It'll end in tiers

How to make SoundFonts from three basic levels of sound, with Steven Helstrip.

I have been ranting on about SoundFonts ever since Creative Labs released its AWE-32 five years ago, but have never dedicated a column to making them. Judging from the emails I receive it's about time I did, so that's exactly what this month's *Hands On Sound* is all about. In addition to creating one from scratch, we will be looking at ways to modify the sound of its basic waveform by tweaking the available synth parameters. The finished SoundFont bank (which, incidentally, will not be finished until next month) will comprise eight unique instrument patches derived from just one sample.

The following examples have been put together using a SoundBlaster Live! equipped with Vienna, but the underlying principles are more or less the same no matter what sound card and software combination you have. If you own a Creative sound card, ensure that you have the latest Vienna update (version 2.3). This can be downloaded from the web site at www.maz-sound.com.

The file needed to create our SoundFont (Supersaw.wav) can be found in the usual folder on this month's cover disc and is a sample from my Roland JP-8000 synth. Also included on our cover CD is the SoundFont bank in its current state, should you wish to cheat [Fig 1].

▲ FIG 1 HERE'S HOW THE SOUNDFONT LOOKS SO FAR. TO HEAR IT, LOAD UP JP8000 SUPERSAW .SF2 FROM THIS MONTH'S COVER CD

SoundFont basics

There are three tiers to the SoundFont structure: Samples, Instruments and Presets. Samples don't require much explanation other than to say you can create a SoundFont from both mono and stereo 16-bit wave files. The Instrument layer defines how synth parameters affect the way Samples are played. Such parameters include volume envelopes, filters and LFOs (Low Frequency Oscillators). The Instrument layer also comprises settings: to determine the range of keys over which a Sample should be played, whether it should be looped and information relating to its pitch.

Finally, a Preset is the name given to an Instrument program. This may simply consist of a single Instrument or a collection split over different key ranges. A Preset may also have several Instruments stacked, or layered, on top of each other. Confused? All will become clear. Vienna organises SoundFonts into a tree-like structure. If you remember Windows 3.1 file manager, you'll find it easy.

To begin with, we'll create a basic Preset with no effects or synth modulation.

1 To load our sample into Vienna, just right-click on User Sample Pool and select Import.

2 Next, load the Supersaw wave file. To create an Instrument, right-click the Instrument Pool and select New Instrument. A dialogue box appears requesting a name; how about Supersaw Dry?

3 Following this, a second screen enables you to link the Instrument to a Sample. Select Supersaw and our Instrument is in place.

4 If you now expand this Instrument in the tree view (click on the + icon) its associated Sample is displayed below it. We need to turn on the loop option so that the sample continues to play over and over when a key is pressed.

5 The sample loop points have already been set using WaveLab's crossfade loop feature (see Fig 2) so all that's left is to check the Loop Enable setting. To do this, right-click on the associated Sample and select Loop — simple.

You create Presets in much the same way as Instruments: in the Preset section, right-click on Melodic Pool and select New Melodic Preset. Give the Preset a name and select the Supersaw Dry Instrument. All the necessary ingredients are now in place for our basic SoundFont. If you were to save it at this point, it could be loaded into memory and played like any other MIDI instrument. But we're not going to stop there.

Stereo flange

We can create a stereo Instrument by playing the Supersaw sample twice; each from opposite speakers and slightly detuned. This will create a wide stereo flange effect. Here's how we do it:

1 Copy the existing Supersaw Instrument, then right-click on Instrument Pool and select Paste Instrument.

2 Name the new Instrument 'Supersaw Wide', right-click on it and select New Zone.

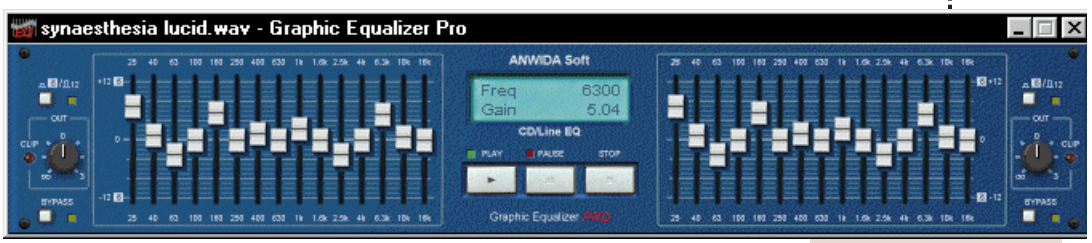
3 When the Sample list opens, select Supersaw.

We now have an Instrument with two voices, or Samples. Synth parameters can be modified separately for each sample. To select either, simply expand the Instrument and click on it. Using the synth parameters in the lower half of the

Questions & answers

Q I'm trying to track down a graphic equaliser for Win98 but have had little success. My sound editor, WaveLab Lite, doesn't support plug-ins so it needs to work as a standalone program. I tried WinAmp but that didn't quite cut the mustard. Do you know of anything else, preferably downloadable from the net?

