

technique

advanced
reverb

Advanced Reverberation

Part 2: Used correctly, reverb is of the most powerful tools of modern music production. This month, we explore the most effective treatments for some of the individual components of a mix.

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Reverberation is to sound what light and shadow is to the visual world. A sound with no reverb is as lifeless as an otherwise pleasant scene lit with perfectly diffused light, where there are no highlights or shadows. Anyone who has spent any length of time in England during the winter knows exactly what that's like!



In lighting terms, adding the right type and amount of reverb is like transporting the same scene to a Mediterranean summer, but, just as with lighting, reverb can be flattering, revealing or just plain overpowering. In the same way that a strong light will leave strong shadows which completely black out part of the scene, heavy reverb can mask other parts of your music. For example, heavy reverb applied to everything in a mix will result in a messy, confused sound with no space for the sound to breathe. That's like a scene being so strongly lit from one side that you can't make out any detail at all in the shadows. However, a few bright sounds at the top end of the spectrum won't interfere with your reverb and, conversely, a bright reverb will still be clearly audible over a low bass note, so you have to look at your arrangement as a set of frequency layers rather than just blocks of instruments.

There's no easy way to learn about the use of reverb in mixing, but there are guidelines, and it's also well worth listening to a wide selection of commercial recordings to see how they've used reverb. In many cases, you won't even perceive the reverb until you listen for it, but once you focus in on that aspect of the sound, you should be able to tell whether the reverb decay is long or short and whether the tonality is mellow or bright. You may hear two or more reverb settings used on a typical pop record, often one setting for the vocals and another for the drums and percussion. Going back to the lighting analogy, this is like using spotlights in a theatre production to create the right visual atmosphere for the various performers.

If you only have one good-quality reverb unit, you may wish to add reverb to some parts as you record, but where possible it's safest to leave effects until you mix, as a part can sound very different when the other parts are playing. As usual, the best way to explore the use of reverb is to examine its effect on different components of the mix.

Reverb For Drums & Percussion

Close-miked drums have very little room ambience, unless you're working in a nice live room and are adding ambience mics into the mix. The same is true of drum machines where the samples are unprocessed. Kick drums can be problematic if you add any obvious reverb, as the resulting wash of low-frequency reverb can really muddy up the low end of a mix. Using a short ambient setting is generally better and can help make the sound more snappy and punchy. One of the reasons an ambient setting adds punch is because the extra reflections generated by the reverb process add to the dry sound, stretching it out over a longer period. Unlike conventional reverb, however, the ambient reflections die out fairly quickly, before they have a chance to confuse the sound. Gated reverb also works well on kick drums for the same reason, though you should use this effect sparingly unless you want your drum part to sound dated.

You can usually get away with adding more reverb to snare drums, as they don't generate much in the way of very low-frequency components. Plate settings are commonly used, because they're flatteringly bright and sizzly but don't produce any obvious early reflections (which can sound gritty on some percussive sounds). Plates also have a fast attack, but avoid using an excessively long decay time unless the music is slow and leaves lots of space for the reverb. In fact, a good rule of thumb is that the faster and denser the track, the shorter the reverb decay time needs to be.



A typical snare reverb setting can be anything from a subtle one-second decay, or even less, up to an obvious three seconds or more, but the perceived effect also depends a lot on the wet/dry balance of the sound. With very short reverb settings you can often mix in more reverb, to create a very live sound, but without allowing the mix to get messy. A common trick is to use a heavy dose of short, bright plate or tiled-room ambience to add life to a dull snare sound. For a bigger sound, pick a short hall setting and experiment by adding a little pre-delay to give the drum hit something of a slap-back feel.

Toms tend not to need a lot of added reverb (unless you're after that overstated '80s rock sound, of course), as they have a longer natural sustain than the other drums in the kit. However, short settings can make them sound more powerful and give them a sense of place, so don't leave them completely dry.

If you're miking your hi-hats separately, again try a short ambience or plate setting to make the sound more three-dimensional. What you're after is a sense of space and high-frequency detail, without a long reverb tail.

Percussion sounds also benefit from added ambience, but long reverb on percussion tends to be used only in film/TV music or New Age music, and even then only where there's a lot of space in the composition, so that the reverb can breathe. The musical arrangement and the choice of sounds dictates the amount of space you have to play with, but in TV and film music it's not unusual to hear very spacious passages, where triangles or odd percussion instruments are treated with very long, bright reverb settings.

