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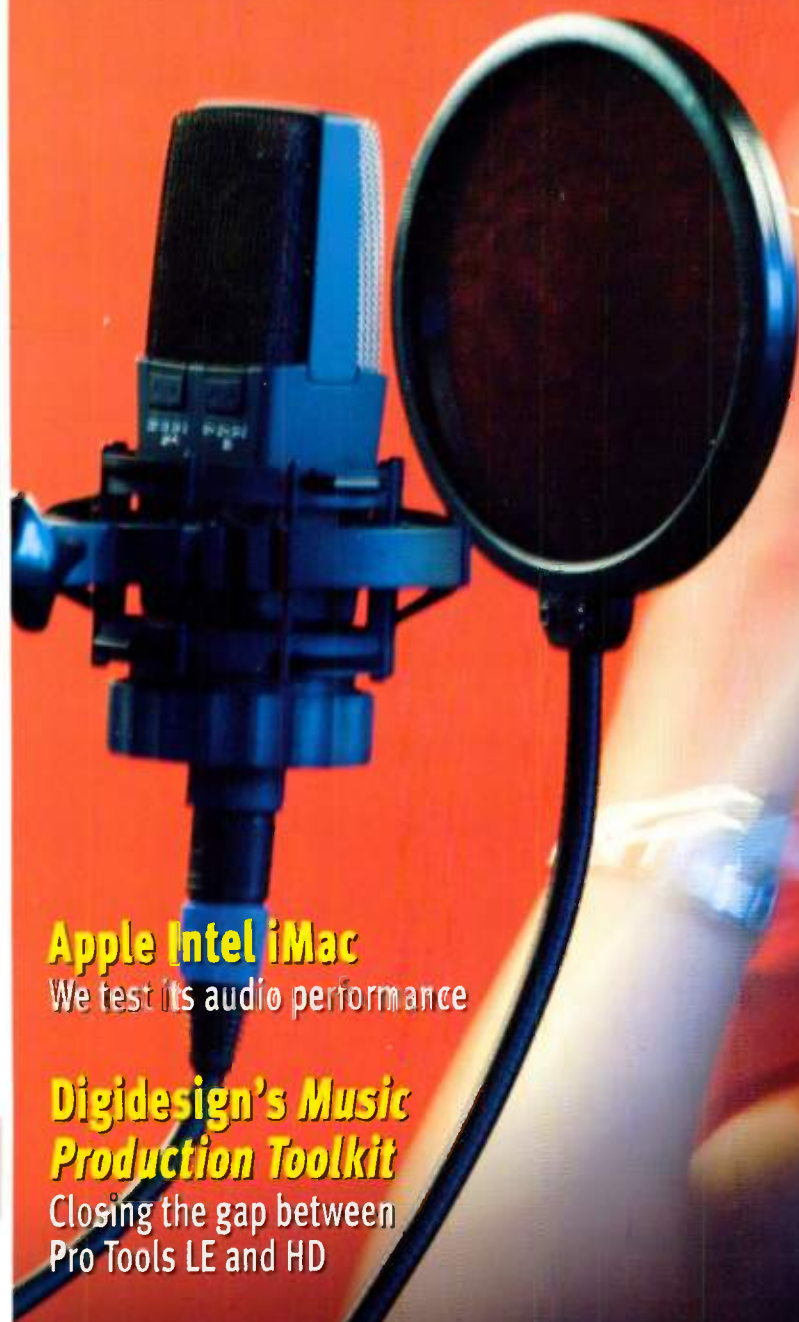
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SOUND ON SOUND

Vocal Recording

The ultimate guide



Apple Intel iMac

We test its audio performance

Digidesign's Music Production Toolkit

Closing the gap between Pro Tools LE and HD

Classic Tracks: Madness

How 'Our House' achieved pop perfection

The end for vocal booths?

SE Electronics Reflexion Filter

WIN Arturia Brass software instruments worth £1000

- Yamaha HS80M Monitors ■ Great River ME1NV High-grade preamp ■ M-Audio Axiom 25 Portable USB keyboard
- Samson C01U USB mic ■ Joe Boyd The king of folk-rock ■ Yellow Tools *Independence* Mega software sampler
- Lynx Aurora Mastering-grade converters, project-studio price ■ *Wavelab 6* What can spectral processing do for you?
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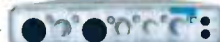
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Full Circle?

The recording industry has gone through some pretty interesting twists and turns over the past two or three decades — first with affordable multitrack tape, then with digital formats such as the Alesis ADAT and the Tascam DA88, and now the all-pervasive computer. We have affordable, studio-quality microphones, very respectable active monitors and practical solutions to home studio acoustics, all at far less than the cost of those early tape-based systems. So why isn't everyone happy, and where will it all go next?

Clearly, those companies that manufacture hardware synths, samplers and drum machines can't be over the moon at the way software instruments have replaced their hardware counterparts in the studio, but when you think about it logically, they are the last people who should be surprised. After all, it was the synth manufacturers who got behind MIDI, and MIDI led to sequencing. It soon became evident that sequencing was best handled by computers, as a screen is a good way to display a lot of information, and if you want to integrate audio and MIDI, then putting it all in the computer makes more sense than trying to sync a hardware recorder to a computer or *vice versa*. Once you get to that stage, putting the instruments into software makes perfect sense as all the settings are saved with the song, there are no wiring problems or rack space issues, and the sound quality is as good as that of your audio interface.

Today we see hardware fighting back, in the main using the 'if you can't beat them, join them' philosophy. Already we have a number of manufacturers launching outboard effects and processors that can be controlled via a plug-in-style editor window. Of course their advantage is that they take no CPU load, which in turn

means you can hang onto the same computer for longer. This is often a good thing, not only for financial reasons, but because once you have everything working perfectly, the last thing you want to do is start again from scratch with a new system, especially if there's just been a major OS or hardware upgrade that leaves you with non-compatible plug-ins for the next year or so while all the individual software companies play catch-up!

Manufacturers of audiophile hardware are also looking at analogue summing mixers as a way to warm up the supposedly sterile sound of digital mixes. If this does indeed catch on in the mainstream, then it will provide a straightforward means for users to route hardware MIDI instruments directly into their mix, and if they include plug-in-style control panels, none of the advantages of 'in-the-box' production are lost. After all, the main benefit of a computer is not that it does everything, but rather that it provides a central point of control and display, and it remembers all of our songs and settings. If we can evolve new systems that are a true symbiosis of computer technology and outboard hardware, then raw computer power will become less of an issue and we may finally get the stable systems we demand with all the processing and music-generating power we need. Indeed, external console-style mixers may again come back into fashion if a standard can be agreed to automatically save their settings directly into a sequencer song whenever you press a Save key.

So will the day come when we'll again get to see the majority of our synths and processors as external rack units or Firewire DSP boxes, our hard disk recorders as independent rackable units, and the computer as mainly a MIDI sequencer, sample player and control centre? It all depends on the will of the industry to co-operate in the same concerted way they did when agreeing the MIDI standard that created their problems in the first place!

Paul White Editor In Chief



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techniques

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Robert Moog may no longer be with us, but the legacy of the instruments he created continues, and this year's Frankfurt Musikmesse saw the official announcement of one more — the final instrument he worked on before his death last year. For some time, rumours had been circulating that Moog's company would be releasing a cut-down version of the Voyager analogue synth (reviewed back in *SOS* June 2003), and they proved to be correct.

The Little Phatty, which Bob Moog's company anticipate selling for around half the price of the Voyager (currently retailing for about £2000), is an all-analogue two-oscillator 37-note keyboard monosynth with one filter (the classic Moog 24dB-per-octave 'ladder' design, naturally) and two four-stage envelopes, one for amplitude and one for the filter. Modulation options are somewhat cut down compared to those on the Voyager, but there's still one mod buss with six possible sources and four destinations. As on the Voyager and the original Minimoog, there's an audio input, but unlike the original Mini, MIDI is built in as standard! Keyboard Gate and Pitch, Volume and Filter CV connections are also included.

The user interface is also simplified from that of the Voyager, but there's still one knob for each section of the synth (Modulation, Oscillators, Filter, Envelope Generators, and Output). Although they all have LED collars apart from the output Volume control, the knobs are pots with end stops, not infinite encoders — when you select a new parameter and the role of the knob changes,

Introducing the Little Phatty

Bob Moog's last project debuts in Frankfurt



the LED collars indicate the new parameter's value (the exact value is also shown on the two-line LCD at the left of the front panel). When you grab and turn a control, the parameter starts to change immediately.

100 user presets were included in the model shown at the Messe, but these may well change before the synth is released later in the year — former colleagues of Bob Moog admitted that just as Bob used to do, they were up programming the presets into the new synth into the small hours of the morning before the Messe launch.

"Bob always used to say that without trade shows, nothing would ever be finished," quipped one of them. The Little Phatty is currently scheduled for release in late Summer 2006, trade-show schedules notwithstanding! The first 1200 manufactured will be limited-edition Bob Moog Tribute models similar to the prototype pictured here, featuring Moog's signature on the front and rear, wooden side panels, and a Moog commemorative poster. Turnkey (0)20 7419 9999 www.turnkey.co.uk www.moogmusic.com

New from Neumann

TLM49 cardioid makes its Messe debut

In these days of super-affordable Far Eastern mics, it's not often that we hear of new products from pioneering mic company Neumann, but this year's Messe saw them announce the TLM49, a new large-diaphragm cardioid condenser mic for speech and vocal recording (although Neumann suggest it will also sound good used on strings, piano and acoustic guitars). As with Neumann's other TLM (Transformer-Less Microphone) models, the TLM49 eschews the use of an output transformer, using a proprietary electronic circuit instead for better low-noise performance and distortion handling — Neumann claim the TLM49 can take signal levels of up to 114dB without distorting.

The look of the TLM49 harks back to 1950s Neumann mics like the M49 and M50, and the company claim that the mic's sound is similar to that of the M49 and the world-renowned U47, due to the TLM49's use of the 34mm-diameter K47 mic capsule, as used in both the M49 and U47. Of course, being a Neumann, it's not cheap at £1056.32 including VAT, but then you get what you pay for! An EA3 elastic suspension cradle is included in the price.

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Room for improvement

Genelec unveil networkable speakers with DSP room optimisation

Finnish speaker manufacturers Genelec chose the Frankfurt Messe to announce their take on the 'speaker incorporating DSP measurement and room optimisation' concept. For years the preserve of seriously expensive speakers like the Meyer Sound X10s (reviewed by a very impressed Hugh Robjohns back in *SOS* May 2000), in the last couple of years, speakers with DSP optimisation have started to filter down to the level where they are affordable in project studios — the Dynaudio Air series, Tannoy's Ellipse and Precision IDP monitors, and JBL's



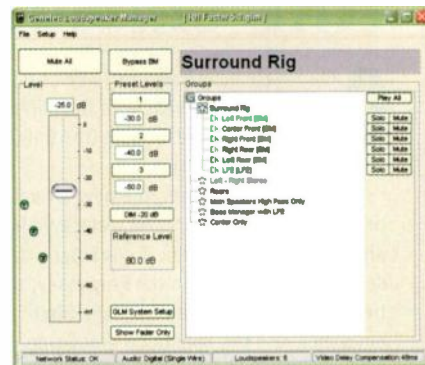
recently reviewed LSR4300 series spring to mind.

The idea is simple — rather than leave you with the responsibility of trying to improve your mixing environment with acoustic treatment, these systems take measurements from your mixing/control room via a high-quality measurement microphone, and apply EQ and processing to your audio to compensate for troublesome room frequencies before it reaches the speakers, in theory providing you with as neutral an environment for mixing as possible. Genelec are fairly restrained in their claims for their 8200 DSP nearfield monitoring systems, reasoning that they've spent many years making their speakers as good as they can, so it now makes sense to have put some effort into attempting to improve the things they have less immediate control over, such as the rooms in which their speakers are used.

The 8200 systems are, in effect, modular: two different sizes of monitor and three sizes of subwoofer are available, and setups

comprising up to 25 monitors and five subwoofers can be assembled. They can accept analogue or digital signals (the latter at up to 24-bit AES-EBU format, at any sample rate from 33kHz to 192kHz), and the response of the monitors in your desired configuration can be manually adjusted to some extent via DIP switches on the rear of the speakers, and at the side of the subwoofers. For full control, however, you need to use the speakers digitally, networking them via CAT5 cable and connecting them to a computer running the cross-platform *GLM (Genelec Loudspeaker Manager)* software, pictured above right, which guides you through the process of cabling and correctly configuring the speakers in your chosen system (2.0 stereo, 4.0 quad, 5.1 or 7.1 cinema surround, and so on). The system setup info can then be stored in the speakers and the software disconnected until the next time you wish to reconfigure the system.

The most important element in the 8200 system is the cross-platform *Autocal* acoustic calibration software, which works in conjunction with the supplied 8200A measurement microphone, a rebadged Panasonic mic (pictured here). You can enter calibration characteristics directly into *Autocal* if you wish, but as its name suggests, the software will automatically analyse your room if you prefer. To do this, it sends a test tone out through each speaker, records the result via the attached measurement mic, and produces a series of EQ curves which are then applied to the speakers to optimise them for the room in which they're installed. Delays are also automatically introduced to help to compensate for distant loudspeaker placement in large systems, and signal phase is automatically adjusted for the subwoofer signals. You can even carry out multiple recordings of your room from different angles and have the software include these in its analysis to aid it in generating a more accurate response, or one that is suited to mix teams of up to three people sitting in



different parts of the room.

As the 8200 systems are modular, there is no one system price, and all the components are priced individually. The bi-amplified 8240A (pictured left) features a 6.5-inch woofer and 0.75-inch tweeter and is set to retail for £928.25 each. The larger 8250A speakers, which sport an eight-inch woofer and one-inch tweeter, are £1398.25 each. One price, £305.50, is charged for a bundle comprising the 8200A mic and the *GLM* and *Autocal* software. The subwoofers are priced at £1645 for the smallest, the 7260A, £2115 for the middling 7270A, and £2937.50 for the largest, the dual-woofer 7271A. All prices include VAT. The 8200 systems are due to begin shipping in early Summer, so look out for a full review in *SOS* in the next few months!

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BBC searches for composers

The BBC's Natural History Unit are looking for a new composer to write music for a forthcoming programme. Those entrants who make the initial shortlist will be invited to masterclasses from experienced composers like George Fenton, who composed the music for the recent *Planet Earth* documentary series. From the shortlisted group, one person will be commissioned to compose for a forthcoming BBC Natural History programme, working closely with series producers. The entry task will involve writing music to a three-minute mute clip (available on-line at www.bbc.co.uk/newtalent) and submitting either a CD by post or an MP3 file on-line. The search is intended for new composers and is not open to applicants who have previously received BBC television commissions. Applicants must also have the facilities to write music to picture. Readers without broadband access can get a hard-copy application pack by calling 08700 106060. Closing date for entries is 28th July 2006.

www.bbc.co.uk/newtalent

Creamware's ASB Odyssey ARP emulation launched at Frankfurt

Creamware have had a busy year: having premiered their ASB (Authentic Sound Box) series of hardware vintage synth emulations at Frankfurt *last* year with the Minimax and Pro 12 (eventually reviewed in *SOS* in January and May this year), they announced a Hammond-style module (the B4000 ASB) at NAMM in January. Now the range has grown again with the debut of the Prodisysey ASB at this year's Messe.

As its name suggests, the new arrival is a recreation of 1972's ARP Odyssey monosynth, and it offers many features from the original: dual oscillators, AR (Attack/Release) and full ADSR envelopes, a 24dB-per-octave self-oscillating filter (on the Prodisysey, this can be switched between an Odyssey filter emulation and the Minimoog-emulating one from Creamware's Minimax ASB), a noise source, an external audio input, and ring modulation. However, like others in the ASB range, the Prodisysey also surpasses the spec of the instrument it emulates, offering 12-note polyphony, computer-based editing via a USB connector and supplied software and built-in effects (delay, chorus and a flanger). It's due to be released in the early Summer, and is expected to cost £749 including VAT.

Sonic8 +44 (0)8701 657456.

www.sonic8.com www.creamware.de



New pad controller from Akai

Akai have unveiled the MPD24, a USB MIDI control unit. It features 16 velocity-sensitive pads, eight continuous rotary encoders and six programmable sliding faders. All pads, sliders and pots can be used to control DAW parameters, and the unit features dedicated transport control buttons. There are four pad banks, allowing for up to 64 assigned sounds, and there's a generous backlit screen for displaying the unit's parameters. An included software bundle features a library of samples from classic drum machines and there's a Mac and PC editor. The unit can be powered by USB when plugged into a computer or by an optional mains adaptor when controlling external devices via MIDI. Although pricing had not been confirmed when we went to press, it is our understanding that the MPD24 will be priced to compete with the likes of M-Audio's Trigger Finger — we certainly hope so! It will be available later this year.

Akai have also released a new software update for their MPC1000 music production centre, available now to download from www.akaipro.com/support.php. The v2.0 software features a new delay effect, sample reversing, off-line time-stretch and pitch-shift functions and a Slice Sample tool that detects the beats within a drum loop. External hard disk drives are now supported, although Akai only officially approve of five specific models — you can find a list at www.akaipro.com/prodMPC1000.php. All new MPC1000s will all come with the latest software installed. Akai have also changed the colour of the unit from blue to black.

Numark UK +44 (0)1252 341400 www.akaipro.com



Presonus provide Roland's missing link

At Frankfurt, Presonus were showing a very early version of a multi-channel Firewire audio interface they've developed for Roland gear, equipped with the latter company's proprietary R-Bus audio protocol. A prototype of the so-called V-Fire was on display at the show passing multi-channel audio from a VS2480 into a Firewire-equipped PC laptop running *Sonar*, and was also allowing users to control on-screen faders in Cakewalk's software by moving the hardware faders on the VS.

The implications are good for owners of R-Bus-equipped Roland gear: they should now be able to use their Roland hardware as a front end for their computers. A VS2400CD or VS2480, for example, could act as a multi-channel preamp, A-D converter box and control surface (although the precise extent to which control data is passed via the V-Fire is not clear at present). We'll bring you more information on the V-Fire when we have it — shipping dates and pricing had not been confirmed as we went to press.

www.presonus.com



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WRD



Korg in control

New affordable USB controller includes piano sounds and software M1

Korg had a busy NAMM show in terms of product launches in January, so it wasn't surprising to see them having a quiet Musikmesse. The buss-powered K-series USB keyboard controllers were amongst Korg's NAMM launches, but at Frankfurt they announced the K61P, a slightly different package which includes built-in piano sounds in addition to the K61's full-size keys and joystick-style ClickPoint controller.

There are 24 sounds in the K61P in total, including six acoustic pianos and five electric pianos, plus a selection of other sounds, such as organ, strings and Clavinet. What's more, the K61P is bundled with a cut-down version of the software M1 emulation from the *Legacy Collection* (the full version of which was reviewed in *SOS* back in February). *M1 LE* lacks the patch card data and new resonant filters

from the full version of the software M1, but is otherwise a fully working version. Also incorporated in the bundle is a software editor, usable with Mac OS X and Windows XP computers, plus demo versions of five other software packages, including composition software (for example Ableton *Live* and Propellerhead *Reason*) and virtual instruments (the full Korg *Legacy Collection* and IK Multimedia's *Lounge Lizard EP3*).

Best of all is the price for all this — Korg expect it to be around £200 in the UK. Following purchase, K61P owners can also upgrade *M1 LE* to the full *Legacy Collection Digital Edition* at a preferential price, although this wasn't settled when we went to press. All in all, a deal not to be sniffed at!

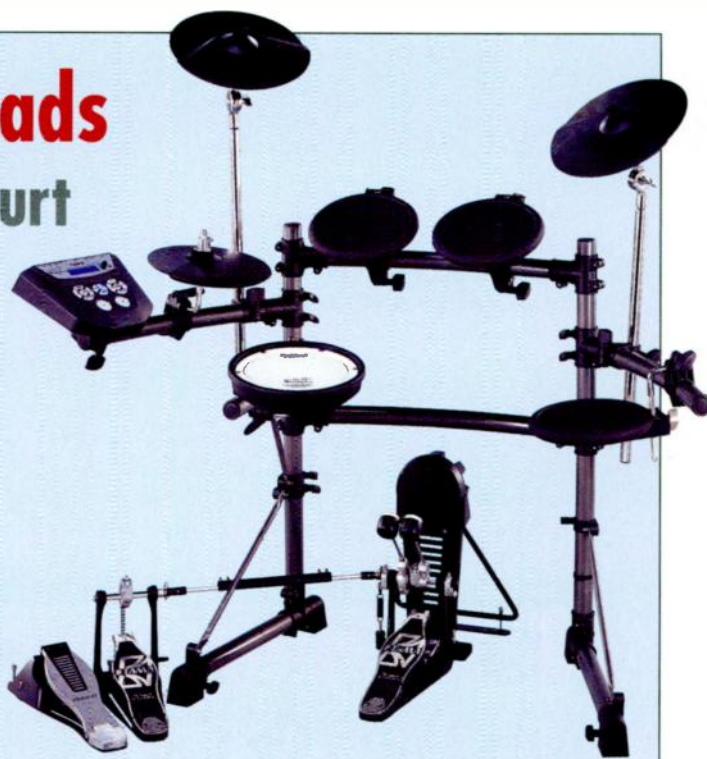
Korg UK Brochure Line +44 (0)1908 857150 www.korg.co.uk

Roland's hip new pads

New V-Drums at Frankfurt

Two new V-Drum kits were announced by Roland at Frankfurt this year. The new kits replace the existing TD6KV and TD3KV kits and incorporate two new electronic pads. Both the TD6KW and TD3KW include the new PDX8 snare pad (a 10-inch mesh-head pad with a separate rim trigger) and the new CY5 electronic cymbal trigger (which is larger than the previous CY8 and swings on its stand when hit for a more realistic playing feel), in combination with existing Roland drum pads and the existing TD3 and TD6 drum sound modules. The TD6KW also comes with a new curved pad rack, the MDS6C. The TD6KW (pictured here) retails for £1149 and the TD3KW for £799, while the PDX8 and CY5 can be bought separately (for those who wish to upgrade older V-Drum kits) for £149 and £49 respectively. The MDS6C can also be bought separately for £149. All prices include VAT.

