No strings attached

Steven Helstrip and Rob Young continue their teach-in on realistic MIDI recordings by showing you how, with patience, you can create an authentic-sounding rhythm guitar part.

However hot your keyboard-playing skills, the rhythm guitar is one of those instruments that cannot merely be recorded in real time from a keyboard and considered as finished. Editing will always be needed to create an authentic sound, almost to the point of dumping the keyboard and step-recording the parts from scratch. But there's no great mystery or complication to creating realistic rhythm guitar parts: all it takes is patience, persistence and some knowledge of how the instrument is played.

With any rhythm guitar part it helps to have a few bars of drums and bass already recorded (when we start editing the timing of the notes, it's hard to tell how well it's going against a plain metronome beat).
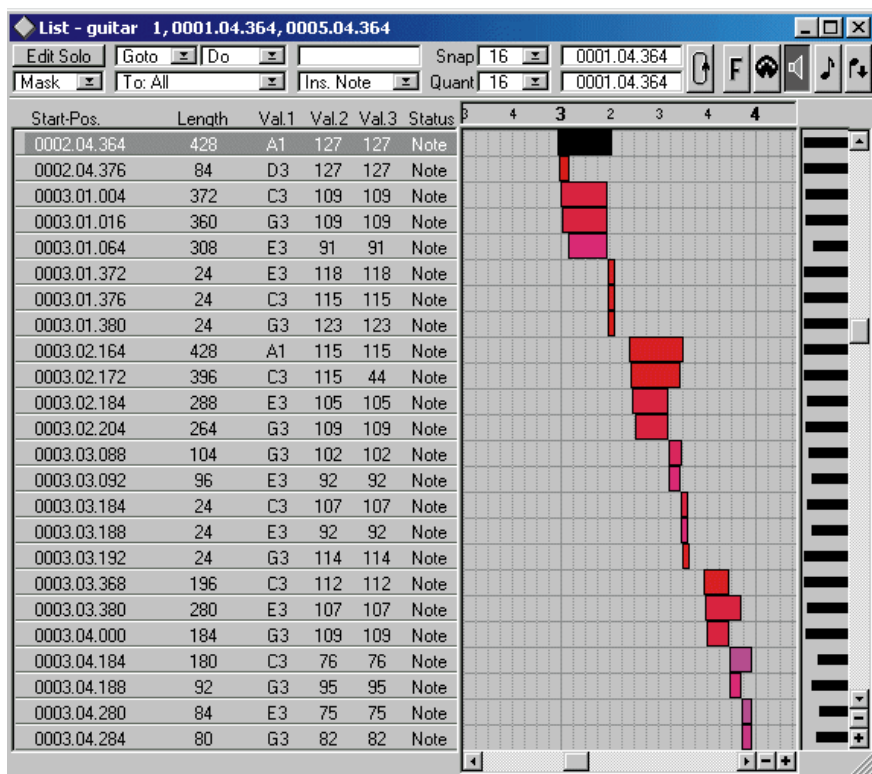
We're concentrating on creating a simple rhythm that will sound best using an acoustic or a clean electric guitar patch (try patch 26 if you have a General MIDI sound source). All we're aiming for is a straight eight-beat rhythm (eight quavers on a chord of E major).

This is where some knowledge of string tunings comes in handy: guitar strings are tuned to E1, A1, D2, G2, B2, E3 from lowest to highest, assuming that your sequencer refers to Middle C as C3. Each of these strings can be raised in pitch by placing fingers on frets, so our E chord would consist of the notes E1, B1, E2, G#2, B2, E3.

How to do it

1. Set up your guitar patch and cue up to record a single bar. Don't worry about note velocities, feel, or trying to "sound like a guitar" as you play, but try to play all six notes on each quaver chord. You probably won't keep all these notes but it's quicker to delete the ones you don't want later on,

List - guitar 1,0001.04.364, 0005.04.364

Start-Pos.	Length	Val.1	Val.2	Val.3	Status
0002.04.364	428	A1	127	127	Note
0002.04.376	84	D3	127	127	Note
0003.01.004	372	C3	109	109	Note
0003.01.016	360	G3	109	109	Note
0003.01.064	308	E3	91	91	Note
0003.01.372	24	E3	118	118	Note
0003.01.376	24	C3	115	115	Note
0003.01.380	24	G3	123	123	Note
0003.02.164	428	A1	115	115	Note
0003.02.172	396	C3	115	44	Note
0003.02.184	288	E3	105	105	Note
0003.02.204	264	G3	109	109	Note
0003.03.088	104	G3	102	102	Note
0003.03.092	96	E3	92	92	Note
0003.03.184	24	C3	107	107	Note
0003.03.188	24	E3	92	92	Note
0003.03.192	24	G3	114	114	Note
0003.03.368	196	C3	112	112	Note
0003.03.380	280	E3	107	107	Note
0003.04.000	184	G3	109	109	Note
0003.04.184	180	C3	76	76	Note
0003.04.188	92	G3	95	95	Note
0003.04.280	84	E3	75	75	Note
0003.04.284	80	G3	82	82	Note

Above A typical single-bar rhythm guitar part in Cubase's list editor

Left Chained single-bar guitar parts on channels 1 and 3, each starting on tick 364

rather than insert the missing ones.
2. Move the single-bar part you've just created so that it starts on about tick 364 of the previous bar (assuming a sequencer timebase of 382). This is very much a rule of thumb, and you'll want to vary it according to the style and tempo of the song, but a guitar part will rarely sound good starting on the first tick of the bar.
3. Next, we need to create the alternate upward and downward strums. Accented strums are downward, which means that the first, third, fifth and seventh chords we recorded will play the notes in order from E1 up to E3, and those in between from E3 down to E1.

Another two rules of thumb: remove the three lowest notes from the upward strums and the two lowest from the downward strums that occur on the second and fourth beats of the bar. Place the notes of each chord in the right order, four ticks apart with the downward strums beginning on tick 364 and the upward strums beginning a little later, so that the final note of each strum

occurs somewhere between tick 380 and tick 4.
4. The next operation requires patience and persistence. Starting from the beginning of the bar, stretch the length of each note so that it ends a tick or so before the next note of that pitch occurs.

If two notes of the same pitch overlap, one or both of the notes will fail to sound; but if the gap between them is too great, the realism will suffer. This is a job for the list editor (Ctrl+G in Cubase) and a mathematical mind. When you come to the

Tip of the month

How many times do you begin a new MIDI arrangement with a four-on-the-floor kick pattern and then lay down a snare on beats two and four? Why not create a default template with the patterns already in place? And there's no need to stop there: label your tracks (bass, hi-hats) and set up your outputs for the most frequently-used instruments.

Cue for a question

Q I'm sure I'm not the first to gripe about this and will probably not be the last, but it is nevertheless galling. Having put together a shiny new system based on AMD's K6-233 processor, I thought I would treat it to a half-decent sound card rather than the cheap no-name FM cards I have used in the past. So in goes an AWE-64 Value, load the attendant software… oh dear, what's this? Wavesynth/WG apparently requires a minimum of Pentium 90 and 8Mb of RAM and will not install.

Forgive me, but I thought a K6-233 and 32Mb of SDRAM were somewhat more capable than a Pentium 90 with 8Mb RAM? Apparently not. Yes, the small print on the box does state the minimum requirements as "genuine INTEL Pentium 90 or higher", but when buying the sensibly-priced way

(i.e. direct) one doesn't have the luxury of perusing the packaging beforehand.

Perhaps I have been lucky in the past, but in using a multitude of different programs over the years on a variety of Intel and non-Intel based machines, I have never come across anything that refused to run because the label on the processor didn't start with an "I". Is Creative Labs now so dominant that it can afford to risk alienating the growing number of owners of non-Intel PCs? Do you know of a workaround to this problem? Or failing that, can you suggest any cheap alternative software offering similar functionality?

brucep@lapwingcom.demon.co.uk

A You are right to state that you are not the first to come across this problem, but with any luck you may be one of the

last since Creative Labs has finally come up with a fix. The file you require, wswg95up.exe, can be obtained from Creative's home page at www.creaf.com.

There are also a number of so-called soft-synths you may want to check out to provide a further range of instruments. The best site I have come across is www.interlog.com/~willwong/softsynths/. Here you can find Yamaha's excellent S-YXG50 which provides up to 128 voices of editable XG sounds and is available on a 60-day trial basis.

Look out for Audio Compositor on our next issue's cover-mounted CD (sorry, we couldn't include it on this one because of space constraints). This is another popular soft-synth that behaves much like a sampler and supports E-MU's SoundFont file format to provide you with up to six more voices, or 32 when you register with $40.

Micro Wave It

If you're sick and tired of the dull presets on your AWE-32/64 and want to inject some life into your mixes, you'll probably want to get your hands on this new CD crammed with ready-to-play SoundFonts. Dubbed as the essential SoundBlaster companion, Micro Wave It brings you more than 100 up-to-the-minute sound banks, providing a wide range of fresh synth pads, basses, drum kits and classical instruments.

Where appropriate, banks have been set up to provide a range of dry and effected patches, which are selectable via a simple program change. This is a nice idea, as a heavily-chorused electric piano can sound quite different to the source sample. Given the low cost of this CD, I was surprised to find that many of the patches have been multi-sampled to offer greater realism. Solo instruments, such as woodwind, come across really well because of this. There are six drum kits in the package, including banks for pop, garage, and one that is intriguingly entitled "Great". To ensure the patches will load into 512Kb, percussion samples have been set up into their own banks. Every sample has been provided in sbk, sf2 and wav format, so even if you don't own an AWE card you can still use the sounds with a soft synth, like Audio Compositor.

By the time you read this, an enhanced Wave It CD-ROM will be available which includes 25

drum kits and improved versions of all sounds, enabling greater dynamics and expression for users with 2Mb RAM or more. A new SoundFont editor featuring global editing and automatic pitch recognition will be included. Watch this space.

■ **Price** Micro Wave It £19.95 (Wave It Gold £59.95)
Contact Time + Space 0800 614822
Rating ★★★★★

last strum of the bar, think about the chord and voicing of the next bar: if this is going to be another chord of E you will simply copy the same bar, so stretch those final notes accordingly. If there is to be a change of chord, you would commonly silence all strings except the open ones (in this case, silence the G#) for 20-40 ticks at the end of the bar while the guitarist moves his hand.

5. Finally, set the velocities of the notes. This is a matter of experimentation, but yet another rule of thumb dictates that upward strums will be quieter than downward strums and each successive note of a strum will be a little quieter than the last. It can be effective to increase the velocity of the highest note of a downward strum.

6. The final job, using this bar as a template, is to chain bars together to build a complete guitar track, editing the chords and voicings as necessary. The changes of chord will help to disguise the fact that you have chained identical parts, but always try to alter velocities here and there, and add or remove strums and single notes to create a more realistic "live" effect.

PCW Contacts

Steven Helstrip and **Rob Young** can be contacted at the usual *PCW* address (p12) or via email at **sound@pcw.co.uk**

Faking it

It's not easy to make MIDI recordings sound like they're being played by real musicians, but Steven Helstrip and Rob Young can show you how, kicking off this month with the drums.

One of the most difficult things to accomplish in MIDI programming is disguising the fact that you've used MIDI at all. The problem is that MIDI, along with all the software and hardware that goes with it, is just *too* easy to use: you pick a synth patch, record a few bars and you've got a brass part, a string arrangement or a guitar solo. Or have you?

Actually, you probably haven't. A lot of the time, what you've really got is yet another keyboard line but this one has a similar sound to a guitar. In short, it doesn't sound like a guitar solo; it sounds like MIDI programming.

The battle facing the MIDI programmer is to make the result sound as if it were recorded by a real guitarist (or horn player, or violin squad), and there are two things that can help in this department.

First, you need sounds with some semblance of realism about them. If your wavetable sound card makes a noise like a strangled duck whichever patch you choose, no amount of editing can do anything for it. Second, it helps to know exactly how the real instrument is played, and how, in MIDI terms, you can fake it. Over the coming months, we'll be looking at "faking it" with various types of instrument. This month, we begin with drum parts.
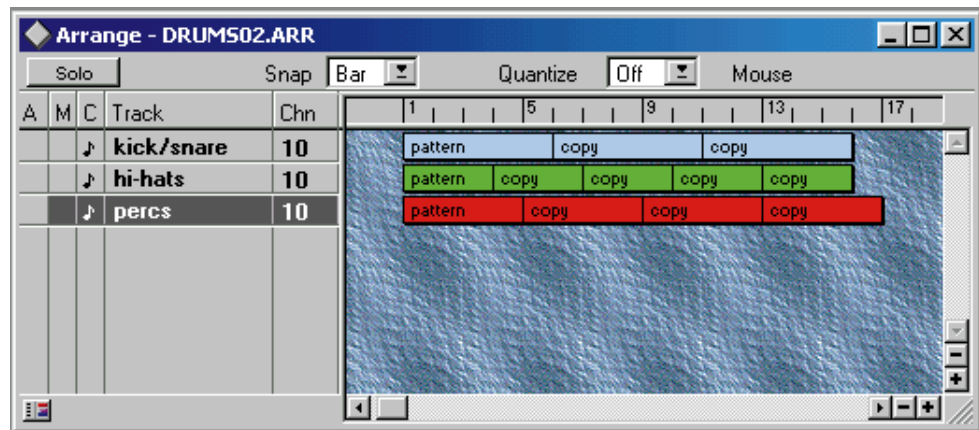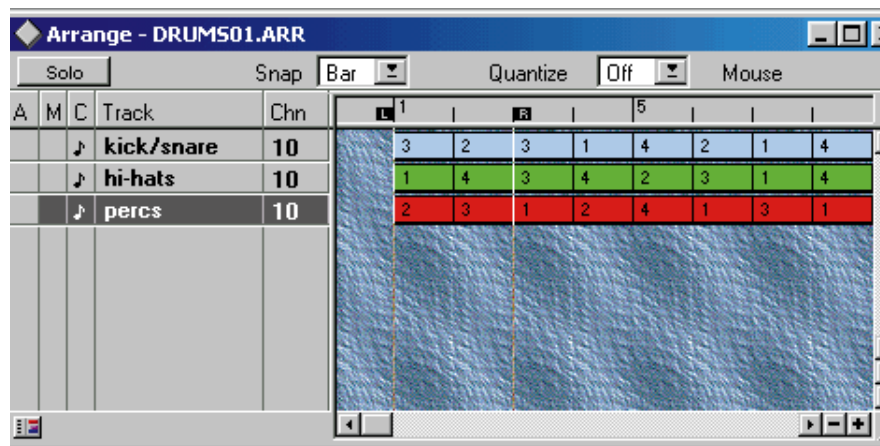
Fig 1 (above) Create several one-bar drum parts and chain them randomly, for constant variation

Fig 2 (left) Chain phrases of different lengths to make a non-repeating 15-bar drum part

Avoiding the humdrum

The big giveaway in sequenced drumming is the one-bar part, repeated *ad nauseam*. As a weapon of torture it's pretty effective, but it doesn't come any closer to being music than the metronome does. With only a little effort, it's possible to copy and chain parts while still maintaining some variation.

