

ADVANCED EFFECTS

PART 2

Reverb



For a quality mix, reverb is essential. Get to grips with this effect and it'll transform your sounds...



On the DVD

TUTORIAL FILES

You'll find our reverb loop – in the **Tutorial Files** folder

What can we say about reverb that hasn't already been said? Well, plenty, hopefully, or we've all got a very dull four pages ahead of us! Before we start, though, a brief recap on the basics...

Reverb is the product of sound interacting with nature. Every time we make a noise, it's transmitted as waves of vibration through the air. These waves ricochet off every surface they encounter, before finding their way to the listener's ears. Because we're so used to hearing these sonic reflections, any situation in which there's nothing

for the sound to bounce off sounds unnatural. With this in mind, successive generations of music productions have used a variety of ingenious processes to recreate these reflections, culminating (for most of us) in digital reverb units in the shape of plug-ins.

There's never been a better time to explore the possibilities your reverb plug-ins throw up, which makes it all the

more surprising that the vast majority of us do little more than call up our favourite reverb and insert it into any channel we need. If we're feeling adventurous, we might even alter the reverb time...

All of this is a real shame, as almost every space you encounter will have a distinct sonic character. Some of these are suited to vocals, drums, or even complete tracks. Clever use of reverb techniques can transform your mix from a lifeless lump of deadwood to a vibrant masterpiece. Don't believe us? Well then, read-on... **cm**



◀ There are many types of reverb – so do play the field with your plug-ins

Common types of reverb

SPRING

In the pre-digital age, the only way to achieve the sound of reverberation was by mechanical means, and this generally meant spring or plate reverb. Spring reverb is a simple concept: usually found inside analogue guitar amps, it involves suspending springs between pairs of transducers with vibrations being generated at one end and received at the other. The effect, while interesting and often useful, is fairly unrealistic, and the vast amount of gain required to boost the received signal makes it prone to extreme signal noise.

PLATE

Plate reverb is similar in principle to spring reverb, in that real vibrations are induced in a real piece of metal by a driver and then picked up by microphones. The difference is in the quality of results – plate reverbs can sound absolutely lush... albeit in a not-quite-natural way. Originally the preserve of top-end studios, they're surprisingly cheap and easy to build, although with an average size of 4'x6', they aren't exactly practical.