Roland UK +44 (0)1792 515020 www.roland.co.uk



Dolphin Music open high street shop

Dolphin Music are expanding out of the world of Internet sales and have opened a new guitar shop in Liverpool. Their focus is on rare guitars and boutique amps, but they also stock a wide variety of new products including recording technology aimed at guitarists. Simply called The Guitar Shop, Dolphin's first outpost on the high street is on Ranelagh Street, in central Liverpool. Dolphin Music's director

Jason Tavaría said, "We are trying to create a music retail quarter in Liverpool, similar to Denmark street in London". For more information, check out www.dolphinmusic.co.uk/liverpool. Dolphin Music's on-line division will carry on as normal.

Dolphin Music +44 (0)8708 409060 www.dolphinmusic.co.uk

reality check

Ready for a dose of reality?

When choosing reference monitors for mixing and music production, accuracy is essential. Speakers that sound "good" on first impression may not necessarily be accurate. You need an honest reference for your mix. Not monitors that have been tweaked or coloured to sound impressive.

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RRP £129

 **YAMAHA**
www.yamaha-music.co.uk

Terratec Area 61

New keyboard and software synth

Terratec have designed a new controller keyboard featuring a built-in USB 2.0 audio and MIDI interface. Christened the Area 61, it has (you guessed it) 61 semi-weighted keys with two separate aftertouch zones, pitch and mod wheels, transport controls and 10 assignable rotary encoders. Each of these rotary knobs is surrounded by a ring of LEDs to indicate its value. The USB 2.0 interface, which is compatible with Windows XP and Mac OS X, provides MIDI in and out and two analogue inputs and outputs at 24-bit/96kHz, and there's an additional headphone output with its own volume control. Unusually, it's also possible to add sounds to the Area 61 via a single expansion card slot. The Komplexor expansion card features Terratec's new *Komplexor* synth plug-in (of which more shortly) while the Wave Xtable card is a 128-voice, GM- and XG-compatible expansion board featuring 500 sounds. Parameters are controlled via the Area 61's LCD screen and control knobs, and the audio output can be routed both to the analogue outputs and into a computer via USB.

The *Komplexor* plug-in is a virtual analogue software synth for Windows PCs based on the Waldorf Micro Q synth — in fact, *Komplexor* can import Micro Q patches directly! It has three oscillators, two multi-mode filters, four envelopes and three LFOs. Add to this a 16 x 16 modulation matrix, five effects (delay, reverb, chorus, phaser and distortion), a vocoder and an arpeggiator and you're left with a pretty powerful and complex synth. Presets can be of course be transferred to the Area 61, which comes with both the *Komplexor* software and expansion board. *Komplexor* can operate in stand-alone mode or as a VST plug-in, and it's compatible with Windows 2000 and XP.

The *Komplexor* software should be available by the time you read this, while the Area 61 is due in the Autumn. UK pricing had not been fixed when we went to press, though the published Euro prices of 199 Euros for *Komplexor* and 599 Euros for the Area 61 should offer a rough idea.

SCV London +44 (0)20 8418 0778.

www.scvlondon.co.uk

www.terratec.net



Saffire's Sister

Focusrite add to Firewire family

Focusrite have announced the Saffire LE, a more affordable version of their popular Saffire desktop audio interface. Besides being a different colour (black and silver, as opposed to white and silver), the new version has two extra analogue inputs, making four in total. The compromise is that the Saffire LE has two fewer analogue outputs — there are six in total, on balanced TRS



jacks — and it doesn't offer on-board effects processing. There are two phantom-powered mic/line/instrument preamps with XLR and TRS inputs, plus coaxial S/PDIF and MIDI inputs and outputs and two Firewire 400 ports. The unit can be powered by either the Firewire buss or the included external PSU.

Front panel features include gain knobs for the two preamps, overload LEDs for all four analogue inputs and a monitor level control. The headphone output, which mirrors analogue outputs three and four, is also located at the front and has its own level control. Surround mixing is possible using the

six analogue outputs; handy legending next to each TRS socket indicates which 5.1 channel is represented. AC3 and DTS surround formats can also be streamed from the S/PDIF output.

Although the Saffire LE lacks the on-board DSP of the original Saffire, the same compressor, EQ, reverb and amp-modelling plug-ins are included in Audio Units and VST formats. Focusrite's *Saffire Control LE* software, which provides a control panel for the unit's settings, is also included, together with Novation's *Bass Station* virtual instrument, Ableton *Live Lite*, FXpansion's *BFD Ultralite* and half a gigabyte of loops and samples compiled by Loopmasters.

The Saffire LE will be available at the end of May and will cost a very attractive £239. For more information, see Focusrite's web site.

Focusrite +44 (0)1494 462246.

www.focusrite.com

Universal Audio to develop Neve plug-ins

Universal Audio have announced an agreement with AMS Neve to produce plug-in emulations of Neve hardware for the UAD1 processor card. At this early stage, details of pricing and availability are sketchy, but we do know that the first plug-in to arrive will be an emulation of the Neve 1073 EQ. The brief demo we had of it at the Frankfurt Musikmesse promised great things, so watch this space!

www.uaudio.com

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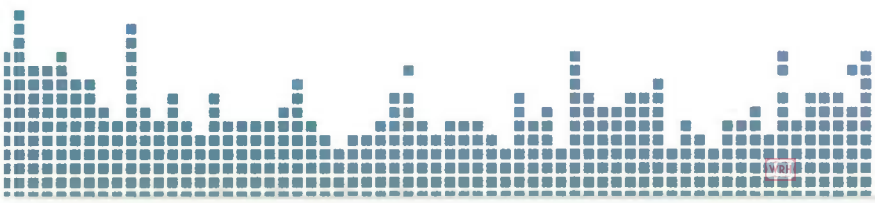
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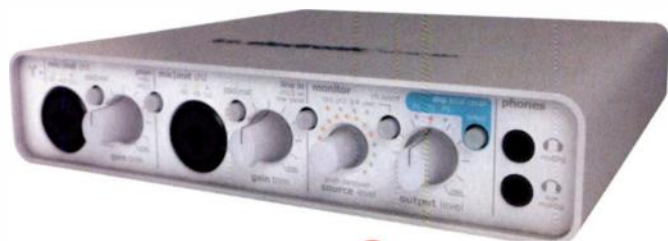
* Contains GUITAR RIG Software. RIG KONTROL available separately.

NI NATIVE INSTRUMENTS
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The Konnekt 24D multi-channel Firewire interface is TC Electronic's first foray into the soundcard market. It features four analogue inputs and outputs, two mic preamps and MIDI in and out. Its digital section can handle ADAT optical and stereo S/PDIF inputs and outputs, supporting sample rates up to 192kHz. The Konnekt 24D also has



Cubase LE and costs £410. It's expected to ship in June.

Also new from TC Electronic is a PCI Express-compatible Powercore card. The long-awaited Powercore Express processing card caters for computers with PCIe slots and comes with 14 plug-ins, benefiting users of new Apple Power Mac G5s and PCs that only have PCIe slots. The Powercore Express will ship in June and costs £939.

Another recently announced product is the M350, a dual-engine effects processor with 15 new reverbs and 15 multi-purpose effects. The unit (pictured at the top of the page) can also be controlled from within DAW systems using an Audio Units- and VST-compatible editor. There are 256 factory presets with space for 99 user presets

TC interface packs Powercore punch

built-in plug-in processing capabilities and ships with Powercore's *Fabrik C* and *Fabrik R* compressor and reverb plug-ins. Unusually, the interface (pictured above) also has a stand-alone mode, where it functions as a mixer and effects processor. When in this mode, pre-programmed DSP settings can be recalled and edited using the rotary controller on the front panel. The Konnekt 24D comes with

and, alongside its TRS analogue inputs, the unit can handle 24-bit digital signals on coaxial S/PDIF. There is MIDI in and out and a pedal input for tap-tempo control. The M350 should be shipping by the time you read this and will cost a very affordable £187.

TC Electronic UK +44 (0)800 917 8926.

www.tcelectronic.com

New Fireface interface RME unveil the Fireface 400

RME have unveiled the Fireface 400, a highly portable little brother for the Fireface 800. The Fireface 400 is a compact half-rack, 18-in/18-out unit. There's a pair of mic/line inputs and two independent instrument/line inputs at the front, with a further four inputs on balanced TRS jacks on the back panel, together with ADAT optical and coaxial S/PDIF inputs and outputs. There are eight analogue outputs in total — six on balanced TRS jacks at the rear and two in the form of a single stereo headphone output on the front panel. Finally, there are two MIDI inputs and outputs on a breakout cable and rear-panel word clock in and out with RME's low-jitter Steady Clock technology. The Fireface 400, which, as its name suggests, uses the Firewire 400 (IEEE 1394a) protocol, can be buss- or mains-powered and supports sample rates up to 192kHz. It's set to ship in June, with drivers for Windows 2000 and XP and Mac OS X, and will cost £649.

Other new RME products include the six-way MADI Converter (£1299), allowing users to convert between BNC and optical MADI formats, and the ADI6432, a 64-channel two-way MADI-to-AES converter (£2100). Head to the RME web site for more information.

Synthax +44 (0)1664 410600 www.synthax.co.uk www.rme-audio.com



Countdown to global music collaboration

Studio owner, documentary maker and composer Martin Voll is setting off on a three-year round-the-world music project in an attempt to create a global artistic collaboration. To commence phase one of the project, Martin has composed a short piece — downloadable from his web site (www.freewilltravel.com) — that he hopes will spark a chain reaction of musical work. On his travels, Martin will record carefully selected musicians with his Edirol R1 portable recorder before loading their pieces into an MP3 library on the site. Anyone is welcome to contribute to the project and submit their own interpretations of the work. There will, of course, be some basic quality control, but the project will promote collaborators' individual styles. In 2009, the project will enter phase two — releases on CD and DVD for charity, including both audio and a documentary filmed by Martin on his journey. Contributors will vote on the choice of charities along with other important project decisions. Martin's adventure will begin on the 21st May and you can track his progress on his web site. We wish him good luck! www.freewilltravel.com

Evening classes for music theory beginners

London School of Sound have announced a new part-time course for beginners in music theory, aimed at remixers, DJs and self-taught producers. The course will look to solve common problems — like finding the key of a track and understanding chords and scales — by combining basic music theory with practical keyboard skills. Students on the course will have access to an array of classic keyboard instruments, including a Wurlitzer and two Fender Rhodes electric pianos, an acoustic piano and a Hammond organ. The course, costing £750, will start on 13th June with evening classes once a week for 12 weeks. Places are limited — there are only four students per course. Check out the LSS web site for more information.

London School of Sound +44(0)20 7354 7337.

www.londonschoolofsound.co.uk

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Emu unveil new USB interfaces



Following the release of new MIDI controller keyboards and software at Winter NAMM, Emu have announced two new USB interfaces. The 0404 USB features two phantom-powered mic/line/instrument preamps, a pair of balanced TRS outputs, and stereo S/PDIF-cum-AES-EBU input and output on coaxial and optical connectors. The unit can handle 24-bit/192kHz signals and has MIDI in and out but, although it connects using USB, it cannot be buss-powered. It's got useful top-panel controls with gain pots for the analogue inputs, main and monitor output controls and independent headphone level adjustment, along with status LEDs for MIDI, S/PDIF and monitor source. The 0404 USB will be available in June, costing just £149.99. It ships with the *Production Tools* software bundle, which includes stripped-down versions of software from Cakewalk, Steinberg, IK Multimedia and Ableton.



The 0202 USB offers two preamps suitable for line or instrument signals, one of which handles mic inputs but does not supply phantom power. It has a pair of analogue outputs but no digital or MIDI options. Unlike the 0404 USB, the 0202 can be powered from the USB buss. It will cost just under £100 and will also be available in June.

Emu Europe +44 (0)800 901 2168 www.emu.com

Look, no keys! Novation launch Remote Zero SL controller

The latest addition to Novation's Remote SL range of USB controller keyboards isn't a keyboard at all! The Remote Zero SL is aimed at anyone who already has a keyboard but hankers after the SL's LCD displays and ample complement of assignable controls. It's a very sensible move from Novation — after all, who wants to pay for the keyboard if all they want is the controls? The Zero has eight trigger pads, eight faders and 16 rotary knobs, plus lots of assignable buttons and dedicated transport controls. It's class-compliant with Windows XP and Mac OS X and has USB and conventional MIDI ports. The LCD screens

display the parameters being changed and the Remote Zero SL comes with Novation's *Automap* software which automatically maps the functions of the software currently selected, or the DAW itself, onto the control surface. At the moment, *Automap* supports *Cubase SX*, *Reason*, *Logic Pro 7*, *Nuendo 3* and *Live 5*, with more to come. The Remote Zero SL costs £229 — less than any of the other Remote SL keyboards thanks to its lack of keys — and will be available in June.

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www.novationmusic.com



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Good timing Serato *Pitch 'n Time* 'n Time gets Logic support

There's a new version of Serato's *Pitch 'n Time* time-stretching and pitch-shifting plug-in on the way. While *Pitch 'n Time* is an Audiosuite plug-in and so only available to Pro Tools users, the new *Pitch 'n Time LE* is designed to operate inside Apple *Logic Pro*, using *Logic*'s existing Time Machine graphical interface, but it will also run in *Pro Tools* within a new plug-in-style window (pictured below). Interestingly *Pitch 'n Time LE* provides different features to *Logic* and *Pro Tools* users. In *Logic Pro*, the tempo can be modified by up to 800 percent, while pitch can be changed by ± 36 semitones. In *Pro Tools* it only allows 200-percent tempo alteration and ± 12 semitones of pitch modification, although the user can preview changes in real time and control *Pitch 'n Time LE* from their trimmer tool, which isn't possible in *Logic*.

The full version of Serato's plug-in features, among other things, a multi-channel mode, a waveform view and more flexible pitch and tempo mapping. The graphical interface is different, too, and allows the user to 'draw on' pitch and temporal changes.

Pitch 'n Time LE will run in *Pro Tools* v6 and above, under Windows XP and Mac OS X. *Logic Pro* users require version 7.2. It will be available later this month costing around £305.

SCV London +44 (0)20 8418 0778.

www.scvlondon.co.uk www.serato.com



Channel Strip For Garage Band

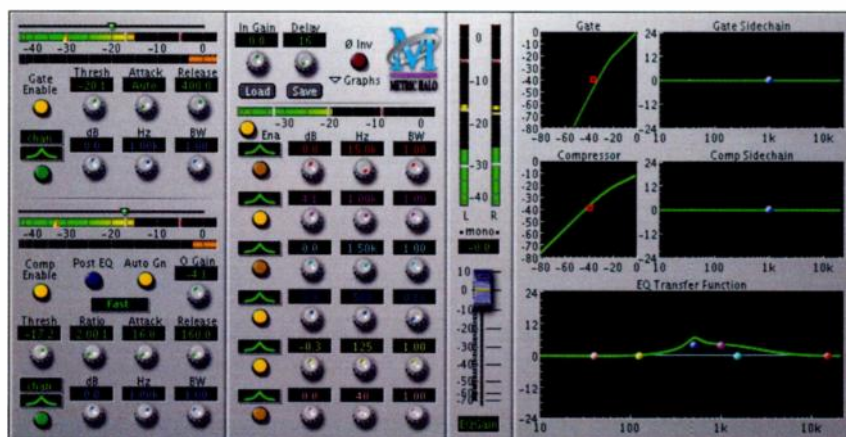
Metric Halo release *Garage Band*-only version of pro plug-in

Metric Halo's *Channel Strip* plug-in has been available for some time in native and TDM formats. However, as its name suggests, the latest version — *Channel Strip For Garage Band* — is designed purely for Apple's *Garage Band* music creation software and will only work with it, although it will run in demo mode within other Audio Units hosts. All features from the original *Channel Strip*, which

features expander/gate, EQ, compressor and time-alignment delay sections, are preserved in the *Garage Band* version and the only limitation (apart from only working with *Garage Band*) is the lack of telephone support. *Channel Strip for Garage Band* is available now and costs just under £60.

Stirling Audio +44 (0)20 8963 4790.

www.stirlingaudio.co.uk



Sons of the Stage Clavia introduce new version of flagship performance keyboard

Swedish keyboard manufacturer Clavia made a splash last year with their lovely Nord Stage 88-note weighted live performance keyboard (reviewed in *SOS* back in February), and announced a 76-note version at January's NAMM show. At the Musikmesse in Frankfurt, they introduced a further member of the family, the Nord Stage Compact, a 73-note version of the Stage with a synth-style semi-weighted 'waterfall' (square-fronted, organ-style) keyboard. As its name suggests, the Compact is designed to provide prospective players with an even more giggable instrument, one that is both physically smaller and lighter (it weighs just under 10kg compared to the 18.5kg of the 88-note Stage). The Nord Stage Compact is expected to retail for £1849, which is a little less than the £2195 of the Nord Stage 88 and the £2095 of the Nord Stage 76.

Also at Frankfurt, Clavia released details of a v2 OS update for all Nord Stages, which contains a new close-miked version of the existing Steinway D piano sound and a version of the Yamaha C7 sound with more velocity layers [*Stop Press: this was followed by a v2.1 update with further tweaks to the dynamics of the new sounds — Ed*]. The new piano sounds have also been made available for Clavia's older Nord Electro keyboards with a version 3 OS update. The updates and sounds are free to download from Clavia's web site.

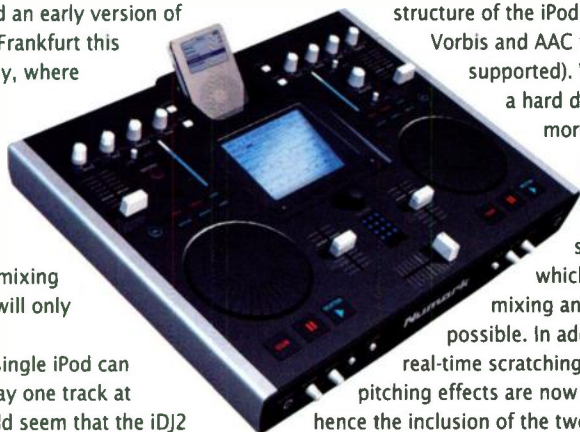
Hand In Hand +44 (0)1579 326155 www.handinhand.uk.net www.clavia.se

Numark's iDJ gets revamp — already!

We first mentioned Numark's intriguing iDJ iPod mixer when it was announced at the Summer NAMM show last year. The white, iPod-styled iDJ is now shipping, but Numark have already announced its eventual replacement, the iDJ2, and showed an early version of the hardware at Frankfurt this year. Interestingly, where the original iDJ needed two iPods to work (each iPod acting like a record deck in a conventional DJ mixing setup), the iDJ2 will only need one!

Of course, a single iPod can normally only play one track at once, but it would seem that the iDJ2

works completely differently to the original iDJ, in that it merely treats the connected iPod as an attached hard drive (instead of using Apple's playback user interface) and fetches whichever audio files the user selects for mixing from the internal directory structure of the iPod (MP3, Ogg Vorbis and AAC files are supported). When used as a hard drive, an iPod is more than capable of streaming more than one file at the same time, which makes mixing and crossfading possible. In addition, real-time scratching, looping and pitching effects are now possible, hence the inclusion of the two deck-style



scratch controllers and the pitch sliders at the top of the control panel. There's a large LCD so you can see which tracks you're cueing up, and USB drives or other storage devices can be connected via USB sockets at the iDJ2's rear. Complete DJ mixes can be recorded to these, or back to the source iPod if you wish.

Apart from all these innovations, the iDJ2 features all the built-in DJ-friendly controls offered by the original iDJ, such as individual track level controls, track meters, cue buttons and transport controls, and of course the large crossfader. And as on the original, there's a mic input and quarter-inch and mini-jack headphone connectors. The iDJ2 is expected to retail for around £450 including VAT, and Numark expect to start shipping it in the Summer.

Numark +44 (0)1252 341400.
www.numark.com

Leeds College of Music update postgraduate degree program

Leeds College of Music have announced that they will be offering two new Masters degree courses. Students can study for an MA in Music Production and in Community Music. These new programs join three existing postgraduate courses in Music, Jazz and Piano Performance, which have recently been revised from MMus to MA, with accreditation from the Open University. Applications can be made through the Conservatoires UK Application Scheme (www.cukas.ac.uk), but 2006 entries must be submitted by the 31st of May.

Leeds College of Music +44 (0)1132 223400.
www.lcm.ac.uk

New Point Blank video tutorials

Point Blank have launched a new series of on-line tutorials, adapted from their Introduction to Production course. The course is based around Steinberg *Cubase SX* and involves some other production tools including *NI Battery* and *Propellerhead Recycle*. After purchasing the tutorial on-line, students receive a course pack that includes all project files, samples and a Quicktime movie with techniques explained by professional producers and engineers. Each tutorial lasts 45 minutes and, if your Internet connection isn't that quick, Point Blank will send you the course pack on CD. At present, there are five sessions available on-line at www.pointblanktutorials.com/shop. Tutorials cost £20 each and more are planned for later this year.

Point Blank +44 (0) 870 600 4884.
www.pointblanklondon.com

New short-course at Alchemea

London-based Alchemea college of audio engineering have announced a three-day course in Modern and Creative Composition. The course is aimed at computer-based musicians who want to develop their songwriting and composition skills. Students will be able to use products from Vienna Symphonic Library, Toontrack and PMI to aid their studies and a music pack, which contains books, CDs and MIDI files, will be supplied to all who take part. It's open to applicants of all levels and prior musical knowledge is not necessary. The first course, which costs £450, is scheduled for the 16th to the 18th of June. For more information about all courses at Alchemea, check out their web site.