One way of doing this is to create several one-bar parts for kick/snare, hi-hats and latin percussion. Make subtle changes to each of these parts by altering velocities, positions and rhythms, and chain them in a random order (Fig 1).

A similar method is to spend some time creating a credible five-bar kick/snare pattern and a three-bar hi-hat pattern, and chain those to effectively give a 15-bar drum part (Fig 2). Tag on a drum fill in bar 16, and you're ready for verse two.

Avoiding the robotic, typically MIDI sound of drum parts makes a huge difference to a finished song, so it's well worth having a careful listen

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Utilities you can't do without

These are some of the hottest sound utilities around. You can find all of them on our cover-mounted CD-ROM this month, in hands\sound. If you have written, or know of any other, useful utilities please get in touch with us (*see "PCW Contacts", p296*).

XG Edit
Yamaha's DB50XG WaveTable daughterboard has been kicking around for a couple of years now, and although technology waits for no-one, there still isn't a better synth you can pop into your PC (or at least one that exists as a piece of hardware). The preset patches, or instruments, are not going to win any prizes, but once you start to tweak the filter and apply some of the outrageous built-in effects, you really begin to have some fun. That's were XG Edit comes in.

Now at version 2 (endorsed by Yamaha), XG Edit provides an intuitive and sexy-looking interface to the XG chipset. At the end of the day, it means that editing patches and setting up song parameters becomes a breeze — almost enjoyable. The true power of this utility comes to light when used alongside a sequencer to record filter sweeps and to adjust other parameters like envelope decay. To do this, you'll need a multi-client MIDI driver, like Hubi's Loopback Device.
■ **Registration price: £25. Contact: Sound Solutions 01403 732606**

Hubi's Loopback Device (HLD)
This consists of two utilities, a MIDI-thru program and a multi-client MIDI device driver. The latter provides up to four virtual MIDI ports which you can use to route time code between applications and even send MIDI output from one application to the input of another. HLD also enables multiple programs to "share" the same MIDI port. Virtual ports can be renamed. The MIDI-thru program is really handy when all you want to do is play the sounds on your sound card, or get to a synth elsewhere in your setup. The program simply appears on the task bar and is activated with a single right click. A transformation utility also enables you to convert MIDI messages. An example would be modulation to AWE-32 filter cut-off.
■ **HLD is freeware**
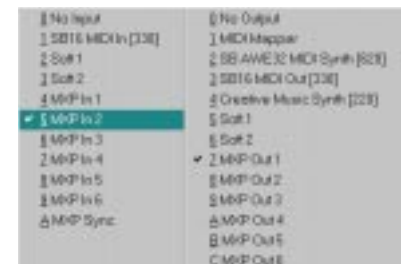
Hubi's Joystick-to-MIDI converter
Here's a beautifully simple program that needs little explanation. But we will say it's great fun to try and offers a "different" way to program fades and so on. When used with HLD, your joystick movements can be routed directly into your sequencer.
■ **Hubi's Joystick-to-MIDI converter is freeware**

BPM
Here's a utility we couldn't live without. Simply enter a tempo, and it works out six different delay settings in milliseconds. There's not much more to say than that, other than why doesn't it work out triplet values?
■ **BPM is freeware**

Seq-303
If ReBirth is a little beyond your reach [see page 296], check out the next best thing: Seq-303. This is an analogue-style sequencer that enables you to create excellent sequences by setting sliders for 16 stages, or notes. You can apply portamento, or glide, between individual notes and set velocity, pan and reverb depth for each. All you need to use it is a sound card and a little imagination. Seq-303 can be synchronised to another application and up to 16 sequences can be stored per song.
■ **Registration price: $34.95. Contact register@shareit.com**

Drum programming tip kit

1. Record kick, snare and toms together on one track; hi-hats and crash cymbals on another. Use a separate track for each additional instrument (tambourine, claps, and so on).
2. If your kit offers a choice of ride and crash cymbals, as the General MIDI kit does, alternate between them to add variety.
3. Remember, drum-sounds are triggers which do not rely on note-length. Shorten all your note-lengths to about four ticks to prevent the same sound being re-triggered while it's still sounding.
4. To record drum or cymbal rolls from a keyboard, use two similar sounds for the recording and then edit the note-numbers of the "wrong" notes and shorten the lengths to prevent overlapping. Never, ever, use a sequencer "Fill" function to create a drum roll unless you're playing for laughs.
5. You'll usually get more colour from a drum part by exaggerating velocity differences between accented and unaccented notes, rather than by aiming for subtlety.

Fig 3 Here's the new look of Rebirth. You can download the demo from www. propellerheads.se

when the sequence is almost finished, and adding extra touches of variation. Dropping in an extra hi-hat here and there, and changing the velocity of a few kick and snare hits, can work wonders. While you're doing that, pay special attention to fills: good programming can be easily spoilt if the same drum fill crops up eight times in the tune.

Drummers have their limits

There's more to MIDI drum parts than variation. Whatever the evidence to the contrary, drummers *are* humans: they're as poorly served in the limb department as the rest of us, so there are limits to the number of kit-instruments they can hit at once! A real drummer can't perform a dazzling round-the-kit fill *and* keep that same semiquaver hi-hat part going. By the same token, the move from crash cymbal back to hi-hat might take one beat or more.

There's the aspect of human error to remember. A drummer might intend to play snare hits at the same volume, or kick and tom-tom at the same time, but it won't always happen. This is where sequencers offer a range of ways to remove all life from a drum part: full quantise can be especially deadly, along with "Fix" functions that can quickly assign every snare hit a velocity of 95. In drum programming, there's really no substitute for getting in among the notes and making each one do what you want.
■ *See our drums "tip kit", above*.

ReBirth, reborn

If you haven't been blown away by ReBirth, you soon will, as version 1.5 is on its way (Fig 3). What's in it? Well, a new version only ever means one thing — MIDI control. And not just for playing notes: knobs, faders and buttons can now be controlled via MIDI, either from an external device like a synth, or from any sequencing package.

MIDI control has always been on the cards and should have been implemented in version 1, which would have meant waiting a few more weeks for the release, but who's complaining? This latest version incorporates a new effect called the Pattern Controlled Filter, or PCF. Essentially, this enables you to create vocoder-like effects and LFO sweeps. The PCF can be used alongside each 303 and 808 emulator. Other features include better sync options and a couple of LEDs on the transport bar. These make ReBirth look a bit sexier and also happen to indicate sync MIDI activity.

PCW Contacts

Steven Helstrip and **Rob Young** can be contacted at the usual *PCW* address (p12) or via email at **sound@pcw.co.uk**

ReBirth 1.5 from Harman Audio 0181 207 5050

In good voices

Sick as a parrot when you hit polyphony problems? Steven Helstrip and Rob Young explain how to avoid them and pass on some valuable tips so that you, too, can have a pretty poly.

We're going to kick off this month's column with ways to tackle polyphony problems. Like computer memory, you can never have enough voices, especially if you're limited to using just a sound card. Synths, sound cards and modules have a maximum number of notes they can play back at once: try to squeeze one more note out of the instrument and something has to give. It's always irritating when this happens, but with a bit of forward planning you can often prevent the feared "dropped-note syndrome".

Let's run through the methods used by MIDI devices to handle polyphony. The first point to make is that instruments don't measure polyphony in notes. A device that claims to be 32-note polyphonic is actually 32-*voice* polyphonic.

Confused yet? Let's explain. Some of the sounds you use, including percussion on channel 10, only require a single voice to produce a note. But other "layered" instruments, such as pianos and strings, may take two or more. So if you create a sequence built entirely on dual-voice sounds, your maximum polyphony has just been cut in half!

It's well worth having a rummage around your user manuals to find out which sounds are greediest for voices, and bear the facts in mind when you choose patches for a particular sequence.

It is also worth knowing how your device reacts when you try to squeeze too many voices out of it. Many devices use a system of channel priorities where channel 10 (which is usually the drums channel) has maximum priority in times of crisis, followed by channels 1, 2, and so on to 16. To reclaim enough voices for the notes you are trying to play, a device will silence the earliest-sounding notes from channels with lesser priority.

It helps to keep this system in mind when you choose channels for each instrument. For example, a solo instrument can usually be given a lower channel priority than a part playing chords. Similarly, if a part will consist of fairly short notes or a fast-moving line, it's a better candidate for a low-priority channel than a legato string line, where a stolen voice at the wrong moment would stick out like a banana in tight pants.

Don't lose your voice
If you use Roland GS or Yamaha XG instruments, you'll find the word "voices" substituted for "partials" or "elements", but the meaning is the same. These instruments use a nifty system that lets you reserve a number of voices for particular channels. In effect, this means you're setting your own channel priorities. For example, if you know that channel 6 will use a single-voice pad sound playing three-note chords, you can reserve three voices for that channel and know that your pad part is reasonably safe. The bad news is that to save these reserve settings in your file you'll usually have to use System Exclusive, which calls for some quality time spent in the nether reaches of your manual.

You will find some of the most useful polyphony-saving tips alongside, but here is the inescapable conclusion: if you have two devices, you've got roughly double the polyphony! A sequencer equipped with two MIDI interfaces can address both devices independently too, enabling you to use up to a maximum of 32 channels. If your sequencer can't do this, you can still get at that extra polyphony: chain the two devices together, and then mute channels on either
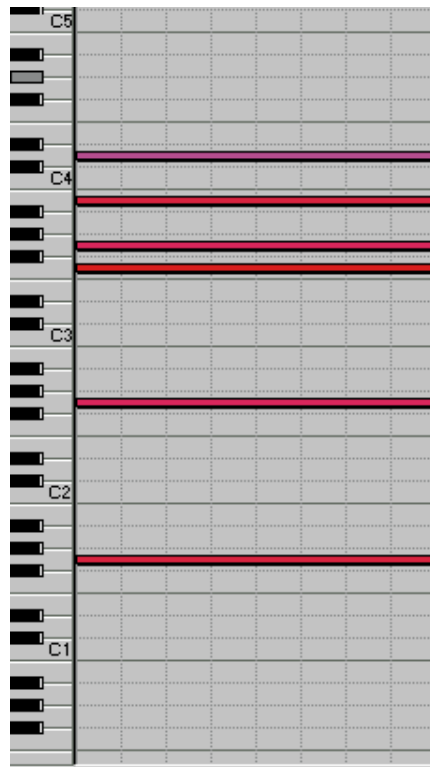
Fig 1 (top) shows the chord G7 in standard notation and **Fig 2 (above)** as it would appear in the piano roll editor
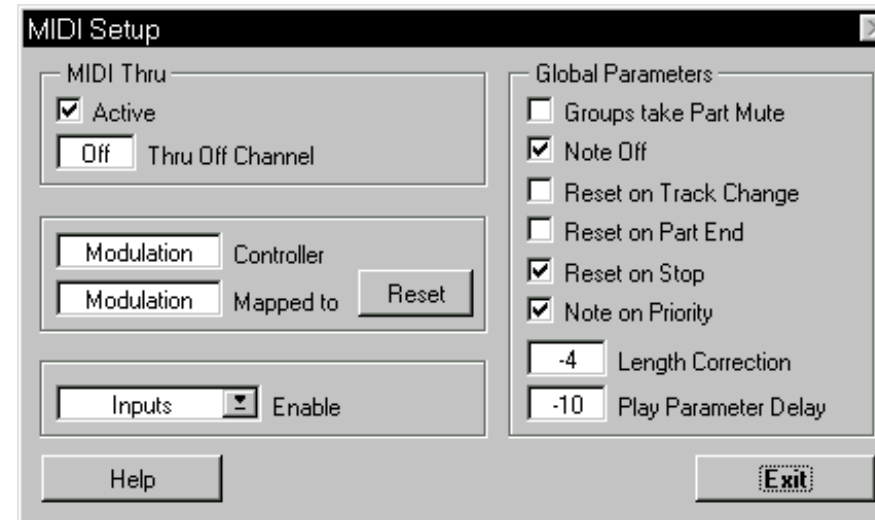
Fig 3 Note overlaps can sometimes be missed. Cubase provides a note length correction feature (see "Ten Polyphony Tips", below)

device so that each channel number is active on only one device. All your data will then be passed to both devices, but a channel's notes will be played only on the device that has that channel active. With a bit more ferreting around in the manuals you may be able to include these channel-mutes in your file as SysEx events. If you can't do that, make sure you note which channels are muted on each device so that you can set everything up the same way when you want to replay the file in future.