ANDREW HARVEY



▲ FOR AROUND £20, GRAPHIC EQUALIZER PRO OFFERS HIGH-END EQ ON A PAR WITH STEINBERG'S FREEFILTER

***A** I have come across several standalone EQs but Graphic Equalizer Pro (pictured above) is by far the best. It provides 15 bands of EQ tuned to 2/3 octave frequencies and has a warm character similar to Steinberg's high-end FreeFilter plug-in. EQ can be applied to all audio sources and processed stereo wave files can be written to disc. Graphic Equalizer Pro is marketed as shareware and registration is only US$30. To download the demonstration, point your browser at www.anwida.com.*

screen, pan each voice to opposite speakers and adjust Fine Tune so that the samples are roughly 20 cents apart. That's all there is to it.

■ Panning

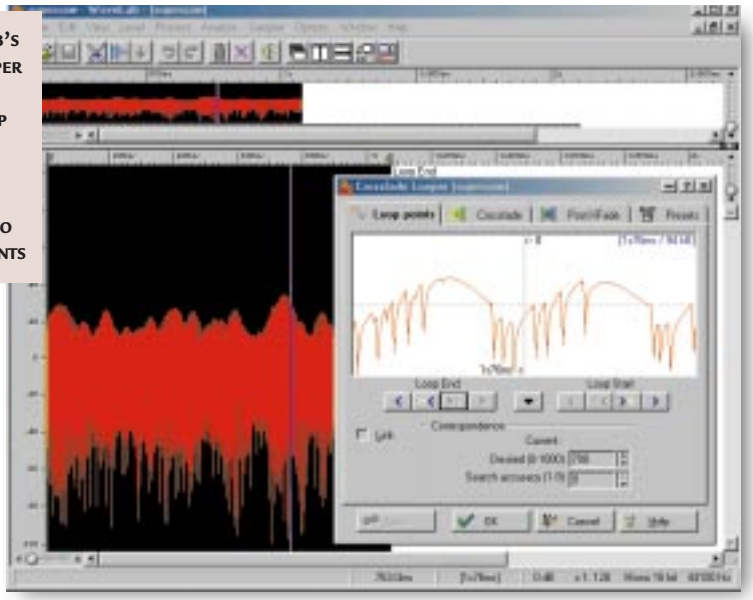
The next Preset we're going to create has an automatic pan effect. This uses an LFO to modulate the volume of two voices, again panned to opposite speakers. By offsetting, or delaying, the LFO on one side, the modulation runs out of sync with itself and gives us our panning effect.

1 Copy the Supersaw Wide Instrument and name the new one 'Supersaw Panning'.

2 Select the first Sample and apply these settings in the Modulation LFO section: Frequency 2Hz, To Volume -12dB. Also apply these to the second sample and set Delay to 0.25 secs. You can change the panning rate by adjusting the Frequency and Delay parameters.

In the next Preset we'll use the LFO to modulate Frequency Cut-off. This will produce a pulsating *wah-wah* effect.

▶ FIG 2 WAVELAB'S CROSSFADE LOOPER AUTOMATICALLY FINDS CLEAN LOOP POINTS IN AUDIO SAMPLES. IT'S A REAL TIME SAVER WHEN IT COMES TO MAKING SOUNDFONTS



1 Copy the Supersaw Wide Instrument and name the new one 'Terminator'. We can simultaneously edit both Samples in this Instrument by creating a Global Zone. To do this, just right-click on it and select this option.

2 In the Modulation LFO department, set the Frequency to 8.176 and To Filter Cutoff to -1,2000 cents. This produces the wah-wah effect, but by tweaking the Modulation Envelope we can shape the effect over time.

3 Key-in the settings: Attack 29.788, Release 29.788 and To Filter Cutoff 111749. The effect now creeps in slowly.

4 Lastly, we are going to add release to the Volume Envelope. This enables the Instrument to fade slowly away once a key has been released. So, in the Volume Envelope section, set the Release to 36.169.

• *There will be more tips next month.*

FREE SOUNDFONTS ON THE NET

As part of its Liveware program, Creative Labs is giving away 25 SoundFont banks each week for six months. The SoundFonts have been created with samples from E-mu's professional sound library. There is also a decent selection of synths from E-mu's Module Mania CDs. As I write, the program is already in its ninth week, but there is still plenty of time to get in on the offer.

For these and links to other SoundFonts, visit www.sblive.com/liveware.

PCW CONTACTS

Steven Helstrip welcomes your feedback on the Sound column; it's music to his ears. Contact him via the PCW editorial office (address, p10) or email sound@pcw.co.uk