Alchemea +44 (0)20 7359 3986.
www.alchemea.com

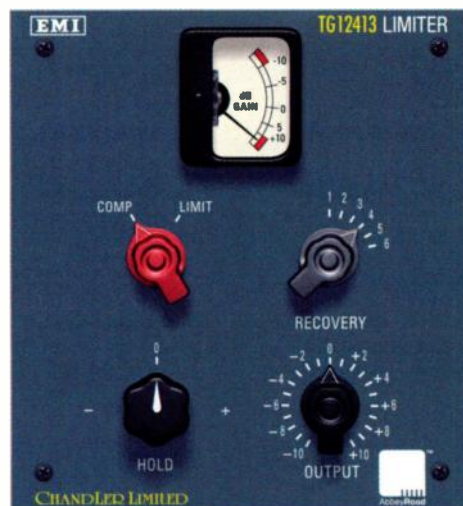
Chandler model EMI compressor

Abbey Road compressor inspires new plug-in

Chandler Limited have released the **EMI TG12413** plug-in — an emulation of the compressor/limiter module that was built into EMI's original TG12345 desk. Original hardware from Abbey Road studios was used in the development of the plug-in, which features Hold, Output and Recovery controls alongside a Comp/Limit switch

and retro gain-reduction meter. The plug-in, which can support up to 7.1 surround sound, is available for Pro Tools systems in either TDM or LE format, costing £399 and £269 respectively. It joins Chandler's existing range of Abbey Road-inspired hardware, such as the TG1 compressor and TG2 preamp.

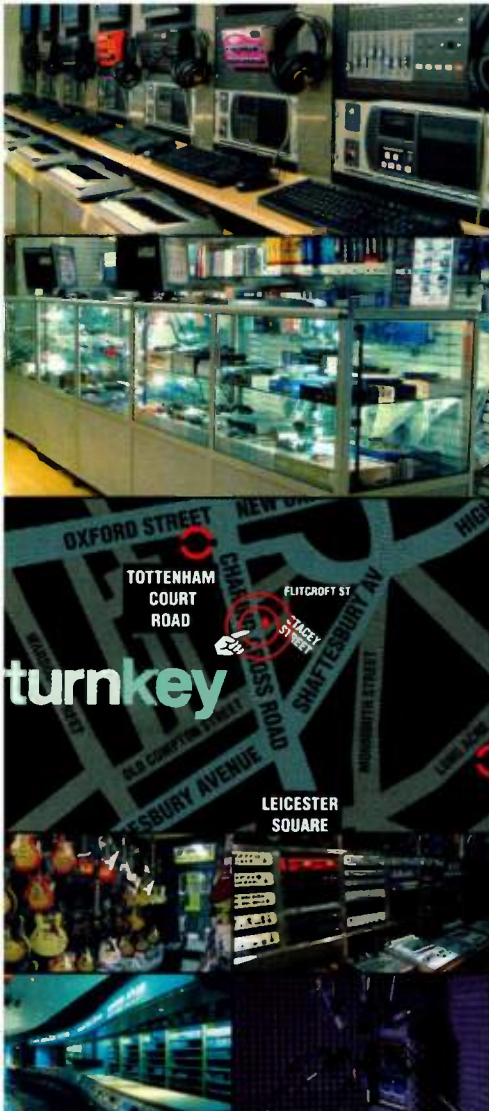
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smoothly and made it whisper quiet; and to get you up and running as quickly as possible, there's a comprehensive on-screen manual that covers the system as a whole including many easy to follow tutorials and troubleshooting guides. To top it all off, we've replaced the standard Windows desktop with our own super-clear interface that also keeps people from messing up your system.

Remote Support

A Carillon FIX modem included with every system allows our engineers to direct-dial into your machine and fix problems live!



Perhaps the most remarkable thing about the **ti** though is the price. With configurations starting from only £799 including music hardware and software that would cost well over £1,500 if bought separately, and free support, it's an absolute steal - you can't say fairer than that. Call or check the website for latest specifications.

Sonar Studio

A World Class Music Creation Environment



Always the best selling sequencer in the States, Sonar is now finally being recognised in the UK for the great application it is, with a top-notch feature list including up to 500kHz 32bit recording, track freeze, full delay compensation, MIDI FX, Rewire compatibility, loop construction tools, genuine Lexicon reverb plus a bunch of synths and FX. And let's be clear here - this is the FULL version of Sonar Studio 4, not a cut-down 'lite' version. Above all though, we chose Sonar for the **ti** for its killer combination of class leading functionality and a superb user interface - it really is a cinch to learn.

SOFTWARE

Loops

SampleLab Luscious Grooves - 5 star award from SOS with over 300Mb of a range of styles.

SampleLab Discography - another 5 star winner, full of house & breakbeat loops.

SampleLab Broken Beats - deep & dirty hip-hop, lo-fi & downbeat in full 24bit.



Sampling

Emu Emulator X - arguably the most powerful software sampler available. Includes a massive sound library.

Keyboard Instruments

Native Instruments B4 Express - Ultra-realistic Hammond sounds with software controllability.

Native Instruments FM7 Express - 64 great tweakable patches of classic FM.

Native Instruments Pro 53 Express - NI's first instrument - an utterly faithful reproduction of the classic Prophet 5.

Bread & Butter

Emu Proteus X - All 1024 presets from the legendary Proteus 2000.

Emu Mo'Phatt X - All 512 patches from the Mo'Phatt - an urban legend!

Drum Machine

Rayzoon Jamstix SE - a software drum machine that actually plays along with your tempo and dynamics!



Synths

SampleLab Analog Archive - the rarest collection of vintage synths ever sampled in awesome quality.

Emu Vintage X Pro Volume 1 - over 2Gb of vintage classics from the legendary Vintage Keys.

SFX

SampleLab Spatial Awareness - 9/10 from Computer Music - chill-out and ambient sounds abound!

Orchestral

Emu Virtuoso X - un-iversally acclaimed as the best hardware orchestral module ever, all the patches are here.

Drum Hits

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World

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Amp Modeling

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Scoring

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Ear Training

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HARDWARE

MindPrint Front End

To enable the **ti** to interface to almost anything though, we've commissioned a completely new drive-bay unit - the HP-Pre. This features a superb mic pre-amp and instrument level input designed by channel strip gurus MindPrint, which also supplies 48v phantom power to allow you to record with any mic you like, straight out of the box. In addition, there is also a very clean high gain headphone amp built-in, crucially featuring an 'audio thru' facility which means you can still have your main soundcard outputs available for speakers, and can switch between



keeping them on if the headphones are being used for foldback, or turning them off if the rest of your household need a break from your latest masterpiece!

MIDI Controllers

Eight front panel MIDI control knobs are provided and are handily pre-set and labeled for the most popular synthesizing parameters and also amp modeling controls for the included AmpliTube LE. Of course you can easily re-route these to control pretty much anything you like - really brings music making to life!



Transport Control

Front panel transport controls not only ensure you always have these vital keys immediately to hand, but also make the recording experience feel like you're using a dedicated piece of hardware.



Custom Keyboard

As well as the included optical mouse, there's also a QWERTY keyboard which we've custom made with all the Sonar shortcuts pre-printed in a clear colour coded system (Cubase and Pro Tools versions are optionally available) - great for getting to know your software quickly and easily.



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Q&A

Your technical questions and queries answered

Q Are all convolution reverb plug-ins created equal?

Are all convolution reverbs the same? I'm looking to get a decent reverb for my Pro Tools rig, and there seems to be lots of choice, and quite a variety of prices — is it just the shipped library of impulse responses that makes the difference, or is there a difference in the software? So far I have looked at Waves' *IR1*, Audio Ease *Altiverb*, WIZOO's *W2* and Trillium Lane Labs' *TL Space*.
SOS Forum post

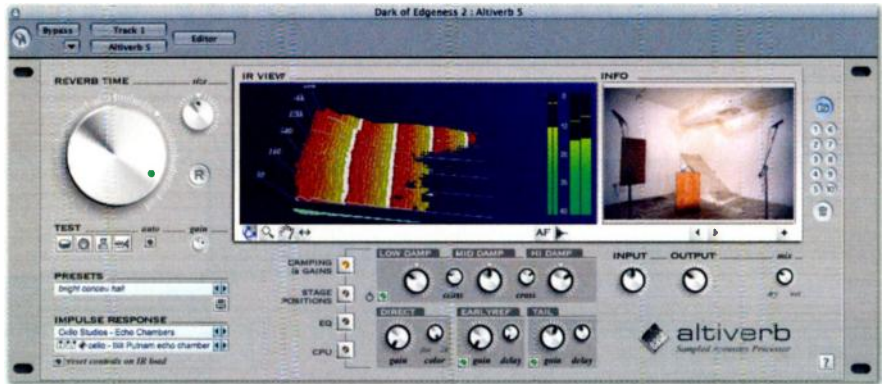
SOS contributor Martin Walker replies:

Many musicians must have at some time wondered whether there's any audible difference if you load exactly the same impulse response into several different convolution reverb engines. Well, different reverb plug-ins can sound slightly different, although you might only hear this difference on high-quality monitors in an acoustically treated room.

Perhaps surprisingly, with some convolution reverb engines you may also hear an audible improvement if you convert the impulse response itself from 24-bit to 32-bit floating point format — all you need to do is load the 24-bit IR into your audio editor, re-save it in 32-bit float format, and then load it into your normal convolution reverb plug-in. This doesn't add any extra resolution to the file, but can ensure that any rounding errors or gain adjustments during the convolution process itself are minimised.

On my PC I can certainly hear an increase in focus and transparency during reverb tails after performing this tweak on the excellent *Pure Space* IR libraries from Numerical Sound (www.numericalsound.com) when they are replayed through both Voxengo's *Pristine Space* and Waves' *IR1* plug-ins, although your mileage may vary with other plug-ins, as it depends on their internal resolution. Try it with your own plug-in — apart from a 50-percent increase in IR size your processor overhead will be identical, so you've got little to lose.

Nevertheless, these are tiny differences. The price of a convolution reverb plug-in has more to do with its versatility — how many clever controls there are to manipulate the impulse responses to make them as useful as an algorithmic reverb — and, more importantly, its bundled library of IRs.



The price of convolution reverb plug-ins, such as Audio Ease's *Altiverb* and WIZOO's *W2*, has a lot to do with the library of IRs they come with.



Although creating IRs is certainly not rocket science, and can be done by anyone with a mic, balloon and pin, doing it to professional standards in world-class acoustic spaces is an expensive and time-consuming business, so those convolution reverbs like *Altiverb*, Waves' *IR1*, and so on that come with a huge library tend to be several hundred pounds more expensive than those that don't. Third-party IR libraries tend to be expensive for the same reason.

Some people may point out that you can download loads of free IRs from various sites on the Net, but although I applaud all the effort that's obviously gone into many of them, and they are certainly a good way to add to your collection, they mostly tend to be 16-bit files, which will restrict the dynamic range of your reverb to 96dB even if your audio tracks have been recorded with 24-bit resolution. Many of the free IRs I've tried have also been truncated, while a few have exhibited hums, or excessive background noise.

Ultimately, as always, you tend to get what you pay for. All four plug-ins you mention have very good reputations, offer plenty of scope for user adjustments, and are bundled with comprehensive IR libraries. However, they all differ slightly in their feature set and scope, so if you can, the very best way to choose is to demo them at a suitable dealer so you can try out different interfaces and get a better feel for the

content of the libraries. After all, while some plug-ins are subject to fads and fashions, you'll still be using a good reverb for many years to come.

Q What do the controls on my preamp do?

I've been looking up information on some external preamps, and I found that most of them have two controls — Gain and Level. Most console preamps have just a Gain control, so what is the Level control for?

SOS Forum post

Technical Editor Hugh Robjohns replies:

Depending on how the preamp in question is designed, as a rule, the Gain control sets either the input level to the (fixed gain) preamp or the actual gain of the preamp, the latter being the more common arrangement. The Level sets the amplitude or level of the unit's output. So Gain and Level are essentially the equivalent of the channel Gain control and the fader on a console channel respectively.

Preamp Gain controls are often indented and change gain in steps of, say, 5dB, while the Level control is normally continuous. Having an output level control on an external preamp allows you to send a suitable level to a recorder. It also means you can tweak the

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* 80 note polyphony based on an average patch load. Oscillator/filter model selection can result in slightly less or even more.



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Q&A

▶ overall gain structure of your signal chain, so that you could, for example, drive the preamp quite hard into saturation while ensuring the output level won't overload the recorder or DAW.

Q What microphone should I use for single-mic recording?

I am looking for one big bluegrass microphone! I would like to purchase a high-quality one for recording my band. Can you give me some brand names to investigate and where I can order one?

Chris Girsch

News Editor David Greeves replies: The traditional way of recording a bluegrass group, and, if

you go back far enough, just about any kind of group, is to use one microphone. The musicians simply arrange themselves around the mic at appropriate distances to achieve the correct level balance between the instruments. If a particular instrument needs to be highlighted, during a solo for example, the musician can move closer to the mic and then back again.

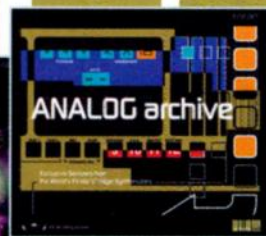
You'll still find this technique used in professional studios today, but even in the staunchly traditional world of country music, more modern techniques are far more common. When we spoke to renowned bluegrass recording engineer Bill VornDick as part of our feature on Nashville production techniques is SOS October 2002

(www.soundonsound.com/sos/oct02/articles/nashville.asp), he

Unusually, Aberfeldy's debut album, *Young Forever*, was recorded using a single microphone.



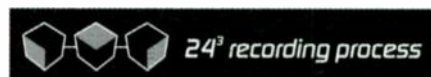
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explained that his usual approach was to use a stereo pair on each instrument. A closer comparison to what you're aiming to do can be found in our interview with the band Aberfeldy and their producer Jim Sutherland, which appeared in *SOS* September 2004 (www.soundonsound.com/sos/sep04/articles/aberfeldy.htm). They recorded the band's debut album *Young Forever* using just one microphone. Though it's not a bluegrass record, it's a good example of how liberating recording with one mic can be, though it throws up a whole new set of challenges for both the engineer and the performers.

You'll get the best results using a condenser mic with an omnidirectional pickup pattern and preferably a fairly flat and even frequency response. This could be a large- or small-diaphragm mic. Though a large-diaphragm mic might intuitively seem most appropriate, small-diaphragm omnidirectional mics typically exhibit a more linear (that is to say, less coloured) off-axis frequency response, and this could be to your advantage if you have a lot of musicians to position around the mic! That's

not to say that you won't be able to achieve excellent results with a large-diaphragm mic, but smaller capsules (when properly engineered, of course) can get closer to the unachievable ideal of a truly omnidirectional pickup pattern — equal sensitivity to sound from all directions at all frequencies.

In terms of large-diaphragm omnidirectional mics, there are lots out there to choose from, ranging from affordable offerings from the likes of Rode, SE Electronics, Red5 and Sontronics to premium products from famous names like Neumann, Microtech Gefell, Beyerdynamic and AKG. Many are dual-diaphragm, multi-pattern mics which offer an omni mode. Dedicated omni mics have a single diaphragm, mounted across a sealed box, a bit like a snare drum. Earthworks and DPA are two notable manufacturers of very high-quality small-diaphragm omni mics.

If you do intend to part with a sizeable amount of money, find a friendly and reputable dealer. Once they see you're serious they should be more than willing to let you try out a few different mics until you find one that suits you. Some manufacturers

— SE Electronics for one — offer direct trial/loan schemes too. It's also worth considering after-sales service — if you're going to spend a lot of money on a mic, make sure you're covered in the event of it developing a fault.

Before we get too carried away with the mic, it's important to consider the rest of the signal chain — there's no point blowing your entire budget on an exceptional microphone if it's going to be let down by other equipment that doesn't meet the same high standards. So consider what sort of preamp and A-D converter or soundcard you plan to use and factor this into your budget. Buying a mid-level mic and upgrading the rest of your equipment will lead to a better end product than spending all your money on a high-end mic alone.

Likewise, don't underestimate the importance of the role played by the room you'll be making the recording in. When using multiple directional mics to record a group it's usually possible to limit the amount of reflected sound picked up, but this isn't an option with an omni — as well as your performers, an omnidirectional mic will

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Of course, this single omnidirectional mic approach will result in an inherently mono recording. If stereo is required, then a coincident or back-to-back pair of cardioid or sub-cardioid mics might be a better bet.

Q What should I use to switch between two mics?

I want an A/B switching box to connect two microphones to one phantom-powered mic preamp. I want the signal to remain as clean as possible and have XLR ins and an XLR out. I've been trawling the Net for ages without success so any suggestions would be gratefully received.

SOS Forum post

Technical Editor Hugh Robjohns replies:

If you just want to be able to switch between two separate mics, the usual way to do it is to use an XLR patchbay. Alternatively, you can make up a simple switching box with two input XLRs, one output XLR and a double-pole, double-throw switch. The ground path (pin 1) can be connected to everything all the time (the common ground). Use the switch to route the hot and cold wires from each input to the output. Beware though — there will inherently be a loud splot when you throw the switch as the phantom power is redirected and the new mic boots up. This isn't a very nice or elegant way to do things, and you should pull the fader down before throwing the switch to protect your monitors. Personally, I'd use the XLR patchbay approach as it is a lot more flexible.

While we're on the subject, it's worth noting that you can't connect two mics to one mic preamp input at the same time, because it will interfere with the input impedances and could potentially overload the phantom power current limit.

If you are looking for a way of comparing mics directly, it is actually a lot better to do the switching after the preamp stage. This is because different mics have different sensitivities, and so need different gains to match levels. Switching after the preamp also avoids problems with phantom power, and it switches high-level signals instead of mic-level signals, so it will sound better!



It's possible to make perfectly good drum kit recordings using just a spaced pair of overhead mics.

Q What mics do I need to record a drum kit?

I have a five-piece drum kit with the three standard cymbals. I am trying to get the best sound possible on a very small budget. I am willing to learn new techniques (and I have to anyway) but I do want to keep prices low. I'm planning to order a Rode NT1A which I hope to use as a single mono overhead, but I was also thinking about a pair of AKG C1000s instead. I am also considering getting a Samson Q Kick mic for the bass drum and a Shure SM57 for the snare drum. My budget may not stretch to the SM57 for now — can I manage without it? I'm aiming for an acoustic rock sound.

SOS Forum post

Reviews Editor Mike Senior replies:

The mics you mention are all solid choices overall, but I'd suggest you go for stereo overheads as opposed to mono. In fact, I'd rather go for stereo overheads to start with, rather than a mono overhead and kick drum mic.

You can manage very well with just a pair of overheads, although you're more at the mercy of your drummer's skills than you are with a full multi-mic setup. After that, I'd probably suggest that a kick-drum mic would be the next best investment, followed by a snare-drum mic. Your choices for both of these should be fine, and you should be able to find lots of other uses for both mics in the studio other than just drum miking.

However, as far as the overheads go, the AKG C1000s wouldn't be my first choice, to be honest. They're designed primarily for stage use — unlike phantom-powered condenser mics, they use a back-electret condenser design which means they can run off battery power — and I've found they can sound a bit nasal. Looking at the options within your budget, a better pair of mics to go for would probably be the Samson CO2s or Red5 Audio RV4s, either of which will set you back only £99 per pair in the UK. A slightly more expensive option would be a set of SE Electronics SE1As, which are £199 per pair. Any of these would be a good starting point, and, again, you should find lots of uses for them as your studio grows. The only potential fly in the ointment is that none of these mics can be battery-powered, so you'll need at least two input channels with phantom power to get them to work. You don't say what you're recording to, but two channels of phantom power isn't asking very much!

In terms of techniques, Hugh Robjohns feature on recording drums from SOS February 2003 is an excellent starting point — www.soundonsound.com/sos/feb03/articles/drummiking.asp. In it he discusses not only mic selection and positioning, but also room acoustics, mixing and effects, and the vitally important and often overlooked matter of making sure the kit is properly set up and tuned in the first place! Searching the SOS web site for 'drum recording' should turn up lots more helpful information. In particular, we frequently tackle drum-related issues in the course of our Studio SOS visits

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► — in March 2003 (www.soundonsound.com/sos/mar03/articles/studiosos0303.asp), March 2005 (www.soundonsound.com/sos/mar05/articles/studiosos.htm) and as recently as April 2006 (www.soundonsound.com/sos/apr06/articles/studiosos_0406.htm). It's not really surprising that the topic comes up so often — recording a full kit in a home studio environment is a bit of a challenge, but with a bit of know-how and some experimentation, you should be able to get good results.

Q Where can I find a software GM sound module?

It should be simple, but nowhere can I find a General MIDI (XG/GS) software sound module for VST. Can you help? A freeware one would be nice...

Dave Wallace

Features Editor Sam Inglis replies: I don't know of any freeware examples, but Edirol make a software sound module called *Virtual Sound Canvas* that provides a complete GM2 and Roland GS sound set and is inexpensive — *Virtual Sound Canvas Multi-pack*, which includes VST, Direct X and stand-alone versions, costs just £49 in the UK. A more upmarket, but pricier alternative (although it lacks GS support) is Native Instruments' new *Bandstand*, which was reviewed in last month's *SOS* (www.soundonsound.com/sos/may06/articles/nibandstand.htm). It comes with a 2.5GB sound library (which can't be said of your average GM module) and costs £150.

Q Can I use a hi-fi system instead of studio monitors?

Does anyone use hi-fi separates for monitoring? I never read about it in *SOS*. Aren't monitors and hi-fi components trying to do the same thing? I ask because with £300 to spend there are only a few well regarded monitors available that I've found, but for that money there are any number of amp and speaker combinations from respected manufacturers — not to mention that it's much easier to find places to audition them. Is this a daft question? If so please excuse me, I'm pretty much a newbie at this!

