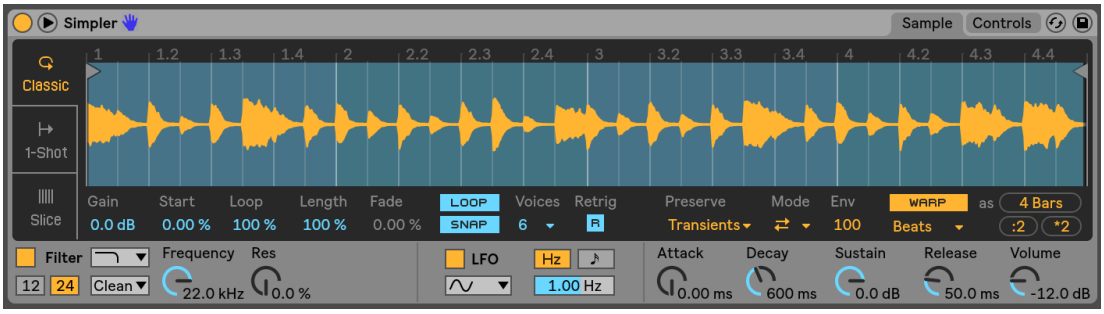
Sampling in Ableton Live

This workshop will explore Ableton Live's software samplers, and offer a brief history of sampling and famous hardware samplers.

Participants will learn how to:

- navigate graphic user interfaces for Live's software samplers.
- import, record, and manipulate sampled audio, and use it to build a library of unique sample instruments that can be used for melodies, harmonies, and/or beats.
- learn about basic synthesis concepts including: LFOs, filters, and envelopes
- gain an understanding of a larger historical context of sampling and hardware samplers in popular music.

Ableton's Simpler



Ableton's instrument **Simpler** is a **Sampler.**

What is a Sampler?

A **Sampler** takes a recording of an instrument, a chunk of recorded music, a field recording etc. and plays it back using a device like a MIDI keyboard, a drum pad, or a sequencer.

A **Sampler** can re-pitch and loop samples, and it can process samples using effects, filters, Low Frequency Oscillators (**LFO**s), etc.

<u>Some Famous Samplers</u>:

Mellotron (1963) – used tape recordings, an analog sampler. A player would have to replace the tapes to hear a different sample.

Famously used on Strawberry Fields Forever by the Beatles.

Paul McCartney demo's the mellotron: https://www.youtube.com/watch?v=tTKPW92ndUA

Fairlight CMI (1979) – A digital instrument, coined the term "Sampler". It was also an additive synthesizer and sequencer. These were incredibly expensive instruments, for samples that were less than a second long. Allowed artists to create "unreal" sounds from real sources.

Lecture on Kate Bush's Production Using the Fairlight CMI by Dr. Dori Howard, discussing her use of "unreal sounds":
https://www.youtube.com/watch?v=MgLtS_TNrt4

Herbie Hancock Playing the Fairlight CMI on Sesame Street in 1983:
https://www.youtube.com/watch?v=daLceM3qZmI

Arturia Soft Synth Fairlight CMI: https://www.arturia.com/cmi-v/overview

Synclavier – Digital Sampler (1977), contemporary to and a competitor of the Fairlight, also a digital sampler, and also expensive.

E-mu Emulator Systems, much cheaper samplers, affordable for slick American teens (featured in Ferris Bueller's Day off).

 (E-MU Emulator II)

AKAI MPC series (1988)– digital sampling, hugely influential in hip-hop music, has a unique set of pressure sensitive pads in a grid. (Allowed independent producers to exist – you didn't need to go to a studio, or shell out tens of thousands dollars on a sampler!)

 (AKAI MPC2000)

Short Doc. on J Dilla and the MPC: https://www.youtube.com/watch?v=SENzTt3ftiU

Roland SP series – budget friendly groove-boxes, workstations, and samplers.

 (SP-404SX (2005), still commonly used)

Even though most of these use digital samples/sampling, they have a distinctive sound, because of low sample rates, and A/D and D/A conversion.

Sampling today is often done in **DAW**s like **Ableton**, and contemporary production is heavily sample based, giving producers an incredible variety of sounds to draw from.

Sample Packs are a common way for producers to find new sounds created by professional sound designers and producers.

Simpler is like a classic sampler in some ways – you can change the volume of a sample, play it back at a different pitch, you can filter it, apply an **LFO** and **Envelopes** to different parameters of the sound. But **Simpler** lets you use Ableton's **Warping** to playback samples at the tempo of your **Live** set.

Adding a Sample to simpler: you can drag and drop samples from your browser in Ableton, or from a clip in the session or arrangement view.

Simpler has **2 windows**:

- **Sample** (allows you to view and edit the sample)

- **Control** (access LFO, Filter, and Envelopes)

-you can expand to look at both at the same time using the arrow at the top left of simpler.

To **Replace a Sample**, drag in a new sample, or use the **hot swap** button.

Zoom in and out by scrolling left and right, pressing command/ctrl.

Playback Modes: Simpler has 3 modes.

Classic Mode:

For melodic and harmonic instruments made from pitched samples, **polyphonic** (can play more than one note at a time), has an **ADSR Envelope** that allows for looping, so you can hold the note as long as you like.
(Right click on sample window to access functions like: crop and reverse)

Flags control where the playback can start and end.

Gain: lower or increase level of sample.

Start and **length** time are represented by percentages.

