

## Make More Of Your Synths And Samplers



**You've got your synths and samplers, but here's some ways of maximising their potential**

What do you think Beethoven or Mozart would have come up with if they'd had sequencers and samplers? Ludwig V would probably be into hardcore techno (with a name change to Beethoven) and the fact he couldn't hear it would probably be an advantage. Mozart would definitely be into trip hop, spending his time in Goa whacked out on ketamine creating beautiful half-hour pieces inspired by sunrises.

An interesting thought but the point is that with the MIDI revolution you can now hear the sound picture as you are composing and get closer to expressing the pure idea in terms of both sound (timbrality) and tune (melody). This has led to sounds being as important as tunes and in many cases more so. No one has ever heard the original of any Mozart piece, simply a succession of cover versions by various conductors and orchestras. Nowadays, as a composer, you can let your original ideas be heard. But there are disadvantages to this. It establishes a definitive version first, making it hard for broad interpretations to be viewed with as much importance or validity.

But on the plus side at least it's killed off soul-less covers as well as encouraging people to be original and creative.

We've already looked at putting together an initial set-up of gear that makes noise and tried to focus intentions and ambitions. So now you have all the sound generating equipment in place but with no means of hearing it. Which leads us to sound processing and the heart of the studio: the mixing console.

### Making the mix

There are three considerations when deciding on a mixing desk: input channels, input channels and input channels. Basically, the more the better. Are you going to be multitrack recording? If you're just doing instrumental music with synths and samplers, can you get away without doing any recording apart from a stereo mix to DAT or some other medium? If that's the case, the mixing desk you buy can be simpler and cheaper, mixing down just to a stereo buss. But if you want vocals or acoustic playing you need some form of multitrack device and a desk that can do the necessary signal routing. With mixers it's a fact of life that you never have enough inputs.

When making a decision, count up all the outputs from the synths and samplers you have, considering whether you need all the sampler outputs connected or if you can get away with a stereo mix output and a couple of separates. Think about your plans for future purchases so you have the space to fit new instruments in, as and when you buy them. Consider returns from effects. Some desks have auxiliary inputs for reverbs but it's often better to have them returning down input channels for greater control. You also have to include the tape returns when you're mixing because they all need a separate channel. The total probably comes to about 168 so sit down and work out all the compromises you can make to bring it down to a price you can afford and a size that'll fit in your room.

EQ sections on budget desks are much of a muchness but a mix without it sounds horrifying. You might consider getting a good-quality stereo equaliser for your rack rather than splashing out on an expensive desk with top-notch EQ. You can use the rack unit while recording and, if necessary, things can be bounced through it and back on to your multitrack. Most desks these days have eight groups designed to marry up to the common eight-track recorders.

### Designer labels

What make? Mackie has long made a reliable, clean and quiet desk which you can expand with an extra 24-channel 'sidecar' when need be. I have a Mackie eight-buss which has been used for track laying on material as diverse as Gene, Man Made (ex Black Grape) and Tony Banks from Genesis. Behringer makes something similar but cheaper, though do be careful not to overload the delicate input amps and Soundcraft produces a variety of good value desks to fulfil every need.

If analogue desks aren't your scene, an eye should be kept on the impending flood of accessible digital desks. Yamaha has led the way with its groundbreaking 03D and 02R, and now the affordable 01V (£1,399) but the competition is catching up, having had the chance to analyse and refine the technology.

Features like on-board effects, moving fader automation and instant recall of desk settings will soon become everyday. Tascam, Mackie and Soundcraft have launched digital desks, Soundcraft's for as low as £3,000. With the right 'optional cards' these desks will talk fluently to the existing digital multitracks such as the ADAT and Tascam DA series.

#### Multiplicity of tracks

The choice of multitrack is even more daunting but you'd be a fool not to go digital. The quality is incomparable but there is a multitude to choose from. First of all dismiss anything that compresses the audio data. Data compression involves discarding digits deemed unnecessary in order to save on storage space and is, on the whole, unsuccessful.

