

Getting into Modular

Sound Sources

ControlVoltage.net

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- Generating Sound - How To
- Oscillators - Shape designer
- Noise - Every frequency
- Filters - Feedback loops

How do we make sound with a modular synthesizer? I know you patch some cables, right? What makes a sound and what does not? This is a silly, yet challenging question we ask ourselves time and time again with the modular synthesizer.

So you got a few modules and think its pretty easy, and you may even be a little bored with the system you wanted so bad. Now that you have it, you don't know where else to go besides the usual "subtractive patch". Or you are using a plug-in and always get a similar sound because of your "comfort zone".

Now we have this NEW series designed to show people who are just beginning, and hopefully people who have already begun, what Sound Sources really are. You may be very surprised after this class, you may not, but we want to thank you for coming out. Lets begin....

OSCILLATOR-

This is the core of a synthesizer. It provides wave shapes, tuning, PWM, and Sync typically. You will find Analog and Digital ones, Voices which are complete synths, Drums Synths, Multi Oscillators, ect....

WIKI "An electronic oscillator is an electronic circuit that produces a periodic, oscillating electronic signal, often a sine wave or a square wave.[1][2] "

Saw, Square, Sine, Triangle, Hybrid shapes (Dixie, z3000, Osc 2 Ritcher, STO

NOISE-

This is every frequency at one time, as in white noise (Noise Ring, Noise Squared, Quantum Rainbow)

WIKI "In signal processing, white noise is a random signal having equal intensity at different frequencies, giving it a constant power spectral density.[1]"

We now know what two of the most important sound sources are in my case, but wait there is more...

FILTER-

A filter is going to be highlighted in our next series to as a Processor, but here we will make a feedback loop. This is when you have your resonance turned all the way up creating a feedback loop with a filter. This typically makes a perfect sine wave. This sine wave may be more perfect than your Oscillators because "Triangle Core" Oscillators are just wave folded triangles, and feedback loops are perfect sine waves typically.

Synth Secrets Sound on Sound "If you continue to increase Q, the resonance becomes so pronounced that the high and low frequencies disappear from the signal and another effect occurs: the filter begins to oscillate at its cutoff frequency"

Static VS Dynamic Sounds

-*Static* or sounds that don't move much and once set in motion sound the same over time.

-*Dynamic* or sounds that move because of modulation over time.

Timbre

-Soft or *Sine and Triangle* based sounds or ones with most of the harmonics removed

-Hard or *Square and Saw* based sounds or ones with many harmonics

FM

- Frequency Modulation or changing a sound at the speed of another sound

AM

- Amplitude Modulation or changing a sounds volume at the speed of another

Sync

- Hard or soft sync. Resets the rising edge of an oscillator or LFO

V/Octave

-Every volt provides another octave on the keyboard C0 = 0 Volts, C1 = 1 Volt, ect

Exponential FM

- Between 10 Volts typically, close to v/octave but sounds like it goes further, think 808 kick drum sound

Linear FM

- Between 2 Volts typically, close to 2 volts total range, think 909 kick

Subtractive Synthesis

-Taking a wave and placing it through a Filter

Additive Synthesis

-Take two oscillators and put each one into the same mixer

Make a Kick Drum two different ways:

808

VCO - VCA - Output - Audio Path

Timer to Envelope Gate

Envelope + to Mult then VCA and VCO EXPO FM

909

VCO - VCA - Output - Audio Path

Timer to Envelope Gate

Envelope + to Mult then VCA and VCO Linear FM

Basic Synth Patch

VCO - VCF - VCA - MIXER

Keyboard Gate to Envelope Gate in

Keyboard Pitch to VCO V/octave

Envelope + to VCA

But wait, there is more. Did you ever make a mistake and plug an LFO into the mixer? Lets listen. Maybe you even had a Echophon that can just self resonate and make noise (pun intended). Or a delay that just fed back into sound? There are a lot of mistakes we make and that can also produce sound. I plug my SMR out back to the INPUT to make a feedback loop on purpose, and that makes sound. You can use a VCA as a sound source. The list goes on. I guess what i mean to say here is to explore, and if and when you get a little tired, try something new. It can always provide interesting results.

Key Synthesis Methods:

Subtractive - Waveform through a filter (Moog Mother32)

Additive - Waves mixed into a Mixer (Arp Odyssey, Moog Sub Phatty, MiniBrute)

Wave Tables - Tables of multiple shapes (Braids, Morphing T, Piston Honda)

FM - Sine wave based (DX7, Akamies Castle, Braids)

Granular - Sample Based (STS, Phonogene, Grandpa)

Vector - Quadrant Based (VS Prophet)

Modal - Filters Pinged (Elements)

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