Loop slider determines how much of the sample will loop

Toggle Loop on and off to **loop** the sample.

Snap – remove clicks when playing back and looping a sample.

Fades – smoothes out looping.

Voices – synthesis concept! If you have 8 voices, you can play up to 8 instances of this sample, 8-note polyphony is possible. (Think of it like a choir with 8 singers, they can all sing one note (unison), or sing different notes.)

Warp – similar to clip warping, you choose the best kind of warping that best allows your sample to snap to the tempo. If you want your sample to speed up, or slow down as it rises and falls in pitch (respectively), then disable warping.

Creating "unreal" sounds from real sounds: try taking a sample of a recording of a real instrument or of a naturally occurring sound (water, ice breaking), and loop/manipulate it to create a new unreal sound.

One-shot Playback:

Monophonic (one note at a time) playback of a sample, best for one shot drum hits or short sampled phrases. Does not loop, and the sample is by default played back in full regardless of how long you hold down a key/pad etc.

Trigger vs Gate

When set to trigger, sample plays back in full, when set to gate, sample plays back as long as a key/pad etc. is help down. (Your finger opens a gate for the sample to pass through)

Fade in and out:

Controls the loudness contour of the sample.

Slicing Playback:

Takes a sample and splits it out chromatically across the keyboard/pads. Simpler can automatically slice up your sample, or you can create the slices manually. This mode is great for working with samples of drum patterns/breaks.

Flags determine beginning and end of slicing.

You can create **Slices** automatically or manually.

Automatically:

Can slice by **transient, beat, region**.

Transient: a sharp, sudden peak in the waveform.

Sensitivity: Allows Ableton to determine how finely to slice – higher sensitivity means more slices.

Mono and Poly: Mono allows one slice to be played at a time, Poly allows several slices to be played at once.

Thru: plays the entire sample through, it is monophonic.

Manual Slices: can create a slice by double clicking on the sample in the sample window. You can double click the new slice marker to delete, and click+drag to move it. You can also create manual slices in any mode by clicking in the timeline.

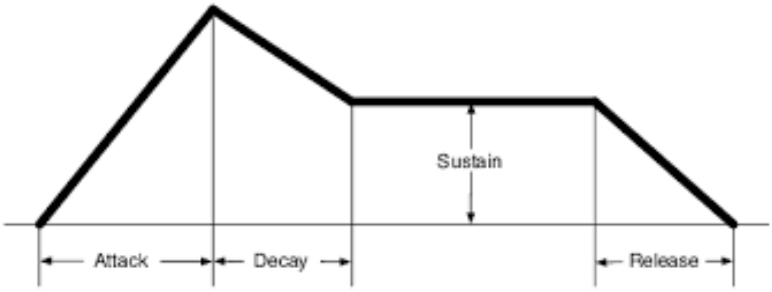
Control Section:

Simpler uses **synthesis** tools and functions to change the sound of samples, including envelopes, filters, and LFOs.

Can **Toggle** sections on and off/bring them into view by clicking on the square next to the text. Feel free to disable unused sections to save on CPU.

Envelopes:

An **Envelope** changes a parameter of the sound over time: loudness, timbre, pitch.



You will often see it broken down into Attack time, decay time, sustain level (not time), and release time.

When you press down a key, the level rises at a certain rate, falls at certain rate, sustains at a certain level, and when you release the key, it falls back down to zero at a rate you specify.

Can adjust these values by clicking and dragging at the handles on the envelope.

Amount: adjust the amount the envelope effects a parameter – Volume, filter cutoff, pitch.

Filter:

Lowpass, Highpass, Notch, Bandpass, and Morph.

Parts of filter:

Cutoff frequency: frequency at which the filter starts to boost or cut.

Resonance (Q): how much is the cutoff frequency emphasized? (At higher values it creates a whistling or growling sound)

12db vs 24 db – determines the steepness of the cutoff slope.

Ableton offers different models of filters based off of classic filter designs from Analog synthesizers (Moog, MS-20 filter, Oscar). Try them and see what you like!

Drive control adds extra crunchy distortion to boost and shape the sound when you filter it.

LFO:

Low Frequency Oscillator

It is a waveform that cycles at a very slow rate – slower than the human ear can hear.

What is it for? Think of it like a **robot arm** that slowly turns a knob or a fader for you at a certain speed (the LFO frequency), with a certain kind of motion (i.e. a random LFO will move the knob with a random motion).

It allows for a repeating modulation of a parameter.

You could for example apply a 5hz sine wave LFO to the volume of a sample– this would make the sound cycle perfectly between quiet and loud 5 times a second. It would create a **Tremolo** effect!

The LFO in Simpler can modulate (change) the filter, the volume, the pitch, panning of your sample.

You can choose an LFO shape:

(Sine, Square, Triangle, Descending and Ascending Ramp, Random)

And an LFO speed, which can be synchronized to the tempo and divided by beat.

Global Parameters:

Tranposition and **Detune**: useful to tune your sample.

Pan: can pan you sample from left to center to right

Spread: mono to stereo sample

Vel/Volume: how much does an increase in velocity change the volume.

Re-sampling:

Taking your production, recording it, and then using this recording as a sample. Can be useful for a live performance, remixing, getting some creative sound design.

Some Additional Reading:

Read these "Lost Art of Sampling" articles from SOS (Sound on Sound).

SOS also has a series on synthesis.