panning panel will be replaced by the Surround and 3D panning.

The normal stereo pan control is now replaced by 3 controls :

X :	-100 .. +100	left to right
Y :	-100 .. +100	back to front
Z :	0 .. +100	bottom to top

Here as well the delay can be panned independently.

Each sequencer is displayed in it's own color in the 3D cube (which can be rotated).
The white spot indicates the position of the C speaker (the Center between L & R).

For each output channel a popup is available which selects the speaker signal sent to that channel.

17. Midi CC controls (Advanced Panel)

When this button is on, CC commands received on the same channel set for Program Changes, will control following parameters.

Controller : Parameter

102 : Dry-Wet
103 : Output Gain
104 : Start/Stop   toggles
105 :
106 : Sequencer 1 Enable   toggles
107 : Sequencer 2 Enable
108 : Sequencer 3 Enable
109 : Sequencer 4 Enable
110 : Sequencer 1 Sampling Armed   toggles
111 : Sequencer 2 Sampling Armed
112 : Sequencer 3 Sampling Armed
113 : Sequencer 4 Sampling Armed

Following parameters are set in the current selected sequencer

114 : Filter Resonance
115 : Filter Frequency 1
116 : Filter Frequency 2
117 : Filter Sustain
118 : Saturation
119 : Delay Feedback

　1 : Oscillator Modulation Depth
　5 : Pitch Glide Amount
 10 : Panning
 72 : Envelope Release
 73 : Envelope Attack
 91 : Delay Send

18. Ableton Link

18.1 What

Ableton Link is a new technology that synchronises beat, phase and tempo of Ableton Live and Link-enabled applications over a wireless or wired network. It lets you play devices together with the freedom of a live band. Anyone can start and stop their part while others keep playing, and anyone can adjust the tempo and the rest will follow. You can use Ableton Link with an increasing number of Link enabled applications – even without Live in your setup.

More info on the Ableton website : https://www.ableton.com/en/link/

## 18.2 Enable Ableton Link button (Advanced Settings)

When enabled the "DAW" button on the main window changes into a "Link" activate button. Ableton Link will now scan the network for other peers but as the Link is not activated yet no syncing will take place yet.

Attention :
On iOS a little Ableton Link settings window will open in which a second Ableton Link enable button has to be switched on as well !
This has to be done only once as the settings are persistent.
In the same little window Start-Stop syncing can also be enabled.
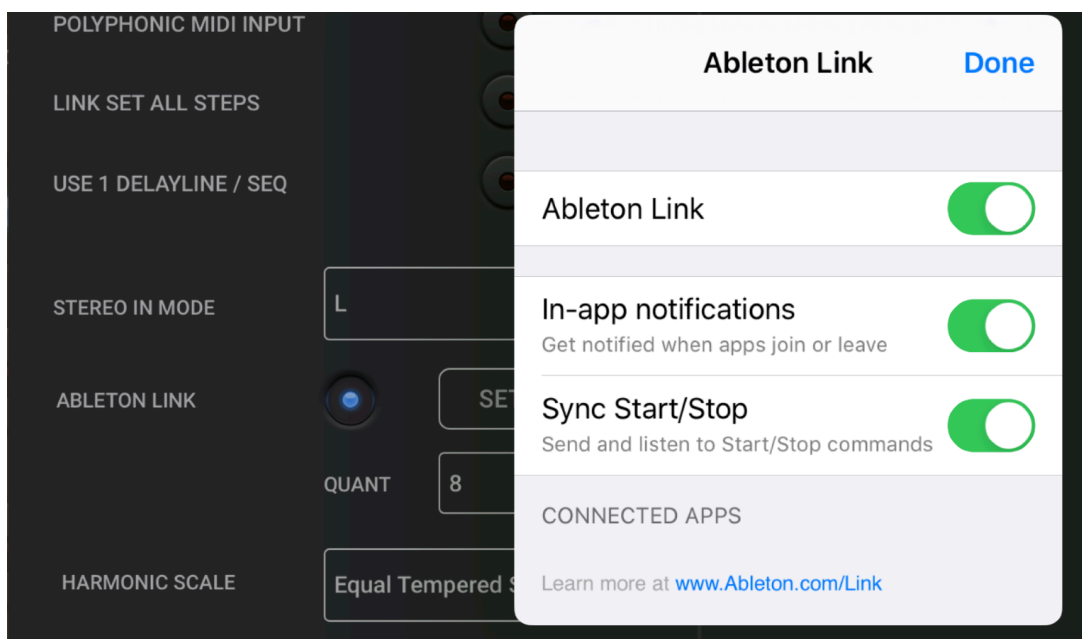
18.3 Activate Ableton Link button

This button replaces the get BPM from "DAW" button in the main window.

The button has a little led which has following states :
- off : no other peers are found
- orange : other peers are found BUT activate is OFF
- green : other peers are found AND activate in ON.

When the activate button is on, each sequencer will display a little led just below the sequencer mute/enable button which has following states :
- green : sequencer steps are in phase with the Link session phase.
- orange : out of phase (tempo has just changed, step timing has just changed, …)
- red : phase syncing not possible (irregular beat timing in respect to the quantum)

When other peers are found and activate is on, following happens :

- changing the WoodStepper tempo (tap, rotary) will be propagated to the Link session.
- when another peer changes the tempo, WoodStepper will take over this tempo.
- when WoodStepper is started (in manual start mode), the real start (step 1) can be slightly delayed so that step 1 starts at the Link session phase 0.
- when the sequencer is running and the tempo changes or the step timing changes, the step duration will be adjusted to get in-phase again with the Link session.
- when the sequencer is running and the steps are in-phase, each step is kept being checked if it is still in-phase and if not the step duration will be slightly adjusted.
- when Start-Stop is enabled, the WoodStepper Start button will also start-stop other (start-stop enabled) peers and vice versa.

18.4 Ableton Link Quantum popup (Advanced Settings)

The quantum can be seen as the (maximum) number of phases WoodStepper can cycle through.

Default set to 8 (as the sequencer usually has 8 steps).

So at any moment in time the phase could be anything between 0.0 and 7.9999

In-phase means that step 1 occurs at phase 0.0 , step 2 at phase 1.0 … step 8 at phase 7.0
Out of phase could be step 1 occurring at phase 0.6 or 1.234 or even at 6.789, etc.

When you want the sequencer to play in bars of 3/4 or 6/8, you can disable 2 steps and set the Quantum to 3 or 6.