Steve Whitehouse



Bandstand is Native Instruments' new software GM synth.

News Editor David Greeves replies: It's not a daft question, Steve! In fact, it's something we're often asked, for precisely the same reason that you're asking it — for the price of some pretty modest active nearfield monitors you could buy some above-average hi-fi speakers, or even a whole system. There's nothing to say that you can't use hi-fi systems for monitoring, but it's important to understand how they differ from studio monitors, and why most people opt for the latter.

Firstly, hi-fi systems are generally designed to compliment or flatter the source material while studio monitors should aim to be as neutral and honest as possible, so as to reveal any problems to the engineer. Not all studio monitors achieve this, of course, and you could argue that a high-end hi-fi system will serve you better in this respect than a set of budget monitors. But some hi-fi systems apply a slight 'smile' EQ curve to make material sound more immediate and exciting, or artificially boost the bass end (either through EQ or bass reflex ports in the speakers) in ways that make it more difficult to really hear what is going on in your mix. When mixing, your aim should be to produce something that will sound good (or as good as possible) on a wide range of different systems. Lots of people like to audition their final mixes on a variety of hi-fi systems (not to mention car stereos, boomboxes, televisions — you name it!) but for the business of mixing itself, will try and use as neutral a system as possible.

From a more practical point of view, nearly

all studio monitors are magnetically shielded so that they can be used in close proximity to CRT computer monitors. Also, studio monitors are generally more robust than their hi-fi counterparts, as they need to cope with being used for extended periods of time, often at quite high listening levels. They also have to put up with the clicks and pops that occur when equipment is plugged in and unplugged, the occasional bit of feedback and other general abuse! Studio monitors — even quite basic ones — also generally feature some way of tailoring their response to suit their environment, even if it's just a bass roll-off control for use when the monitor is up against a wall. No hi-fi speakers that I know of offer this kind of facility. Finally, while nearfield monitors are designed (as the name suggests) to be situated right in front of the engineer, hi-fi speakers are not — designers expect them to be listened to from a distance. Hi-fi speakers are expected to fill the room with sound, while nearfields need to provide precise information at close quarters.

Ultimately, the choice is up to you. If you feel your current budget won't allow you to buy some decent studio monitors, perhaps a hi-fi system is preferable. Just be aware of the potential pitfalls outlined above, and if you buy separates, there's scope for you to upgrade to a studio-quality amp and passive monitors in stages. In the end, whatever monitoring system you use, it's important to become familiar with how it sounds by listening to a variety of commercially released material so that you can be objective about your own mixes. **SOS**

Roger Nichols: Across The Board

This month, Roger tackles some questions from his bulging virtual postbag...

Roger Nichols

What is this new Boot Camp thing from Apple?

Everyone is talking about Apple's new Boot Camp software for the Intel Macs that allows you to boot native Windows XP. I tried it, and after about an hour, I moved all of my Windows programs over to XP on my Intel Mac and discarded my PC. Somehow, even Windows feels better running on a Mac. I guess it's just a perception thing. It feels better to drive 60 miles per hour in a Ferrari than a Hyundai. I installed Adobe *Audition*, *Premier* and *Encore DVD*, which all worked like a charm. The *Plextools Professional XL* program that I use for checking CDs and DVDs for errors worked perfectly as well.

Another big Web buzz asks whether companies that make programs for both Mac and PC will eventually drop the Mac versions. Adobe already did so years ago: I owned the Mac versions of *Framemaker* and *Premier*, which have been gone for a long time from the Mac catalogue.

With Apple's XCode development tools you can now compile an application that will run on either Power PC or Intel versions of the Mac. Apple insiders say that a goal is to be able to compile a version that will run natively on a PC. That would definitely cut down on the man-hours necessary to build multi-platform applications. The future is looking good.

I thought 24-bit recordings sounded great. I can't wait to hear 64-bit applications like *Cakewalk*.

Wait! Sixty-four-bit audio applications are not going to start recording 64-bit audio. The 64-bit architecture allows for faster data transfers and more memory addressing, not greater audio bit depth.

If your DAW uses 32-bit internal data paths, it can transfer two chunks of data at a time, but this may or may not make things faster. It takes time to take those two 32-bit

chunks, put them together, move them, and then take them apart again — in some cases, more time than just moving each 32-bit chunk by itself.

Before 64-bit computers and software, memory addresses were 32 bits in length, which limited the maximum amount of memory to four gigabytes. Hey, no problem for me — I remember when I was limited to 56 kilobytes, and I once bought a chunk of memory that cost twice as much as a new Corvette, but back then, that much money would only buy one megabyte. With 64-bit addressing, the memory limit is about 18 exabytes, which is 18 billion gigabytes. You would need a PC with four billion memory slots and a bank account bigger than Bill Gates's to buy that much memory. For now, computer manufacturers have set more realistic limits on physical memory. Apple G5s will address up to 16GB, while Linux can be compiled to support up to 64GB.

What this extra memory does for the audio-holic is to allow programs to be designed that will hold more audio data in memory, which lowers latency, or hold more samples and wave tables in memory for samplers. For those who wish to sample

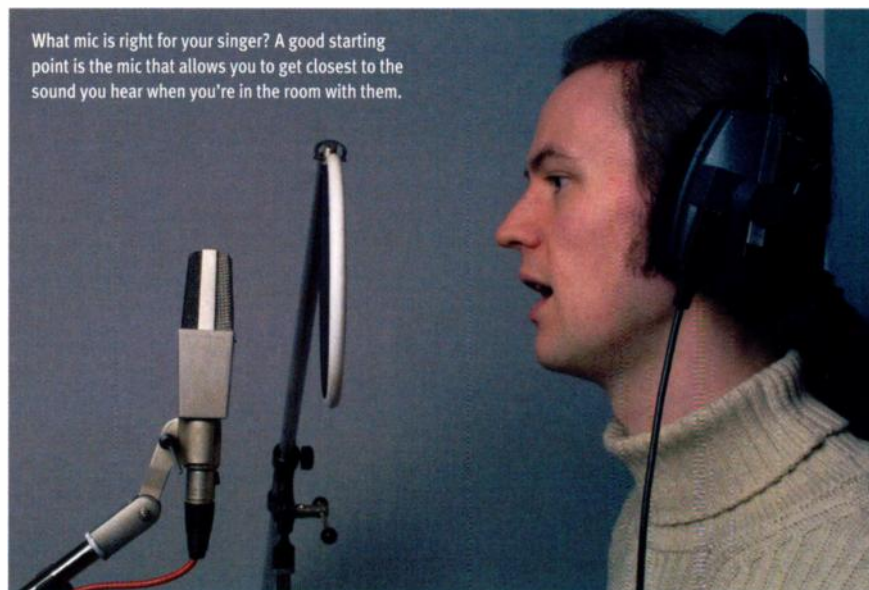


Roger Nichols has been professionally involved in the music business since 1968, working as a staff recording/mixing engineer at ABC Records and Warner Bros before becoming an independent engineer/producer in 1978. His work with Steely Dan in particular has led to a string of Grammy Awards and nominations, including a Best Engineered Album award for *Two Against Nature*. An advocate of digital recording since 1977, Roger designed and built the first digital audio percussion replacement device and has lectured on digital audio around the world.

the high road, check out Windows XP Professional X64, which will require a 64-bit motherboard and CPU (Intel or AMD) as well as true 64-bit applications, or a Mac G5. The Intel Core Duo, as used in the new iMac, is only 32-bit, but the Intel 'Merom' chip is its pin-compatible 64-bit replacement, due later in 2006. Bring lots of money.

Which microphone should I buy to record vocals?

There is not one microphone that is the 'best' for anything, although any microphone can be used to record everything. Does that make sense? There is some basic knowledge that you can use to narrow down the choices for vocal



What mic is right for your singer? A good starting point is the mic that allows you to get closest to the sound you hear when you're in the room with them.

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- :: record
- :: arrange
- :: edit
- :: process
- :: mix



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▶ recording. A condenser microphone would be a better choice as a starting point because of its sensitivity and wide frequency response.

Go into the room with the vocalist and listen to what the voice sounds like. For this test, ask the singer to stay in one position about four to six inches from the microphone. Now go into the control room and listen to the vocal through the recording chain and the speakers. What are the differences? Does the vocal sound thick and boomy or thin and crispy?

These differences between what you heard out in the room and in the control room could be caused by many things, but for this combination, the best remedy is to use some EQ to get the vocal sounding more like the actual singer. Now change microphones and listen to the vocal in the control room. The differences are not the same as with the previous microphone. Maybe you have to EQ more, or maybe you have to EQ less.

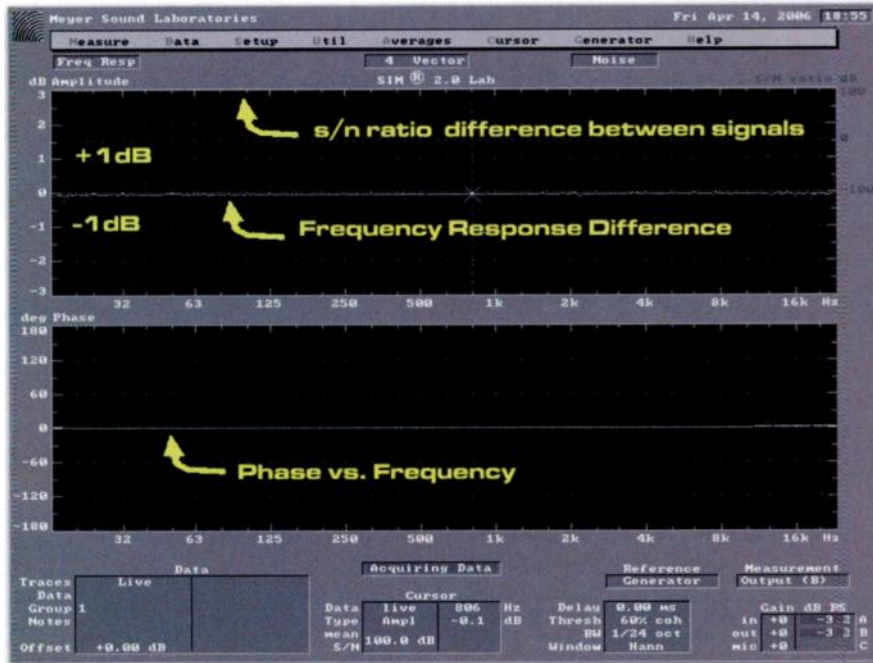
Experienced engineers make mental or written notes of the microphone, the room quality, and the sound of the actual singer. This time EQ is used to save the day. If one microphone sounded brighter than another, notes are made of these characteristics for future reference. Next time you record a vocal that sounds boomy you will know right away that it would sound better with the second microphone choice. There is no substitute for the actual experience of hearing the differences between pieces of gear. Other engineers can tell you their experiences with a particular microphone, but they can't tell you how that microphone would sound on your singer.

I recorded a cappella album with Take 6, a vocal group in Nashville. The very first day all we did was decide which microphone sounded the best on each singer. We had 20 condenser microphones ranging from a \$500 Shure KSM32 to a \$7000 Sony C800G. Only one singer sounded the best on the Sony. One singer sounded the best using the Shure, and another sounded the best on an Audio-Technica 4050.

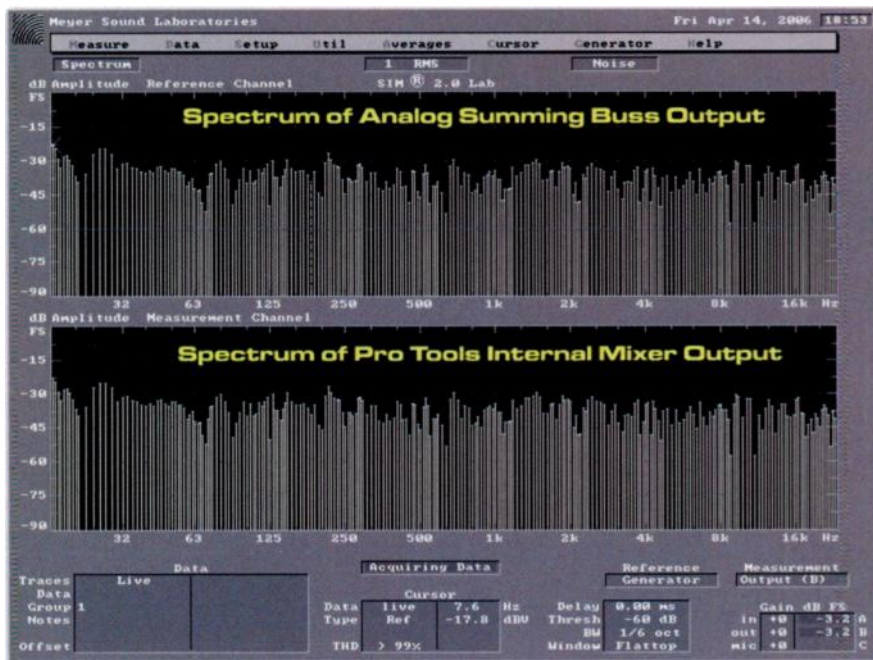
I still get involved with 'vocal mic shootouts' where we get a male and female vocalist singing two different types of music through 10 different microphones and 10 different microphone preamps. After holding this event numerous times, the same microphone/preamp combinations have never won twice.

I heard the mixing buss in Pro Tools is no good. Everyone says I should mix through an external analogue summing buss.

Someone asked Al Schmitt how he mixed



There is no difference in frequency response, signal-to-noise ratio or phase between a mix done in Pro Tools and the same mix done using an external analogue summing mixer. External resistive analogue summing buss: 64 individual outputs from Pro Tools, with all track faders at -12dB summed to mono. Pro Tools internal mixer: 64 tracks with track faders at -12dB, master fader at zero, all tracks mixed to mono.



A 1/24th-octave spectrum display of two signals in Pro Tools. The top display is a summed mono signal from an analogue summing network; the bottom shows a mono output from the Pro Tools mixer for the same mix.

a record. Al answered "I just turn the knobs until it sounds good." You can't argue with that.

The first thing I had to learn about audio engineering was signal flow. You have to know how to get the audio signal from the microphone to the recorder and back to the speakers so you can hear what you are doing. The second item is gain structure. At any point in the signal path you have to

keep the signal higher than the noise floor but lower than the point of clipping and distortion. Everything else is going to be easy. Just twist the knobs.

Every console is designed to add signals together before they come out as finished mix. It is called a mix because the individual tracks are mixed together. I rather fancy the English term 'two-track reduction': it is being reduced from 24 tracks to two tracks.

equitek



Physical consoles usually have a stereo mix buss 'summing amp' for each group of eight modules. These summing amps then feed another summing amp connected to the master output module. During the mixing process the master fader is turned all the way up. As individual tracks are turned up their audio is heard through the master fader and the level is registered on the main output meters. As more and more audio channels are introduced to the mix, the overall master level starts getting high, so the master fader is turned down a little to compensate. This work flow proceeds in a loop until the mix is getting pretty far along.

At some point the engineer looks at the gain structure of the mix he has going on the console. He has learned that by running the individual faders high and pulling down the master fader he runs the risk of overdriving the summing amps with too much level and adding distortion to the final mix. The engineer will trim down all of the track faders by 6dB or some similar amount so that the master fader can be brought back up to zero.

This method has worked for decades to keep the audio quality as high as possible while remaining within the limits of the console's design, but for some reason engineers ignore this procedure when mixing inside a DAW (digital audio workstation). When asked why they don't perform this requisite task the answer is always "It's digital, you don't have to do that." All of the 78 track faders are up near zero and the master fader by now is down to -40dB. Soon the engineer starts to complain about how gritty and distorted digital sounds.

How do they fix it? They connect the DAW to a console. At the console they either trim down the inputs or pull down the track faders to prevent the summing amps from clipping, and they make sure that the master fader is all the way up. "Hear how much better the mix sounds through a console?"


Sound familiar? I know all of you have run across this situation from one end or the other. The smart guys who saw this wanton disregard for gain structure quickly designed 'outboard analogue summing boxes', charged a lot of money (because it can't be good if it doesn't cost enough), and made a fortune. Good for them. Too bad I didn't think of it.

Because Pro Tools was the most visible professional DAW, Digidesign took the brunt of the criticism. "Man, I can't mix inside Pro Tools, their internal mixer sucks." Although there were tons of good-sounding records made and mixed in Pro Tools by engineers who knew how to turn down a fader, the majority of the forums on the Web hosted tons of complaints. "It shouldn't do that, it's digital."

Digidesign have updated their internal mixer to 48-bit. This means that you can mix 128 faders at +12dB with the master fader down to -90dB without overdriving the internal mixing buss. There will not be much room for a final fade, but at least Pro Tools is now being idiot-proofed. Me, I prefer to watch what I am doing and trim all of my faders down so that my master fader stays at zero. It has worked for me since the '60s and continues to work for me in whatever digital DAW I mix in.

Oh, and check out the in-the-box versus external buss measurement (left, above).

TTFN (ta-ta for now).

PS: Just so you know, I do tell my clients that "I only mix on dual 64-bit processors with a 48-bit mixer fed by 16 gigabytes of memory and an on-line RAID5 disk array of 8 terabytes and a 15 gigabit-per-second fibre-optic Internet connection. You do hear the difference, don't you?" 



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Yamaha HS80M

Active Monitors

These new monitors from Yamaha add some low-end welly to the sound of the legendary NS10.

SOUND ON SOUND

Yamaha HS80M **£397**

pros

- Plenty of level, with decent bass extension.
- Has the NS10 family sound.
- Sensibly priced.

cons

- Not so good if you don't like the 'forward' NS10 family sound!

summary

Yamaha's HS80Ms bring the NS10 concept up to date in an active package that can deliver a decent amount of low-end clout without adding a subwoofer. Their slightly aggressive sound won't be to everybody's taste, but I'm betting a lot of people will find that they are just what they're looking for.

Paul White

Although Yamaha's ubiquitous NS10 monitor attained almost 'industry-standard' status, they were never particularly accurate, especially at the bass end. Yamaha's new HS80M active model, however, has been designed with the intention of offering a flat and true reference with a realistic degree of bass extension. The cosmetic styling clearly owes something to the NS10, specifically the black, no-frills hi-fi-style case and white-coned bass driver, but in reality this is a very different product and features a significantly larger woofer. If you want something more NS10-sized, check out the HS50M, which has a five-inch woofer. In deference to modern styling, the cabinet corners are slightly radiused, which may help reduce diffraction from the cabinet edges, but this is also likely to be useful in preventing you digging the sharp edges into yourself when moving the speakers. The HS80Ms are designed to be used in both stereo and surround configurations, and an optional subwoofer is available in the form of the HS10W.

Two-way Bass-reflex Design

Designed for nearfield and project-studio applications, the HS80M, like most small active studio monitors, is a two-way, bass-reflex design, bi-amplified via an active crossover (in this case set at 2kHz). The bass port is on the rear panel, which also sports a finned heat sink to cool the power amplifiers. In total there's 120W of amplifier power (75W bass, 45W treble) on board, delivering a 42Hz-20kHz response from the eight-inch bass/mid driver and one-inch domed tweeter. However, the frequency response is measured at -10dB, not -3dB, which is a bit naughty. Like the NS10, the tweeter is protected behind a metal grille, but a new addition is the very shallow waveguide-style baffle that is, presumably, designed to help control the dispersion at or near the crossover point.

Power comes in via the usual IEC socket on the rear panel, and there's a choice of balanced jack or XLR inputs. The gain-trim knob is accompanied by EQ switches labelled Mid EQ, Room Control, and High Trim. The Mid EQ offers a choice of flat, 2dB boost, or 2dB cut centred at 2kHz, while the Room control offers a choice of flat, -2dB or -4dB shelving



at 500Hz to help level out the bass response when mounting the speakers close to walls or corners. By contrast, the High Trim switch offers the same cut or boost options, but works for frequencies above 2kHz. A further Low Cut switch rolls out the low end at 80Hz or 100Hz, or leaves it flat, allowing the speakers to work at their maximum bass extension. There's no reason to cut off the bass end this high unless you were checking a mix for compatibility with small consumer systems or radios, so it might have been more useful to locate this particular option on the front panel.

Because there are many conventional CRT monitors still in use, especially in video facilities, the speakers are magnetically shielded. With a case size of 250 x 332 x 390mm and a total weight of 11.3kg per speaker, the HS80Ms are a little larger than the old NS10s and, of course, the onboard amplifiers make them heavier. In fact, the footprint is almost exactly the same as for my Mackie HR824s.

Studio Time

In the studio I used the HS80Ms both to play back some of my mixes in progress and also to play back some of my reference CD tracks. The Yamaha logo lights up when the speakers are active, and I did all my tests with the EQ switches set to their default, neutral positions. The stereo imaging is really very good and the sound is very revealing of detail, in much the same way as the original NS10s were, but I found the sound slightly aggressive for my own tastes and would probably find it fatiguing after long periods. Still, I felt exactly the same about NS10s, but that didn't stop them being popular, and a number of leading engineers still swear by them. The rear-panel switches can be used to modify the response to some extent, but they do little to change the essential character of the speakers.

Where the new model is definitely not NS10-like is at the bass end, because these speakers have plenty of depth. Despite the rear porting, the bass also stays reasonably even; something that can be a problem with other rear-ported designs in rooms that don't have optimal acoustic treatment. I didn't feel the bass was as tight as from some other speakers I've worked with, and tapping the woofer cone gently reveals a distinct note. This is typical of many

Alternatives

Within this price range, you might want to look at the Fostex PM15 or even the smaller and less costly PM05s, as well as the Alesis M1 Active MkIIs. The Tannoy Reveals also fall in this price range, as do the KRK RP6 and RP8. You also have a choice of the Event ALP5 and SP6 or the Genelec 8020As. If you can stretch your budget a little further, there's the Event 2020BAS (bi-amplified system), which has just dropped in price. Also consider the slightly more expensive Dynaudio BM5As and Mackie HRM624s.



smaller speakers tuned to give the most solid bass response possible, but it is no worse than any other 'small to medium' monitor in this respect. Overall, I'd say the sound is reminiscent of an NS10, but with a decent amount of bass extension, and a lot of users will want exactly that.

