

Synth Programming (pt II)



Patches, filters and more in part II of our guide...

In part one of this series we covered the basics of creating sounds on a synth. Just in case you missed last month's feature, or have forgotten it already, synth sounds are made using a collection of electronic boxes. Each of these boxes shapes an aspect of what you hear.

Oscillators make a harsh pitched buzzy or whiny noise which responds to the notes you play on the keyboard. Filters chop out some or all of the buzziness. The most common sort take out of the trebly bits of the buzz, although you'll come across other sorts which take out the bassy bits, or leave a small range of buzziness in the middle. They can also - if you want them to - add a squelchy effect to the sound. Amplifiers simply control the volume of the sound.

And there's more

If these were the only boxes you had, the sound would always be static and boring. So LFOs and envelope generators control how the sound changes over time. The big thing to remember about both of these is that they don't make any noise of their own. Instead they work like automatic hands that change what the oscillators, filters and/or amplifiers are doing.

LFOs (Low Frequency Oscillators) produce a slow wobble, while envelope generators produce a shape that ramps up and down in a controlled way. Connected to an oscillator, these change the pitch of the sound. Connected to a filter, they change how much of the sound is being chopped out, and hence how buzzy (or squelchy) the result. Connected to an amplifier, they change the volume, so you can create fast blips, or sounds that fade in and out slowly.

The patch is the catch

Linking everything together is some sort of patching system that connects the LFOs and envelopes to the oscillators, filters, and amplifiers. On cheaper synths this is fixed. On more expensive ones you can link anything to anything, to make complicated, dynamic or just plain bizarre noises.

Finally on all modern synths there's an effects section which adds things like echo, chorus (to fatten out the sound), reverb (to make things sound like they're in a big space) and other less common options such as distortion (grrrrrrrrunge), phasing and flanging (whooshy and spacy jet plane effects) and countless variations on these and others.

Controlling it all there are memories which store all the settings for each sound. And more often than not, a whole collection of MIDI options which let you get into the guts of the synth and control some or all of the settings from a sequencer.

Creating the sounds.

OK, so now you've got these basics, what do you do with them? The best thing to do now is to put some sounds together yourself, to put these basic theories into practice.

Big enough?

So once you've created your sound, how about making the sound bigger, or punchier? The bass is usually there to create the foundation of a track, so you don't usually want to make bass sounds too swirly. Adding another oscillator or two and detuning them a lot is unlikely to sound good.

What you can do though, is add another oscillator and detune it very, very slightly. That'll thicken the sound out. Or you can add another oscillator at a different octave usually the one above. Or both.

Next you can add a filter sweep. For a dry sound, keep the resonance (Q) at a minimum, and turn up the Filter EG setting (or however it's labelled on your synth). Set the attack to a minimum, sustain to minimum and play with decay and release till they sound good. Similarly experiment with the Filter EG setting to vary the depth of the sweep.

Dynamic dynamism

So how about some dynamic variation? On both the filter and amplifier envelopes you'll usually find a setting marked something like EG Vel Depth. This lets you change the size of the envelope depending on how hard you hit a note. On the filter envelope, it makes the sound brighter or softer; on the amplifier envelope, it makes it louder or quieter. And when you're sequencing, it's also an easy way to introduce interesting variations to a line or riff, because you can program the note velocity in your sequencer however you want.

What about some squelchiness? To add this, just turn up the resonance control on the filter. The sound gets 'wetter' as you do this. Grunge? If there's an effects section in your synth, it may have a distortion or amp simulator option. That'll instantly dirty up and crack up the sound. Once you're started, it's easy to keep experimenting till you get something that sounds good to you.

Stuff you need to know

OK, presuming you've now got your hands dirty and have created some sounds and wellied up the filters and dynamics, we now want to delve into some essential information about the setting, but just where do these live in real synths?

If you're lucky enough to have an analogue-modelled synth like the Access Virus, Nord Lead or one of the new Korg MS2000s, then most of the settings will be right there on the front panel, pre-labelled and ready and waiting for you. Just grab the relevant knob, and turn it until things sound right.

Typically there will be an LCD window which shows you some numbers relating to the knob's position, so you can have more precise control over what you're fiddling with.

Occasionally knobs will be 'paged'. This basically means there will be a button which steps through a set of options that defines what the knobs do. The envelopes on the Waldorf Microwave work like this. There are eight envelope control knobs, which are switched between the filter/amplifier envelopes, the free envelope, and the wavetable control envelope. Press the button once to set the filter/amplifier knobs, press it again for access to the free envelope settings, and again for the wavetable control envelope. (We explain more about wavetables in part III) An LED lights up to tell you where you are in this scheme.

Not no knobs

If the synth doesn't have knobs (like on the Roland JV series of modules or on lots of Yamaha kit), you'll have to battle your way through some form of display and menu system. It's a pain, but the only way to do the job. Usually you have to hit an Edit button to go into Edit mode, which makes all the settings accessible. From then on it's cursor, abbreviation and manual hell as you try to find your way to the settings you want. When you get there you most often change them with a data entry knob or slider. Then go off and find the others.

Some synths are just plain bizarre. The Yamaha AN1x uses a combined knob and menu system that must have been designed by someone whose brain was put in back to front. You really don't want to tackle a system like this unless you have to.

Synths go soft

Finally, there's the software option. Some synths have optional editing utilities for PCs and/or Macs which you can copy from the Net or - as a last resort - buy. To use these you have to connect the synth to a computer.

Once you get the software up and running, all the settings appear on the screen, where you can easily edit them. Soundcards that have editable sounds usually go for this option too.

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