Ten polyphony tips
1. Avoid using the sustain pedal on a dual- or multiple-voice sound if you're hoping to include more instruments in the sequence.
2. If you create a delay track (see September's column), place it on a minimum-priority channel: if an occasional note is sacrificed, it will barely be noticeable.
3. Pad sounds often use multiple voices, or partials. Unless a pad is dominant in the mix, quantize it fully, move the entire track a few ticks earlier, then shorten notes to remove any overlaps at the chord changes.
4. Remember that some sounds have a long release phase: although notes don't appear to overlap in an editor, that release phase may still be using valuable voices long after the note-off.
5. Pay attention to drum tracks. Because channel 10 has maximum priority, there may be several inaudible sounds (hi-hat, tambourine, etc) playing under that crash cymbal, stealing voices needed elsewhere.
6. Avoid over-quantization. MIDI traffic is usually greatest at the beginning of bars and if you quantize everything strongly, that means the first tick of the bar. Let events

MIDI tip of the month

Effective MIDI mixing often comes from exaggerating differences in settings. For example, if a sound needs a low reverb setting, give it 15 not 40. If a non-accented hi-hat note needs to be quieter, try taking off 30 rather than ten. Making bold use of the full 128-point range of MIDI controllers and velocity can do wonders for even the most basic MIDI sequence.

straddle the bar line to help the feel.
7. Be more economical with chords in problem areas. Figs 1 & 2 show the chord G7 in both standard notation and as it would appear in a piano roll editor which happens to be playing back on a dual-voice piano patch. As there are six notes in the chord, 12 voices will be needed.

Although the voicing of the chord is more or less standard, not all the notes are necessary. So which notes don't we need? To begin with, the root (G) is being played three times, therefore G2 and G3 can go straight away, freeing up four voices. Chances are that the bass, or other synth part, will also be playing a G, so consider taking out G2 if need be, leaving just three notes in the chord; the third, fifth and the seventh notes.
8. Most chords can be stripped back in this way. However, be sure to leave in the seventh if applicable and especially the third, as this determines whether the chord is major or minor.
9. If some notes are still not getting through, it could be down to note overlaps when two identical notes follow. What happens is that the note-off message from the first note is

p298 ➢

Banging on about drums — Beat It!

The real point of this book is to help you learn how to play the drums, whether they're for real or exist as a bunch of samples spread out across a keyboard. Written by what is described as one of the UK's top MIDI programming teams (Heavenly Music) Beat It! covers just about every musical style this century has seen, from jazz through to current dance-floor grooves.

Over 200 patterns are detailed and presented in grid notation throughout the book. The examples are also supplied as MIDI files on the accompanying free floppy disc, enabling them to be heard, studied and even incorporated within your own tunes.

If you have a graphical sequencer, the disc alone would probably work just as well on its own; other than describing what each instrument is doing (playing quavers, etc) little else is put forward by the authors. It would have been nice to see additional tips, such as how to create realistic drum rolls; after all, this is one of the first exercises you learn as a drummer. It would also have been useful to see rhythms with a triplet, or 12/8 feel printed on a triplet grid, instead of straight semi-quavers, or 16s.

■ **Beat It**
Price £11.95
Contact PC Publishing 01732 770893
Rating ★★
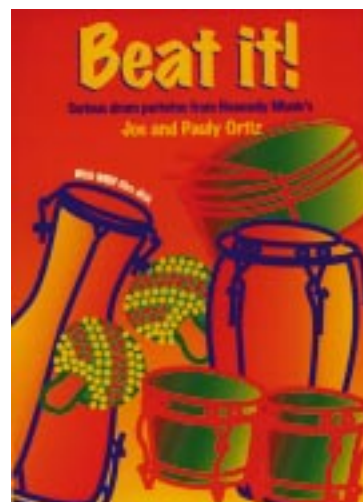
Total Control X-FX

This is intended for anyone who works with sound in games and film post-production. It contains all the sounds and atmospheres that are really expensive, if not impossible, to make yourself without help from the sub-sonic producing capabilities of the Stealth Bomber. A ton of weapons from Terminator II wouldn't have gone amiss either in the production of this stunning sci-fi FX library.

The disc is well structured into sound-element categories such as hydraulic doors, explosions, electrical switches and alarms, and warnings. The middle portion of the disc provides all manner of interior atmospheres, machines and space environments, before going on to two tracks of seriously speaker-threatening subfrequent, pulsating drones — you know the sort of thing.

The final section offers a rocket-fuelled engine construction kit, consisting of engine start-ups, shut-downs, continuous power, thrusts and all permutations in between.

The effects are very natural-sounding. And because they are not drenched with reverb to make them sound bigger, they are easy to handle in a mix. So if you need to energise your rocket ships and get a hold of the bursting explosions from the big-time movies, look no further. Ten out of ten for production and diversity of effects.

■ **Total Control X-FX**
Price £59.95 **Contact** Time + Space 01837 841100
Rating ★★★★★

sent immediately after the note-on from the second; therefore the second note does not sound. This can sometimes go unmissed and can be corrected by quantising note lengths. Cubase provides a note length correction feature that leaves a short gap between two notes of the same pitch. This can be found in the Options/MIDI Setup dialog panel .

10. One final gremlin to be aware of is when you have a double note situation; although you can see the correct-length note in your editor, there could well be a much shorter note hidden under it that note-offs prematurely.

PCW Contacts

Steven Helstrip and **Rob Young** can be contacted at the usual *PCW* address or via email at **sound@pcw.co.uk**.

Not fade away

Steven Helstrip and Rob Young "tell you how it's gonna be…" easy to create fades and sweeps. They round off their mini-series of MIDI programming tricks, and have an AWE64 to give away.

This month we'll be looking at ways to create fades and sweeps and, although you might not class these as "effects" at first glance — after all, a steady hand on the fader can easily create an adequate fade — there's more to them than is at first apparent.

The Control Changes we're interested in for these effects are CC11 (expression) and CC10 (pan). You might remember, from our August column, that your editing life will be much easier if you use CC11 to control volume changes via a file, and just place a single CC7 (Main Volume) at the start of each track to act as a master control. So,

Fade tips

■ Try to record continuous data after the notes, and on a separate track. This way, if the fade is perfectly executed but its position isn't right, you can simply move the part around until it works. It also gives you the opportunity to copy the fade part for re-use.

■ When programming a fade-out at the end of a song, make sure the parts fade cleanly. Some sounds will be more prominent than others (particularly those with chorus added) so you might need to fade them out a little sooner. For the final fade-out, it is always best to record a single, clean fade and copy it to the required positions for each channel.

■ If you fade out at the end of a file, make sure you return all tracks to 11:127 as the last event. That way, there's no danger of the next file you try to play being silent. (Keep this in mind for resetting pitch bend and other controls at the end of a file, too.)

the first thing to do when recording expression fades or pan sweeps is to make

sure that you really are recording the correct controller events.

If you use Cubase, this is a doddle: go to Options, MIDI Setup and you'll see the dialog shown in Fig 1. Right-click inside the box labelled Controller until MainVolume appears, then right-click the box below and select the controller to which all CC7 events should be converted. If your sequencer doesn't offer this nifty feature, you may be able to remap the controllers on your keyboard, but remember to reset them when you've finished if you use the same keyboard for playing live!

The actual recording of a fade or a sweep is simple. The trouble with recording continuous controllers in real time like this, though, is that bucketloads of unnecessary data is recorded, particularly if you use a high-resolution sequencer like Cubase.

To keep your files squeaky clean, carry out these two small operations. First, go to Cubase's Function menu and choose Reduce Cont Data. Don't let this make you nervous; you'll be amazed at how few events are needed to create a smooth effect. Second, check the end-point of the chord you faded and remove any events coming after it. This is best carried out in the list edit

Fig 1 It only takes a couple of clicks to remap controllers in Cubase
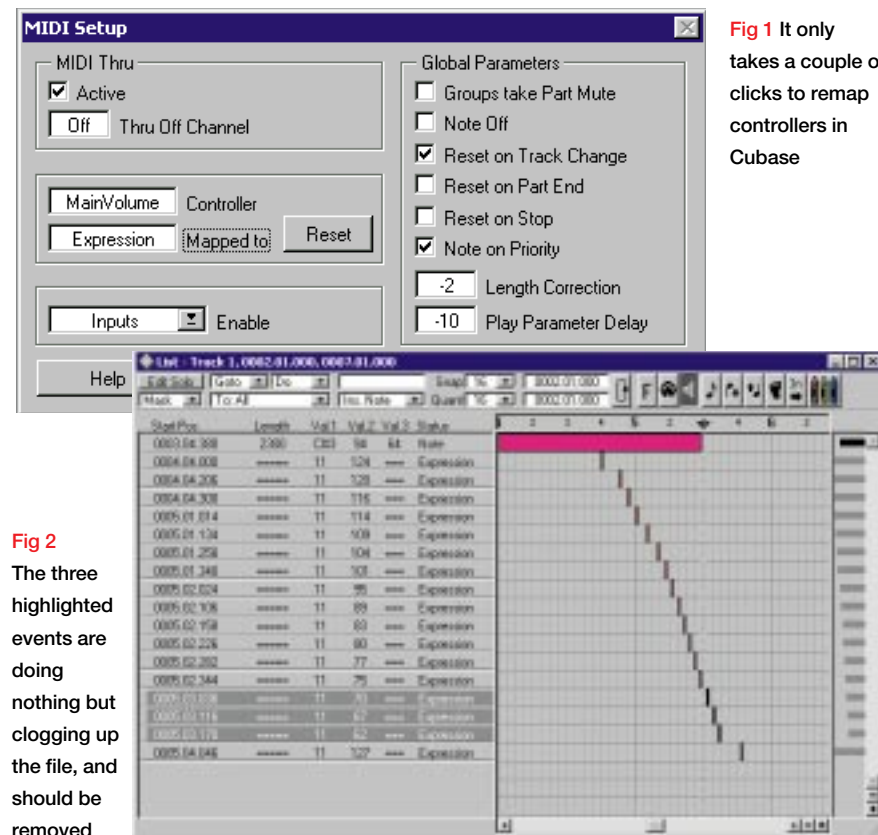
Fig 2 The three highlighted events are doing nothing but clogging up the file, and should be removed

F.A.S.T. Animation

Just when you thought there was a sampling CD to cater for every musical occasion, along comes something completely new. Well, almost.

Remember, back in 1991, when TV's Tomorrow's World teamed up with BBC Radio 1 to demonstrate 3D audio? With nothing more than a standard stereo system, viewers and, of course, listeners were amazed to hear the trumpets from a specially re-mixed version of the Tomorrow's World theme tune being played from behind them. The strings section could well have been sitting in their neighbour's garden, and even the percussion was positioned to fool the ear into thinking it was coming from anywhere but from the two speakers in front of you. Months later, the BBC released a follow-up CD with more 3D sound-bites. Now, six years later, Ueberschall has released another.

Created using Roland Sound Space technology (RSS), Animation is the first 3D audio CD designed specially for sampling purposes. This new genre of sampling has been nicknamed FAST (Future Audio Sampling Technology). Track 1 demonstrates what's in store for the next 70 minutes: bringing space ships, trains and a myriad of sci-fi effects right into your living room. When sitting directly between the speakers to make up an equilateral triangle, it is difficult not to be impressed by the vastness of the "beyond stereo" range. The majority of effects are based on so-called space-ship fly-bys, which begin to your right and somehow pass through you to eventually disappear to the left. Use of the Doppler effect is prevalent on this CD to further enhance the 3D experience. This further fools the ear into thinking that something really is flying past.

The disc is categorised into several science fiction-related topics: Alien Worlds, Pyscho Encounter and Space Cars are just three. But when futuristic space vehicles aren't flying by, what can you expect to hear? Many of the effects have been created from what sounds like analogue synths as well as natural sounds like running water. Heavily effected and disguised, the sounds are difficult to describe other than effects that would have you believe they are flying around your home. Sometimes they're behind you, others beneath you, and occasionally it's just impossible to tell.

Producers of ambient music and soundtracks for games and sci-fi films would find a lot to get excited about on this CD. Otherwise, £60 might just be a touch over the top to pay out for a product with an experimental edge.

Competition: Win an AWE64 Gold sound card

Creative has just given us an AWE64 Gold to give away. With 64 voices (32 in hardware and 32 in software) and 4Mb sampling RAM, this card could be the answer to every musician's dream, providing stacks of power to make music on your PC. With low noise output and the integration of Acoustic Physical Modelling, there's no shortage of the kind of high-end features you'd expect to find only on expensive workstations.

The AWE64 Gold is supplied with an SP/DIF digital out, which enables the hardware synth and sampler to be plumbed into an external DAC, significantly improving the audio quality and reducing noise still further. You'll also receive a MIDI interface kit, a huge wad of Creative software and a copy of Cubasis Audio on CD-ROM.

For a chance to win this great prize, just tell us: **(a)** what the 64 stands for, and **(b)** how much RAM is supplied. Send your entries on a postcard marked "AWE-64 Gold Competition" to:
PCW Editorial,
VNU House, 32-34
Broadwick Street,
London W1A 2HG,
to arrive before
1 October 1997.
■ *This competition is open to readers of PCW, except for employees (and their families) of VNU Business Publications and Creative Labs. No cash alternative is available in lieu of the prize.*
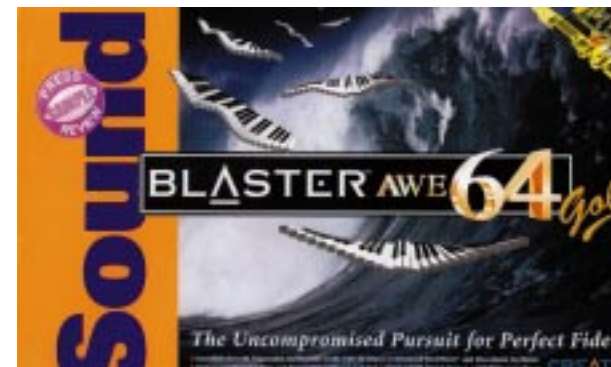
Simply the best!