If you like NS10s, but you need something that delivers plenty of level with a decent amount of bass to bring out those bass synths, bass guitars, and kick drums, then the HS80M is going to be right up your street. As I said earlier, its sound is a bit on the forward side for my taste, but don't let that put you off, as it could actually encourage you to work harder on producing smoother-sounding mixes, and that's no bad thing. The pricing puts these speakers in the middle ground, as far as the project-studio market is concerned, and that's probably about fair, given their pedigree and level of performance. Oddly, the spec sheet gives no indication of the maximum SPL these speakers can produce, though to my ears they sounded suitably generous in this respect. If you're an NS10 fan and are in the market for a full-range active monitor with plenty of clout that retains the essentials of the family sound, then make sure you take the HS80M for a spin before making your final choice. **SOS**

Information

- £** HS80M, £397 per pair; HS10W subwoofer, £329 each. Prices include VAT.
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SE Electronics Reflexion Filter

Stand-mounted Acoustic Absorber

Paul White

The Reflexion Filter, from mic manufacturer SE Electronics, is a compact and portable acoustic absorber, designed primarily to reduce the amount of room ambience picked up by a microphone during recording. It may also assist a little in isolating the mic from other sound in the room, such as the noise from

SE Electronics' portable screen is designed to turn any room into a vocal booth.

computer fans or spill from other performers. The Reflexion Filter can be fitted behind almost any microphone by means of the included stand clamp assembly, which also incorporates a support for your mic or shockmount. This means that you require only a single mic stand to hold both the Reflexion Filter and your microphone, but as the assembly can end up being quite heavy, it is important

to set up the stand so that the weight is evenly distributed over its base.

To achieve a worthwhile amount of acoustic absorption within a limited thickness, the Reflexion Filter comprises six main layers, contained within a punched-aluminium frame that allows sound waves to pass through it while adding some useful diffusion. Once it has passed through the holes in the aluminium, the sound encounters a layer of absorptive wool

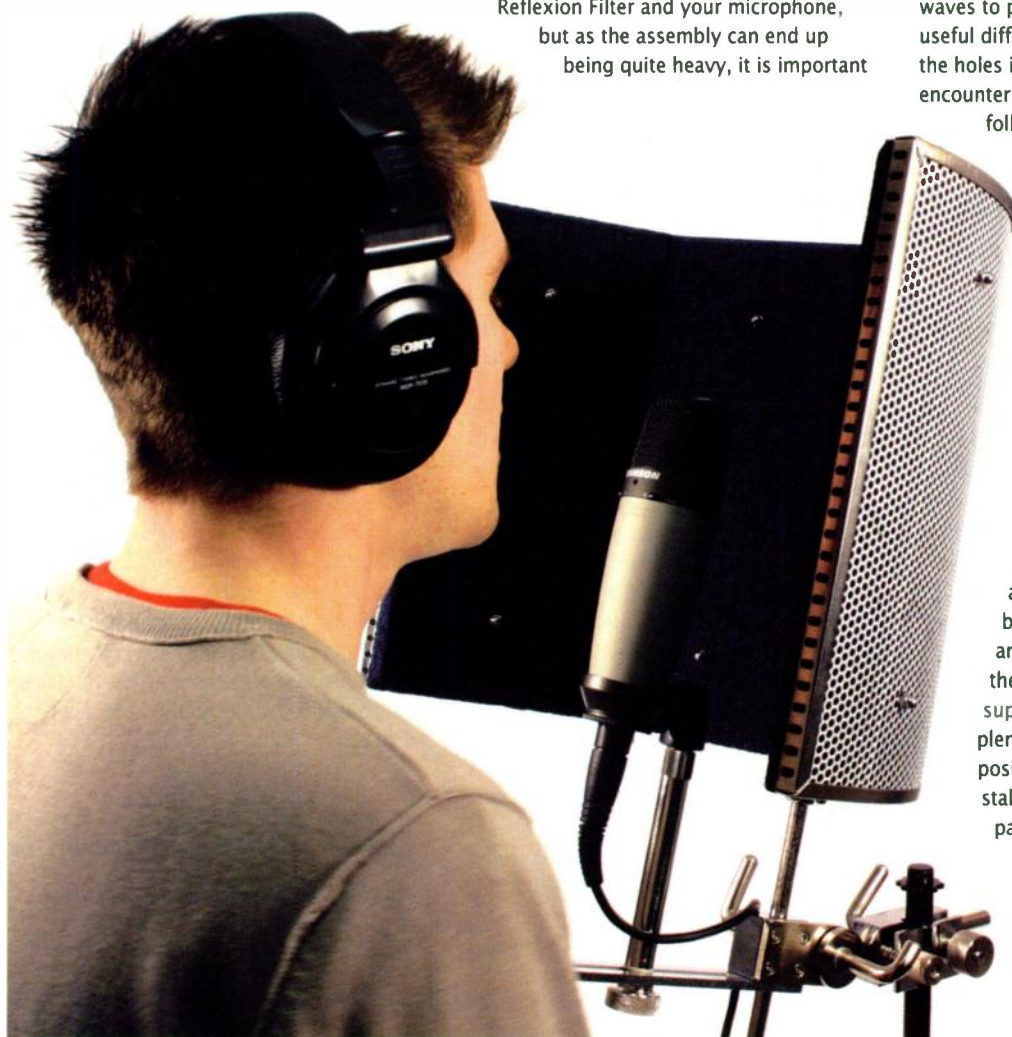
followed by a layer of aluminium foil, which absorbs more energy.

Behind this is an air space, kept open by rods passing through the various layers, followed by a further layer of wool. Additionally, there are four pieces of specialist acoustic absorptive material attached to the inside face of the structure, which further absorb and diffuse sound.

The stand assembly comprises a rather heavily engineered mic stand clamp that attaches by means of an adjustable block to the horizontal bar supporting the Reflexion Filter and the threaded post that holds the mic. This can be slid along the support and then clamped to provide plenty of flexibility for mic positioning. Although it does ensure a stable mounting, personally I felt this part of the design was slightly heavier than it needed to be.

An Absorbing Subject

If you've read any of our articles on recording in an untreated room, particularly vocals, you'll probably know



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SE REFLEXION FILTER

► that we recommend always putting some absorbent material behind the singer. Most home-studio musicians record using cardioid-pattern mics, so most of what ends up in the mic is a combination of the direct sound from the singer plus whatever is reflected from the wall directly behind them. Why, then, would you want to put something like the Reflexion Filter *behind* the microphone?

Firstly, if the singer works close to the Reflexion Filter, the sound will still be picked up as normal by the microphone but a lot less of the acoustic energy will be able to escape out into the room. This in turn reduces the energy of the reflected sound, which helps dry up the recording. Secondly, even cardioid mics pick up a significant amount of sound from the sides, so placing a cardioid mic within the curve of the Reflexion Filter will help keep out room reflections approaching from the side. Depending on how good, or otherwise, your room is, you may be able to make a perfectly acceptable vocal recording using just the Reflexion Filter to control the acoustic environment, but my own approach would be to combine the Reflexion Filter with some improvised absorption behind the singer — which could be as simple as a suspended sleeping-bag or duvet. This would help absorb any of the voice that managed to reflect after getting past the filter and would also prevent sound sources elsewhere in the room reflecting from the wall into the live side of the microphone — for example, computer fan and drive noise. With the Reflexion Filter screening off the rear and sides of the mic, this should lead to a significant improvement in both the acoustics and the amount of unwanted room



The Reflexion Filter is designed to attach to the same stand as your vocal mic.

noise entering the microphone.

Another valuable application is to use the Reflexion Filter to de-sensitise the rear of a figure-of-eight microphone, such as one of the many ribbon mics now on the market. It could also be used to allow acoustic guitar recordings to be made more effectively using omni-pattern mics rather than cardioids, as these tend to produce a more open sound and they are less critical of positioning. According to the measurements made on behalf of the designers, the construction of the filter minimises any acoustic coloration, with variations of around only 1dB being typical. This is good, as the last thing you want is for an acoustic screen to significantly change the tonal character of your favourite microphone!

Studio Trial

The Reflexion Filter absorbs acoustic energy with impressive effectiveness; you only have to stick your face up close to it and speak to hear that. On its own, it makes a valuable contribution to improving your recordings by reducing the amount of reflected sound getting into the microphone, and it can be used in different ways when recording instruments to improve separation and to

reduce room tone. For my money, it still produces the best results when used with some absorption behind the performer, which makes perfect sense as each tackles a different type of sound-leakage, so by combining them, you really can make great recordings in a typical bedroom studio. Whilst the Reflexion Filter scores in minimising the level of off-axis sound reaching the microphone, the duvet behind is most effective at preventing reflections reaching the front of the microphone.

The optimum mic position relative to the filter is to get the capsule lined up with the centre of the filter and to have the mic

Alternatives

To date there are no direct alternatives to the Reflexion Filter. There are foam products available that clip behind the mic with a view to improving separation, but these aren't really trying to do the same job, and their much lower mass makes them far less effective at low frequencies. In fact, the only real alternative is the improvised acoustic treatment we often recommend, where the singer is positioned with a V-shaped corner behind them made from two heavy duvets that absorb sound from the sides and reflections from the wall behind. Even then, the Reflexion Filter is likely to be better at reducing off-axis sound pickup, because of its proximity to the microphone.

SOUND ON SOUND

SE Reflexion Filter £229

pros

- Impressive absorption capabilities.
- Affordable.
- Reduces off-axis sound pickup and may help reduce the amount of sound getting into the room to cause reflections in the first place.

cons

- Mounting hardware a little heavy and clunky.

summary

Ironically, the Reflexion Filter makes the biggest difference in the worst rooms. And it can make a big difference, but any product like this can only achieve a certain amount; in my view, additional absorptive material (even if it's only a duvet or heavy blanket) behind the singer should still be considered mandatory. If you combine the two approaches, you should be able to record adequately dry vocals in almost any environment.

BLACK SAFFIRE

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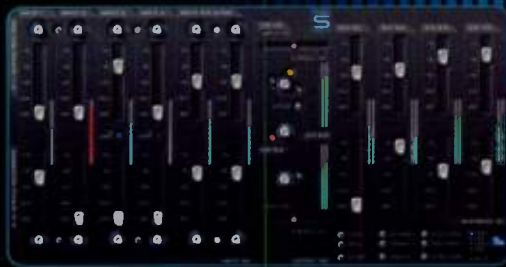
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SE REFLEXION FILTER

▶ sitting just within the curve of the filter, leaving plenty of space between it and the filter wall. If you place the mic further into the filter, the sound dries up more, but may change slightly in tonality. This can be used constructively when recording electric guitar cabs and suchlike, although in my experience, the amount of spill you get when close-miking guitar amps with a cardioid mic is negligible anyway. Perhaps if you were using a figure-of-eight mic, such as a ribbon model, at some distance from the cabinet, the use of the Reflexion Filter would make more sense.

Exactly how much difference the filter makes rather depends on how well behaved your room is. If you already have some acoustic treatment in place or you have lots of soft furnishings, you may find that it makes less of a subjective difference than you might expect, but it becomes very obviously more effective in less friendly environments such as an untreated room or village hall. So long as you don't set back cardioid mics more than an inch or so from the mouth of the Reflexion Filter, the amount of coloration is minimal, but my tests with omni and figure-of-eight mics suggest that you need to take a little more care with the positioning of these. Putting

Second Opinion: Steve Levine

I took home a Reflexion Filter from this year's Sounds Expo show, as I had been searching for just such a product for the last few months. I am in the middle of producing a new radio series about record producers for BBC Radio 2, and needed a way of turning my home-made vocal booth, which works really well for lead vocals, into a 'radio'-style voiceover booth, to get that extra-close 'In your face' radio voiceover sound.

I was due to record the first of the voiceovers with Radio 2's Richard Allinson the next morning, as well as a few links from yours truly. The SE filter performed brilliantly — if you move your head toward the filter panels whilst speaking, you can hear the immediate effect of 'drying out' all of the room sound. The end result was exactly what I needed: dry, clean and in your face! My

the mic too far back will change the sound quite noticeably, although the reduction in spill and room tone is also far more significant. The figure-of-eight mic I used sounded best when placed a couple of inches in front of the filter opening.

With cardioid mics, the Reflexion Filter seems able to achieve very little improvement in the rejection of fan noise from a computer at the other side of the

first lead vocal proved to be equally successful and the vocalist commented on how good he thought his voice sounded that day!

Next up I thought I would try it on some guitar overdubs. I have one of the tiny Brian May Vox amps, which cuts really well in a track, especially if the other guitars all have a 'Marshall'-based sound. Removing the screen from the standmount and placing it on the floor next to the front of amp, I used the Reflexion Filter as a mini-gobo, which made the guitar sound as if it was about half an inch from your face. Even when I added a touch of 'room reverb' from one of my DM2000's plug-ins, the sound was exactly as you would imagine — little amp, but now in a little room! In my view this product really makes it that bit easier to get a 'pro-studio' sound at home. *Steve Levine*

room, unless you have a further absorber of some kind directly behind the singer (to be fair, that isn't what it was designed to do), but with omni and figure-of-eights, the drop in noise is quite noticeable.

Does It Really Work?

Those recording in less-than-ideal recording environments have been looking for a 'magic bullet' quick fix for recording vocals since the term 'home recording' came into being, and the SE Reflexion Filter represents a serious step in that direction. It can't keep all reflected sound out of the mic, as some will end up bouncing into the mic's frontal axis from the wall behind the singer, but it certainly reduces this by minimising the amount of voice making it out into the room and by attenuating off-axis sounds. This could be particularly useful in a typical studio vocal booth where there is often a glass door directly behind the microphone. If rear-wall reflections are still a problem for you, some thick blankets, duvets or similar behind the singer should bring about the desired degree of improvement, and in combination with the Reflexion Filter should allow anyone to record clean vocals that are free from damaging room coloration. The price of the Reflexion Filter could actually be said to represent extremely good value when you consider that it might well make more difference to the subjective quality of your recordings than blowing an extra grand or two on more sophisticated mics and preamps! **SOS**

information

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Mix Rescue

An ambient dance track gets the Mix Rescue treatment this month, as *SOS* reader Mark Edwards finds out that less is definitely more.



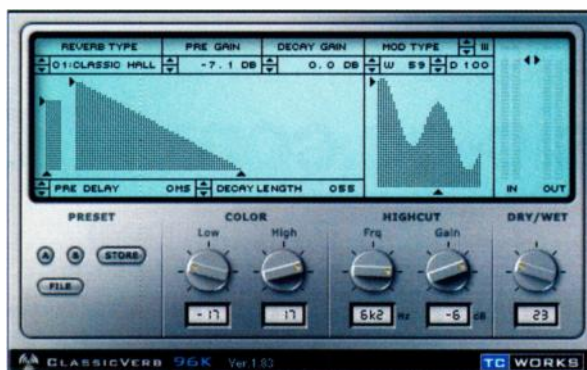
Paul White

I was intrigued by this track when it was sent to us by *SOS* reader Mark Edwards, as it was the first electronic instrumental track we'd had in for a Mix Rescue and I really liked some of the sounds and textures Mark was using. His piece, 'New Horizon', has a very simple, mainly monophonic, piano motif as the lead line supported by a fairly chilled drum groove, a simple synth bass part and several different types of pad that drift in and out throughout the piece, including a Mellotron sample, or similar, some bowed bass strings and a few reversed sounds. I liked the feel of Mark's mix, but at the same time thought that it had a rather squeezed, congested sound, and that it might benefit from being opened out a little.

Creative Piano Processing

My first impression was that the piano part wasn't flowing as well as it might, and as this was the only part sent to me as a MIDI file, I checked it and found that there was no sustain pedal in use. All the other files came as audio, some with processing already added. To smooth out the piano, I set it up using a Steinway sample, then extended all the notes to make the sound flow more. Where there were consecutive notes, I used *Logic's* facility for preventing consecutive similar notes from overlapping. I also moved one or two notes very slightly to make the timing seem more relaxed.

To give the piano a dreamy, almost 'trippy' feel, I added some light compression, and then used Universal Audio's UAD1 *Roland RE210 Space Echo* plug-in to add simulated



The piano recording was given an ethereal, 'trippy' quality using a software emulation of Roland's RE201 Space Echo. A further echo/reverb treatment was then applied with a TC Electronic *Classicverb* algorithm.

I brought this in around a third of the way into the song, so as to introduce some dynamics and to enhance the sense of mystery.

tape echo, and followed that up with the TC Electronic *Classicverb* to provide a bright, spacious echo/reverb combination. A light dusting of low-cut filter at around 350Hz lightened the sound further, so that it just floated over the rest of the mix.

As I had the MIDI file for the piano melody, I also experimented by finding a vocal pad sound on the *Wavestation* (courtesy of Korg's *Legacy Collection*), then passed this through a flanger and added reverb, mirroring the piano part at an almost subliminally low level.

enhance the sense of mystery.

Drum & Bass Distortion

Mark had created his drum part using the excellent Spectrasonics *Stylus RMX* plug-in, which drove the track along nicely, but to me it sounded a bit too polite, so I dirtied it up a little using *Logic's Distortion* plug-in, and then used some 100Hz low-cut filter to kill a little excessive low end. Mark had also recorded some little *Stylus RMX* rhythm fills on a separate track, so I used the Noveltech *Character* plug-in to lift these out of the mix a bit more. The other *Stylus RMX* rhythms he'd used just at the start of the song and again at the end were left as they were, other than having their levels automated.

The other part that I felt was too clean and tidy was the synth bass line that Mark had called *Boobass*. Again I used a distortion plug-in to fluff up the sound a bit, then passed the result through a low-pass filter to stop the high end getting too rough. Not quite *Leftfield*, but heading in the right direction!

Rescued This Month...

Mark Edwards plays guitar and bass in two bands, and also has a studio ('The Pod') in Portishead in Bristol, where he makes abstract and ambient electronica inspired by Brian Eno, William Orbit, Enigma, and Debussy.

mark.edwards23@btinternet.com



I felt that treating the drum and bass parts in this way gave the track a more contemporary feel, and at the same time gave the piano line more space to breath at the high end of the spectrum. It's rather like the effect of creating a photograph with the background slightly out of focus in order to enhance the clarity of the main subject.

Balancing The Pads

That sorted out most of the key elements, but now there were all those pads to deal with. One part called Marbles comprised a steamy filtered synth sound with a bit of a vintage sci-fi quality to it, but I wanted to thin it down while at the same time make it more interesting. To this end I passed it through *Logic's* *EVO20* filter bank with some gentle modulation to add movement, then used my old trick with the tempo-locked panner to get it moving side to side eight times per bar.

I left Mark's Angel Pad as it was, but dropped out a couple of sections near the middle of the song to allow some of the other elements to come to the fore. I also muted a small section of the Mellotron strings and bowed bass strings just after the middle section to introduce some lightness before the

Hear The Differences For Yourself!

Hear the effects of my remixing for yourself at www.soundonsound.com/sos/apr06:

- [/audio/OriginalMix.mp3](#)

Mark's original mix of his track 'New Horizon', as sent to us.

- [/audio/Remix.mp3](#)

My remixed version of 'New Horizon'.

- [/audio/StylusOriginal.mp3](#)

Mark's original *Stylus* RMX audio part.

- [/audio/StylusProcessed.mp3](#)

The *Stylus* RMX audio part with mild distortion and low-cut filtering.

- [/audio/MarblesOriginal.mp3](#)

The Marbles pad part as supplied.

- [/audio/MarblesProcessed.mp3](#)

Marbles pad with added *EVO20* filtering and eight-per-bar panning.

- [/audio/OrchestraOriginal.mp3](#)

The original orchestra pad part.

- [/audio/OrchestraProcessed.mp3](#)

The orchestra pad with Roland *Dimension D* chorus and low-cut EQ.

- [/audio/AngelFilterOriginal.mp3](#)

The Angel pad in Mark's version of the mix.

- [/audio/AngelFilterProcessed.mp3](#)

The Angel Filter pad with flanging and low cut EQ.

mix built up again. I also used some low cut and gentle mid-range boost to take some of the depth out of the bowed bass strings, as I felt they were conflicting with the bass synth part a little too much. To fatten up the orchestral strings in the mid-section, I passed them through the Roland *Dimension D* plug-in, added reverb, and then rolled out a little low end to prevent the lower mid-range from going muddy.

Another pad part, that Mark had called Angel Filter, was treated to flanging and low cut to make it more breathy, but most of his

other parts were left pretty much as he'd sent them, except that I automated their levels where necessary to keep the mix sounding balanced. He'd included some tracks of cymbals, reversed cymbals, tambourine, shakers, and maracas, and these were balanced up and with a little reverb to give them a sense of distance. With this kind of music, I feel that it's useful to try to create an illusion of front-to-back perspective as well as left-to-right, and combining more reverb with lower mix levels is one way to achieve this. Where pads were playing at the same time, ▶

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Remix Reactions

Mark Edwards: "Composing and producing my own music has taught me many things, one of which is the need to stay objective. It was with this in mind that I contacted Mix Rescue. When I received the new version of my track, the first thing I noticed was how much more 'open' it sounded. The introduction in particular had given me some trouble, but it now sounded sharper and much more effective. I then noticed that the piano sounded better and was more prominent. In fact, each instrument seemed to have its own space. I had not listened to my original mix for a while, and when I did an A/B comparison I quickly came to the conclusion that less is more!

"Paul has done a great job and I have learnt so much from this experience, which will help me when I mix the tracks for my new collection."



