

## Audio Processing with Sweep

## Let's Groove

Want to digitize your collection of LPs or dub your amateur videos? The Sweep sound editor provides quick and simple sampling facilities, effects and other sound sensations. **BY ANDREAS PALAND**

The Sweep audio editor allows post-production processing of digital recordings with a virtual stylus, called Scrubby. Working with Sweep [1] soon conjures up that “DJ at the turntables” feeling.

Of course that doesn't mean that Sweep emulates scratches and noise. Instead, Scrubby provides the kind of search and cut techniques that only analog devices like turntables and tape machines can otherwise provide.

## Installation

Sweep is included with most major distributions, such as SuSE 8.2, and the packet manager will take care of any dependencies. If you need additional effects and filters, other than those that Sweep provides by default, you can simply add the LADSPA plugins.

LADSPA is a programming interface that allows developers to write audio plugins without actually knowing the application program itself. When launched, Sweep automatically looks for new plugins, creates appropriate dialog

boxes, and adds these to the *Process* menu, in alphabetical order.

An overview of the various plugin collections is available from [2]. If you use SuSE, check out the *ladspa* package, which contains on less than 133 plugins. If you want to install LADSPA from the source code, to access the functionality of a later version, Box 1 provides an overview of the packages you will also need. Most distributions are supplied with these packages.

## Hello Scrubby!

When you launch Sweep for the first time, Scrubby, the mascot for the sound editor, pops up to say “Hello” (see Figure 2). Scrubby is the virtual stylus of your virtual turntable. You can use Scrubby to search through your tracks. To get started, open an existing track – it makes no difference if you choose an uncompressed audio file or a file in MP3, Ogg Vorbis or Speex format. For licensing reasons, you cannot save MP3 files.

After you make your selection, Sweep first converts the file and places it in



Figure 2: The mascot saying “Hello” when you launch the program

memory. You can play the track by hitting the play button down at the bottom of the screen. A slider is displayed just above the button bar. You can use it to search through your tracks, using your mouse wheel to navigate.

The sample you are currently playing moves through the screen during playback. Although it may be slightly confusing at first, in time you will come to appreciate how practical this feature is. It stops you losing track of the cursor and you can immediately listen to the sample you are looking at.

The zoom factor of the wave display has a big effect on the search function. Again you can use the mouse wheel to change this. To activate the zoom function, simply drag the mouse over the wave.

Let's take a closer look at Scrubby now. The icon bar at the top of the window includes two gray buttons that allow you to toggle between Scrubby and select modes. If you toggle to Scrubby mode and then drag the mouse across the wave, you can literally feel the sound output.

## Scratching and Cut Points

Sound specialists used to slowly turn the reels on their analog *tape machines* to find the right cut point to within milliseconds. This is exactly how Scrubby works. To locate a cut point, hold down

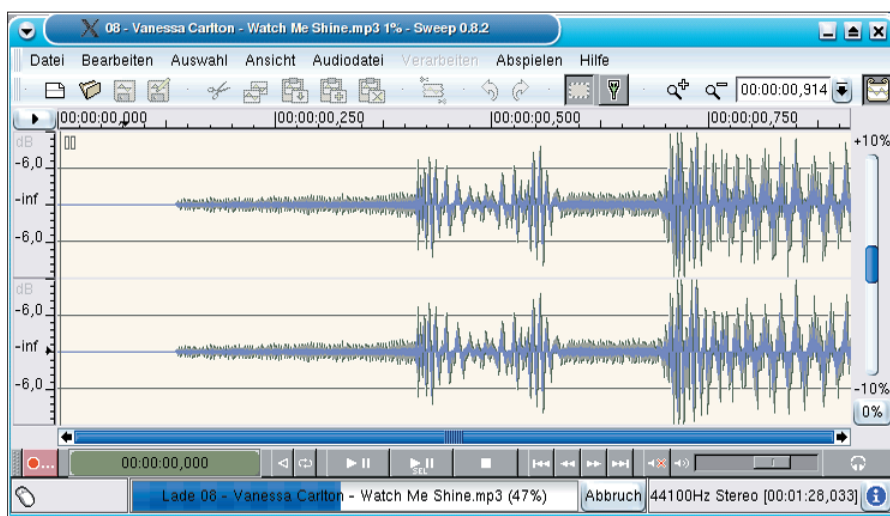


Figure 1: The main window in Sweep showing the sound channels for the current track

## GLOSSARY

**Effects/Filters:** Operations that change a sample, either alienating the sample or adding special attributes like reverb or echo, are referred to as effects. If the manipulation actually removes something or attenuates certain attributes, experts refer to this as a filter.

**Scratching:** Turning a record backward and forward rhythmically, while the turntable is running, is known as scratching. What started off life as a party gag back in the 80s, is now an integral part of many musical styles.

the mouse button within a track and move the cursor. This allows you to search backward and forward through a track. The sound will depend on the zoom factor and the mouse speed, and is either quite bassy or more typically bright.