Handbook of MIDI Sequencing
**Author:** Dave Clacket
Price: £13.95
Contact: PC Publishing 01732 770893
Rating ★★★★

Here's a book that should be of interest to regular readers of this column. Dave Clacket starts off with a guide to what MIDI is and how it works, then goes on to explain the pros and cons of each sequencing platform — Mac PC and Atari ST. Sound modules and current synth standards are also clarified in some detail. With plenty of useful information about PCs and basic housework, this book sets many sensible ground rules and uncovers any problems you're likely to run into. It's not all computer talk, though. Once that's out of the way, it's straight into a superb chapter on the basics of sequencing. Since no reference is made to any one particular sequencing package, there's stacks to be gained, regardless of which software you use. As a light-hearted touch, the author shares a few muso jokes with us along the way. One I feel inclined to share with you goes: Q. What do you call a musician without a girlfriend? A. Homeless. Great!

With chapters on creating better guitar, bass, woodwind and brass sections, this book should be read by programmers at all levels. Tips on chord voicing, wah-wah effects and note roll-off techniques are offered, and Continuous Controllers and System Exclusive are also covered in great depth, showing you, for instance, how to set up reverb and chorus parameters with GS and XG modules. There are 20 pages set aside for reading and understanding printed music. It's a great introduction for beginners, or a useful refresher course if you need to brush up your skills. This paves the way to being able to sequence and learn from the full score of Tina Turner's "Simply the Best", which is printed towards the end.

This book provides a solid foundation for anyone interested in sequencing, and it's worth its weight in tenners.
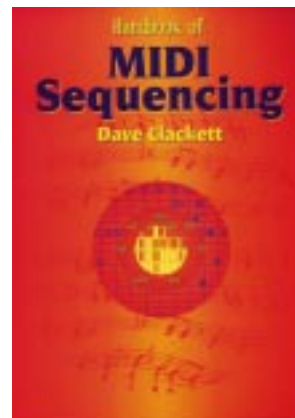
Tip of The Month

If your synth has a Brightness or Cutoff controller (as do Yamaha XG devices, among others), try remapping that to your volume fader for some weird and wonderful dynamic effects.

XG Controllers	Functions
CC 71	Resonance
CC 72	Release
CC 73	Attack
CC 74	Cut-Off Frequency

page. The only event you're likely to need is a resetting control such as 11:127 to return your part to maximum volume in preparation for the next phrase. In Fig 2, you can see three events clearly having no effect on the sound: the number of extraneous events has been minimised here for clarity; you might have dozens of them, especially if you moved the fader back up to 127 while recording.

Rocking and rolling

What else can you do with these controllers? If you use constant "rolling" expression to add some feeling to string and pad sounds, try copying all those CC11s to another track and converting them to

CC10s, making the sound gently shift from left to right as the volume rises and falls.

Another popular effect is the crossfade: copy a sustained part to two channels, each with a different sound. Set one channel to CC11:0 and the other to 11:127, then repeatedly fade one out as you fade the other in, creating a "morphing" effect as the first sound seems to evolve into something different. Once again, copying the expression events to pan events can add a touch of sparkle. Or use pan by itself as an ethereal wash as the two sounds slowly swap places in the stereo field.

If you don't mind a bit of step-recording, pick a rhythmic but non-sustained part (something like a house piano part, for instance) and enter alternating 10:0 and 10:127 events just before each chord to create a hypnotic "whirling" effect.

Three degrees

In the second part of their mini-series on MIDI programming tricks, Steven Helstrip and Rob Young tell you about a trio of tricks you can try. Don't delay – try echo today!

Following last month's foray into the world of gate effects, part two of this mini-series about programming effects introduces a group of three interrelated tricks: double-tracking, delay, and echo.

The Part Info dialog makes it easy to set and adjust delay times

Double-tracking

Let's take double-tracking first, because it's such a doddle to do. To double-track a sound, pick an instrument track that you'd normally pan close to centre and copy its data to another channel. Then pan one channel hard left (controller 10, value 0) and the other hard right (10:127). You'll probably need to reduce the volume of both tracks slightly, but otherwise that's it. The result is a thicker and wider sound that works best for sounds with a fairly sharp attack (guitars, pianos, basses, vibes, rather than strings or pads) and instrumental parts which have plenty of movement.

Decreasing note velocities in an echoed line, with a wide difference between the first note and its echo

Delay

When you're successfully double-tracked, it's hard to resist going one step further and adding delay for a more noticeable effect. That's just as easy, especially if you have a well-featured sequencer such as Cubase.

Select the duplicated part, press Ctrl+I to bring up the Part Info dialog, and right-click in the Start box to shift the entire part forward so that it begins and ends later (Fig 1). How much you delay the track depends on a number of variables: faster tempos will need a greater delay, but you'll need to balance this against the type of sound you're using. Staccato sounds like marimbas, for instance, tend to need a shorter delay than sustaining sounds. Pan positions make a huge difference, too. If you pan the original and delayed tracks

close together, the effect will be all but lost. My favourite setup is to pan the original track about 20 left (10:44) and the delayed track well to the right (perhaps 10:116). Finally, reduce the volume of the delayed track so that it doesn't just sound like badly timed double-tracking, and give it a little chorus to help it blend into the mix despite its extreme pan position.

Echo-nomics

So if that's delay, what's echo? The two effects are very similar, but I use the term "echo" to refer to multiple repeats which follow the tempo of the music, occurring on sixteenth or eighth notes, for example, and gradually diminishing in volume. Unlike delay, you probably wouldn't apply an echo effect to a whole track, but use it to add some

Delay & Echo Tips

● Slapback echo, a very '50s effect, entails creating one echo and placing it a sixteenth note after the original at a much reduced volume. This gives great results with brass chord stabs and snare hits.
● If double-tracking seems dull, try triple-tracking (if your polyphony can stand it!). Place an extra copy dead centre and reduce its volume slightly. Or why not transpose it up or down an octave, or delay it?
● Single stab chords can be enhanced by following them with about five echoes, each of which is a semitone lower than the last.
● Pre-delay, and especially pre-echoes, are tough to get right but rewarding when they work. Place the copies before the original rather than after it, make them a lot quieter than ordinary delays and echoes, and increasing in volume with each repeat.

AXE Brazilian Percussion

Described as a revolutionary sampling CD, Brazilian Percussion is set to turn your PC into a hi-tech drum machine. However, this so-called rhythm workstation isn't limited to 32 instruments like the boxes with which we're already familiar. There are over 800 individual percussion grooves ready to be mixed using the eight-track sample-based sequencer, all of which make it possible to generate more than 20 million different

Above Here's the sequencer – even my Gran can use it

Left Setting a few sample parameters sends the auto-groover "off on one"

groove combinations. All the loops are precisely tempo-tuned, which means the mixing and matching of grooves always gives tight results.

The sequencer is a doddle to use. First you select a track with a single click, then from the instrument list you choose one of the loops which vary from 60 to 160bpm. As the title might suggest, the instruments on offer all come from the Brazilian percussion family and include the cabassa, conga, agogo and vocal phrases. An "auto-groove" feature enables percussion ensembles to be generated at random. If you like something you hear, it can be saved to disk on-the-fly as separated wave or aiff files. More preferable would be the ability to have the files SCSI-dumped to your sampler.

At a little under 60 notes, this CD strikes me as a little pricey. The results are reasonable but not quite up to professional standard.

■ Brazilian Percussion (multi-format Mac and PC CD-ROM)
Price: £59.95
Contact: Time + Space 01442 870681
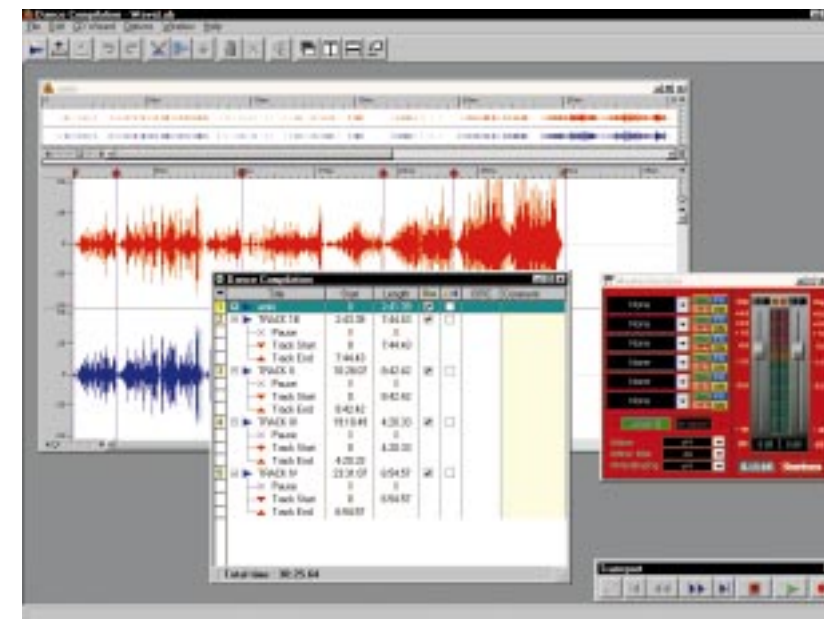

WaveLab update

In the short time WaveLab has been around it has established itself as one of the best applications for digital audio editing. Version 1.5 introduced plug-in effects, making the package ideal for digital mastering with the superb DeNoiser and DeClicker. Well, it keeps on getting better because 1.6 has finally arrived and, as mentioned two issues ago, it now integrates CD burning. You can create a CD using the CD Wizard to simply add tracks stored on hard disk. For more ambitious projects where you need to insert track and index points, markers can be added directly above the recorded wave file. For example, if you have an album's worth of material where all the tracks merge together, you can mark the start points of each track and let WaveLab worry about the rest. What's so surprising is how easy and convenient the whole package is. When it comes to burning a CD there's no waiting around for an image to be created: it simply gets on with the writing.

With the prices of CD writers falling all the time, they'll soon be standard among PC users. WaveLab, by the same token, will become an industry-standard package. What more could you ask it to do?

■ WaveLab version 1.6
Price: £399
Contact: Harman Audio 0181 207 5050

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spice to a few fills or to an instrumental part that's less dominant in the mix.

Nevertheless, echo effects are created in much the same way. Make three copies of a recorded part, delay the first copy by a sixteenth note (96 ticks in Cubase), the second by an eighth note (192 ticks) and the third by three sixteenth notes (288 ticks). Reduce the volume of the copied parts so that each repeat is quieter than the last, with a large volume drop between the original line and its first echo (Fig 2).

Echoes work nicely when all panned to the same position (in fact, if the notes are short enough not to overlap, you could assign them all to the same channel), but you can create some weird effects by

panning the repeats to different positions and letting them jump around the stereo spectrum. If the sixteenth-note repeats seem too regimented, try using two copies and delaying the first by 128 ticks and the second by 256 to echo in triplets.

Another odd but neat trick is to transpose the repeats so that each is an octave higher than the last, or (with a little more work) the melody and its echoes form arpeggios.

If you want to know what all this is supposed to sound like before you start experimenting, you'll find a file named LARGO.MID on this month's PCW CD-ROM, demonstrating a concert-hall piano delay, and percussion echoes.

Book review: *The Fast Guide to Cubase*
Let's face it, Cubase can be a tad daunting beyond the arrange page and only a few people have a full working knowledge of all that's on offer: one of those people wrote this book. Starting with an analogy of Cubase as a solar system, Simon Millward goes on to describe each of the editors (planets) and the arrange window (the sun) in a digestible yet comprehensive manner. Along with valuable programming tips and tricks there are stacks of practical examples to try out with Logical Edit, the Input Transformer and the MIDI Effects Processor.

There are 30 pages set aside for the Score editor, which is a must-read for anyone interested in the DTP aspects since the manual is great at telling you what is possible, but fails to tell you how. This book will save you hours of frustration and, with the use of flow charts, will show you the

correct way to go about things. Superb value for money.
Price: £10.95
Contact: PC Publishing 01732 770893
★ ★ ★ ★

A hot tip that rocks

Want to get more "drive" out of a rock sequence? Move the drum and bass notes on beats two and four, several ticks earlier, and cut the velocities of any hi-hats falling on the "in-between" eighth- and sixteenth-note beats.

PCW Contacts

Steven Helstrip and **Rob Young** can be contacted at the usual *PCW* address or via email at **sound@pcw.co.uk**.

The **gating** game

The first of a mini-series of MIDI programming tricks sees Steven Helstrip and Rob Young building four-bar gates (without hammer and nails); just a bit of rhythm and a little patience.

T to open a mini-series this month, covering MIDI programming tricks, we're going to take a look at gating effects and prove you don't have to be a carpenter to construct a four-bar gate. All you need is a sustained pad sound, a squad of Control Change 11 (Expression) events and a little patience.

Choose a pad sound like General MIDI's Warm Pad (patch 90) and record a single chord lasting several bars. Open your list editor for the part you just recorded and step-write a CC11 event on the first tick of the part with a value of zero. Take two ounces of patience and start creating a gated rhythm: step-write CC11 events on every 16th note beat and give each a value of 127. These are the points at which the gate is opened and the sound will be audible. Finally, we need to close the gate, silencing the sound, so insert more CC11 events about 20 ticks after each of the "open" events, giving them values of 0. The result should look something like that shown in Fig 1.

Doing it by the book, that's a gate effect. Admittedly, it's a pretty uninspiring one, but you can use the same technique to obtain far more exotic results. Just remember the basics: decide what rhythm you want, then enter CC11:127s as if they were the chords being "played". Then decide how long each chord should last and enter CC11:0s in the correct positions after the 127s. To add some dynamic colour, reduce the values of some of the controllers currently set at 127 (Fig 2). If all that step-writing gets you down, try recording the rhythm you want to use as notes, then convert them to controllers using a facility like Cubase's Logical Edit (see overleaf).