And what about DATs?. The advantage of using tape is that it's a relatively cheap storage medium and somehow feels more substantial. It's also familiar and user-friendly but on the minus side tapes are delicate and prone to damage, especially on the earlier ADATs whose transport was borrowed from VHS recorders. The last thing you want is for the tape to be eaten having spent weeks recording, so with these older machines it's important to be able to make safety copies on a second machine (or borrow a mate's).

The newer ones are more reliable but it would worry me working without back-ups. The tape-based machines are pretty well all eight-tracks and the Tascam series is probably the best although the most expensive.

#### Definitely direct to disk

As the price of memory comes down and disks speed up, so direct-to-disk recording becomes more accessible. This is undoubtedly where the future lies and already there is a huge choice.

A big draw to this medium is the versatility. Audio data can be edited and manipulated to extremes. You can repeat sections of performance, reverse bits, cut out bad bits, delay one track against others, edit at waveform level... in fact, almost anything that comes to mind and it's all non-destructive. If you don't like it, hit the undo button. But do you go for a dedicated standalone unit or one incorporated into your computer system? The technology is still in its infancy so anything you buy will be superseded very quickly and be worth very much less than you paid for it.

It would seem to make sense to opt for a system that is expandable and upgradable, but often the upgrade paths are almost as expensive as buying new so it's not a strong argument. Just remember you're buying from dealers. Can you handle it? It's a slippery slope from floppies to hard disks.

Dedicated units will be easier to use at first but aren't so versatile as the software platforms for your computer and tend to be designed along the lines of tape machines which aren't fulfilling their potential. Once you've mastered the machine you might get a little frustrated with what you can't do. Waveform editing, albeit complex, is something to work towards. Being able to zoom in and see the sound becomes essential for precision editing. Not many standalone machines have it and if they do the screen tends to be a bit small to see what you're doing.

Synchronisation is a must. Locking digital machines together has to be precise otherwise all sorts of clicks and pitch changes start to happen. At some stage you are bound to want to lock your box to someone else's so make sure there is a 'word clock' in and out or at least a slot on the back for an optional sync board. Even though the price of memory is falling you'll still need a lot. Each track uses about 5Mb per minute and bear in mind you'll commonly do several takes of things.

Therefore a back-up medium is essential, even for machines that use removable hard disks such as the Jaz cartridge, and herein lies a perfect solution. Most hard-disk recorders have options for ADAT or TDIF (Tascam Digital Interfaces) connections so rather than getting a DAT streamer or other tape back-up system, spend a bit more and get an ADAT or Tascam DA38 or 88. You can record into the hard disk, edit and arrange the music as you want it and then transfer it to the DAT machine twice; one as master, the other as back-up. No quality is lost with digital transfer. Simply keep your DAT machine synched to the hard disk and you have a 16-track set-up with easy back-up.

A word about quality. Pretty well all the machines on the home market use CD-quality, that is 16-bit, processing with the audio being sampled 44,100 times a second (44.1kHz) or 48kHz. You've heard CDs and know they're alright but the industry is now getting excited about 24-bit processing and sampling rates of 96kHz which should become the future of sound. Of course, 24-bit takes up a lot more disk space than 16-bit and because the converters compromise quality more than anything else, either on the way in (analogue to digital) or on the way out (digital to analogue) or both, no two makes will sound the same.

#### Computer world

Computer-based hard-disk systems come in the form of soundcards that you slot into the back of your computer, or external hardware that connects up. Each use software to control the goings on. These systems are more versatile than their standalone counterparts and some have software revisions that improve the system. You can also incorporate the hard-disk recording capability into your MIDI sequencer environment using programmes such as Emagic's Logic Audio, Steinberg's Cubase or MotU's Digital Performer where MIDI tracks and audio tracks can sit side by side in the same window.

