# The Granulator


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The granulator is a very simple patch that can produce a wild variety of timbres. The patch is an analog implementation of the fundamental audio unit for Granular Synthesis, called a grain. For more (much more!) info on Granular Synthesis see "Microsound" by Curtis Roads (MIT Press). I'll summarize (and over-simplify) a bit here for background.

The basic idea behind Granular Synthesis is to chop up an audio stream into small bits (grains) and then put them back together to form a new sound. This is usually done by a computer that can create many simultaneous grains from an audio source, each grain having its own parameter values.

The parameters that are important to a grain are duration and envelope shape. For our purposes, the duration range of a grain can be anywhere from 50 ms to about 800 ms. In practice, some cool sounds can be derived with duration values outside of this range using the patch I describe here. The envelope shape can be anything, but the best results are obtained with bell-curve-like shapes. An AD envelope works very well.

Figure 1 shows the basic patch.

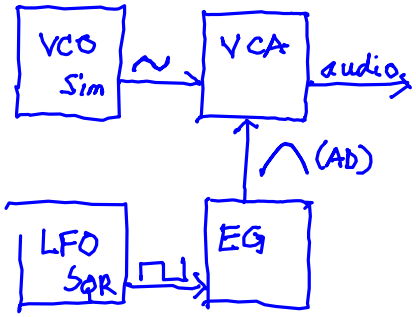


**Figure 1: The Granulator Patch**

The patch shows a sine wave as the audio source. Since a sine is pretty boring in a timbre sense, it makes a good starting point to demonstrate how warped the product of this patch can be. Use any wave shape you like including samples and other audio streams. Send the audio to the VCA. Set up your EG to Attack = 1 or 2 and Release = 1 or 2. It's best to have the attack and release rate symmetrical; you can see this on a scope if you have one. Asymmetrical shapes work, too, so don't sweat it. Feed the Gate and/or Trigger in of the EG with a square wave from an LFO or a slow VCO. The EG out goes to the CV in of the VCA.

Play with the speed of the LFO and with the A and R parameters of the EG. Set up several of these patches each fed by the same audio source but with differing LFOs and EGs then mix them together.