You can get more out of the gating principle than plain volume-based rhythms by combining the expression events with other controllers. For example, copy all the CC11:127 events to a separate track set to the same channel, convert them all to CC10s (Pan) and edit their values to create the desired panning movements. (Don't bother copying the CC11:0s — the track will be silent at those points.)

Express yourself
You can create unusual effects by swapping the expression controller for something different: Yamaha XG devices (among others) have Cutoff Frequency and Resonance controllers which can give you some brilliant wah-type rhythms, or you could set your pitch-bend range to +/- 12 semi-tones and step-enter pitch-bend
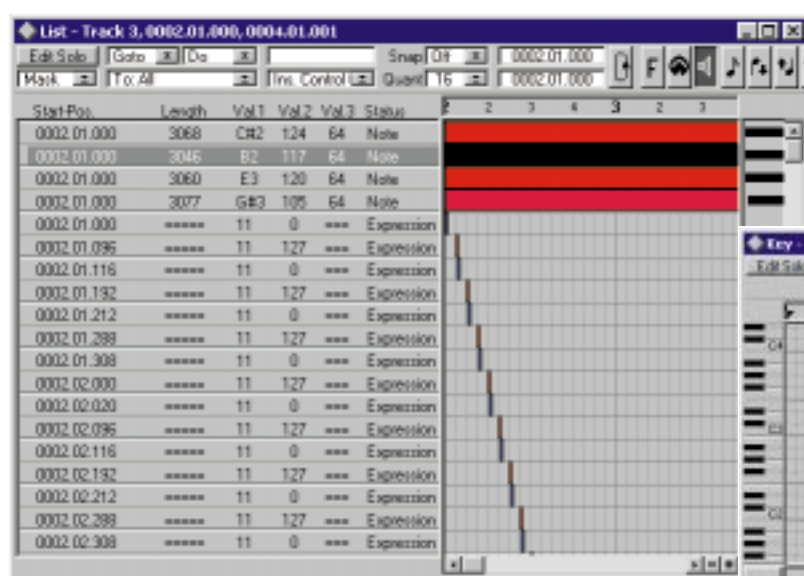
Fig 1 (above) For the numerically minded, the gate "ons" and "offs" in List view
Fig 2 (right) A gate effect in the graphic editor, showing different "on" values for the Expression controller
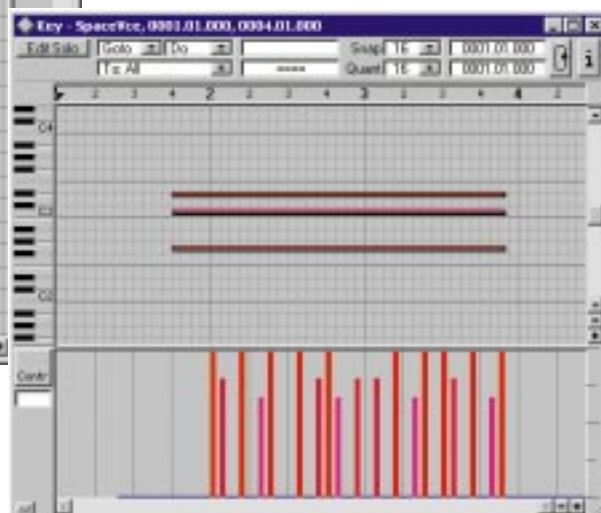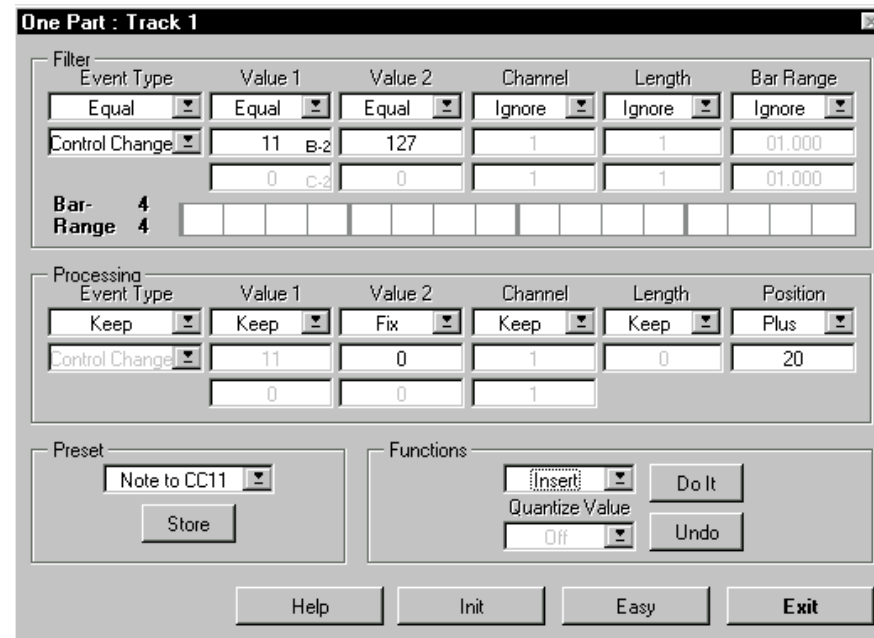
Fig 3 Using Logical Edit to turn the gate off and create a gate effect

events to make the chords jump rhythmically between octaves.

If you like to experiment with weird effects, try this: record a few notes using a sound with a sharp attack such as a vibraphone or guitar and use two expression events to silence the attack portion of each note. With instruments like pianos, where the attack is instantly recognisable, this trick can give a whole

new brain-teasing sound. Or why not apply it to drumkit instruments?

You'll find three short GM-compatible MIDI files on our *PCW* CD-ROM in the hands\sound folder, demonstrating some of the gate effects covered here. And if you've got any tips and tricks you'd like to share, don't forget to drop us a line.

Converting note events into CCs

Once you have recorded and quantised the rhythm for the gate effect, select that part and open Logical Edit. Even though it is well endowed with features, one thing that Logical Edit cannot do is to treat note-on and note-off parameters separately. Therefore, this routine will only take note-ons and convert them to CC:11s with a value of 127. We will tackle the note-off problem in a moment.

In the Processing section, fix the event type to Control Change, and under Value 1, enter fix to 11. Value 2 should be fixed to 127. Ensuring Transform is selected in the Functions department, hit "Do it".

That takes care of the audible bits. Now, here is how to turn the gate off: still in Logical Edit, select expert mode and Filter CC:11s with a value of 127. (See Fig 3 if you're unsure how to do this.) Then, under Processing, fix Value 2 to 0 and enter Plus 20 in the Position field. Back under Functions, select Insert and press Do it. Hey presto, you have a gate effect. You can enter a larger figure in the Position field for longer-held notes. Remember, a semi-quaver is equal to 96 ticks.

Win a FreeBass FB383 worth £200

Remember the review of this superb 303 clone which appeared in the May Hands On Sound column? Well, the guys at Turnkey were so chuffed when they read it, they asked us if we'd like to give one away. Just to remind you what this 19in rack synth can do, let's recap. It does everything you'd expect of a 303, from the fattest bass sounds, to warm resonant squelches and blips. Get a bassline up and running and you can sit forever just tweaking the knobs: which is what I did with the review model — then I bought it. To win one, tell us: (a) which company manufactured the original 303, and (b) which company is responsible for making this version. Send your entries on a postcard marked "FreeBass Competition" to PCW Editorial, VNU House, 32-34 Broadwick Street, London W1A 2HG, to arrive before 1st August 1997.
■ The competition is open to readers of *PCW*, except for employees (and their families) of VNU Business Publications and Turnkey. No cash alternative is available in lieu of the prize.

Methods of Mayhem

Here's a collection of the messiest sounds around. Designed to add a touch of ugliness to your tunes, Methods of Mayhem is described as "an organised chaos engine that takes you from hardness to weirdness". To put a finger on the style, I guess it bridges the gap between the sounds of Kraftwerk, to Aphex Twin and The Prodigy.

Tracks two to eight comprise some seriously busy, and a handful of tame, analogue synth-loops treated with all manner of effects and a lot of distortion. This is followed by a collection of mono and stereo vocoded rhythms created from thin percussive sounds through to fat basses. In the drum loop section, the overall tone is industrial, with tempos ranging from 120 to 160, in 10bpm intervals. Then there's a really long bit of grungy guitar effects followed by more synth effects and percussive hits. Next in store is a load of throat-box effects and noisy atmospheres. The final 12 tracks consist of space and horror vibes, along with spoken words from forties and fifties movies. These can have a great effect within chaotic and ambient music alike when gated and treated with heaps of reverb and delay.

Methods of Mayhem is 74 minutes of ear-splitting fury. It wont be everyone's cup of tea, but if you want to add an experimental edge to your tunes, give it a go. (*See PCW Contacts, below.*)

Trigger tips and CC sins

■ **Tip of the month**
Drum sounds are triggers — they play from start to end regardless of note length — so cut all your drum note-events down to four ticks at a resolution of 96tpq (or 16 ticks in Cubase, which has a resolution of 384tpq) to avoid the occurrence of overlapping cymbals, hi-hats or toms that cut one another off. (It will make your drum parts easier to edit, too.) Why four ticks? A couple of GM synths simply ignore any note shorter than that. If yours doesn't, and no-one else will be using your files, cut all the notes down to one tick.

■ **Sin of the month**
Don't use Control Change 7 (Main Volume) for running volume changes throughout a track. Instead, use CC11 (Expression) and place a single instance of CC7 in the very first "setup" bar. Why? If you use CC7 all the way through a song and then decide you need the entire track louder, you'll have to change each and every occurrence of CC7 (and edit all your fades). Using CC11 throughout means that you can adjust the fine-tuning of the entire track by adjusting just that single CC7.

Change your range

Need to change the pitch-bend range for an instrument? There's a little collection of controllers, collectively known as RPNs

(Registered Parameter Numbers), that can do the job for you. Just insert these controllers into a track set to the appropriate channel:

```
CC101 :   0
CC100 :   0
CC6  :    ?
CC101 :  127
CC100 :  127
```

The value for Control Change 6 sets the bend range in semitones, so entering CC6:5 will give you a pitch-bend range of +/- 5 semitones. Most MIDI devices will allow a setting of up to 24 semitones. Make sure these events occur in this order, and on separate ticks, or your device won't respond to them. You should be able to set ranges individually for each channel, but we've come across a few modules calling themselves General MIDI compatible which either allocate the new range across all channels, or (worse still) won't shift from the default setting of +/- 2.

PCW Contacts

Steven Helstrip and Rob Young can be contacted at the usual *PCW* address or via email at sound@pcw.co.uk.
Methods of Mayhem costs £59.95 from Time + Space on 01442 870681.

Jumping the Q

Rob Young joins Steven Helstrip to urge you *not* to commit the sin of automatic Quantizing: it's inhuman … avoid it … better to do it yourself and keep that "natural" feel in your music.

Before we crack on with this month's column, I'd like to welcome Rob Young as a new contributor to this column. Last month I highly recommended his book, *The MIDI Files*, and hoped you would benefit from his experience and ideas. Rob, who's not that "young" really (sorry, I couldn't resist it) will be taking care of MIDI-related topics from now on, while I'll be keeping you up-to-speed on digital audio, sampling and new products. So, here's Rob…

The Q-word

I'm going to kick off with a rude word (cover your ears, Granny): quantization. There, it's out. "But what's wrong with that?" you might ask. "I use it all the time." Well, quite simply, quantization is to programming what Coca-Cola is to dentistry.

In case you haven't come across the Q-word before, let me explain. Quantization is a sequencer facility which tidies up timing errors in your recording by shifting every note to the nearest beat you specify (the nearest eighth-note, quarter-note, or whatever). Or, put another way, it searches your recording for any hint of human feel and promptly removes it.

The result, when applied to most types of music, sounds unnatural and lifeless, but quantization is an all-pervading sin. Many commercial MIDI files you buy seem to be made by the same robots that build BMWs.

Careful Quantize

Of course, there's good and bad use of quantize. Cubase's Auto Quantize function definitely qualifies as "bad". Always give yourself a chance to listen to what you recorded before your sequencer gets its claws into it. If the timing does need a bit of

A 20-30 setting captures the worst goofs without ruining your feel

tidying-up, don't use Over or Note-On quantize. Unless you're programming a techno track or an obvious synth-effect, you don't want every note bang on the beat.

The most musical result comes from Iterative Quantize, which lets you move the worst offenders in small steps. Choose Setup Grooves from the Functions menu and enter the settings you want in the Iterative Q section of the dialog.

If you set Strength to 50 percent, a note that was off the target beat by 20 ticks will be ten ticks out after quantizing. Use the Don't Quantize setting to help Cubase
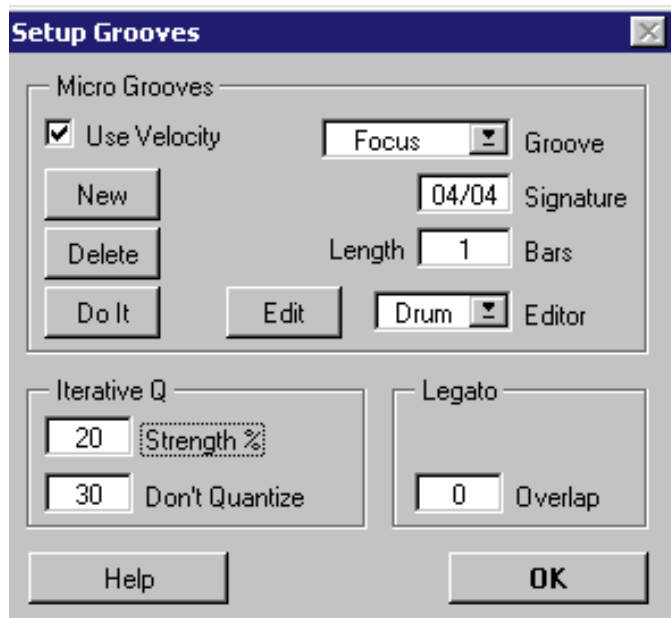
distinguish between bad timing and human feel: if you set this to 16, only notes more than 16 ticks off the beat will be moved.