Incidentally, this is the same technique that DJs use with analog turntables and is known as **scratching**. So it should be no surprise that Sweep even allows for the wow and flutter typical of analog turntables running up to speed.

If you click on a position behind the cursor while playing a track, the cursor moves back quickly, slows down, and then returns to normal speed. The bigger the distance between Scrubby and the cursor, the quicker and further Scrubby will jump back. If you click on the ruler at the top of the window in Scrubby mode, Scrubby will jump to exactly that spot, before continuing to play the track.

## Selecting and Cutting

After re-living that nostalgic moment, you might start to ask yourself what the software is really good for? For example, it will help you cut tracks. To do this, first switch back to selection mode, click and drag the mouse to roughly select a sample that you want to cut out. Then go to the edges of your selection to fine tune the selection.

Sweep supports multiple selections which are available by holding down the [Ctrl] key while marking a selection. Right next to the Play button there is a button that allows you to play the selected samples.

### Box 1: Dependencies

Dependency	Provides
gtk+ 1.2	Gimp Toolkit
libsndfile	Library for reading and writing audio files
libsamplerate	Library for file attribute manipulation
tdb	A simple database API
pkg-config	Utility for compiler
libogg	Container format for Vorbis codec
libvorbis	Free alternative to the MP3 codec
libmad	Decoder for MP3 files
speex	Free sound format, especially for speech

If the sample is to your liking, select *cut* to remove it from the track, or select *copy* to copy it to the clipboard. In contrast to this, *crop* will remove everything but your selection, allowing you to carry on processing your selection.

There are several options for the

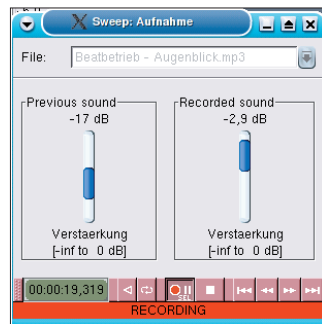


Figure 3: The record dialog box brings LPs to your machine!

(paste) command. You can use *insert* to insert data from the clipboard at the current cursor position. This is the simplest method.

However, for more impressive effects, you can mix a selected area with the content of the clipboard by selecting *mix*. Alternatively, select *crossfade* to tell the program to fade out the selection and fade in the sample in the clipboard.

Make sure that the volume of the two samples is compatible. The best idea is to try a few experiments first, and not worry if you make a mistake: a multiple redo function will remove any experiments that go wrong.

## On the Air!

But what happens if you don't have the track you want to edit on file, but do have an old LP? In this case, the recording dialog box can help you transfer the track to your machine. You will first need to attach your analog sound source to the line-in jack on your sound card, and create an empty document, making sure that the document has enough space for the recording.

Then open the dialog box by clicking on the red button at the bottom left of the screen. Additionally, launch a mixer program, such as *Kmix*, for example. You will need the mixer to adjust the recording level.

The recording dialog box (see Figure 3) provides similar play and navigational elements to the button bar in the main window, but in this case, they control the recording cursor. You can only record within a selection. Start off by selecting the whole document first, and then create

a test recording. Try to locate a particularly loud part of the track to allow you to set the recording level, and then click the *Record into Selection* button.

If anything is getting through to Sweep, you will note the red cursor, which should be moving through the file, leaving a wave behind it. Use the input slider in *Kmix* to allow the loudest part of the track to reach the top edge of the graph.

It makes more sense to create a quiet recording than to lose part of a soundwave. After performing this test, use the button

bar to re-wind the recording. You can then go on to actually record the track.

After completing the recording, go to both ends of the track and cut off the empty sections. If you recorded at low volume, you can now normalize the recording level using the *Normalize* plugin. This is one of Sweep's default filters, and is available via the *Process* menu along with all the other plugins.

The selection of plugins ranges from simple effects like *Chorus* and *Echo*, through loudness manipulation plugins like *Fade-In*, to frequency traps and oscillators. In fact, the sky's the limit (see Figure 4). If you need more information on the effect a particular plugin provides, check out [2] and [3] for more literature. Or you could go to the website at [4] for a complete introduction to audio processing techniques. ■

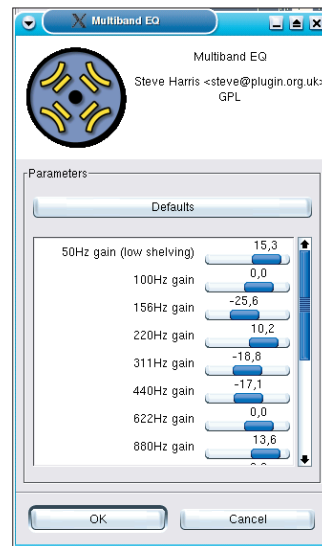


Figure 4: The Multiband Equalizer is one of many plugins for Sweep

### INFO

[1] <http://www.metadecks.org/software/sweep>

[2] <http://www.ladspa.org>

[3] <http://plugin.org.uk/documentation.php>

[4] <http://www.linuxfocus.org/English/March2003/article271.shtml>