Logic Pro X

Alchemy For Creative Loop Manipulation

White Paper
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Overview

Logic Pro X provides great options for working with loops and Apple Loops on Logic tracks and if you want to trigger loops live, or shape them with synthesis tools, you can do so using EXS24, Ultrabeat and now Alchemy.

Alchemy supports the playback of Apple Loops as well as standard .wav audio files and can manipulate tempo and pitch in realtime. Alchemy's sophisticated synthesis engine can transform loops with multiple forms of resynthesis and an abundant collection of filters, modulation and effects racks. This white paper introduces some of these new features.

Manipulating Loops

Alchemy can generate a synthesized version of an audio file using a process called resynthesis. This expands the creative options for manipulating the sound. One of those options is the ability to time stretch and pitch transpose the sound in realtime. The following steps show how to use the Speed and Position controls for that purpose.

1. Select an audio loop
    To control tempo, you will need to know the length of your loop in bars/beats. If it's an Apple Loop, the number of beats are listed right within the loop browser. This tutorial uses an Apple Loop, but any supported file format will work just as well. Before continuing on, set your project tempo to 110 BPM.

    Open the Apple Loops browser in Logic by clicking the loop browser icon in the control bar. Use the search field and type "Basic Vintage Break." If you look in the browser you can see the original tempo is 100 BPM, its 8 beats (2 bars) long.

2. Switch to Advanced view

3. Open Alchemy & Clear settings
    Open Alchemy and select Clear from Alchemy's File menu. This resets Alchemy's settings and makes it easier to build sounds from scratch.
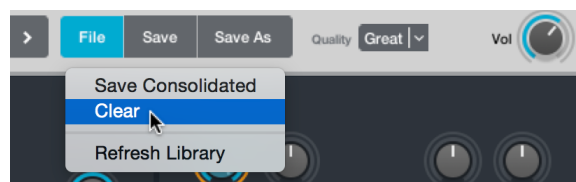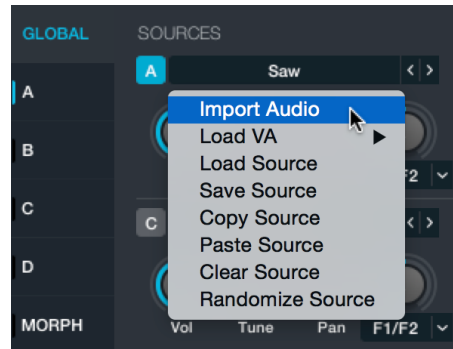

4. Select Source A Editor
    Click the A tab in the source section. This displays the detailed edit controls for Source A.

5. Open Import Audio Window
    Click on the waveform / import audio menu and select "Import Audio"


6. Add Apple Loop
    Drag "Vintage Funk Loop 03" from the Apple Loops browser and drop it onto the
    Alchemy file browser area labeled Drop Zone. It's important to note that when you
    import audio, you must select the Analysis Mode which corresponds to the synthesis
    engine you plan to use. The choice you make here cannot be altered without
    repeating the import process.

    Choosing the synthesis method most suitable for this type of material is key to getting
    good results. For this tutorial, you will use Spectral and Formant. Spectral is ideal for
    a wide range of source material from polyphonic melodic recordings to drums and
    percussion. Alchemy's high quality Spectral engine is especially good at preserving
    transients making it useful for drums and percussion. The Formant option extracts
    the resonances from the original audio and converts into a filter shape which can be
    edited and reshaped.

   Set the Analysis Mode to Spectral + Formant.
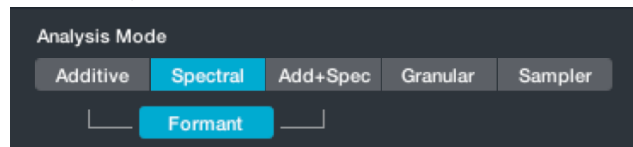
    Click the Import button in the lower right corner to begin analysis and import the
    loop into Source A.

    Once Alchemy has completed the analysis, try playing some notes on your controller
    keyboard. You will hear the loop play at its original recorded speed if you play C3, but
    playing at other pitches transposes the sound while playing at a fixed tempo. To make
    this loop play at the current session tempo, we need to control of playback speed.