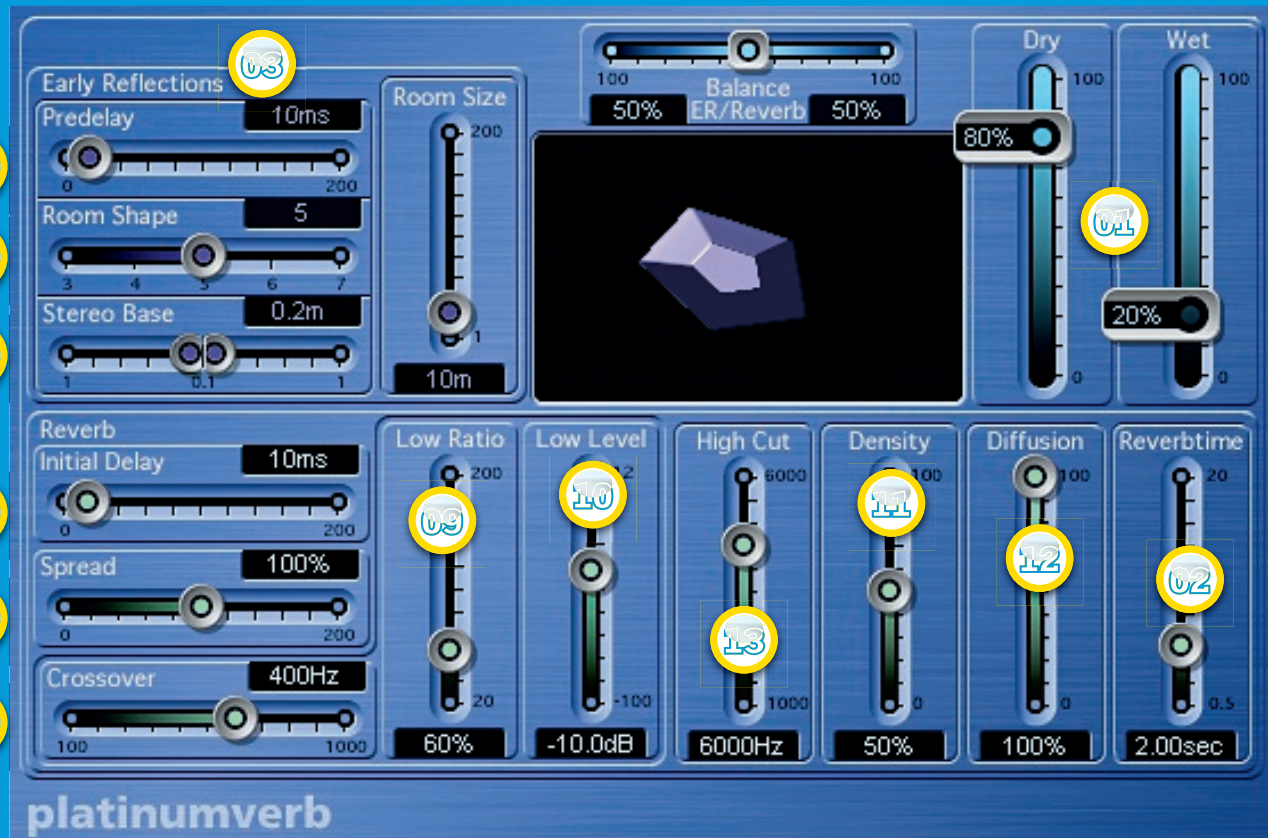
CONVOLUTION

The daddy of modern digital reverbs, the convolution reverb uses painstakingly accurate sonic models of a specific and real acoustic space, so that any sound to which it's applied appears to be playing in that environment. For example, in the room you're currently sitting in, a series of specialised sounds would be played and recorded with a variety of mics. Using clever calculations and deductions, a sonic blueprint (called an impulse response, or IR) would be made so that any sound fed into it would appear to be interacting with exactly the same environment, taking into account every table, chair, window, sofa – even you, if you happened to be in there when they took the blueprint.

DIGITAL

At the risk of oversimplifying things, let's just say that digital reverb is usually achieved with a combination of very fast delay algorithms and filters. And if you've ever wondered why reverbs are among the most processor-intensive effects you can use, then you must not know that to create even a modest sounding digital reverb, said algorithms must churn out anywhere from 1000 to 3000 delays every second. And they must impart clever randomisations of timing between each one so that the effect isn't completely unnatural.

THE ANATOMY OF A REVERB



01 WET/DRY This specifies the amount of clean signal versus effected. If you're using your reverb as an insert, this will be used to control the intensity of the effect, but in a send/return loop, the normal setting will be 100% wet, with the send level of each track determining the intensity and amount of reverb on each.

02 REVERB TIME It's hard to say at what point reverberations actually stop, so the reverb time (aka decay time) is accepted as being the time it takes for the reverberations to decay by 60dB. Longer equals bigger sounding – with normal rooms in the 1-3 second range, and huge spaces like cathedrals dishing out ten seconds or more.

03 EARLY REFLECTIONS When a sound is produced, there's a slight delay (perceptible or not) before it encounters a reflective surface. Consequently, smaller rooms will generate early reflections that are audible before being lost in the reverberant mush that follows. The brain makes an educated guess as to the size of a space based on these early reflections.

04 PRE-DELAY The amount of time between the original sound and the early reflections. Too short and you lose definition, too long and there's an audible gap (such as in a very large space), generating an echoing effect. As a rule of thumb, try to achieve the longest pre-delay time you can without an audible gap.

05 ROOM SHAPE Many reverb units include a room shape option, usually determining the number of walls, but sometimes also their placement.

06 STEREO BASE Some reverb designs enable you to simulate the placement of stereo microphones. To accurately mimic the perception of a real room, try placing them around the same distance apart as your ears.

