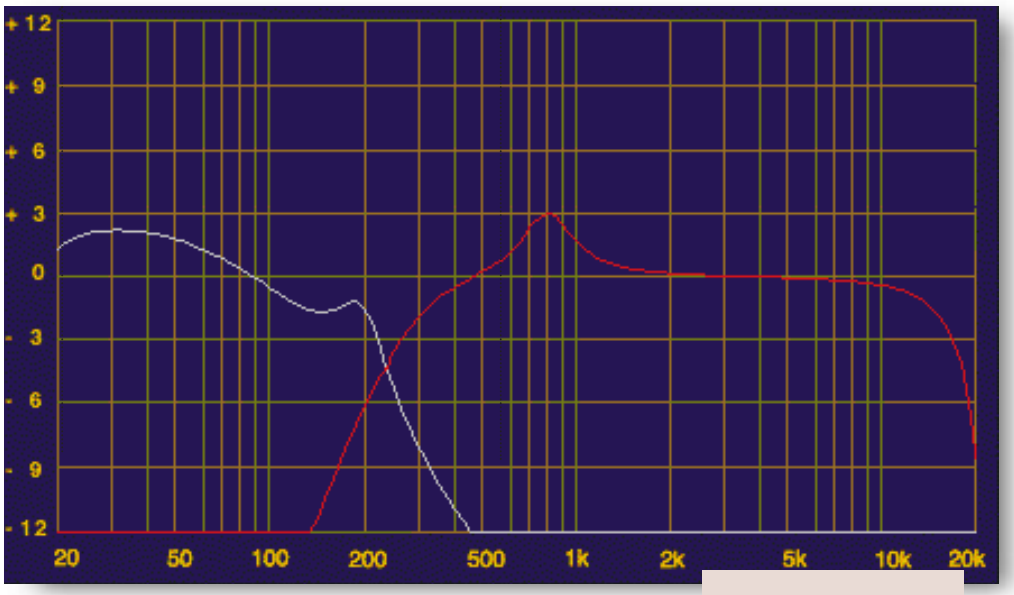
Sitting comfortably

Use EQ to make a sound sit well in your mix. Steven Helstrip explains.



▲ FIG 1 EQING TWO BASS-TYPE SOUNDS

To continue our mini-series on mixing audio, we're going to look at EQ in more detail and explain where, when and how to use it. Although EQ can be used as a creative tool, its main purpose is to shape and control a sound so that it 'sits' well with other instruments in a mix. But what does that mean, exactly? When mixing a track, what we're aiming to do is to make each instrument come across as clearly as possible over the speakers. We can do this with EQ by separating (or partitioning) instruments into their own spaces within the audio spectrum. Of course, there's a good deal more to mixing than EQ alone, but this is a good place to start.

The more instruments or parts you have playing in a song, the more difficult it becomes to mix them. We can illustrate the problem with this simplified example. If two untreated bass instruments play simultaneously, they are likely to sound cluttered as, by their very nature, they occupy similar frequencies in the audio spectrum. However, they can work together well if they are separated into their own spaces.

There are three ways to achieve this effectively. The most obvious is not to play them in the same place. It's often overlooked as a basic principle of production — less can be more. The second approach is to pan them to opposite speakers, although this may not always be appropriate. If neither of these work, then EQ has to come into play.

Fig 1 shows how two bass-type sounds might be EQed to fit into separate frequency ranges. The red EQ curve has had most of its bass frequencies filtered out (or rolled off) to allow the instrument, represented by the blue curve, space to breath. There is some area of overlap but this is perfectly alright given that it's a relatively small range. Conversely, the blue curve has had much of its *higher* frequencies filtered out. In addition, you can see that each curve has a bell-shaped peak where gain has been applied to bring out a particular quality in each instrument's tone.

The main purpose of EQ is to shape and control a sound

The art of mixing can take years to master but you can improve the sound of your music with a basic understanding of EQ. By far the best way to learn is to get some direct hands-on experience. So what are you waiting for? Here are ten general guidelines to help you get started. And if you need an EQ or filter plug-in, we've got that covered, too, in the panel overleaf.

1 Before you reach for the EQ, ensure that you have done everything possible in the recording process to get the right sound onto disc in the first place. Careful sound selection can keep the use of EQ to a minimum.

2 Don't spend too long EQing an instrument in isolation as it will sound totally different once it's back in the mix.

3 Cutting frequencies you don't want, rather than boosting those that you do, can be just as effective and helps to open up a sound.

4 Listen carefully to how commercial tracks are mixed. This is by far the best way to learn how to approach your own mixes. Also, take time out to practice and experiment.

5 To add a click to a kick drum, boost the frequencies around 6KHz. To help it 'bite' through the mix, boost around 2KHz.

6 To add clarity to a bass instrument, cut the frequencies around 250-300Hz. A boost of around 100Hz will add body and weight.

7 Take the abrasion off hi-hats by cutting from the 1-2KHz range. Meanwhile, sparkle can be added by boosting the frequencies around 10-12KHz.