► I tried to pan these to opposite sides (but not too extremely) to create a wider soundscape. Of course, the rhythm and bass parts were kept pretty much central, as was the piano. I tried a number of different reverbs, and found that the

but deep flanging to make it sound even more other-worldly than it already did. By the same token, the short Angel Filter part in the same section, which had a reversed feel, was given some additional *Space Designer* reverb and panned to the

opposite side to the other pad playing at the same time. The only part I actually added to the mix was a sample of an African shell rattle being shaken, once during the low-key intro and again right at the end. I also copied one of Mark's reversed cymbals



Here you can see how Paul used Universal Audio's multi-band mastering compressor to give a final polish to the completed mix.

choice wasn't too critical as long as the reverb didn't have too much low end. With music of this type you can get away with reverb times of a little over two seconds if you keep the reverb sound thinned out and don't add too much. Cascading delays and reverbs can also be very effective.

Another short, swirly synth sound used only on the intro was treated to some slow

to punctuate the point at where the melody starts.

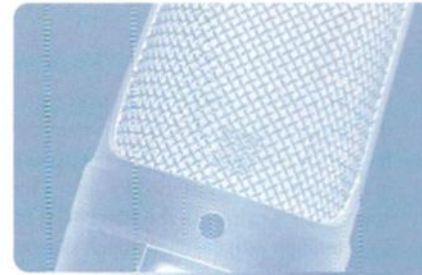
To add a bit of gloss to the mix, I tried out the new UAD1 multi-band mastering compressor at a low-threshold, low-ratio setting and with the mid-range pulled down slightly to add punch and to increase clarity. This was followed by the TC Electronic *Brickwall Limiter* to pin those peaks and the job was done.

Obviously, with a track like this that is so abstract in nature, there is no single right way to mix it, but I felt that I'd certainly arrived at one of the possible right ways. I think I succeeded in getting a bit more space and air into the mix and also in sorting out some conflicting frequency issues. The mix now had a little more light and shade in the arrangement, and, overall, I was quite pleased with it. As ever, I have more flexibility when all the tracks are sent to me without processing, but all things considered, I felt this worked out pretty well. **EOS**

Need Help With Your Mix?

If you're having trouble with a mix, then you can submit your track for the Mix Rescue treatment. Either email an MP3 file of your mix to the address below, or post a CD to Mix Rescue, *Sound On Sound*, Media House, Trafalgar Way, Bar Hill, Cambridge, CB3 8SQ, UK. Please include a daytime contact telephone number, some information about how you recorded and mixed your version of the track, and your views about what aspects of your mix are causing you most concern.

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Great River ME1NV



Microphone Preamp

A modern take on the vintage Neve sound.

Hugh Robjohns

Great-sounding mic preamps are in plentiful supply, and many are surprisingly affordable too. Some are designed to be as accurate and faithful to the source sound as possible, while others are carefully 'sculpted' to add a degree of warmth or some other favoured characteristic. The American Great River MP2NV (dual-channel) and ME1NV (single-channel) mic preamps are intended to impart a certain 'vintage' quality and are based on the kinds of discrete circuit designs employed in the Neve consoles from the 1970s. However, these are not just more faithful recreations of the classic 1073, because the design has been tailored somewhat to address some of the perceived downsides of the early Neve design — specifically a tendency to lose some control

at the bottom end in certain situations.

The ME1NV is housed in a half-rack 1U box with an internal linear mains power supply. Sowter transformers are employed for the input and output paths, and up to 70dB of gain is available. In addition to the balanced mic input there is a dedicated DI input, and both balanced and unbalanced line-level outputs are provided. Other features include separate input- and output-stage level metering, an unbalanced insert point, and switches to alter the input impedance and output loading.

Front-panel Controls

The unit is finished with a durable black paint, through which the panel markings appear to be etched. The controls comprise just a pair of black knobs and five grey buttons. There's a mains power switch, with associated blue On/Off LED, while the other four buttons each have an associated green LED to make their status obvious. Most signal switching is performed by sealed relays, and the internal construction is to a high standard.

The input gain is switched in precise 5dB increments from 5dB to 60dB with the larger

of the two rotary controls. The smaller rotary control adjusts the output level and is continuously variable. The front-panel markings suggest a range of ± 10 dB relative to a centre Cal (calibration) marking, while the handbook says the range is -22dB to +10dB and the specifications claim -25dB to +10dB. This imprecision is compounded by the fact that there is no centre detent on the output-gain control, so the actual calibrated level position is rather vague anyway. When I measured the level control's range I found it went up to +11.5dB and down to -15dB, so none of the published figures are right! However, regardless of the panel markings and claimed specs, the control actually covers a useful range and performs its task of level matching with other equipment perfectly well — just don't rely on the markings to set levels!

The preamp circuitry design is such that, as the input gain is increased, so too is its 'vintage character', and this arrangement provides a range of tonal options. If you want a fairly transparent sound, for example, it pays to crank up the output gain control to benefit from that stage's cleaner sound, and back off the input gain control. For a thicker

and slightly more coloured sound, turn the output level down and wind in more front-end gain. We are not talking guitar-amp levels of overdrive distortion here, but the effect and the way it is controlled are broadly similar.

Variable Microphone Input Impedance

The input impedance seen by the microphone can be switched with one of the grey buttons between 1200Ω (out) and 300Ω (in). The impedance change is achieved by re-configuring the input transformer's windings to alter the turns ratio, although this inherently also changes the gain slightly. I measured a 2.5dB increase when switching to the 300-ohm mode. For most mics, most of the time the 1200Ω mode is fine, although the majority of modern preamps present a higher figure, and most modern transformerless mics are probably designed with a higher figure in mind — 2400Ω is pretty common these days, for example.

The 300Ω mode may suit some ribbon mics better though, and will certainly result in a change in sound quality when used with most dynamic mics — typically a tilting of the frequency response to give a thinner and brighter sound. However, the actual changes are a little unpredictable and depend on the complex

relationship between the mic's output transformer and the preamp's input transformer, combined with the mic cable's attributes. In other words, it's a case of pushing the button and seeing if you like the results! Most capacitor mics (and buffered dynamics and ribbons) with transformerless outputs will remain largely unaffected by changing the input impedance — although in some cases the lower load may result in increased transient distortion and reduced headroom.

The front-panel DI input overrides the rear mic input and presents a 1.2MΩ input impedance, which is ideally suited to electric guitars and basses. This input employs an active FET buffer stage before the signal is routed through the mic transformer. Consequently, as with the mic input, changing the input impedance will have a tonal effect on the DI signal and is worth experimenting with. The input has been designed to provide some musical colour to the signal — this definitely isn't a squeaky-clean DI — and the lower impedance setting seemed to enhance the coloration nicely!

Two of the remaining grey switches apply 48V phantom power and invert the output signal polarity. Phantom power measured at 48.4V with perfect symmetry, and the preamp was able to deliver the full current rating without any obvious voltage sagging. The polarity inversion only affects the XLR output — the unbalanced -10dBV output is completely unaffected by this switch, which is a shame. This restriction of the unbalanced output is noted in the handbook, but may still catch some people out. From a practical point of view it would have made more sense to have reversed the input transformer's connections rather than the output transformer's so that both outputs would be affected.

Inputs, Outputs & Termination

The last grey button disconnects the standard 600Ω load across the output transformer. Most output transformers have a high-frequency resonance peak that requires a specific loading to control it. In the case of this particular Sowter transformer the peak is at about 50kHz and the optimum loading is 600Ω. This is an old-fashioned concept now, which has largely been forgotten in this day and age of electronically buffered outputs, but it has a usefully creative side effect. Switching off the termination when driving the preamp's output into a high-impedance input will result in

SOUND ON SOUND

Great River ME1NV £864

pros

- A nice take on the vintage Neve character.
- Floating transformer-balanced output.
- Unbalanced insert point.
- Plenty of gain and a low-impedance input option for ribbons.
- Input-impedance and output-loading switches.
- Input and output metering to help set gain structure.
- DI input adds musical character to basses.

cons

- Output gain control markings inaccurate.
- Polarity inversion doesn't affect the unbalanced output.

summary

A compact single-channel preamp that provides much of the flavour of the classic Neve 1073 without the drawbacks some assign to that design. Input and output transformers combine with the discrete component Class A circuitry to provide a lovely rich quality that suits a wide range of musical genres. Controls are simple and obvious, there is loads of gain, the headroom is generous, and the noise floor is benign. The DI input is handy too.

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GREAT RIVER ME1NV

Alternatives

The ME1NV is attractively priced, given its facilities and sound quality, but it isn't a true Neve 1073 clone. The manufacturers would suggest that their refinements offer an advantage, and in the right circumstances I would broadly agree. However, you can still buy the modern Neve 1073 module in various forms, and there are plenty of pretty accurate clones around if you simply must have that sound, but they cost significantly more than the ME1NV. One of my favourites is the Chandler 1073 LTD, but the same company also make preamps based closely on another vintage console, the EMI TG. The Chandler TG2 is a really nice preamp that is sonically more flexible, in some ways. While, again, more expensive than the ME1NV, it does offer a different yet equally desirable sound



character. For a cleaner sound, it's hard to beat the DAV Electronics BG1, which is based on vintage Decca design principles, but uses a modern integrated-circuit front end. It is very well engineered, performs superbly for the price, and remains one of my firm favourites.

► gently rising high-frequency region, adding a sense of 'air' and brilliance to the sound (plus a small increase in the mid-range distortion).

When correctly terminated, the frequency response measures flat to 20kHz and drops gently above that to about -1.5dB at 35kHz and -3dB at 50kHz. However, with the 600Ω termination switched out and feeding a high-impedance device the high-frequency response rises gently to roughly +1dB at 20kHz, +3dB at 35kHz, and +5.5dB at 50kHz (the resonance). The precise results in any given situation will actually be dependent on the input characteristics of the receiving device and the connecting cable, so it's another case of trying the switch in both positions to see what works best with the particular source sound.

The final front-panel element to mention is a pair of LED bar-graph meters, each with four green, one yellow, and one red LED. There are no level markings, but the meter seems to have something resembling a VU meter response. The bottom green LED comes on at -22dBu, with the other greens illuminating at roughly -12dBu, -2dBu, and +2dBu. The yellow LED lights at +10dBu, and the red glows at +20.5dBu.

The rear panel of the ME1NV is neatly laid out, with XLRs for the mic input and balanced +4dBu output. The XLR output is transformer balanced and fully floating, while a quarter-inch socket provides an unbalanced output at -10dBV. Since this output doesn't pass through the output transformer, it is fractionally cleaner than the balanced output, although the lower level means that it won't be able to drive some A-D converters fully,

and it also misses out on the polarity inversion switch.

A second quarter-inch socket provides an insert point (labelled Patch) using the familiar tip-send/ring-return configuration. The nominal signal level is -10dBV and the insert point is immediately prior to the output stage. Mains power is connected via the usual IEC connector, with integrated voltage selection and fuse holder.

Vintage Sounds

The ME1NV is not the cleanest or quietest mic preamp in the world, but it does have a subtly rich character that many users will really appreciate. It sounds a tad more 'modern' than most vintage preamps to my ears, but

able to use the Great River preamp with a couple of different Chinese ribbon mics during the review period to great effect. Changing the input impedance changed the sound in fairly subtle ways, and was different for the two mics as well. With most of my capacitor mics — nearly all of which have transformerless outputs — the impedance switch seemed to have little or no effect, much as expected.

The DI is surprisingly effective, especially on bass. Driving the front end quite hard gives a nice richness and character to the sound that seems to work well. However, a little care is needed not to clip the front end, because that doesn't produce a very nice sound at all! I didn't use the insert point in earnest, although I did check that it worked as advertised. For anyone who still likes to track through a compressor or with some EQ, this facility allows a suitable outboard unit to be integrated with the preamp, before the processed output signal is dispatched through the preamp's output transformer. The provision of separate balanced and unbalanced outputs can be useful in some situations, and one suggested application is to provide a zero-latency monitoring output to feed a monitoring mixer or similar.

This is a nice little preamp, well worth investigation for anyone recording rock and pop material where a degree of coloration is

“The sonic impression is indeed reminiscent of the vintage designs, but it sounds a little more open and modern to my ears, which will certainly appeal to many people.”

still has more than a hint of the scale and body of a typical 'vintage' preamp — all those transformers and high-current discrete Class-A circuitry make sure of that.

The separate input-gain and output-level controls allow the overall level to be balanced against the required amount of 'drive' to provide a usefully creative range of sound characters. The ability to tinker with the input and output impedances adds further to the sonic versatility of the unit, and the dual metering allows the internal gain structure to be optimised sensibly.

There is plenty of gain available, and I was

a desirable thing. It wouldn't be my first-choice preamp for classical or 'serious' music applications, although it is capable of delivering a fine performance if the mics are chosen carefully and the gain structure is set up thoughtfully. Overall, I found the ME1NV to be a good-sounding and musically versatile preamp, and the sonic impression is indeed reminiscent of the vintage designs, but it sounds a little more open and modern to my ears, which will certainly appeal to many people. It is also cheaper in the UK than most Neve 1073 clones and includes a very usable DI input, adding further to the attraction. **EOS**



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What could be more tempting than a sweet-sounding virtual analogue synth? How about that same synth bundled with a bunch of high-quality plug-ins targeted at music production?

Sam Inglis

Having established Pro Tools as the industry-standard tool for multitrack audio recording and editing, Digidesign's development over the last couple of years has focused on musicians and programmers. *Pro Tools 7* added lots of new MIDI functions, as well as Instrument tracks, which provide an elegant new way of incorporating soft synths into a Session. Now,

the company's takeover of Wizoo has added another string to their bow. The German developers have been transformed into Digi's 'Advanced Instrument Research' department, and the first fruits of their work are two new software instruments, *Xpand!* and *Hybrid*. Both are native plug-ins that are available for TDM, LE and M-Powered systems on Mac and PC, though as they are only available in RTAS format, they won't work with other hosts besides *Pro Tools*.

Xpand! is intended to be free to all Pro

Tools users, although since it's too large to be easily downloaded, you might need to pay a nominal sum for Digi to send out the CD. It is, in essence, a virtual workstation sound module, designed to provide a good basic library of bread-and-butter patches covering both real and synthetic sounds, without allowing the user to get too tangled up in complex editing. *Hybrid*, by contrast, is not free, and has no truck with samples: it's a full-blown three-oscillator subtractive synth offering comprehensive editability, with elements of wavetable and FM synthesis thrown in.

Hybrid (above) is available as a product in its own right, but many potential buyers with LE and M-Powered systems will be tempted by the new *Music Production Toolkit* bundle. This includes *Hybrid* along with four other

plug-ins: Digidesign's *Smack!* compressor, *Broadband Noise Reduction LE*, *Sound Replacer* and TL Labs' *TL Space* convolution reverb. In addition, it ups the audio track count available in *LE* and *M-Powered* versions of *Pro Tools* to 48, and adds the full multitrack version of the Beat Detective drum-fixing tool that was previously available only in TDM systems. At £295, the *Music Production Toolkit* looks excellent value, and as none of the elements have previously been reviewed in *SOS*, I'll look at them all in this review.

Mind Xpanding?

Before that, though, let's take a quick look at *Xpand!* (below). It's strange that while the likes of *Logic* and *Cubase* are bundled with weird and wonderful soft synths offering everything from analogue emulation to physically modelled bells made out of cheese, no-one has yet thought to include a conventional sound module. After all, if there's one thing that everyone needs to get started, it's a collection of basic sounds such as drums, keyboards, strings and basses, so full marks to Digi for making *Xpand!* a free part of the *Pro Tools* environment.

What are those basic sounds like? Well, it's fair to say that anyone who's ever used Steinberg's *Hypersonic* soft synth will be on familiar territory here — in fact, large sections of the sample library appear to have been taken wholesale from that product, which was of course designed by Wizoo. That means there are some decent, if not exceptional sounds in most categories, with drums, percussion, basses, keyboard and mallet instruments all well represented. There are a few nice individual orchestral instruments, but the string and brass patches

SOUND ON SOUND

Digidesign Hybrid £150 & Music Production Toolkit £295

pros

- Good value for money.
- *Hybrid* is a very nice virtual analogue synth, and if you don't already have one, should fulfill almost all your requirements in this area.
- Likewise, *Smack!* and *TL Space* are great: *Music Production Toolkit* owners are unlikely to need another convolution reverb or vintage-style compressor.
- The *Music Production Toolkit* is the only way to get full Beat Detective functionality and 48-track support in *LE* versions of *Pro Tools*.

cons

- *Pro Tools LE* and *M-Powered* should support 48 tracks as standard, not as a cost option.
- Though it's still useful, *Sound Replacer* is looking pretty dated and could benefit from new features.
- *BNR* seems a little out of place in this bundle.

summary

Digidesign's *Music Production Toolkit* is an aggressively priced and feature-packed bundle that will genuinely meet the needs of many producers. As a stand-alone product, the *Hybrid* synth is also well worth a look.

are generally underwhelming. There are also plenty of synthetic sounds, many of which are very usable, but in this department, the lack of editing on offer can become frustrating.

Hypersonic was designed to work in host programs that support multiple outputs from soft synths, and offered 16 'slots' on separate MIDI channels, each of which could be routed to one of four stereo outputs. *Pro Tools* doesn't support multiple outputs, so *Xpand!* is

basically designed to be triggered from a single channel. If you want to use it for bass and drums and keyboards, say, you'll have to use three instances on separate tracks. Each instance allows you to layer up to four elements, though, so you can stack sounds or combine the various elements of a drum kit into a single *Xpand!* patch. Each element has its own arpeggiator, too.

A basic mixer is used to balance the levels and pan position of the four elements, and to send to the two global effects, but there's no facility for insert effects to apply to individual elements. And, of course, the fact that every element in an instance of *Xpand!* shares the same output means you can't apply effects to an individual element in the *Pro Tools* mixer, either. This isn't a problem in most cases, but is annoying with drum kits, where you might want to process the snare or kick separately.

Editing for each element consists of six Smart Knobs. Just like the Hyperknobs in *Hypersonic*, these are hard-wired to whichever parameters or groups of parameters are deemed most important for that sound. With a synth patch, for instance, they might control attack, release, cutoff, resonance and so on. Where a sound is already fairly close to being right, the knobs usually provide enough flexibility to get it closer. You can also use the mod wheel and aftertouch to make parameter changes in real time, but this isn't the sort of synth where you can create new sounds from scratch. Still, whatever its limitations, it integrates nicely into *Pro Tools* and it's a whole lot better than nothing — so at the price, we can hardly complain.

Cross Breeding

Though it's a rather different kettle of sonic fish, *Hybrid* bears a recognisable visual resemblance to *Xpand!*, with similar virtual knobs surrounded by luminous position indicators. Along with all the controls that affect specific parameters, there are also four Morph knobs, which again recall the Hyperknobs in *Hypersonic*. Each Morph knob can modify multiple *Hybrid* parameters in different directions and amounts, thus allowing you to change multiple aspects of a sound with a single twist of the mouse. The difference, compared to *Xpand!* and *Hypersonic*, is that the assignment of parameters to Morph knobs is completely controllable by the user.

The basic architecture of *Hybrid* is that of a well-specified subtractive synth, although there are nods to other synthesis methods too. Two main oscillators are supported by a simpler third unit, which is mainly designed

Xpand! is free to all *Pro Tools* owners.



DIGIDESIGN MUSIC PRODUCTION TOOLKIT

► to produce sub frequencies and noise. There are some interesting innovations in the design of the two main oscillators, and one or two curious omissions — oddly, neither can produce a sine or triangle wave, but each offers three variants on a sawtooth waveform, three based on a square or pulse wave, and a wavetable option.

The clever thing about the saw and pulse options is that they enable you to achieve oscillator sync and cross-modulation without tying up another oscillator to use as a modulator. In essence, each of the two main oscillators has a hidden second oscillator dedicated to this purpose, and when you select the CM or Sync versions of a saw or square waveform, the Wave Shape control determines the pitch ratio between that and the hidden waveform. This is a neat idea, which enables you to create all those classic 'tearing' sync leads and groaning cross-modulated noises with no effort at all.

The third square-wave option is a classic PWM waveform, with the Wave Shape control determining pulse width, while the final sawtooth-based waveform is Saw Multi. Like the Supersaw waveform in Roland's JP8000, this consists of several sawtooths stacked on top of one another, with the Wave Shape control setting a detune amount between them. Finally, the Wavetable option provides access to 100 wavetables, each containing 64 single-cycle waveforms; the Wave Shape control adjusts the playback position within the wavetable. You can't import your own wavetables.

Saturated Fat

There's only a single filter, but Digi are rightly proud of it. It offers all the usual high-, low- and band-pass responses, plus various settings that combine different high- and low-pass slopes. It has its own envelope and a Keytrack control, but the neatest part of it is the Saturation slider. Ramping this up causes your clean sounds to distort in a convincingly 'analogue' fashion; the effect varies from subtle warmth through to something akin to a broken speaker, but is never fizzy, and always sounds like it's part of the sound rather than being stuck on. With the exception of Sound Toys' peerless *Filter Freak* plug-in, I don't think I've heard a better recreation of this effect.

Clicking on the little tabs next to the oscillator and filter controls shows their modulation options instead. The most intriguing options here are to do with *Hybrid's* FM capabilities. Unusually, these apply not to the oscillators but to the filter, the idea being that you ramp up the resonance to drive it into self-oscillation and then use Oscillator 3 to modulate the cutoff frequency at audio rates. Unsurprisingly, the

Test Spec

- Pro Tools M-Powered v7.1 with Music Production Toolkit.
- Centrino laptop with 2GHz Pentium M processor and 2GB RAM, running Windows XP SP2, with M-Audio Firewire 1814 interface.

results don't bear that much resemblance to the tinkly bells and ballad pianos one associates with traditional FM synthesis, which has got to be a good thing. Instead, there's a fair amount of noise and distortion on the menu, especially when you introduce noise as a modulation source. In fact, the main problem I found with this implementation of FM is that when used at full bore, the results need another filter to tame them! However, the FM capabilities are very useful for adding a dirty edge to sounds that are otherwise too clean, or in conjunction with *Hybrid's* envelopes, for creating short bursts of noise to reinforce note attacks.