07 INITIAL DELAY This is the elapsed time between the original signal and the main diffused reverb effect. The diffused reverb should flow on from the early reflections, and again, a good technique is usually to have the longest initial delay without an audible gap between the early reflections and the diffuse reverb.

08 CROSSOVER Because bass reverb can overpower a track quickly, some reverbs enable you to set the bass and mid/treble reverb times independently – the crossover setting in this type of reverb will determine at what point the signal is split.

09 LOW RATIO The low ratio control is essentially a reverb time control for the bass end – in this case expressed as a percentage of the main reverb time.

10 LOW LEVEL If your reverb enables you to split its action, it will usually have a low level control so that you can set the level of the low reverb effect independently – in this case, a setting of 0dB means the levels of both the high and low bands are equal.

11 DENSITY This controls the amount of reflection, and essentially sets the thickness of the reverb. This should normally be as high as possible without colouring the sound.

12 DIFFUSION Diffusion controls alter the regularity of the individual reverb delays (of which we've established there are thousands per second). High

diffusion values mean more irregularity and, therefore, greater realism.

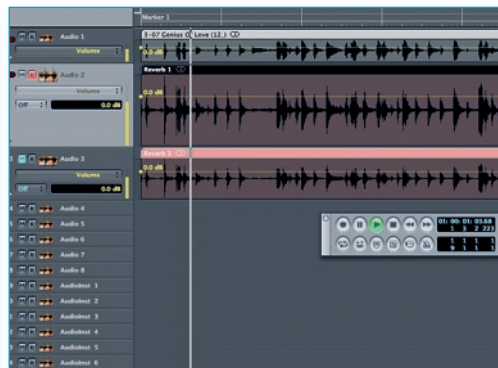
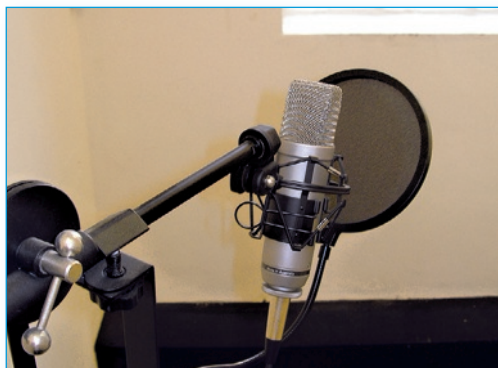
13 HIGH CUT High frequencies tend to get absorbed much more quickly than low frequencies, so in nature reverb tends to lose top end much faster than bottom (except in stone or other highly reflective environments). A high-cut (also known as 'damping' in many units) filter simulates this effect.

14 SPREAD Natural reverb is an unnatural and unruly thing, so it can be very difficult to detect much in the way of direction from it. Nevertheless, clever algorithms that offset the early reflections and longer reverberations as they play through the left and right channels can be used to add stereo width to even a mono signal. Some convolution reverbs, such as WizooVerb W5, can accurately model three-dimensional spaces in glorious 5.1 surround!

15 ROOM SIZE Determines the size of the virtual space created by your reverb plug-in. Obviously.

Some tasty tricks with reverb

STEP BY STEP Nature's way

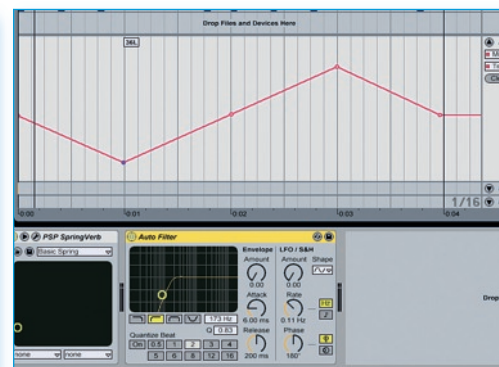
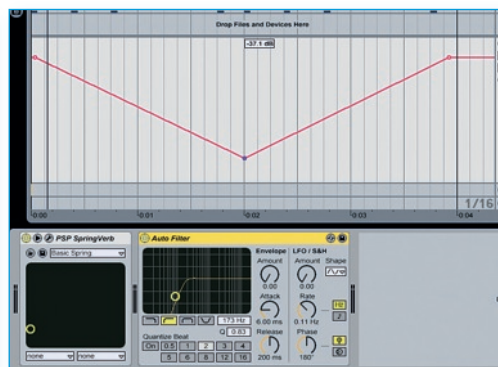