For the most feel-preserving results, use low Strength and high Don't Quantize settings, such as 20 and 30. In the Arrange window or an editor, select the part that

Quantization Tips

■ Remember that fast tempos need a lower Strength setting than slow tempos: ten ticks away from the beat at ballad tempo is much looser than ten ticks out at rock tempo.
■ Use your ears, not your eyes: if it *sounds* okay, it doesn't matter what it looks like in the editor.
■ If your drums sound too quantized, try moving whole kit-instrument parts off the beat. Move all your hi-hats four ticks earlier, all your snares two ticks earlier and your handclaps two ticks later.
■ Import a good drum part and chain it for the length of the track so that you can turn off the metronome. You'll get a better feel, and you're less likely to have bad timing to clear up later.
■ If your music sounds quantized when it isn't, take a look at those velocities. A narrow velocity range for an expressive instrument can sound as mechanical as heavy use of quantize.
■ Never chain identical one- or two-bar patterns together, other than for effect. Create three- or five-bar patterns, with subtle variations in each bar (use an odd number since music generally uses four-bar phrases) and string those together instead. If each bar is sufficiently different, the chaining shortcut should be unnoticeable.

needs adjusting and press E (just who is it that picks those hotkeys?). Then have a listen to the result. If you can't hear much difference, press E again to shift the delinquent notes a little more.

Manual Quantize

The best type of quantize around is Manual Quantize, but you won't find it on any sequencer menu. Just open the Key, List or Drum editor, play back what you recorded and adjust any bad timing yourself. After all, your playing surely wasn't so bad that every note needed adjusting, was it? If it was, don't even edit: just scrap it, give yourself a stern talking-to and record it again.

Manual Quantize is often easiest in the List Editor, where you can left- or right-click a note's starting position to adjust it tick by tick. It takes a bit of discipline though: all those "wrong" numbers might tempt you to move a note far closer to the beat than it needs to be. To give yourself room to work, position the divide bar to show only the start position of notes, as this will let you see more events in the grid.

Something else worth trying is switching Cubase's Snap and Quant values to Off, and using the kicker tools to graphically move a note in single-tick steps.

If complex rhythms appear a tad daunting in the List Editor, have a go using the Piano role, or Key Editor. To keep your sanity, work with one- or two-bar phrases at a time. Remember, loops can be easily set up by dragging the mouse across a selected region of the bar ruler. When the

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Tip of the Month

Cue up to start recording at least two bars before you'll start playing, or use Cubase's Preroll facility (located on the Metronome dialog). After hearing those bars as a count-in, you're more likely to start at the right speed and velocity, and with the right feel. A better result, with less editing to do.

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note Info button is active, the selected event's start position is displayed in the top-left of the screen. Similarly to the List Editor, these can be shifted using the left and right mouse buttons. Useful shortcuts include using the cursor keys to move between notes, and G and H to zoom in and out.

Before signing off, I'd like to appeal to readers of this column: you know better than I what you'd like to see covered here, so please do get in touch and let us know. For instance, what MIDI topics do you want to find out more about? What programming problems are you having? What would you like to see on the CD-ROM?

Terratec EWS 64 XL

In last month's column we had a look at the AWE-64 Gold from Creative Labs. Although it improved on the AWE-32 in many aspects, it wasn't as good as it should have been. I've long since given up nagging Creative to make the "ideal" PC sound card, and, as I always expected, someone has beaten them to it. Yes, I'm talking about the EWS 64XL from Terratec.

If you read our group test of sound cards in last month's issue, you may be familiar


The X-Files of House

Delving deep into underground house is what this 2-CD set from Sweden is about. Inspired by the sounds of New York and Chicago, X-Files delivers the creamiest house grooves by way of loops, instrument samples and bags of flare. There's no tack on this CD, just throbbing four-to-the-floor beats, classy piano, organ riffs, seriously fat basses and obscure yet usable sounds.

Each track starts with a demo, which is almost a track in itself, followed by the loops and instruments which were used in their making. In many cases, the broken-down parts begin by excluding the kick and going on to leave you with the bare sounds.

If you're into the New York vibe you won't be dissapointed with this CD set. The production is superb, the ideas are inspiring, and because everything's tempo-grouped between 120 to 130bpm, there's scope for mixing and matching samples to produce your own dreamy house tunes. Full marks. Don't forget to check out the samples on our cover-mounted CD this month.

■ See "PCW Contacts" for details.
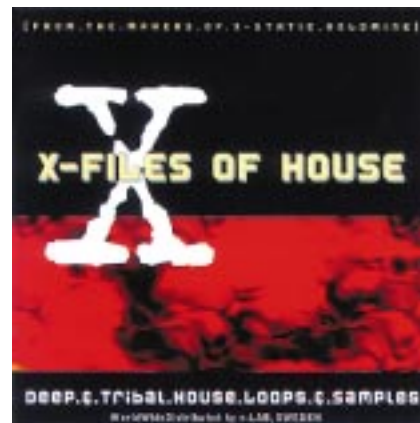
Top Here's the synth editor to accompany the EWS. It's capable of velocity-switching between instruments, layering up 64 voices, and keyboard splits. Looks good, doesn't it?

Above This'll be a mixer, then...

Left This is the effects rack. More goodies should follow due to programmable DSP

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with the Terratec brand. It's a German-based company which last year bagged 20 percent of the sound-card market. The EWS 64 is, however, considered to be its first major product with a full-on spec, without the full-on price to match.

So what's so special about it? Well, for starters it's got a 64-voice Akai S1000-compatible sampler with 6Mb RAM (upgradable to 64Mb), a WaveTable synth and two "real" MIDI interfaces. Then there's the S/PDIF and TosLink digital inputs, two digital outs, two stereo line ins/outs and DSP effects which currently offer reverb, chorus, EQ and AudioRendering or 3D sound. Different effects can be applied separately to each of the outputs.

Still unimpressed? The synth/sampler provides 64-voice polyphony in hardware, therefore not draining CPU usage, and it provides the most comprehensive MIDI spec I've seen on any card. The 24dB resonant filters can be controlled in real-time via

NRPNs. Likewise, Continuous Controllers can be assigned to every editable parameter. These include the panning of drum instruments, reverb send of individual notes, and full control of EQ settings.

The 16-bit card has an extension box in a 5.25in drive bay, providing connectors for MIDI and digital I/O, and there's a headphone output. I haven't got my hands on the EWS but the spec sheets and software look impressive, including Steinberg's Cubasis AV (a halfway house between Audio and Cubase v3). The EWS 64 costs £449 (inc VAT). And no, that isn't a misprint.

PCW Contacts

Steven Helstrip and Rob Young can be contacted at the usual *PCW* address or email **sound@pcw.co.uk**.

The X-Files of House set costs £60 (inc VAT) from **Time + Space** on 01442 870 681
EWS 64 from **Imago** on 01635 294300
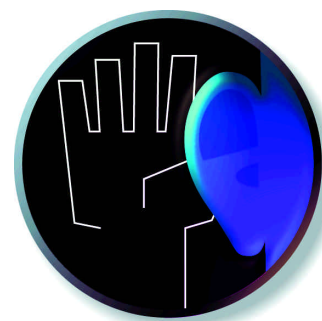
Going down **low**

Steven Helstrip has some ideas for programming 303 basslines without a 303. A new sound card from Creative Labs and books about MIDI and dance music come under scrutiny, too.

When I first took an interest in MIDI, eleven years ago, the idea of picking up a book to learn the ins and outs was out of the question. There just weren't any. It has taken some time, but at last it looks as though some worthwhile publications are beginning to filter through, two of which are reviewed later. Also in this month's Hands On Sound, we'll be taking a look at Creative's AWE-64 Gold sound card to see if it really is the answer to every bedroom producer's prayers.

Programming 303 basslines

Having indulged in TB-303 clones last month, it's time now to impart a few tips to help in the programming department.

The 303 is an incredibly versatile instrument which can be treated in all kinds of ways. You don't actually need a 303 to try the ideas I have come up with here; they will work just as well using any clone, including the demo of Rebirth 383 (RB-383) previewed last month. With any luck, the demo will appear on our CD-ROM next month, and it has a couple of new features: a step counter on each 303 panel, and a manually adjustable sound buffer to cure glitches on slower machines. In the meantime, it can be downloaded from the Propellerheads web site at www. propellerheads.se/products/rebirth.html.
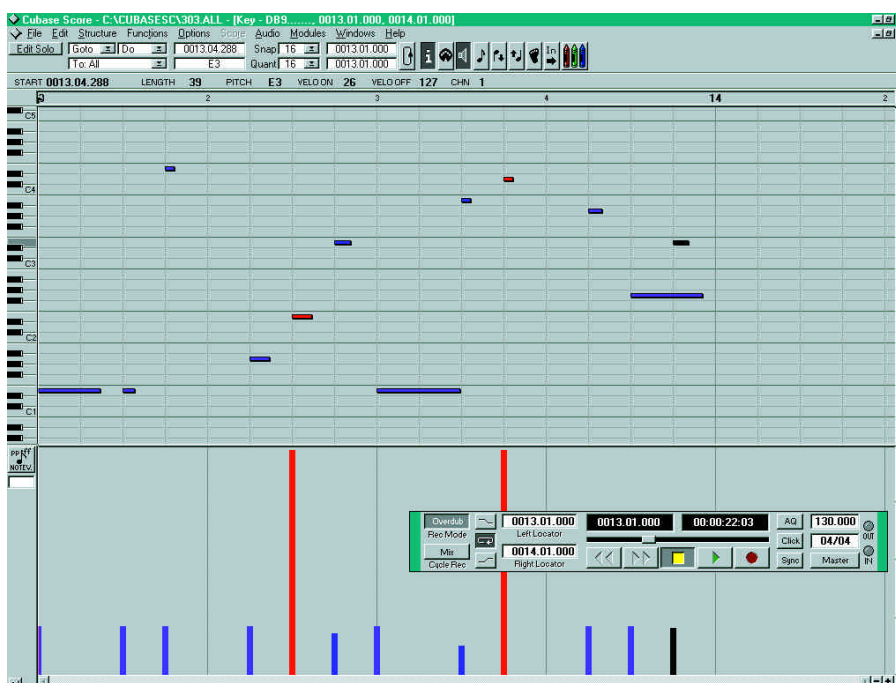
The ideas which follow are illustrated using Cubase but they can just as easily be implemented using RB-383. Before starting,

An emergent 303 riff created entirely with the pencil tool

set up a TR-909 drum loop. This helps set the scene, since the two instruments go hand in hand. Next, route the 303 through a stereo delay.

At 130bpm, try settings of 231 and 462ms, which correspond to eighth and whole-note delays. This creates a wide, full sound and adds to the overall vibe.

Since the 303's internal sequencer was based on 16-step patterns, the piano role editor, with a 16-snap value, seems a good place to record your bass line. This enables you to see the notes appear as they come. Likewise, they are just as easily removed.

If you have an idea for the bassline, get it down. If not, select the pencil tool and, based on one note, insert a random syncopated rhythm. If you loop the sequence over a one-bar loop, you'll soon get an idea for the bits that work. With a rhythm in place, adjust the note lengths to further hone the overall sound, then try moving individual notes so that a melody emerges. Popular intervals worth trying are octaves, minor sevenths and minor thirds.

Most 303 clones respond to high-velocity notes (over 100) with an accent. Using the pencil tool, change the velocities to create a simple sub-rhythm within the bassline. Slides, or portamento, between notes also define that 303 sound.

Next month, we'll be digging deeper into this subject. Until then, get pencilling — it's a great way to come up with new ideas.

Creative AWE-64 Gold

There is little doubt that Creative Labs' AWE-32 changed the way in which thousands of so-called "bedroom artistes" now create music. The whole concept was

Music books

The MIDI Files

I am often asked to recommend a book to newcomers to MIDI — *The MIDI Files* has just become it. Written in an entertaining, jargon-free style, it begins by telling you what MIDI is, how it works and answering any questions you're likely to have. It intends to guide you through every aspect of the Musical Instrument Digital Interface. If you're thinking about setting up a basic MIDI studio, advice is given on choosing the right sequencer (the pros and cons of hardware and software-based types) and how to go about setting up your equipment.

The main thrust of *The MIDI Files* is honing your programming skills, from learning how to program better drum patterns and create realistic guitar, bass and string arrangements, through to improving your mixing technique. The pages are crammed with valuable hints and tips, many of which are referenced to the accompanying floppy disc containing 60 MIDI files. These include sequencer tricks such as MIDI gating effects, stereo delays, use of portamento, complex percussion fills and song arrangements.

Many of the techniques described have evolved only after many years of experience with sequencers, so this book should give you a useful head start. Well worth the investment, whether you're a novice or think you already know a thing or two.