7. Set Speed to Zero
    Set the Speed knob to 0%. This stops the loop from playing forward in time and will
    repeat the first few samples at the current position.
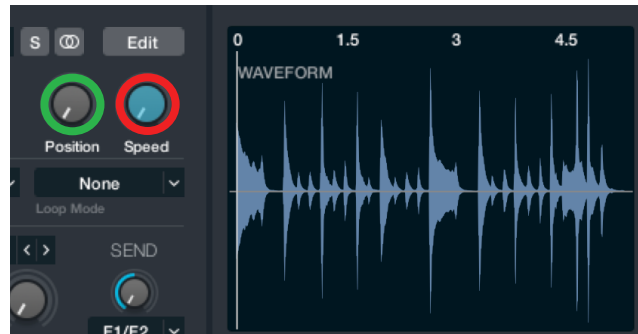
    Try holding down a note and listen to how you can take control of the playback using
    the Position knob. This moves playback forwards and backwards through the loop. Set
   the value to 0% before moving to Step 8.

8. Add LFO to modulate the Position knob
    You will now use an LFO to move the Position knob through the loop sync'd to the
    project's tempo. Right click on the Position knob and select Add Modulation > LFO1.
    This assigns an LFO to control the Position knob.
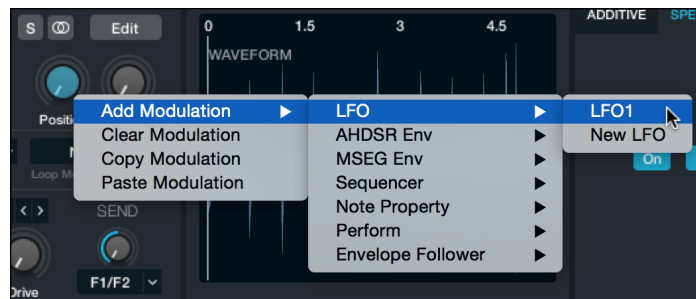
9. Setup LFO
    The modulation section in the middle of Alchemy will now display the controls for LFO
    1. Switch the LFO's shape from Sine to Ramp Up and set the rate to 2 (measures) to
    match the length of the Apple Loop. Click the Bipolar button to turn it off. Note When
    Bipolar is active, the LFO outputs both negative and positive values in each cycle (from
    -50% to 50%). When off, only positive values are output (from 0% to 100%). If you play
    and hold a note on your keyboard, you can see a small dot around the Position knob
    indicating its values changing from 0% to 100%. Bipolar is useful for controlling
    parameters like pan where 0 is in the midpoint of the knob's rotation and you want
    the value to oscillate around the center.
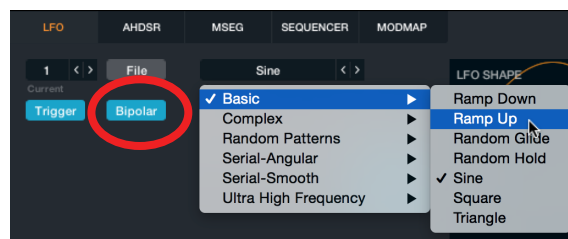
    Triggering C3 should now play the loop at its native pitch but the tempo should now
    match the project.

Additional Explorations

Explore these additional steps after completing the tutorial.

- LFO Trigger Mode on/off
  If you turn off the Trigger mode, you will notice that the loop position continues to move through the file but is only audible when you play a note. This allows you to create gating and stuttering effects by rhythmically triggering notes. Try playing a series of very short 8th notes over this loop to change its feel.

- Pitch Bend Range
  Its also fun to play notes of different pitches or even pitch bend to add that chopped & screwed effect to your loops. The default pitch bend range is only 2 semitones, but Alchemy supports pitch bends of up to 36 semitones up and down. To set this, switch away from Source A to the Global view. In the Voices section, you can set the up and down pitch bend values independently.
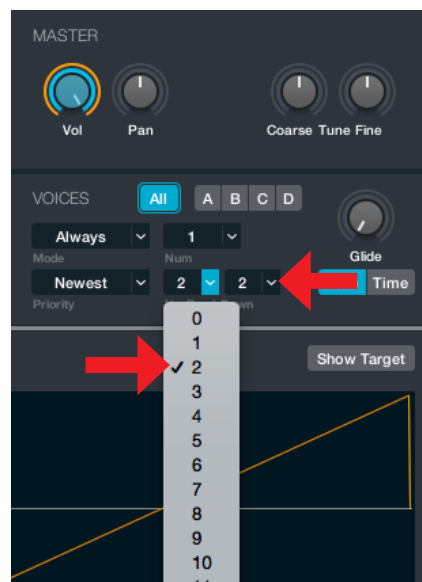

- Set LFO Shape to Ramp Down
  Changing the LFO shape to Ramp Down plays the loop backwards by starting the Position at 100% and moving back to 0%.