Unless you have access to lots of different reverbs (or plug-ins), you may want to pick one setting for the whole kit and then vary the amount added to the individual drums, but if you

do work in this way, either choose a short reverb setting or leave the kick drum as dry as possible. Traditionally, the kick drum is treated with the smallest amount of additional reverb and the snare with the largest; toms come somewhere in between. However, these days there are more opportunities to break musical rules, so let your ears decide what works. You'll need to experiment with the reverb level added to any overhead or ambience mics, as so much depends on the natural characteristics of the room.

Where the drum sounds come from a drum machine or sampler, you may be forced to use the same reverb treatment for the whole kit, depending on how many separate outputs the drum machine has. In this case, I'd again recommend an ambience program, with the bass end on the reverb returns rolled off just enough to ensure that the kick drum doesn't 'smear' the bass end of the mix. Indeed, I've used this type of treatment on complete stereo master mixes where the original has been mixed too dry, and the improvement can be enormous.

Finally, be aware that the quality of ambience and other short reverb settings varies enormously from one reverb processor to another. An obviously trashy reverb sound can work really well in a dance mix, so don't throw out all your cheap boxes, but where you want a more natural sound, quality really counts.

Vocal Treatments

Vocal reverb is vitally important, as few things sound worse than a completely dry vocal, even when it's perfectly sung. Reverb also helps singers pitch their notes, as each new note is subconsciously referenced against the reverb decay of the previous note. However, it's important to understand the way reverb affects the listener's perception of a vocal line. For example, adding a lot of reverberation tends to reduce intelligibility, especially with longer decay times, and it can fill up vital space that's needed to create contrast. Bright reverbs can also emphasise sibilance. On the other hand, too little reverb makes the vocal sound disassociated from the backing track and is very unflattering to the singer.

From a psychoacoustic point of view, reverb also affects the apparent position from which the vocals emanate. Adding a lot of reverb creates an impression of distance, which is directly at odds with the usual goal of placing the singer at the front of the band. To make a vocal sound up-front and intimate, you may need to use quite a short setting, but another popular trick is to add between 50 and 80ms of pre-delay to the reverb, in order to put a little space between the dry vocal and the reverb that follows. If you want that reverb tail to add shimmer to the sound, use a room, chamber or hall program, but increase the early reflections balance so that the reverb decay doesn't dominate. A refinement of this technique is to use two reverb processors on different sends, one to provide an ambience setting to liven up the voice, and the other for a more obvious vocal reverb with pre-delay. A high level of early reflections helps suggest an

Using Reverb To Introduce Variety

The way in which our hearing systems have evolved from the time when they were a primary part of our survival mechanisms means that we are more likely to notice changes in sound than something that is continuous and unchanging. From this, it follows that if we can add changes to our music, people are more likely to pay attention. One way to do this is to vary reverb character, by using different reverb types in different sections of a mix, or by switching from very little reverb to a lot. Of course, you should only do this kind of thing for the best of artistic reasons, but the idea is worth playing around with.

Another way of introducing apparent movement is to use a different type of reverb in the left and right channels. For example, if you add a hefty dose of pre-delay only to one side, the reverb will seem to start in one channel and then move over to the other. The easiest way to get this effect is to put one reverb output through a delay unit and use the other one just as it comes. Elaborating on this, pretty much anything goes. I've had some success panning the reverb outputs gently from side to side, flanging one of the reverb outs but not the other, and even modulating reverb level in a rhythmic way, using a gate triggered via its side-chain.

intimate environment and gives the sound sparkle, so if you don't need an obvious reverb tail, try an ambience patch on its own.

As with instruments, long reverb decays can work, but only in songs that leave space for them. One technique often used to prevent reverb from trampling everything is ducking the reverb output when the dry vocal part is sounding, but allowing it to swell back to its normal level between words and phrases. Using a gate with ducking mode is the easiest way to do this. It's probably only necessary to duck the reverb level by 3dB or so to achieve the desired effect. The ducker's attack and release times should be fairly fast, but without making the gain change sound too abrupt, so start with values in the 250-500mS range and then fine-tune by ear.

Enhancing Backing Vocals

Many of the general vocal-processing rules also apply to backing vocals, except that you don't have to strive to push the backing vocals to the front of the mix as you do with lead vocals. Indeed, backing vocals are usually designed to sit a little behind the lead vocalist. A patch with obvious early reflections will help thicken BVs, and if you need to use a longer reverb time you don't have to worry about the backing vocals sitting too far back.

If you have a reverb with inbuilt modulation (such as the Spin and Wander facilities of Lexicon reverbs), you can use this to thicken and smooth the sound in a subtle way, but you can also feed the reverb from a chorus unit, flanger or pitch detuner to get a more pronounced effect. The characteristic sweep of the modulation is randomised by the reverb, so you end up with an attractive shimmer rather than a churning, cyclic effect. Multi-effects boxes or plug-ins make this kind of effect configuration easy to achieve.