8 Vocals generally sound warmer when you cut around 1KHz, while boosting the 2-3KHz range adds presence.

9 To make pads sit back in a mix, cut the frequencies around 2-3KHz. A boost around 8KHz will add clarity.

10 Leave any final EQing until the following morning if you can. Your ears will be fresh and any problems will be easier to spot.

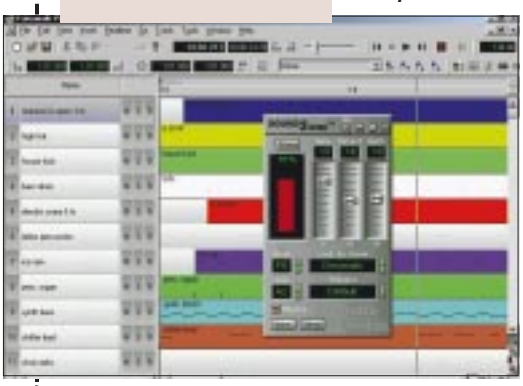
Questions & answers

Q I have a problem recording melody lines into my sequencer because my keyboard skills are minimal. Entering notes in step time is not satisfactory as there is no natural flow. Do you know of a program which would take an input from a microphone and convert it to MIDI so that I could sing, hum or whistle the melody and then assign an instrument to it? I can string a few chords together and have no problem with bass lines but a naturally flowing melody defeats me.

BERNARD MANTELL

A *There is a program called Sound 2 MIDI which will do just that. It runs alongside your sequencer and can take an input from either mic or line inputs. Once it knows the key and the mode of the music it's about to transcribe [Fig 4] all you have to do is hit record in your sequencer and, er, sing. I just hope you can sing in tune! See the PCW Contacts box for details.*

▼FIG 4 SOUND 2 MIDI TAKES AN ANALOGUE SIGNAL FROM YOUR SOUND CARD'S EXTERNAL INPUT AND CONVERTS IT TO MIDI



Q I have some old four-track demo tapes that I'd like to transfer to my PC for digital editing. Do I need a dedicated four-input sound card to record them or can I simply buy a cheaper, second stereo input card to use with my Sound Blaster 16?

PAUL WARD

A *The problem with using two separate cards for recording and playing back multiple channels is that each card's audio clock source may run at different speeds. Although we're only talking about tiny fractions, over a few minutes the two cards will almost certainly drift out of sync, even if they're the same type. From what you have described, though, you don't actually need four inputs. Simply record the tracks off tape two at a time and use your audio editor to line up the separate takes — that's the beauty of digital editing.*

Q Do you know of a program that can convert and compress to and from various audio formats and has a batch mode (like Paint Shop Pro)?

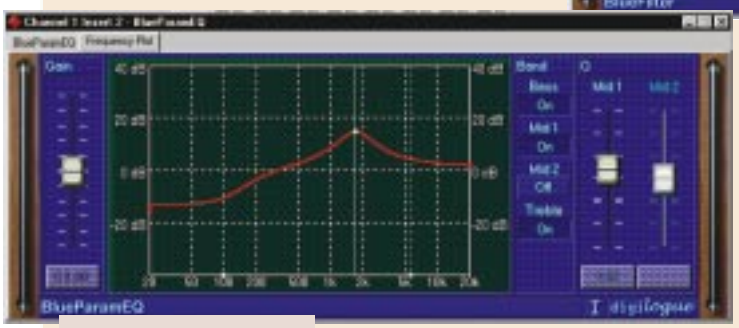
ALEX HELFET

A *Two shareware programs spring to mind. The first is Convert, a DOS-based command-line utility. It supports around 50 audio file formats and provides basic batch processing. It's straightforward to use but if you'd prefer a Windows application, check out Awave. which supports nearly 200 file types including SoundFonts and Mpeg. But it doesn't have the batch processing facility. So, best get both, then. These programs are available from www.maz-sound.com.*

DIGILOGUE BLUELINE PLUG-INS

There's no shortage of free plug-ins on the internet but I've never before come across anything so complete as this. BlueLine is a suite of 11 plug-ins for VST and DirectX-compatible applications. It's a great set but the two in which we're particularly interested are filter and EQ modules [Figs 2 & 3]. Together, they provide everything you need to start mixing, including four fully-parametric bands on EQ and no less than 16 filter types. Although both are big on features, they actually use very little processor overhead and should work with any system, so now you've got no excuse!

▲FIG 3 THE BLUELINE FILTER OFFERS 16 FILTER TYPES WITH LEVEL TRACKING



▲FIG 2 DIGILOGUE'S EQ MODULE PROVIDES FOUR FULLY-PARAMETRIC BANDS WITH ADJUSTABLE Q

PCW CONTACTS

Steven Helstrip can be contacted via the PCW editorial office (address, p14) or email sound@pcw.co.uk

Digilogue BlueLine plug-ins http://members.tripod.de/digilogue/

Sound 2 MIDI £99 (£84.26 ex VAT) from Et Cetera Distribution 01706 228 039