■ **Price** £19.95 **Rating** ★★★★★
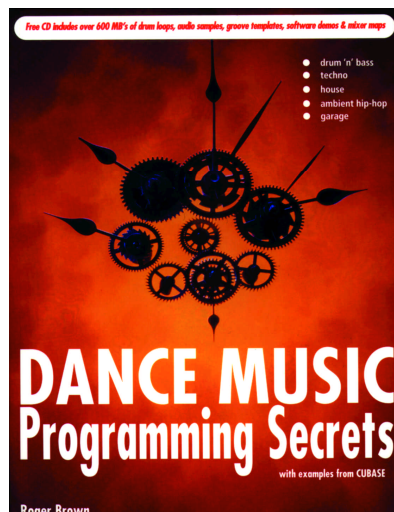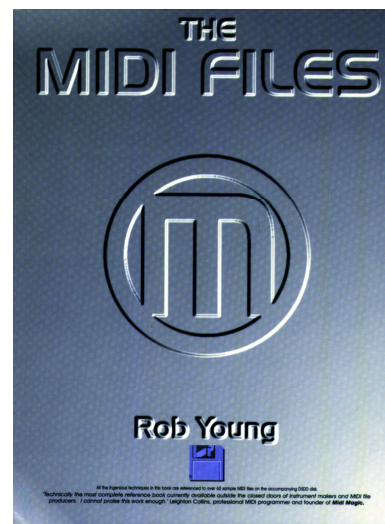
Dance Music Programming Secrets

"The hidden art of programming brilliant, sophisticated, contemporary dance music" is what's written on this book's back cover. Aimed primarily at the novice programmer, it sets out to introduce the basics of programming drum and bass, techno, house, garage and ambient hip-hop styles. There are more than 464 pages with as many Cubase screenshots. Separate chapters deal with programming basslines, rhythmic effects, chords and MIDI effects. There's many a tip to be had, although it's not as thorough as *The MIDI Files* [see above]. The accompanying mixed-mode CD contains five audio tracks that were produced during the writing of the book, and over 600Mb of Atari, PC and Mac files. These include software demos and mixermaps for Cubase and MIDI files to illustrate some of the techniques covered.

I feel the book tries to cover too much ground and doesn't quite get into the heart of programming. If you want to learn how to use Cubase, this book makes a good companion to the Cubase manual: it certainly explains the Interactive Phrase Synth in more detail. There's a section on mixing, and an introduction to digital audio which makes a more interesting read but which has little to do with the title of the book. There's good advice on seeking a record deal with independent labels, too. The same chapter also explores the possibility of pressing and distributing your own work.

I was quite taken aback when I listened to the audio tracks/demos. They are not brilliant or sophisticated and only bear a faint resemblance to contemporary dance music. Has this guy [Roger Brown] been to a club in the last five years? It doesn't sound as if he has.

■ **Price** £29.95 **Rating** ★★★

sure to be a success: an affordable card that integrates a sampler, a half-decent synth, a MIDI interface and the ability to record direct to disc.

Although no-one could complain about the AWE-32's feature set, one common criticism was that it was just too noisy.

Creative's new range of audio cards have been designed with a little more thought and with the music enthusiast in mind.

Noise output has been reduced significantly now that the engineers have had a chance to sit down and rethink the board design. The next obvious

improvement is 64-voice polyphony handling and the introduction of Acoustic Physical Modelling. This is achieved with software synthesis, a technology which although still in its infancy is nevertheless something we're going to be seeing a lot more of in the future.

Acoustic Physical Modelling has been available in professional synthesisers for some time now. Yamaha uses it within its range of wind synths to add greater realism and expression to "live" instruments. By mathematically modelling the characteristics of acoustic instruments (wind, strings and brass), the AWE-64 begins to touch the tip of the iceberg but still falls short of anything realistic. Still, there is a definite improvement in overall realism.

More importantly for the musician, the AWE-64 Gold is supplied with 4Mb of RAM as standard, accompanied by 2Mb, 3.5Mb and 4Mb GM sound banks. This massively improves the synthesiser department. Using Vienna, the sound banks can be stripped down to use only those instruments you require, thus freeing up memory for your own samples.

The Gold edition is supplied with an SP/DIF digital out, which enables the hardware synth/sampler to be plumbed into an external DAC, significantly improving the audio quality and further reducing noise. The analogue outputs have been upgraded to gold-plated RCA connectors (the theory being that gold doesn't oxidise, resulting in better contact with the phono cables). You also receive a MIDI interface kit, a huge wad of Creative software, and a copy of Cubasis Audio on CD-ROM.

At around £199, the AWE-64 Gold is a superb buy: there's nothing around at the moment with quite so many features at anything like this price. If you own an AWE-32, it is certainly worth upgrading.

Sampling CD: Strictly 12 Inch

If you want to improve your dance floor tunes by any order of magnitude, the first area of production in which to invest is drum and percussion samples. The samples that form the basis of WaveTable drum sets can be effective, given the resources to process, compress and EQ

each sound individually, but this requires a professional studio setup. In the absence of a 96-input desk and rows of rack-mounted effects, why not consider buying a sampling CD, where all the hard work has been done for you?

There is no shortage of CDs providing pre-processed loops and individual samples, but they don't get much better than this. Strictly 12 Inch is an up-to-date, no-nonsense collection of four-on-the-floor loops, which is also supplied with the samples that were used to create the loops.

The CD focuses on house and garage styles, covering tempos from 121 to 130bpm, and is organised so that stripped-down rhythms and individual sounds follow loops of up to 16 bars long. The loops are well constructed and can be used as they come, or for inspiration for new grooves.
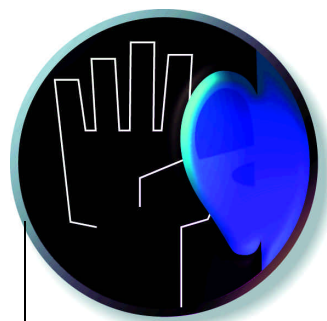
Tracks 87 to 98 comprise one-shot samples of kicks, snares, hi-hats, tambourines and various percussion — in fact, all you're every likely to need in the drum department. The people responsible for this CD certainly knew what they were doing. Check out the samples in the hands\sound folder on this month's cover-mounted CD.

Bass-ic instinct

Remember Roland's classic TB-303 Bassline? Dance music would be devoid of "that" sound without it. It's revived today in software form, to the unabashed delight of Steven Helstrip.

T he past month has been quite exciting. Not only have I finally persuaded Internet Explorer 3.0 to recognise my modem, but I've also been inundated by new software releases including updates for WaveLab, Cubase and Recycle. From the products I have received, however, the one to grab my attention and, indeed, much of my free time was the return of Roland's classic TB-303 Bassline. This time around, it's in the form of a software package.

It's hard to believe until you hear it, but the RB-338 Techno Micro Composer from Propellerhead gives you two fully-tweakable and programmable TB-303s on-screen. And that's not all. You also get an equally desirable TR-808 Rhythm Composer, a

digital delay unit and a distortion pedal, all in one package.

The unique sound of the 303 has been

Main story The TB-303 is reborn, thanks to those clever people at Propellerhead. Have a go at tweaking those knobs for yourself: the demo can be downloaded from www.propellerheads.se. There are some free samples up for grabs, too

Fig 1 Loudness Maximiser can pump up your mixes with no noticeable loss in audio quality

mid-eighties. Up until now, to get "that" sound, you would either have to have been one of those lucky people who bought one new, or wealthy enough to have bought one from the second-hand classified ad pages.

The RB-338 engine models the tonal characteristics of the 303 and 808 in software: it is not sample-based. This represents a major breakthrough in sound technology and will hopefully pave the way for more classic synths to be reproduced in software. It works with any

synonymous with dance music since the day it was born. The only mistake Roland made was ending the production line in the
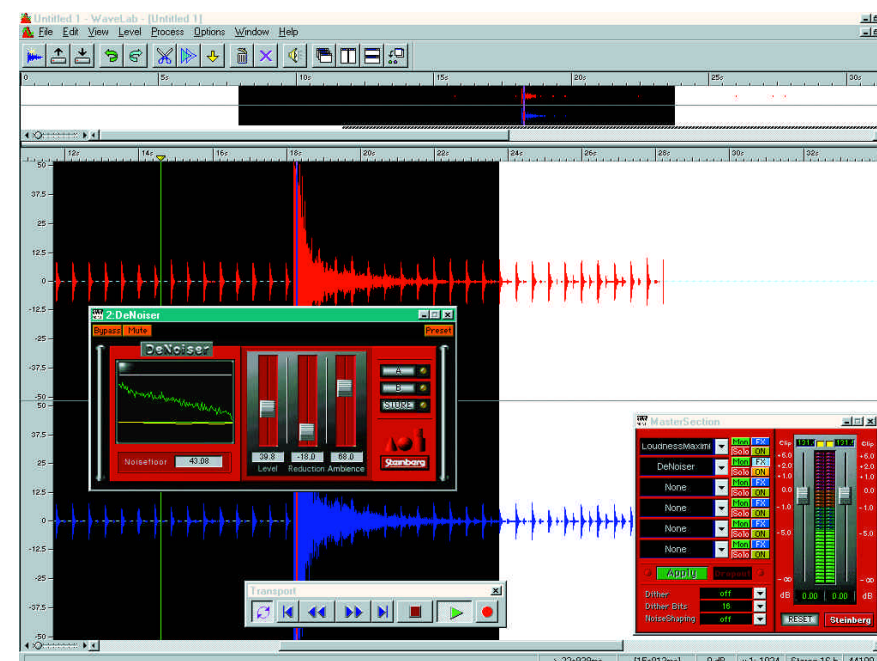
Fig 2 DeNoiser working miracles within a quiet musical phrase

16-bit sound card, including the digital variety, so it's possible to get a decent output signal for studio use.

Although analogue purists will disagree, the RB-338 does sound like the real thing, especially when routed through a valve compressor which can help soften the harsh nature of digital audio. The filter section, which is largely responsible for making the 303 what it is, has been faithfully reproduced and is more convincing than any previous offering. The pattern-based sequencer works in exactly the same way

as its predecessor, and has slide and accent parameters to enable you to get authentic acid riffs.

Once you have programmed your bassline, the RB-338 will sync to an incoming MIDI clock. Alternatively, you can output the sequence to a wave file and import it into any audio-equipped sequencer.

Why the TR-808 was chosen to be implemented rather than the TR-909 I'll never know, since the 909 has far more clout on the dance floor. It's handy to have

The FAT FB383, a serious clone

Throughout the nineties, nearly everyone in possession of a soldering iron has attempted to clone the TB-303. The first successful attempt to go on sale was the Novation Bass Station, followed by the Deep Bass Nine and a string of others including the RB-338. The FAT FB383 (confused with the names yet?) from Freeform Analogue Technologies, is the latest. I chose to review it here because of its staggeringly low price and versatility.

It comes in a 1U rackmount and is quite possibly the most distasteful design I have ever seen. Looks aside, though, it's a gorgeous synth to have in any MIDI setup. From left to right the front panel gives you tweak tuning, wave shape, filter cutoff, resonance, envelope modulation, accent, decay and volume. The knobs are of a much higher quality to those found on the Bass Station and the Deep Bass 9, enabling accurate and comfortable tweaking. This is

important, since they cannot be operated via MIDI. Being an analogue instrument, the inclusion of an auto-tune button is welcome.

So how close is it to the 303? Very close. It is able to create everything from fat, round, basses through to thin, resonant, blips. The filter, although very lush, doesn't quite crank up to the intensity that the 303 can, though. Since wave shape is variable between square wave and saw-tooth, it is capable of producing a wider range of sounds than the 303. And programming is a joy. Overlapping notes glide, similar to portamento, and velocities over 100 are accented.

I would be happy to pay double the asking price for the FB383. It's a serious instrument at a silly price.

Price £199 (£169.32 ex VAT)
Contact Turnkey 0171 379 5148

Creative Essentials — Dance Drums

I like the idea of Dance Drums. One CD, squillions of carefully selected drum samples. This, for once, enables you to find the sounds you're looking for in next to no time, assuming you know what you're after. There are no loops on this CD, though. Oh no. It's better than that. What you get are the sounds used by the professionals to make drum loops; the source code, for want of a better analogy.

As part of the Creative Essentials collection, each sample is provided in .aif, .wav and audio format so there's no audio degradation to endure if you use a soundcard-based sampler. Tracks two to six consist of a complete set of sounds from the coveted 909, 808, CR78, R8 and SP-12 drum machines. Where possible, samples have been recorded with numerous decay settings: for example, there are four 909 kicks.

Although based on just one sound, each has different characteristics — track seven has 30 kick drums to annoy the neighbours with. As ever, there are a handful of fillers, but this is a handsome collection nonetheless. The remaining tracks contain a mixed bag of snares, crashes, rides and percussion.

On our cover-mounted CD-ROM this month, in the hands\sound folder, there are ten samples to try out. If they work for you, check out the rest. At less than twenty quid, you can't go far wrong.

Price £19.95
Contact Time + Space 01442 870681

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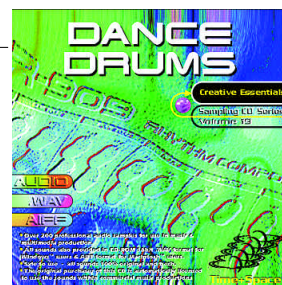
the full 808 kit, though, with tweakable decay for each instrument.

As I write, the RB-338 is still in alpha testing, but it looks set to be released this month. So far it looks and sounds great, and I expect the final will be rock solid. You can't beat being able to tweak the knobs with your own hands, however, so this month's product review is of a true analogue 303 clone *(see page 299)*.

Harman Audio will be distributing the RB-338 in the UK but hasn't yet decided on the price. If you happen to be in the United States, you should be able to pick one up for less than $200.

WaveLab update

By the time you read this, WaveLab 1.6 should be available as a free update for existing users of 1.5. Released last December, 1.5 introduced professional real-time plug-in modules for mastering and re-mastering audio tracks. With the 1.6, you can now master and burn a CD all from the same package. Whole tracks, or selected parts of an audio recording, can be dragged directly into the CD-Track list.

The CD writing capabilities support full PQ coding and editing of PQ markers. Drivers are supplied for most CD writers, allowing up to four-speed CD-writing.

On the subject of WaveLab, I recently checked out two new plug-ins and was seriously impressed with the results. Loudness Maximiser *(see page 298)* is designed to increase the perceived volume of an audio track, to give it more clout. Even tracks that have been normalised to digital

0dB can be raised up to a further 6dB, depending on the type of material. The Soft/Hard parameter enables further modifications. By applying a positive value, the bottom end of the material is tightened up, enabling a higher gain setting. This works well with dance-orientated music and can really toughen up your mix.