1 Ambient mics are often used to capture the sound of a real room when recording drums, but a similar process can be used with any signal. Start by setting up a speaker in the space you want to capture – or perhaps even in an adjoining room with the door open. Then place a microphone in the space to be captured – facing away from the sound source. »

2 Make sure the mic is a good distance away from the speaker and adjust the playback volume until you're fully aware of the natural reverberations. Be sure to mute the output of the microphone channel, so as to avoid any feedback. Then simply play back the source – be it a vocal track, instrumental part or complete mixdown – and record the reverberations. »

3 Try recording a few different speaker and mic placements, then unmute the recordings and play them quietly behind your original source. For a nice stereo effect, feed one recording to the left channel and another to the right. And there you go – an easy, effective and natural reverb effect that's great for any occasion.

STEP BY STEP Reverb 3D



1 Reverb can be used to add more than just stereo width. Armed with nothing more than two ears, we can easily detect direction with sound, so there's no reason why we shouldn't use stereo reverb to equal effect. Start by placing our two-bar **Reverb Loop** (on the DVD) onto a new track, and a reverb unit (set to 100% wet) on a bus. Send the output of the track to the reverb bus. »

2 Now, use automation to lower the volume of the reverb bus from a high point of your choice to a low point of your choice and back up again, with the lowest point exactly halfway through two bars. Next, automate the pan from centred to fully left and back to centre over one bar, then fully right and back to centre over the second bar. »

3 If all is well, the reverb should sound like it's running in a large circle in front of you. So far this effect is pretty severe, so to moderate it slightly, simply ease back the extreme pan values, and lessen the volume range. To really add some dynamism, try applying the exact opposite automation to the audio loop.

Tips on adding reverb to drums

FOR A BIG room sound, try using a hall setting on your reverb and adding some pre-delay, but avoid adding too much of the effect to your kicks and toms, as pre-delay and long-reverb times will fill your mix much faster than an orchestra paid by the note...

TOMS GENERALLY DON'T NEED much reverb as their natural envelope has a pretty extended sustain, but if you do want to add some presence and a sense of scale, try using quite short settings

and be sure to remove the bass from the wet signal.

SNARE DRUMS ARE very bright and so can sound tasty with most types of reverb – it all depends on the effect you're after. For punch, try a plate style reverb, as this has a fast, clean envelope.

APPLYING REVERB TO kicks can be troublesome, as the low frequencies generated can really muddy your mix. Shorter, ambient settings are better for

real kick drums, but for electronic kick drums it's best to avoid standard reverb.

IF YOU ABSOLUTELY must apply reverb to your electronic kicks, try playing around with some gated reverb settings or reverse reverb. Beware, though: these are both very bold effects so make sure the result sounds absolutely mint!

TRY TO AVOID long reverb tails on hi-hats unless you're doing it for specific effect, as these can sound quite

distracting and unnatural, and will really muddy up the top-end of your track. For most purposes, shorter but bright reverbs add a sense of size and space without being overly intrusive.

FOR A REALISTIC live sound, you can still apply different reverb settings to each drum sound, but try sending the individually processed sounds to a sub-mix and then applying some subtle ambience reverb to them as a complete drum kit.

Tips for adding reverb to vocals and guitars

WHEN RECORDING VOCALS, be sure to add some reverb to the singer's monitoring channel (even if it's only a lower quality one) to ensure smooth playback. The reverb tail extends after the singer finishes singing, so many singers will use this to reference their pitch accuracy.

IF YOUR VOCAL line is suffering from too much sibilance, try adding a de-esser to the reverb rather than the original signal. De-essers can sound a little unnatural sometimes, and this technique can often provide less obtrusive but nonetheless highly effective results.

