

The Thirty Second Drum Sound Setup By Malcolm Chisholm

Studio work is changing.

An apparently accelerating trend to live sessions, combined with a breakdown of an apprenticeship system which taught live recording techniques until the late 70's, has put a number of thoroughly competent recording engineers in the awkward position of knowing how to do good work, but not knowing how to do it fast enough to meet the demands of live sessions.

Those demands are that the work be done well and done immediately-if-not-sooner as time, energy, and patience are in short supply when working live.

Four sides in three hours allows very little time for corrections, let alone experimentation.

The techniques passed on by the late and sometimes lamented apprenticeship programs were developed over a course of some sixty years by the live broadcast and recording engineers of the time, who not only had to get good sound, but couldn't fix it in the mix.

They did it by inventing and refining a very large bag of tricks which allowed them to achieve otherwise impossible results.

This article is about tricks for drums.

First, a few words about drummers.

While there's an old line about hiring six musicians and a drummer for a gig the line is a basic fraud.

After working with drummers for quite some time, the writer has come to the conclusion that drummers are probably the most competent of ordinary studio musicians.

Whether or not they play better than other musicians is arguable, but drummers generally know far more about their instruments and the sounds they can produce than other members of a band.

The majority of musicians play one note at a time on one instrument, with only small variations in sound from one job to another, and they generally leave the maintenance of their instruments to professionals in that field.

Very few pianists, as an example, can so much as tune the beast, let alone voice it or adjust the action.

In contrast, jobbing drummers carry and play eight instruments, most of which they have rebuilt and modified several times, and six of which change their sound every time the drummer changes rooms. This makes it necessary to retune about half of the kit and play the other half differently for each gig.

Because of this recurring need to produce a different sound in each room in order to project the same sound to the audience, drummers become genuinely expert in generating nearly any sound they want from the kit.

And they use that ability in studios. The good ones routinely listen to the first playback, do a little light retuning, make some changes in playing, and get what they want to hear when it comes back the next time.

They do that so well that they can get a pretty good sound from a poor mike setup, and have been known to cancel out an engineer's unwanted equalization.

Since any given drummer was almost certainly hired because of his particular playing style and drum sound, unrequested help from the mixer is usually something between counterproductive and a source of conflict, and is best done subtly or avoided altogether.

All the mixer really needs to do is give the drummer a setup that turns out a fair picture of what the kit produces, sit back, and let the expert do the work.

Eight of anything except drums would be called a section, and a form of section miking is appropriate on a drum kit.

While single or stereo miking is not acceptable for contemporary work, the other extreme of overmiking a drum kit to the extent of removing all perspective and compound section sound is equally bad, as it takes control of the sound away from the drummer, aggravates phasing problems, and can easily end up sounding like a drum machine instead of a real live musician.

A little fallthrough on a drum set is a good thing.

A LITTLE, that is, not a lot.

If two mikes pick up the same drum at anything approaching the same level, they will produce a comb filter which will ruin the mono sound and drive the cutter head, light valve, or CD channel nuts.

The two mikes sometimes seen a couple of feet above a drum kit in drum booths and overdub situations not only pick up everything else in the studio on a live session but are about as dangerous as a pair of spitting cobras in terms of phase cancellation.

They can be adjusted to prevent cancellation using a phase monitor in the form of a handy monitor paralleling switch, but it takes time, and still leave the stray pickup problem. Not recommended for live work.

What's recommended for live work is the fewest mikes that will get the job done.

This follows a cutesy version of Occam's razor known as the KISS rule; Keep It Simple, Stupid.

The object of the exercise is to reproduce the sound of a drum kit as quickly, simply, and faithfully as possible.

If the sound is to be modified by gates and/or other signal processors, well and good, but it's wise to keep in mind that the best way to make a silk purse from a sow's ear is to begin with a silk sow.

Tricking up a good sound to make a producer happy is one thing, but using toys in an effort to save a bad sound is incredibly time consuming, and since it doesn't always work it sometimes results in egg on face.

No two drummers set up a kit quite alike, and there are variations in the number and size of the instruments, so a basic setup can't be graven in stone, but with judicious adjustments in mike positions and the addition of a mike here and there for a drummer who brings in the whole store, the following will yield a very fair representation of what the drummer plays, allow balancing in about 30 seconds, and encourage the drummer to make performance changes in order to get exactly what he wants on the playback.

It also invites him to break out a lot of little tricks he normally uses only in practice sessions as they can't be heard on stand, but work very well in recording.

It is a genuine delight to listen to a bandstand drummer tailor his playing and sound to studio conditions during a session, and that alone is probably worth the effort involved in making a good live mike setup.

Starting low and working up;

BASS DRUM: Because normal miking distance for a 26 inch instrument would be about six feet, bass drum is usually miked inside the drum case by an end fire full-range dynamic placed an inch or two off one side of the case and pointed more at the case than the drum head.