If you're desperate and you have a Mac, you don't actually need hardware. With any of the above programs you can input audio via the little stereo mini-jack on the back, record it on to your internal hard disk and monitor it back via the stereo mini-jack output. The quality is compromised but at least you can do it with little expense.

There are drawbacks of course. The initial steep learning curve is off-putting but worth it. Plus there are often problems getting it all to work together happily and crashes are fairly regular, usually to do with so many different bits of software written by different people from different companies. Finding one person to take responsibility for getting your system working is the worst problem, which is why it's always worth buying all your gear from the same dealer.

The most exciting side to computer-based systems is the expandability and potential. Plug-in processors broaden the capability of your set-up; you can insert these software effects units into the audio tracks to create some amazing sounds from simple delays and reverbs to modulators, resonant filters and distortion. Any changes you make to the effect can be recorded in real time and played back, as can any level changes or pans. Cubase VST is the most accessible for all this.

Your computer will become a virtual studio, mixing desk and all. You'd just have all your synths and samplers plugged directly into the A/D converters with a software patchbay to send them where you want. It's not far off but is the idea of looking at a screen non-stop really so appealing?

#### The listening room

Now you've got your sounds mixed and stored properly it's time to give some thought to the environment you're listening to them in. Although you probably don't have the time or money to work out the angles in the room, predict acoustic bounce or build an angled wall in the corner to stop those dreaded standing waves, it's easy to improve your room with a bit of common sense and a basic understanding of acoustic behaviour.

First thing to get right is the speaker position. Bass collects in corners which, far from being a problem, can be used to get a full balanced response. Put on some music you know well and move the speakers into or away from the corners. Some set-ups might be offset in the room so only one speaker is near a corner which will produce a slight stereo imbalance; but as bottom-end isn't very directional you can get away with it.

Right in the corner the sound will boom too much and be muddy and ill-defined. Away from the corner a small speaker will be top heavy by its design. Somewhere in between is a 'sweet spot' where the bottom sounds weighty but not clouded out and the definition is clear.

What the speakers are standing on can also be used to advantage, especially if you have a general work surface at table height with all your gear on and space underneath it. The speakers will excite the space below and cause bottom end booming. This may be too much but some excitation might be useful in a sub-woofer type way. Isolating the speakers from the surface bit by bit, using rubber mats and speaker stands, might be a good way of adding an extra boom to your monitoring.

Now listen for other problems which come in the form of destructive reflections. Square rooms aren't the best shape because frequencies whose wavelengths match the length, width or height of the room get a momentum going and bounce back and forth. The best way to handle this is by diffusion, scattering the soundwaves' energy rather than letting it bounce back to the wall it came from.

Don't laugh but the handiest and cheapest diffuser is an egg box. Get a load of large egg trays, slap them on the offending wall and cover them with a cotton drape. It should make a difference but what it might do is uncover another lighter flutter somewhere else. Test it out by clapping in the room. If you still hear a fluttery echo, keep going till the echo stops... or you run out of egg trays.

Mid and high frequency early reflections cause the worst problem in terms of general monitor clutter.

They damage definition and clarity and tend to come from side walls and ceilings but can come from any hard surface close to the listening position. Tackle this with absorption. For heavy absorption use stuffed old mattresses. Lighter but probably more practical is to hang heavy rugs or blankets a couple of inches away from

the wall by attaching them to a piece of timber mounted on the wall. If you want to spend a bit of money The Noise Control Centre (Tel: 01664 60203) make a specialised acoustic foam that has amazing absorption properties to counter early reflections. I've used it to great effect in my studio mounted in a wooden frame, covered in a light material and attached to walls and ceilings. Remember though that too much absorption will make your room sound dead and dull so do it bit by bit, listening to music as you go.

Next time, whenever that may be, I'll be looking at useful outboard gear and ways of getting the best out of it. In the meantime, sort out those walls.

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