- Replace LFO with MSEG envelope
The MSEG envelope can duplicate the same kind of looping Ramp Up pattern used
in the LFO example above but are capable of longer more complex patterns than a
repeating ramp. MSEG envelopes are useful when you have specific ideas about how
you want parameters to change over time. MSEG are capable of creating a range of
modulation patterns from simple short ramps to very long, complex sequences.
For example, here's an 8 bar, complex rhythmic pattern:
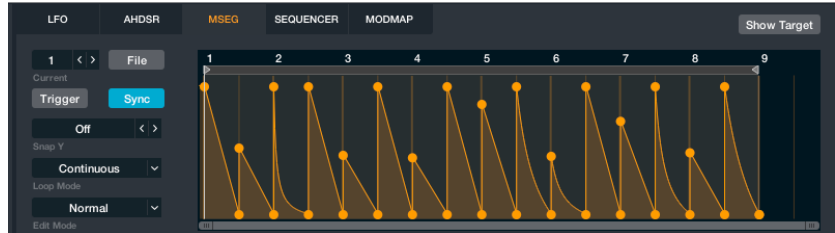
In this next tutorial, we're going to use the MSEG envelope to take creative control
over the Position knob just like we did with the LFO in the above tutorial. This time
we will use the MSEG to move play Position to the halfway point of the loop, play in
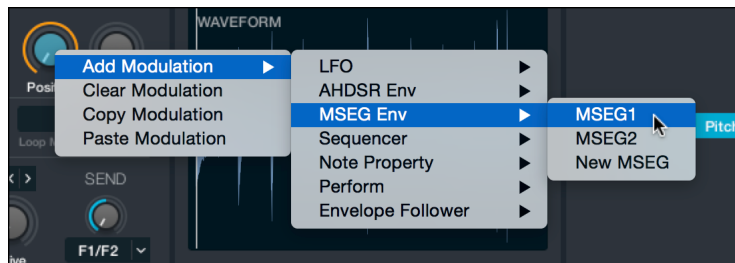reverse, then forwards again all while following the tempo.

1. Disable the LFO
Select the Position knob and then click the button next to the modulation area to
disable the LFO. If you play notes now, it no longer plays forward through the loop.
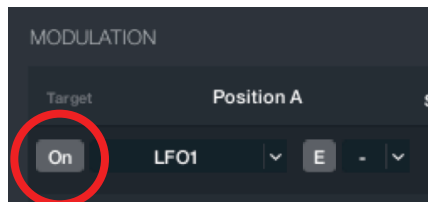
2. Add MSEG to control the Position knob
Right click on the position knob and select MSEG Envelope 1


3. Setup MSEG Envelope 1
Click the File button in the MSEG editor and load the preset "Ramp Up". This preset
creates a 8 beat (2 bar) ramp from 0% to 100%. So, if you play a note, the result is just
as it was when we used the LFO in the above example.

The exact position of each point in the MSEG are important to keeping consistent
tempo. To add points, just click anywhere along the graph line. If you add one by
mistake, double click on a point to remove it.

As you move points, they will snap to the tempo grid. Add a point midway at beat 5 and drag up/down until the Y value reads 50%. Add another point at beat 7 and drag it down until the Y value reads 25%. Move one of the points at beat 9 down until the Y value reads 50%. Double click the mouse to remove the last point.

The final MSEG graph should look like this image. The red circles are added to show you the value required for each point.
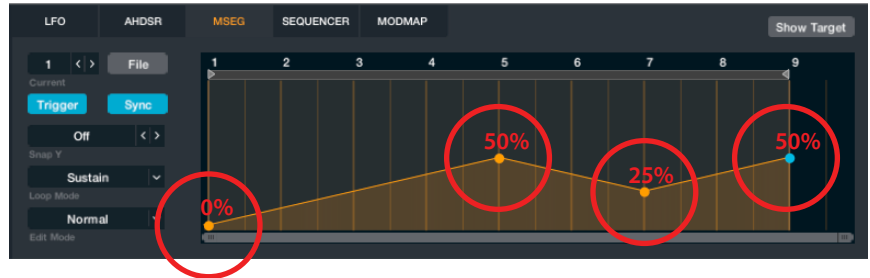
Try holding a note down and it should play forwards, backwards and then forwards again all while locking in time with the project tempo. More complex use of this can cause the position to jump to specific places within the loop to make variations of the original loop.