On the subject of envelopes, *Hybrid* is well equipped with modulation sources. Two of the four envelopes are hard-wired to the filter and amplifier, and all four are available as modulation sources elsewhere. Three sync'able LFOs offer all the usual waveforms with the handy addition of Random and Drift, which are akin to smoothed sample & hold waveforms. If you want to reproduce the slight instabilities inherent in the sound of a true analogue synthesizer, you can achieve a lot by using one of these waveforms to subtly modulate oscillator pitch, wave shape and so on. One thing you can't do, however, is delay the onset of LFO modulation, so that vibrato fades in on sustained notes.

I would also take issue with the way LFOs and envelopes are edited. You can click to enter precise numeric values from the keyboard, but I imagine most people will prefer the alternative of dragging the breakpoints in the graphical representation. The trouble is that it's hard to be precise enough using this method, because the

Alternatives

There's no direct alternative to the *Music Production Toolkit*, because no third-party plug-in can extend *Pro Tools'* track count or Beat Detective functionality. If those aspects aren't crucial to you, however, you could consider McDSP's *Project Studio* bundle, which includes the *Revolver* convolution reverb, the *Compressor Bank* suite of vintage plug-in emulations and the *Synthesizer One* virtual analogue synth, plus powerful EQ and amp modelling plug-ins. Alternatively, of course, you could mix and match plug-ins from different manufacturers, though this might not be so cost-effective.

If you're just considering *Hybrid*, Arturia's *Prophet V* is perhaps the closest among many competitors, combining the functionality of the analogue *Prophet 5* with the *Prophet VS's* wavetable synthesis.

graphic displays are small and the range of the envelopes is huge, so dragging by a couple of pixels seems to take your attack time from 10 milliseconds to 30 seconds. According to the manual, it should also be possible to control these parameters using a mouse scroll wheel, but it didn't work with the pad controller on my laptop.

Steppin' Out

I must admit that I've never really seen the point in building a sequencer into a plug-in that is itself running in a sequencer. If you do, though, you're unlikely to be disappointed by *Hybrid's* step sequencer and arpeggiator. Clicking the Seq tag switches the plug-in's entire window around so that you see the controls, most of which pertain to the sequencer. You make the arpeggiator or sequencer active by choosing a Mode from the pop-up menu at the top left. Some of these settings are very basic: for example, the Up, Down, Up+Down and Random choices simply cycle through the notes in whatever chord is being held down in the order you'd expect. The Phrase option uses a MIDI file as a basis for the arpeggiation; lots of preset phrases are provided, and you can import any Standard MIDI File. However, you can't drag and drop MIDI Regions from the Edit window or Region List, which would be much more convenient.

The other Modes relate to the Step Sequencer, which offers control of up to five parameters over 16 steps. Note pitch and velocity can be specified for each step, along with two control parameters and a gate. A set of performance controls allow you to tell *Hybrid* the rate at which the sequencer should run, and how much swing should be applied. Disappointingly, there doesn't seem to be any way to save sequencer patterns independently of *Hybrid* patches, but it is possible to transfer patterns between patches.

Identical Twins

Copying sequencer patterns is made possible by the fact that each instance of *Hybrid* actually contains two identical synth engines: all of the features I've described above are available twice, in 'A' and 'B' versions. Saving a preset using the standard *Pro Tools* plug-in settings window saves all parameters for both, but *Hybrid* also has its own preset system which stores the settings for a single synth engine. Visiting the Presets page allows you to load a stored patch into either the 'A' or 'B' engine. You can also copy all the settings between the two, or just those pertaining to the sequencer. Some of the basic editing controls for both engines are reproduced on the Presets page so that you can make quick adjustments without having



Each instance of *Hybrid* actually contains two synths, and the plug-in's own preset library allows you to load two separate patches simultaneously.

general, if you want things punchy and brash, *Hybrid* is likely to excel. If you prefer them delicate and ethereal, it's not so good. This is partly because all the waveforms available at the two main oscillators are so harmonically rich; the main difficulty I had programming *Hybrid* was in getting the filter to close enough to eliminate these harmonics. Even with the cutoff knob at zero, it only takes a small amount of filter envelope to make things over-bright, and I'd have preferred to have finer control at this end of the scale.

That apart, there's a lot to like about *Hybrid*. The clever oscillator design definitely speeds up programming, there's an impressive lack of aliasing and zipper noise, and reproducing the engaging instabilities of a true analogue synth is easier than on any other virtual design I've tried. If you already own and like one of the many other virtual analogue synths on the market, *Hybrid* won't add a huge amount to your armoury, but if you don't, it should definitely be in the running for a place in your plug-in folder.

to flick back to the main edit window.

This all seems to work, but I'm not quite sure what it offers that couldn't be achieved more simply by running two instances of the same plug-in, and dispensing with the two-level preset architecture. Given that Digi have developed this dual-engine approach, moreover, I think they've missed a trick by not extending the morph system to allow you to morph between different patches loaded into the two engines.

Finally, we should pay a quick visit to the Common and Effects pages. The former groups together the usual portamento, retriggering and mono/poly options, and allows you to assign and detune up to eight unison voices to each synth engine for a thicker sound; for some reason, though, switching Unison on for an engine forces it to play monophonically, which isn't always what you want.

Building effects into a plug-in soft synth is, in my view, nearly as pointless as building a sequencer in, given that most users will have a range of dedicated plug-ins available to do the job rather better. Be that as it may, *Hybrid* offers two insert effects for each synth engine, plus global chorus, delay and reverb. The choice of insert effects is impressive — there are well over 40 options, covering the usual reverbs, delays and modulation effects, as well as the less usual bit reduction, pitch-shift, rotary speakers and so on. Most of them sound pretty good, which only reinforces the feeling that I'd rather have them available as separate plug-ins.

Hybrid Or Mongrel?

So much for *Hybrid's* features. What does it sound like? Strangely, the synth that it most calls to mind for me, both visually and sonically, is the Waldorf *A1* plug-in bundled with Steinberg's *Cubase SX*. However, that shouldn't be taken as a criticism, partly because *A1* is a very under-rated synth and mainly because *Hybrid* is vastly more powerful and versatile. It's excellent for basses and leads, and good for strange pads and atmospheres, although things like synth strings don't seem to come as naturally. In

Lip Smacking

Digidesign introduced their *Smack!* compressor quite a while ago, and it's proved deservedly popular despite the name (what next, the Crystal Meth de-esser?). It has a slick retro-styled front panel that recalls vintage gear from the likes of Fairchild, but offers a more versatile selection of controls than you'd expect from most hardware units. There's no threshold control — you simply mess with the input level and ratio until you get the amount of gain reduction you want. This is indicated



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► on a large virtual VU. The ratio is a stepped control which goes from 2:1 up to 'Smack!', which is hard limiting. Annoyingly, though, the attack and release controls are simply numbered from 0 to 10 rather than being calibrated in milliseconds. It may look more retro that way, but it's not as informative.

There are actually three different types of compression available. The Normal, Warm and Opto settings emulate different hardware circuits, and the differences between them are more apparent as you crank *Smack!* harder. Normal and Warm modes are based on an FET circuit, the difference being that the latter's release time incorporates a programme-dependent element; it also seemed to me to have slower attack times. In Opto mode, the attack and release controls are greyed out, and you're restricted to the fixed, slow time constants. Another control switches in various flavours of harmonic distortion, again attempting to incorporate some of that old-time feeling. The effect is pretty subtle on most sources, but can add a pleasing burr to instruments like bass guitar.

Overall, *Smack!* is a very useful and musical compressor, and I think everyone doing pop or rock music will find a place for it in their mixes. In Normal mode, the attack time goes down to around 100 microseconds, making it an effective 1176-style limiter. It's also particularly good as a buss compressor, whether over a drum submix or an entire mix, and it's easy to get satisfying pumping effects out of it if that's your bag.

Space In Your Mix

Having bought up both Wizoo and Trillium Lane Labs in the last year, Digidesign have found themselves in possession of two different convolution reverbs. Both of them have unique selling points: as well as being capable of true surround operation, Wizoo's design allows you to blend algorithmic and convolution reverbs within a single patch, while TLL's *TL Space* is notable for being the only convolution reverb that runs on Accel DSP chips, thanks to its clever bridging technology. Since the *Music Production Toolkit* is only available for LE and M-Powered systems, though, the version included here runs as a conventional RTAS host-powered plug-in. As such, it does pretty much the same as all convolution plug-ins; there's no must-have feature that separates it from the likes of Audio Ease's *Altiverb*, or indeed Wizoo's *W2*, but it's easy to use and offers a sensible amount of control.

TL Space designates the first portion of the impulse response as 'early reflections', and offers separate controls for this section and for the rest of the reverb tail. Naturally, these aren't as comprehensive as you might find on a typical modelling reverb, but they enable as

much shaping of the impulse response as you're likely to need. Both elements of the reverb can be panned independently, if you're using a stereo-out configuration. The Length slider tells *TL Space* how much of the start of the impulse response should be considered early reflections, and the Size parameter scales the apparent dimensions of this space up or down.

The other controls are grouped in two pages under the headings Reverb and Decay. Parameters in the former list include a two-band EQ, stereo Width and an intriguing Reverse slider. The default setting for this is Off, and its other positions are calibrated in beats per minute, the idea being that you can create a reverse reverb that syncs to your Session tempo. The Decay page allows you to divide the impulse response into low, mid and high-frequency bands at user-definable

and let go, it automatically selects the first option, which is to open a web browser and attempt to download IRs from the Digidesign site.

To a large extent, convolution reverbs stand or fall on the supplied impulse responses, and *TL Space*'s library is pretty good. There are some particularly nice plates and springs, and it's strong on special effects and post-production sounds. I would have welcomed more ordinary rooms and ambience patches, but there are plenty of third-party options available if you need these.

One neat feature is that in addition to the IR library and Digidesign's own plug-in librarian, *TL Space* also supports up to 10 snapshots. Each of these includes an impulse response plus all reverb settings, and you can switch between snapshots on the fly. Snapshot switching can be automated,



crossover points, then adjust the decay time of each band independently. There's also a global decay time parameter, and you can set the relative levels of dry and wet signals, and the balance of early and late reflections. Both elements of the reverb can also be pre-delayed by user-definable amounts.

Clicking on the double arrow at the top right of the screen opens up *TL Space*'s browser, where impulse responses are categorised in a tree structure using folders. True-stereo operation is supported. The main display can be set to show either a waveform view of the IR, with the early-reflections portion highlighted in a lighter colour, or a JPEG-format image illustrating the space that was sampled. The Edit button brings up a pop-up menu allowing you to import audio files and IR libraries in all common formats. This all works fine, as far as I can see, but the menu itself is infuriating: if you simply click

making it possible to step through up to 10 different reverbs within one Session from a single instance of *TL Space*. This will probably be of more use to post-production users than musicians, but it's still a nice touch.

My main reservation about *TL Space* is that on my machine, some settings seemed to produce unexpected spikes in processor use, causing *Pro Tools* to deliver its 'You are running out of CPU power' warning. Convolution is always demanding on CPU resources, but this was happening when it really should not have, in small Sessions without any other demanding plug-ins. In general, a single mono-to-stereo instance of *TL Space* would use perhaps 25 percent of CPU resources on my Windows laptop, but I sometimes found that adjusting a control would send it through the roof, and I'd have to turf out that instance of *TL Space* and reload it. However, this only happened

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- ▶ occasionally, and not often enough to make me not want to use it! If you don't already have a convolution reverb, *TL Space* is a fine example, and is excellent value as part of the *Music Production Toolkit*.

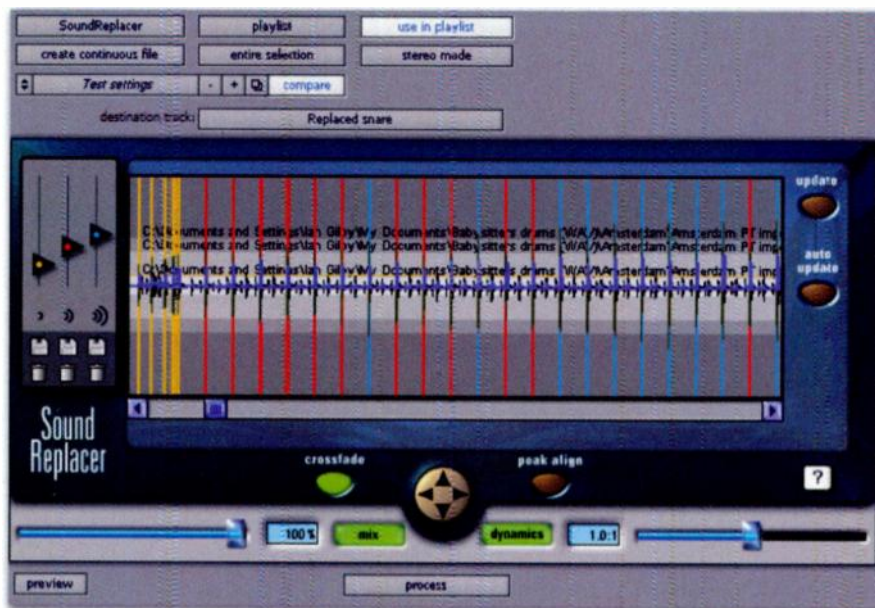
Repairs And Replacements

If there's one instrument that causes more recording headaches than any other, it's the drums, and the popularity of Pro Tools as a music recording package has a lot to do with its tools for dealing with iffy drum recordings. Two features in particular have rescued countless records from the horrors of inconsistent timing and inadequate drum tuning (or ruined countless records by sucking the humanity out of a living, breathing drum part, depending on your point of view). Beat Detective and *Sound Replacer* are the weapons in question, but they haven't always been available to all Pro Tools users. BD was TDM-only for many years, before it was finally incorporated into LE versions in the *Pro Tools 6.7* update; and even then, the LE version lacked some of the capabilities of the full version. *Sound Replacer*, on the other hand, has always been a cost option.

The *Music Production Toolkit* includes the *Sound Replacer* Audiosuite plug-in, and extends the Beat Detective capabilities of *Pro Tools LE* and *M-Powered* to the full multitrack feature set found in *Pro Tools TDM*.

However, it's been some time since *Sound Replacer* came on to the market, and it's beginning to show its age. This is partly apparent in the way it looks, with its Mac OS 8-derived icons and scroll bars, and partly in its functionality, which has been surpassed by some of the third-party alternatives that are now available or promised. (Shortly before they were taken over by Digidesign, TL Labs announced a sophisticated drum replacement plug-in called *TL Drum Rehab*, so it's possible that this will supersede *Sound Replacer* in Digi's product line at some point.) Of course, that's not to say that it isn't invaluable in the right circumstances.

To use *Sound Replacer*, you select your source Region in the Edit window and choose SR from the Audiosuite plug-in menu. Clicking the Update button loads that Region into the waveform display in the centre. This can't be resized, and you have to wait for it to update every time you scroll or zoom, which gets old extremely fast. You can divide the source audio into up to three 'velocity' zones by dragging the yellow, red and blue sliders down until vertical lines appear over the drum hits, the idea being to catch all the wanted hits whilst excluding hi-hat spill and the like. Clicking on the floppy disk icon (I told you it looked dated) beneath each slider opens an Explorer/Finder window



Sound Replacer allows you to define up to three 'velocity' zones in the source region and replace detected hits in each zone with a different sample.

allowing you to select the audio file that will be used to replace any hit in that zone. Various other options let you change the way hits are detected, reduce the dynamic contrast in the replacement part, mix the replaced sounds with the original audio and choose whether to crossfade hits that are close enough to overlap. You can also choose to place the replacement Region onto a different track, which is useful.

This all works, and with a little bit of trial and error and some adequate drum samples, you can get good results fairly quickly. However, it's not hard to spot ways in which *Sound Replacer* could be improved. At the top of my wish list would be the ability to use it to create a MIDI part rather than an audio file. This might not have the same sample-accurate timing, but it would be vastly more flexible. In conjunction with a software sampler it would allow you to audition sounds much more easily and to use as many layers of samples as you like, and any false triggers or missing hits could easily be edited by hand. Other improvements I'd like to see include support for dragging and dropping samples from the Region List onto the sliders, and the ability to create, delete and move hitpoints by clicking and dragging in the waveform display. The icing on the cake would be some sort of frequency-conscious

hitpoint detection, which might make it easier to isolate, say, all the kick drum hits in cases where spill is really a problem.

By contrast, Beat Detective is still one of the most advanced tools available for detecting and modifying timing in recorded audio. It has been repeatedly improved in recent *Pro Tools* updates, and the latest version incorporates the ability to work in identical fashion on MIDI and audio tracks; if you want, you can derive a groove template from an audio Region and apply it in the MIDI Quantise dialogue, which is pretty useful. The use of Beat Detective has been covered several times before in *SOS*, notably in August 2003 and July 2005, so I won't describe it in depth here.

Installing the *Music Production Toolkit* expands Beat Detective LE to the full functionality available in the TDM version, the main difference being that it works across multiple tracks. This makes it possible to apply the same timing edits simultaneously to any number of audio and MIDI Regions, which is vital if you want to preserve phase relationships between tracks in a multi-miked kit. It also opens up the sophisticated Collection Mode. In a nutshell, this allows you to analyse multiple audio or MIDI tracks, with different settings, and combine the results to create a single tempo map or groove template. This is really handy when you have a drum kit recorded with multiple mics, along with percussion overdubs and so on, and you want to combine elements of the timing information from several of them. You might, for instance, want to collect the triggers from your kick and snare tracks as a basic backbeat, before adding extra triggers from a 16th-note hi-hat part. Handy.

Going Up

The various elements of the *Music Production Toolkit* are authorised to an iLok key in the usual way. Note, however, that you need to upgrade your version of *Pro Tools* to 7.1 in order to use either the *Toolkit* or the *Hybrid synth*.

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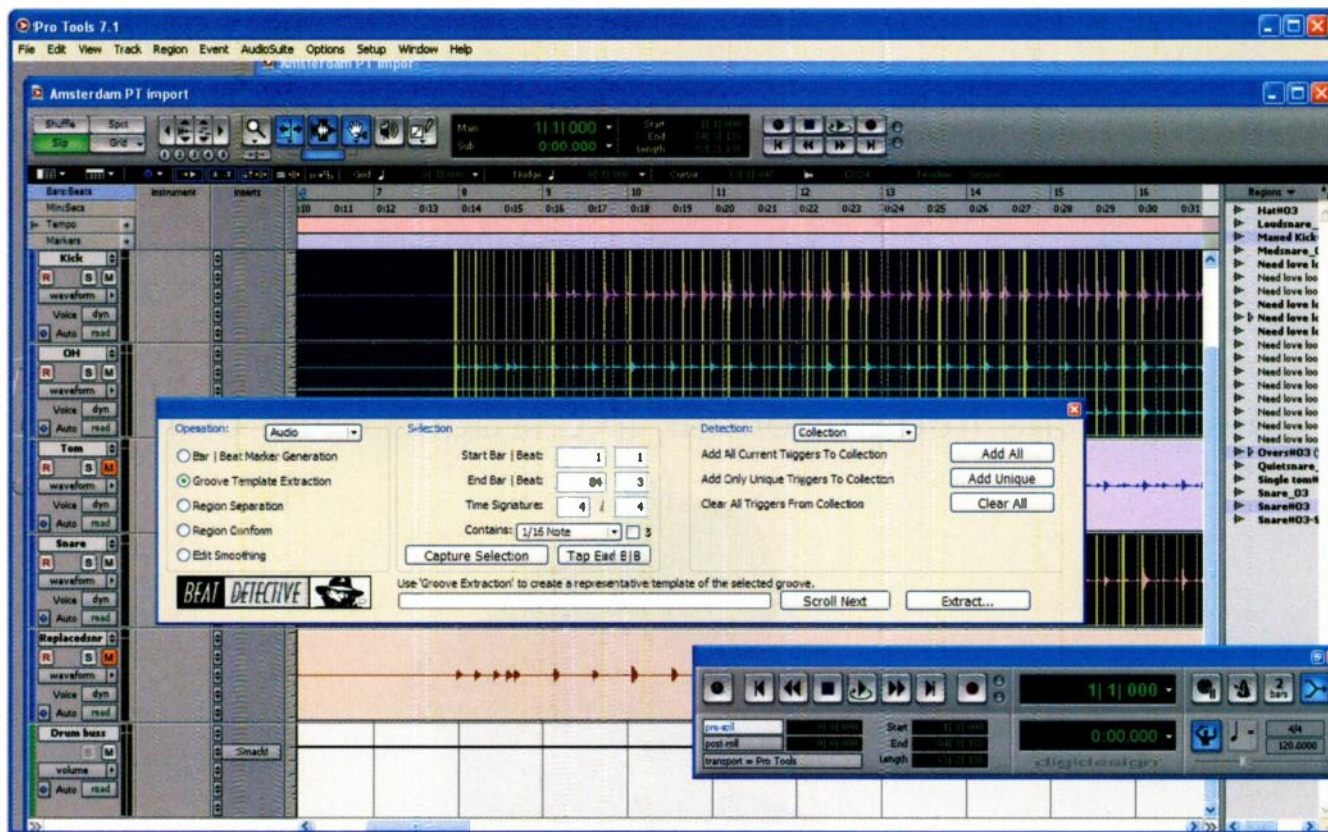
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Beat Detective in Collection Mode, previously available only on TDM systems.