"IF YOUR VOCAL LINE IS SUFFERING FROM TOO MUCH SIBILANCE, TRY A DE-ESSER"

USE REVERB TO increase the separation between vocals. Backing vocals should be just that, so try adding plenty of early reflection and longer reverb tails to push them back in the mix. Conversely, lead vocals can sound a little distant with longer settings.

EARLY REFLECTIONS CAN add a sense of intimacy to a signal, particularly with acoustic sounds like guitars and vocals – the bright, quick reflections sound like a small room or venue. For this effect try using nothing but ambience settings initially, and then add a more conventional reverb setting slowly afterwards (or not at all).

A GOOD WAY TO stop reverb dominating your vocal tracks is to use a ducking gate to lower the reverb

▼Spring reverb: perfect for guitars, and on the cm DVD in the shape of SpringVerb



signal by a few dB when the vocal's playing. If you don't have a gate with a ducker, try applying a compressor to the reverb signal and send the vocal signal to its sidechain.

ELECTRIC GUITAR PARTS (especially those of the chord-driven, wall-of-sound persuasion) are already very full, so be careful with your reverb lengths. Spring reverb patches are traditional and sound the part (bright and clean), but don't be afraid to try out something a little different.

GATED AND REVERSE reverb can sound excellent on guitar parts, as they fill out the sound without swamping it, and won't result in the obvious and clichéd sound that they can produce on drum parts.



▲Logic's Enverb is just the thing for reverse and gated reverb effects

General reverb tips

TRY USING DIFFERENT TYPES of reverb on one track. In days gone by, reverb was expensive and limited, so it was placed on busses, but high quality plug-ins and fast processors let you use multiple reverbs as inserts for total control.

REMEMBER THAT IN most cases, slower, sparser tracks can accommodate longer reverb times than quicker and thicker mixes without making them messy.

FOR A REALISTIC live sound, as you increase the reverb time you should also reduce the wet/dry balance, and as you shorten the reverb time you should increase the wet signal.

USE REVERB TO impart a sense of three dimensional space rather than just width. For example, if a sound has a large amount of reverb, it gives a feeling of distance, just as the sound of somebody singing at the other end of a room is heavily mingled with the reverberations.

TRY USING DIFFERENT reverb effects on the left and right channels. This can be quite fiddly on individual tracks, but can be done much more easily for a global reverb send/receive setup.

IT SOUNDS OBVIOUS, but don't forget that all the flexibility of modern digital reverb is wasted if the source material is a reverberating mess to begin with. We're not saying you shouldn't take advantage of natural reverb (check our walkthrough), but if you plan to add any kind of processed reverberations, the cleaner and dryer the source material, the better!

REMEMBER THE BLUES Brothers scene where Jake says to Elwood, 'How often does the train go by?', to which Elwood replies, 'So often you won't even notice...?' Well, it's true – we humans notice change more than consistency,

so don't be afraid to muck about with reverb lengths and parameters throughout a track!

WHEN THICKENING SOUNDS, try applying chorus or flanging to the reverb signal. Alternatively, if you're using your effects in an insert chain, try applying reverb before any modulation effects (though for a more natural and subtle effect, the first technique is probably the better option).

DON'T OVERLOOK THE power of compression on reverb, particularly reverb used as a track insert. For a



▲Logic's Space Designer is one of the most powerful convolution reverbs on the market. It deserves to be fed only the cleanest signals!

spectacular pumping reverb effect, try running your kick drum into the compressor's sidechain.

IF YOU PLACE a gate in the signal path before a reverb, you can adjust it so that only the louder signals make it through and generate reverb. Or by still allowing a small amount of signal through when the gate is closed, you generate more reverb for louder sounds – this works especially well on vocals, but be sure not to over-compress the source signal or the effect will be lost.

IF YOU'RE USING heavily panned sounds, try applying mono reverbs panned to the same sides as the panned sounds to emphasise their positions in the mix.

TO FILL OUT a sparse mix, try using a combination of delay and reverb, but with one panned mostly (or completely) left and the other right. For even more of a sense of movement, trying sweeping these effects so that as the delays move right, the reverb moves left.