Used in this manner, the mike acts as a PZM, picking up the boundary layer sound traveling along the case edge and exhibiting little to no proximity effect despite being less than two feet from a source bigger than that.

Dynamics are generally used because they will stand up under the extreme levels inside the drum, their patterns are tight enough to sidestep the phase schmaze inside the case, and their slow transient response discriminates against the snapping attack sound generated by some bass drum heads.

Ribbons actually work better in this application, but short of cutting a ribbon out of Belfoil and hanging it in an old Altec Lansing 639, they don't last long.

RE-20's are nearly traditional on bass drum. They work as well as any dynamic, and better than most.

To quote a famous British WW1 cartoon, "If yer knows of a better 'ole, go to it."

FLOOR TOM: Close dynamic again, and the RE-20 really shines on a tub. The 20 has a small pickup element resonance at about 700 Hz that makes it peculiarly suited to percussion work in general and drum heads in particular.

The mike is placed an inch off the tub's head at it's outside and pointed toward the middle of the drum kit.

This setup works nicely unless the tub has a bottom head. If it does, very close miking will pick up both heads, and since the bottom head can't possibly be matched to the top (it has no damper, and has never been played) the two will produce a dogfight and sound terrible.

The options are to back off the mike, or spend a great deal of time trying to get the two heads to work together, or remove the bottom head and the problem with it. The latter is best, (KISS) and most drummers will cooperate, as it's the nature of drummers to cooperate.

Full time studio drummers almost invariably carry one head on each tom, so the problem doesn't come up.

SNARE/HI HAT: That pair has always been a problem.

Normal mikes do a poor job of picking up the hi hat, and using two mikes puts them so close to each other as to make phase cancellation inevitable.

There is a solution available in the form of electret condenser mikes made as announcer's lavaliers.

One of these, EV's Co-94, works astonishingly well for both instruments, partly because it is a true omnidirectional and partly because the very small pickup element has a much higher mechanical slew rate than normal mikes.

In fact, it moves so fast that it picks up the real sound of the hi hat, which makes it something of a jaw dropper.

The 94 sounds a little thin at first earball, but since it feeds back through the control room glass at about 5 Hz under extreme gain, that's probably due to the extended top end.

On the down side, the thing's only about an inch long, and has no mount.

Mine's attached to a replacement portable radio whip antenna, which is handy for snaking it through the chromium jungle.

TOM TOMS: Almost any end fire condenser small enough to fit over a tom will work, and there doesn't seem to be much of difference between one and another.

Dealer's choice. Placement is two or three inches off the center side of the tom head pointed down at about 30 degrees and toward the ride or sock cymbal.

This placement allows a trick solution to miking those two instruments, which otherwise would have to be picked up at three or four feet to avoid proximity effect and wouldn't work anyway, as at those distances you lose too much top end.

A reasonably quick mike looking at the tom sees the big cymbals reflected off the head and, again, acts like a PZM. No proximity problems, and it eliminates a couple of channels as well.

The cymbals come through a trifle weak, but the drummer can correct that by hitting them a little harder, just as he does when he's working a big room.

Cymbals tend to drop dead in big rooms and drummers normally overplay them to compensate, so they're used to that.

So much for mikes and positions; Upward and awkward to panning, as shown in the illustration.

At one time the writer spent a good many years doing sessions one day and cutting lacquer masters on them the next and in common with other engineers with the same responsibilities, developed a number of recording stratagems to make the transfers quick, easy, and faithful to the original.

It's commonly known that keeping things in phase helps with the end product.

A rather more obscure but equally helpful technique is panning the instruments so that what the mixer hears is close to what he sees.

The writer has no clear idea as to how or why panning impacts on transfers, let alone on the mono sound, but in both cases the influence exists, and the transfer effects are not limited to lacquers.

They are equally clear in film work and appear, although to a lesser extent, on CD's.

Both the microphone position and panning parameters of this setup are arranged with the above factors in mind.

Most of the panning is obvious, but since there are no dedicated mikes on the big cymbals, a small trick used on them merits a little explanation.

The main pickup for each big cymbal is a bounce off the head of it's nearby tom tom, but there is also a degree of fallthrough on the floor tom and snare/ hihat mikes.

This fallthrough on mikes panned to the outside of the kit pulls the big cymbals toward them, and with a little 10 KHz boost on the tub mike, results in their appearance about halfway between the tom toms and the outside mikes on tub and snare right where you see them.

For lack of a better term I call that phantom panning, and despite the fall- through, it generates no transfer problems because the frequencies involved are very high, the signal rise times quite long, and the amount of fall- through fairly small.

In summation, by recognizing and encouraging the utilization of the unique skills of drummers, a mixer can use a very simple mike setup for drums which saves considerable time both in setting up the studio and in balancing a drum kit to say nothing of currying favor with the drummers. Useful stuff.