DeNoiser *(see page 299)* is based on the non-trivial task of spectral subtraction. You don't need to understand this technology to get great results since the plug-in is intuitive. The display shows an estimation of the noise floor, along with an FFT snapshot of the current signal. This enables you to set up the three parameters ensuring that only noise is taken out, with no loss of signal. I successfully cleaned up some of my own old tracks and was amazed by the results.

Because the modules work in real time, you can listen to the effect they're having while the music is playing. What's really neat is that you can feed a signal into your PC, process the audio and output the results straight to DAT.

Both modules cost £299 (£254.47 ex VAT) and are available from Harman Audio.

PCW Contacts

If you have any hints or tips, MIDI-related items or general comments, contact **Steven Helstrip** at the usual *PCW* address or email him at **sound@pcw.vnu.co.uk**

Harman Audio (for the RB-338, and the Loudness Maximiser and DeNoiser modules) 0181 207 5050
Time + Space (for Dance Drums CD) 01442 870681
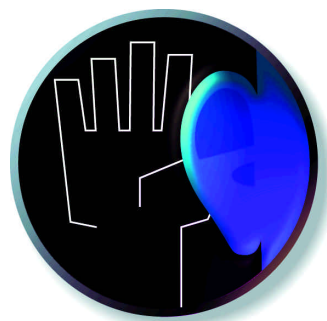
Generation X

Koan Pro, which randomly generates musical ideas, is now in Silver, Gold and Platinum formats and active on the internet. Steven Helstrip tuned in and turned on to its ambience.

F rom the letters and email I receive, it has become apparent that the occasional hardware review would be appreciated on these pages. So from on, I'll be on the look-out for new and appealing products to put to the test.

For this issue, I got my hands on the stunning ZA2 digital audio card from Zefiro Acoustics, which you, too, can lust after once you've checked it out. We also have news of an emerging audio standard for the internet, some useful MIDI tricks, the customary sampling CD review and a stack of goodies to enjoy on this month's CD.

Koan Pro

Last year I met up with Brian Eno to see how he was using Koan Pro to write generative, ambient music. Koan, which I wrote about in March 1996, randomly generates and develops musical ideas for up to nine hours at a time, and all from a modest 100Kb file. Eno later released an album of "Koan" music. It wasn't available on CD, however. It came on a floppy disk.

On the disk was a jukebox-style utility and enough music to last the weekend. Using only an AWE-32 as the sound source, there was only so much you could expect, but the music was interesting enough owing to the random nature of the Koan engine: each time a track was played, it would develop differently. In fact, you would never hear the same piece of music played twice.

Twelve months on, Koan has been adopted as a new, low-bandwidth music format for the internet. To help the format along, a new application has been developed to allow even the most modest of musicians to create generative music.
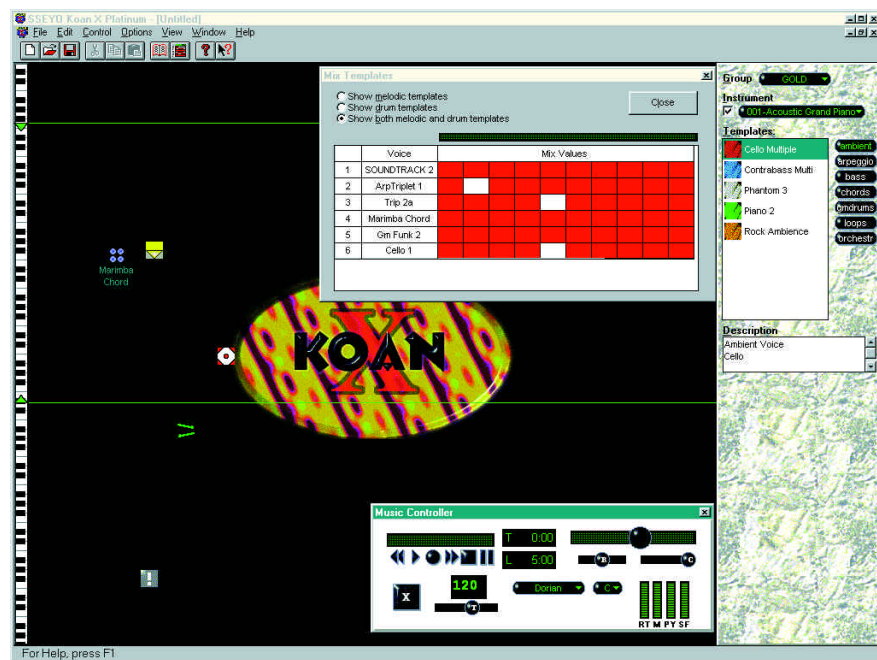
Fig 1 Koan X Platinum: Create "ever-changing" music easily by dragging pre-recorded phrases, or templates, into the mix window. Templates exist for most styles of music, from ambient through to techno. By applying rules to the templates, your music can take on a life of its own…

The new software, Koan X, comes in three flavours: Silver, Gold and Platinum. The Silver edition can be obtained as a free download from the sseyo web page and comes with 30 musical templates to be used as starting points for your arrangements. Although it's a radically cut-down version, it can be used to produce up to two minutes of music — ideal for creating free music for web sites. Gold provides 30 further templates, General MIDI and Soundfont support, and better editing facilities. It will generate up to eight hours of music. The Platinum version, shown in Fig 1, has it all: 100 templates, automated muting/mixing, and the ability to output songs to either MIDI or wav files.

You can find a copy of the Koan X Silver on this month's CD. Gold and Platinum versions are available from sseyo's website, www.sseyo.com, via secure credit-card transaction, priced £15.99 and £32.99 respectively.

Trigger happy

The only good to come out of studio noise was the invention of the gate. This is a hardware device, usually rackmounted, that turns the input signal from a noisy keyboard, say, to either on or off. When closed, no sound can pass through, reducing cumulative noise. When triggered by an audio signal, the gate reopens.

A neat feature found on some gates is
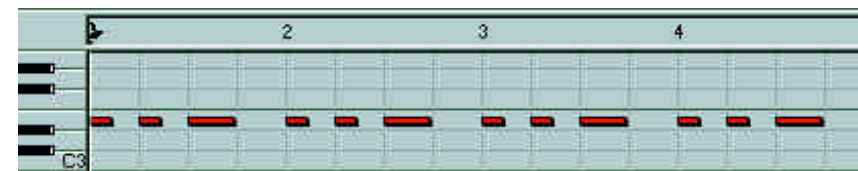
Fig 2 A typical gating rhythm, two semi-quavers followed by a quaver, seen as note lengths

the ability to open the gate from an external trigger, enabling you to create rhythmic patterns from any sound. This is a prominent feature in today's dance music, used frequently with synth pads and vocals. When a sustained chord is routed through a gate, a sound source from a second keyboard can be used as the gate trigger. By playing or sequencing a pattern on the trigger, some great effects can be created.

It is possible, using MIDI volume messages, to create a similar effect, although it cannot cure any problems you have with noise. A typical rhythm used for gating is two semi-quavers followed by a quaver, repeated over and over. This can be seen in Fig 2 as note lengths. Be aware, however, that note lengths should be reduced by 50 percent, to allow the gate time to open and close. If they are legato, the gate will remain open.

■ Newtronic gates

Newtronic has produced a compilation of 100 MIDI gating effects, along with panning and volume fade effects, available on floppy for £14.95 (Fig 3). The disc contains some excellent syncopated rhythms which are superb to have at hand. To use them, you import the MIDI file to your sequence and set the MIDI channel to where you want the effect. The panning effects, likewise, are not to difficult to program, but save you time and aggro.

Zefiro Acoustic ZA2

To record audio to your PC without adding noise in mountain-sized proportions, the

analogue to digital conversion must be performed by an external ADC, such as a DAT player. The ADCs found on sound cards just aren't up to the job, and even if they were, they would be subject to interference from the myriad goings-on inside your PC.

The Zefiro Acoustics ZA2 is a new DSP-based digital audio card designed to work alongside any digital source, be it a sampler, DAT machine or another hard-disk recording system. The single 16-bit ISA card provides SPDIF, Toslink fibre-optic and AES/EBU digital in/out as standard, and is supplied with DSP utilities to support 20-bit recording and MPEG2 playback. Providing your PC has two high DMA channels available, the ZA2 will work in duplex mode and has no problem handling as many audio tracks that your PC can throw at it.

Installing the card was straightforward, even with two other sound cards present. The accompanying driver software, seen in Fig 4 (page 306), can be accessed effortlessly from the Task Bar: such a simple idea and it works a treat. The icon also indicates whether or not the card is synced to an incoming digital clock.

All digital outs on the ZA2 function simultaneously: inputs are software selectable. There's also an analogue output for monitoring. With some help from the DSP, the ZA2 will up or down sample data, enabling real-time sample conversion. For example, you can feed a 48kHz DAT stream to the card, but actually record at 44.1kHz. Likewise, you can play a mono, 11kHz, 8-bit sample from disc and output to DAT at the

Fig 3 Newtronic's collection of MIDI gating effects will help you get the rhythm right
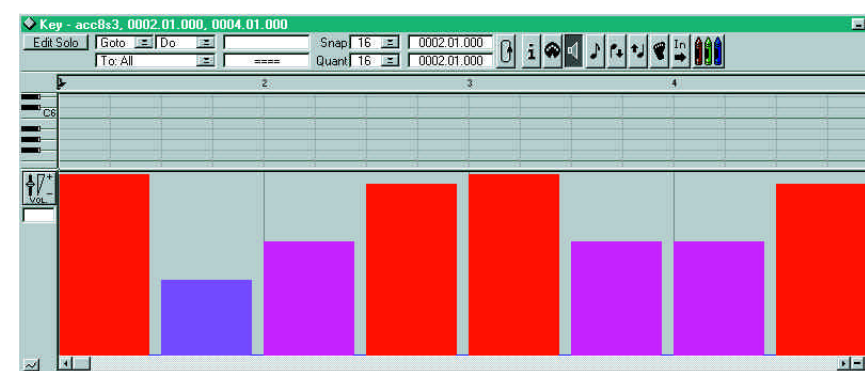
## Creative Essentials' World Class Breaks

World Class Breaks is the fifteenth CD to be released under the Creative Essentials label. Like the rest in the series, a mere 20 quid buys you 200 samples, in this case drum loops in both audio and 16-bit sample format for Windows and Mac systems. Ten genres of dance music have been covered: hip hop, swing, acid jazz, house, garage, and jungle are among them.

For each of the ten styles there are twenty loops. These are essentially four grooves, with five variations on each, but this is no bad thing since it enables you to vary the drum patterns throughout your songs. Each of the four grooves within each style are tempo-grouped with 5bpm intervals.

John Dunne, the producer, seems to have hit the nail on the head with the swing, acid jazz and seventies funk patterns, but seems to have lost the plot with the house and garage patterns, which lack imagination and are stale in comparison.

Taking the overall package into account, though, this is still a great CD at a great price. The samples used to create the loops would have been appreciated, but isn't that the usual story?

There are five loops on this month's cover CD in the hands\sound folder. Have fun!
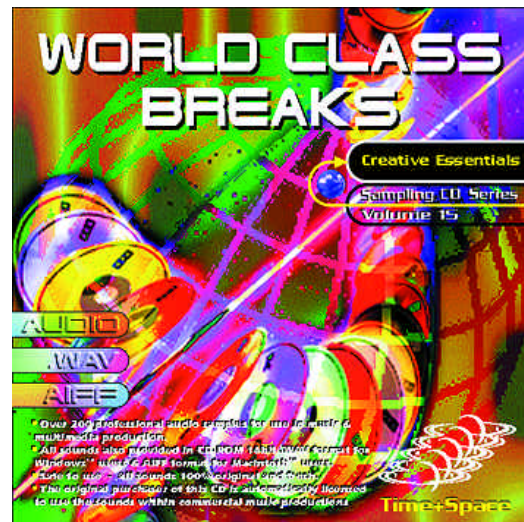
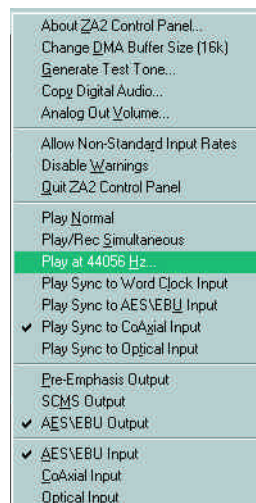
standard 44.1kHz 16-bit stereo.

The ZA2's OS is downloaded to the card at system boot, allowing the card to be upgraded with new software which will be made available on the net free of charge. DSP algorithms are also in development, making real-time effects such as EQ and reverb possible in the

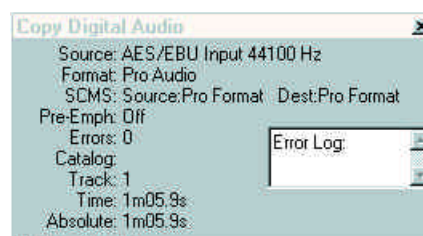**Fig 4** The driver software which accompanies the Zefiro Acoustic ZA2

near future. Hard-disk backup software is supplied with the card, enabling 1.2Gb to be stored on a standard two-hour DAT.

I've had two weeks to check this card out, and it's been a joy. I no longer need a digital patch bay, since I have had the DAT plumbed-in on the AES/EBU and the sampler on SP/DIF. I'm assured that multiple cards work together with Samplitude and SAW to provide up to six independent outs, although I don't suppose Zefiro would let me have another two cards to check it out...

Zefiro Acoustics has succeeded in putting together a truly versatile and future-proofed card at a superb price. It could show the CardD a thing or two.

PCW Contacts

If you have any hints or tips, MIDI-related items or general comments, contact **Steven Helstrip** at the usual *PCW* address or email him at **sound@pcw.vnu.co.uk**

Newtronic 0181 691 1087
World Class Breaks £19.95 (inc. VAT and delivery) from Time + Space 01442 870681
Zefiro Acoustics ZA2 £397 (inc. VAT) from RKMS 0115 961 1398; www.rkms.com