A more creative trick is to connect a gate before the reverb unit and use the gate's Range control to allow a low level of signal to be fed to the reverb unit when the gate is closed. On louder words, the gate will open and the reverb level will increase. Tony Visconti once described to me how he'd produced a vocal effect on a David Bowie album using a similar principle, except that he'd used real room ambience rather than electronic reverb. The 'reverb' was picked up via ambience mics at the back of a live room, then gated, but there's no reason not to try the same thing with a digital reverb unit. A nice refinement of this trick is to use two reverb units, one with a small room setting and the other set to a much larger space. The small room sound is heard all the time but the larger reverb only joins in on signal peaks when the gate opens.

Before leaving vocals, one tip on dealing with sibilance that's being exaggerated by a bright reverb setting is to de-ess the reverb feed rather than the dry vocal part. This way the de-essing will be much less obvious.

Guitar Ambience

The electric guitar is often associated with a spring reverb sound — not because springs sound great, but because that's the sound we've grown up with. Many reverb units include a spring emulation, and some model the bad aspects of springs too closely for comfort! For certain styles, though, it's worth experimenting with different reverb types, with and without pre-delay, to see what variations you can get. For example, if you want that big, 'Floyd-y' sound, compress the guitar and then treat it with a large,

In A Spin: The Do's & Don'ts Of Reverb Modulation

If you have a reverb unit or plug-in that offers internal pitch modulation, or you want to experiment by putting chorus before a reverb, make sure the treatment is appropriate for the instrument you're working with. For example, a heavily modulated reverb can be quite flattering on strings, but will sound totally wrong on acoustic piano, where even the slightest hint

bright hall reverb setting. This can be very effective in the right context, but the usual rule applies: only use this treatment where there's space for the effect to breathe.

It's also well worth trying gated and reversed treatments. Gated patches, in particular, can be useful for creating spaciousness and impact without filling in the spaces between notes, and they can provide a useful alternative to ambience settings.

Bright plate reverb patches work well with acoustic guitar if you're after that American West Coast sound, but keep the reverb time reasonably short or you'll drown the sound.

A Sense Of Perspective

Reverb units have stereo outputs which should be panned hard left and right to create the maximum sense of space, but in reality this space only exists in two dimensions, unless you're working in surround. However, a little psychoacoustic trickery can be used to create a sense of front-to-back perspective. In real life, those closest to a performer hear the most direct sound and the least reverberant sound, whereas at the back of the room you hear a greater proportion of reflected sound. In an enclosed space, reverberation doesn't follow the normal inverse square law for decreasing loudness with distance, but of course the direct sound does. With a well-designed reverb algorithm, increasing the reverb level and/or decreasing the dry sound level should have the effect of moving the performer towards the back of our imaginary space.

Reverb characteristics can also be very different depending on whereabouts in the room the listener is sitting. For example, at the front of the room the early reflections build up quickly and are quite prominent, whereas a listener at the back will hear a more diffuse, less bright reverb that builds up a little more slowly.

So far I've been talking about creating a natural sound, but in pop music natural isn't always best. For example, you can pan the dry sound hard to one side and all the reverb to the other to provide an enhanced (albeit unreal) sense of space. This works particularly well if you use a generous amount of pre-delay. Furthermore, some producers will deliberately use a mono reverb (panned to the same place in the mix as the dry sound) to provide a more focused position for the sound. While widely panned reverb increases the general sense of spaciousness, it actually decorrelates directional information to such an extent that it's often difficult to be precise about where the sound is supposed to originate from.

The Bottom Line

Try to get your mix sounding well-balanced and as finished as you can before you add reverb. That way you won't be tempted to add too much in an attempt to solve other problems. Also, err on the side of adding too little reverb rather than too much. Home demos often use far too much reverb, and the result is a cluttered mix with no space.

For all the technology we have to play with, our most valuable tools are still our ears, so I'll end as I started, by suggesting that you spend some time listening to how different styles of music have been mixed and how the most successful reverb treatments have been chosen to complement the arrangement.

of pitch modulation sounds unnatural. The same applies to solo harp, classical guitar, and so on, whereas brass and other ensemble sounds can sometimes be made to sound a little richer by the judicious application of modulation. For electric guitar (and some synthesizer sounds), heavily modulated reverbs can work nicely, because electric guitars don't have to produce 'quantised' pitches, and in any event a natural sound is not a prerequisite for an electric guitar! As a rule, the more 'classical' the instrument or the production, the more you should steer away from modulation and aim instead to create a natural-sounding room ambience.

Glossary

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