A Curious Addition

There's one more plug-in at the bottom of Digidesign's goodie-bag, but it seems a slightly odd inclusion in a package aimed at musicians. *Broadband Noise Reduction LE* has been taken from the *DINR* plug-in suite, and Digi say that it's intended for suppressing 'unwanted elements such as tape hiss, air conditioner

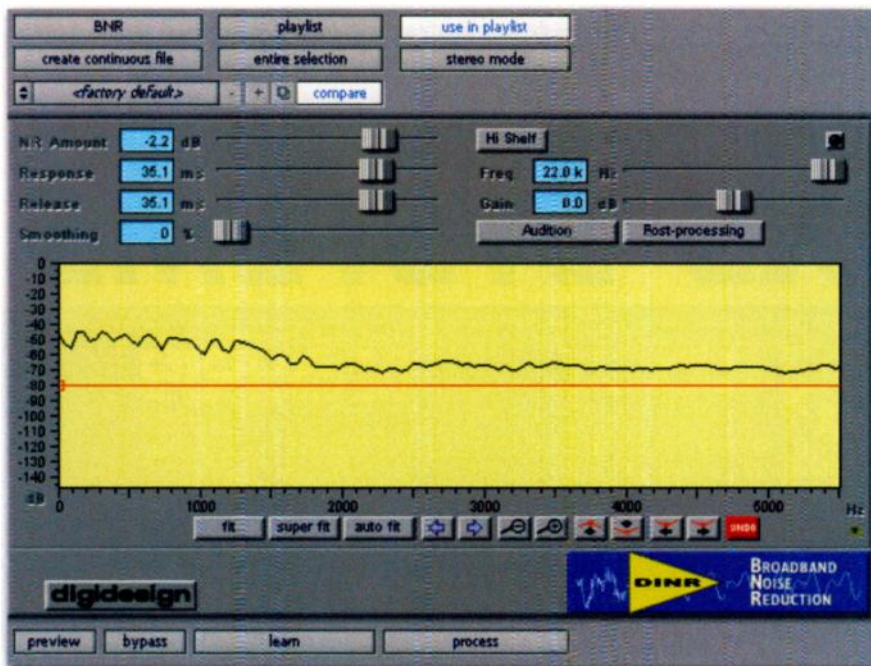
rumble and microphone preamp noise'. My Pro Tools system has never suffered from tape hiss, strangely, and you don't have to spend too much these days to ensure that your mic preamps are adequately noise-free. Ambient noise such as computer whines and hums can be more of a problem for musicians recording to DAWs, but as always, prevention is better than attempting to cure these with plug-ins.

In fact, the only time I can ever recall using noise-reduction software in a music-production context is to clean up samples taken from vinyl, and *BNR* doesn't include the de-clicking and de-crackling tools you need for that.

Like *Sound Replacer*, it's also looking a bit yellowed around the edges in this day and age. The version supplied here is off-line only, and in fact the Preview function wouldn't work in my system, so I couldn't even audition the results before applying the process. It's not a bad plug-in by any means, but trying to remove computer noise from a delicate acoustic guitar or vocal part is asking too much of it, and I rarely found that the benefits outweighed the side-effects.

Shall I Count The Tracks?

There are two further features included in the *Music Production Toolkit*. One is the MP3 Option, which allows you to export audio Regions or bounce your mixes as MP3 files. It's an obvious and sensible inclusion in this package, though it's a shame it doesn't also let you import MP3s to *Pro Tools*. The other feature is a relaxation on the limited number of audio tracks you can have in an *LE* or *M-Powered Session*. Previously, you could have up to 128 mono or stereo tracks, but were limited to 32 mono Voices to play them back. This meant that, in effect, you could have 32 mono or 16 stereo tracks, plus a nearly unlimited number of inactive virtual



tracks. With the *Music Production Toolkit*, you can still have up to 128 tracks, but 48 of them can now be active. However, it doesn't make a distinction between mono and stereo, so you can in fact have the equivalent of 96 Voices active if all your 48 tracks are stereo. Using high sample rates doesn't restrict the track count, so depending on the configuration you choose for your Session, you can now run up to 48 stereo tracks at up to 96kHz. The higher track counts achievable with the *Music Production Toolkit* are only supported by Digidesign under certain conditions, which you'll need a fast computer and multiple hard drives to meet, but even on my 7200rpm laptop hard drive I could play back 48 mono tracks at 44.1kHz without any problems at all.


The increase in track count for *LE* versions of *Pro Tools* is long overdue, but to my mind, Digidesign are exhibiting a bit of a cheek by making it part of a cost option. I can't think of a single other native DAW that still places this sort of arbitrary restriction on the number of audio tracks you can use in a project. Digi's argument has always been that they kept the restriction in place because they wanted to guarantee a certain level of performance. Now, however, they seem to be admitting

what everyone else already knew — that modern computers are capable of recording or playing back far more than 32 mono tracks — so it seems mean that they haven't made this functionality available to every *Pro Tools LE* and *M-Powered* user.

To Summarise

At £295, the *Music Production Toolkit* is slightly more expensive than *Pro Tools M-Powered* itself (the *LE* versions, of course, are only available bundled with Digidesign hardware), which gives you some idea of the relative value Digi place on the two products. It offers a huge saving over buying the component parts separately, and to my mind, it's a well thought-out bundle that represents good value for money, as long as it doesn't duplicate plug-ins you already own — diminishing returns set in pretty fast when you start buying more than one convolution reverb. It's also competitively priced by comparison with third-party products. For instance, the entire bundle costs a lot less than Waves's *IR1*, a bit less than Audio Ease's *Altiverb*, and slightly more than Wizoo's *W2* — but as well as the reverb, you're also getting a top-class compressor, a very nice

virtual analogue synth and several other invaluable tools.

The *Music Production Toolkit* is not available to *Pro Tools HD* owners, but the *Hybrid* synth is sold separately as a £150 stand-alone product for both HD and LE systems. At this price, it's perhaps not quite such impressive value as the *Toolkit*, but it's still very much worth investigating: more flexible than dedicated vintage emulations such as NI's *Pro 53*, it sounds just as good, and in some ways it's easier to use, because its interface is not trying to recreate a 25-year-old front panel. I'm not sure it quite has the magic something that sets an instrument apart as truly special, but I've already used *Hybrid* on almost all the projects I've started since installing it, and it's always come up with the goods. 

information

- £** *Music Production Toolkit* £295; *Hybrid* £150.
Prices include VAT.
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- F** +44 (0)1753 658501.
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Sound & Vision

Making A Living From Music For Picture: Part 7

Bill Lacey

Some people say that change is a good thing, but as a music-for-picture composer, I sometimes find myself wishing that everything I write could be used without the need for any changes. Whenever I start thinking like this, it's usually not too long before I get a rude awakening; as we've seen, change is often the first order of business. The director can suddenly decide that completely different music is needed, or make new edits to the visuals that throw off all of your precisely calculated tempo changes. Last month, we began to discuss how to deal with revisions, and you should now have had a chance to try scoring the opening scene to the short film *Ghost Soldier*. It's time to explain what I wrote, and continue the tale of the short film that kept getting shorter and shorter.

And... Cut!

When I first sat down to write the opening cue for *Ghost Soldier*, I thought carefully about my conversations with director Allan Tsao. As I explained last month, Allan had assured me that the temp music in the rough cut he had shown me was merely filler and not significant. However, experience has taught me that temp music is not likely to be written off easily, whatever your client may tell you. While Allan was eager to discover my perspective on the scene, deep down I felt that I hadn't heard the last of the temp track. I decided the best route to take was to come up with two ideas, and one of them would be based on the temp music.

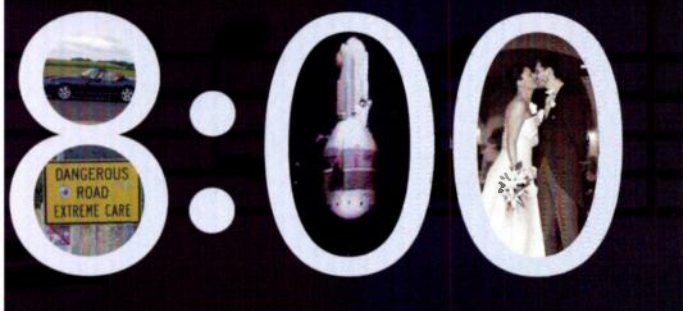
What happens when the director whose work you're scoring isn't satisfied, or demands changes due to events beyond your control? We find out, and also look at writing music for film trailers.

The score in my first attempt (which you can hear in the Quicktime movie at www.soundonsound.com/sos/soundandvision/ghostafterv1.mov) is heavy on sound design. I found Spectrasonics' *Atmosphere* indispensable for this. I had chosen to score this piece in MOTU's *Digital Performer*, and loaded up a number of sounds

that were in the same genre as the sounds in the temp track. Besides *Atmosphere*, I used some hardware synths that I continue to find useful, including the Roland JD800 and JD990. And I loaded up some Taiko drums from East West's *Stormdrum* library as well. The first minute or so were my own ideas that I felt set up the film nicely. After that, I began to move



The score for *Ghost Soldier*'s opening sequence (or the first version of it...!), as seen in MOTU's *Digital Performer*.



musically in the direction of the temp music.

One of the major challenges of this scene was dealing with the different locations and changes in time. The film begins in Iraq, jumps back in time to childhood memories, fasts forwards to the present back home, jumps back to Iraq and finishes with a bittersweet moment from childhood — all in the first two minutes of the film. Yikes!

Version 1 of my score opens with the 'Taikos Earthquake' patch from *Stormdrum* (see the screenshot opposite). Following that is a layer of patches from *Atmosphere* including 'Chill Factor', 'Ancient Extinction', 'Coming Unglued' and 'Angelic Morph'. I also used the 'Adagio' strings preset, which has a more distant sound than my usual choice for strings, VSL's *Opus 1* library (which I used in version 2 of this score). The idea was to create a slightly dark, ethereal ambience to introduce the film. Following that would be a melodic motif representing longing for the past. This section somewhat resembled the temp track.

As an alternative, I took a completely different approach in version 2 (which you can hear at www.soundonsound.com/sos/soundandvision/ghostafterv2.mov). This version would be more symphonic in scope, utilising string orchestra, woodwinds, snare drum ensemble and tam tam, children's choir, and instruments native to the Middle East. This version would be slightly more 'epic' in its approach. I made some use of sound-design elements in this version, and kept the 'Taikos Earthquake' patch used at the beginning of the previous version. The orchestral sounds came from the VSL *Opus 1* library, the voices from Spectrasonic's *Symphony Of Voices* library and the Middle Eastern sounds were derived from East West's *Ra* and Ilio's *World Winds* sets.

When Allan showed up to listen to the tracks, he listened to them once and immediately remarked that they didn't sound close enough to the temp track. Now, I had spent an extraordinary amount of time on these tracks, and wasn't particularly pleased that they had been written off inside of five minutes. We listened again, but still Allan wasn't sure that my efforts were going in the right direction. What followed was an epic struggle over how close we could reasonably get to the temp music (which, being a copyrighted commercial composition, could not be used as it was). While I agonised over the revisions, Allan continued to cut and re-cut the film. After another week, I was presented with a new cut with new temp music. The original temp music no longer worked, and it was time to change direction again. The battle over temp music continued further into the film, and I did my best to accommodate the desires of my employer while also making my own creative contribution.

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‘hey is that all ya got?’”**

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▶ As I've mentioned a couple of times, clashes like these are not necessarily because what you've written is wrong or inappropriate; many times directors are simply used to hearing a particular music track accompany visuals that they've painstakingly put together during months of editing, and new music seems foreign to them. As Allan continued to edit, my tracks began to grow on him, and he slowly began replacing the temp tracks with mine. By the time he was finished making changes to the picture, he could no longer imagine the temp tracks working at all and only my tracks seemed to fit. That, of course, was my ultimate goal, and it should be yours in similar situations!

You can download the final version of the opening scene from

www.soundonsound.com/sos/soundandvision/ghostafterfinal.mov. Allan had trimmed at least 40 seconds from the opening scene, and the flashback scenes from childhood were pushed further into the film. In fact, the entire film was trimmed some five to six minutes, which is significant for a short film. The musical direction we eventually settled on was derived from the first 30 seconds of my first version. Ultimately, the entire score combined the sound-design elements of the first version and the orchestral and Middle Eastern elements of the second. The dreamlike synth motif of the first version was altered and used later in the film, and for the closing credits.

While it is not unusual to go through a process such as this to achieve the desired results, there was another twist to the story. Most composers prefer to work in isolation, locking themselves away in their studio and not coming out until depleted of ideas. And for the most part, this is how I work as well. For a significant portion of this score, however, I worked on it with Allan sitting in



Narrow Gate Producer Sarah MacAllister 'on set' as lead character Sarah Weber.

the studio next to me.

There are distinct advantages and disadvantages to this method. On the one hand, it can be a huge timesaver, as having immediate feedback on the score can keep you focused on the what the director wants, and avoid you wasting time on a direction that will not be well received. On the other hand, it can be awkward to have someone in the studio during those moments when inspiration has taken a coffee break. And speaking personally, being a guitar player with lousy keyboard skills, it can be downright embarrassing to have someone sitting there while I hit one clunker after the next. It can also take a while for an idea to come to fruition, as the layering of parts from the bottom up can take considerable amounts of time. Objections may be raised before you've had a chance to finish the thought. My experience as a sound designer and post-production sound mixer helped immensely here, as I'm used to having clients in the studio tossing out suggestions. On the

whole, things went very smoothly, and in the end, we had a score that met the director's criteria and gave me great artistic satisfaction.

However... the story doesn't end there. As I write this article, Allan has decided to further edit the film after screening it to test audiences (all of the feedback has been extremely positive; he merely wants to make it an even stronger film than it already is). Consequently, it now seems that the opening scene will be trimmed again. I'm currently waiting for the new 'final cut' and have to score yet another version!

Meet The Producer

We're going to switch gears a bit for our next film, *The Narrow Gate*. It is not entirely uncommon that the Producer for a film will exercise creative control of the post-production process (editing, scoring, sound design and mixing), rather than the Director. For our next film, this is exactly what happened. And we'll be looking at scoring the movie trailer, rather than the film itself. Trailers represent another potential income stream for aspiring composers, and as we'll see, there are a number of different circumstances to consider that differ from what we've previously discussed.

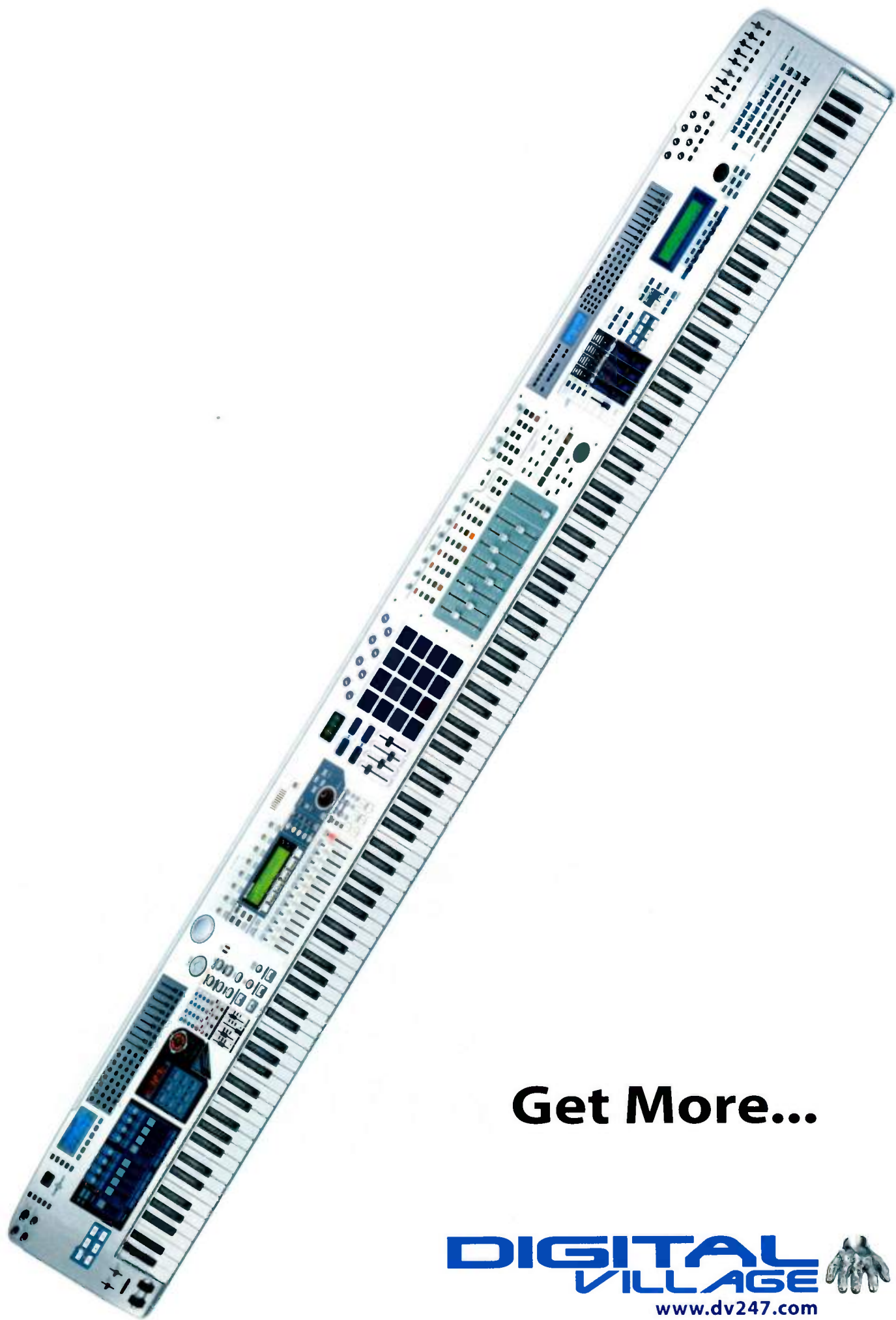
The Narrow Gate is a feature film written and produced by Heather MacAllister, who also plays the lead character in the film. Heather has previously produced an off-Broadway revival of Neil Bell's *Two Small Bodies*, and is currently producing a feature film by filmmaker Paul Stone about New York's Times Square in the 1970s. In addition to performing the lead role of Sarah Weber in *The Narrow Gate*, Heather starred as Cathy in the short film *All Souls Day*, as well as roles in the films *The Right To Remain* and *Death Of A Dynasty*. Her television work includes roles in *Law and Order* and *The Sopranos*. Heather is also drafting a new script for an upcoming feature-film project. ▶

Recording Cape Fear

Sometimes working in the music-for-picture game can be a slow, fraught, and difficult process, but at other times, you're utterly captivated by the project you're working on. One of the most rewarding moments of my professional career was being a part of the soundtrack recording for the Martin Scorsese remake of the film *Cape Fear*.

I was an engineer at BMG/RCA Studios in New York at the time, and I was fortunate enough to work with a number of people I had great admiration for. First of all, the music was a new orchestration by Elmer Bernstein (who also conducted) of Bernard Herrman's original score (Herrman, of course, is another hero of mine). Secondly, getting to work on a Martin Scorsese film that starred Robert De Niro, Nick Nolte and Jessica Lange was a major treat. And finally, I got to work with one of the best Hollywood scoring mixers in the business, Shawn Murphy.

Working in the famous RCA Studio A, the orchestra was recorded primarily with the classic Decca Tree microphone setup, utilising three vintage Neumann M50 microphones. Those of us who work mostly with virtual orchestras yearn for the day when we have an orchestra of this size at our disposal. As advanced as virtual orchestra libraries are today, they cannot recreate the beauty and warmth of a talented orchestra playing in a fabulous-sounding hall and being recorded by an expert engineer. It was also truly educational to witness a great film composer and conductor working his magic, bringing the notes on the page to life and adapting to changes on the spot (you try making alterations to a score with 60 musicians waiting for you and one of the world's greatest directors sitting patiently on the studio couch!). You can't pay for experience like that, and I'll never forget it.



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► Unlike the previous films we've discussed, this film was secured as the result of a prior working relationship (they say you're only as good as your last job...). I met Heather while working on the short film *All Souls Day*, written and directed by Laura Storm, who also directed *The Narrow Gate*. Heather also played the lead role in that film, and I did the sound design and post-production audio mixing. While my initial role did not involve scoring outside of a few short guitar-based underscores, I volunteered to compose a few extra pieces after spending time working with the film, and one of those pieces was used for the closing credits. Barely six months later, Laura and Heather called to hire me for *The Narrow Gate*, taking me on to compose an original score, provide sound design and mix the final audio. I began by meeting Heather to look at a rough edit of the film. She didn't have any specific musical directions, other than a strong preference for piano and string orchestra, and no temp tracks were used during the editing process.

One of the real challenges of the film was to accommodate the emotional complexity of the story line. First of all, there was the delicate topic of the September 11th terrorist attacks. This is certainly something that needed to be treated with great care; politics is best not discussed at the dinner table, and should also arguably absent itself from movie scores. I have my own feelings about that day, but needed to be careful; the musical focus had to be on what the *film* was trying to say. And at the same time, musical accommodation had to be made for the lead character's growing paranoia after the attacks, the breakup of her marriage, her developing

friendship with a Muslim woman, and the gradual descent into despair of one of the supporting cast members who would play a critical role at the conclusion of the film.

Despite this complex plot, and as we've discussed previously, it's always important not to have too complicated a score. I try to keep the number of 'musical characters' to a minimum, especially in an involved story like this. The piano played a significant role in more intimate situations, while the orchestra carried the larger-scale themes. I also used some Middle Eastern instruments from East West's *Ra* library, with haunting vocals by vocalist Smadar Levi, who specialises in traditional Middle Eastern music (while *The Narrow Gate* is set in New York, the producer wanted to include some musical references to the Middle East, given the subject matter of the film). However, the example I'm introducing this month comes not from the main film score, but from the film's trailer, which I was also in charge of scoring.

The World Of Trailers

Movie trailers are handled in a number of different ways; some companies even specialise in providing stock music for trailers. One reason for this is that trailers are often cut before the composer writes a note for the film. It is also not unusual that a different composer may be hired to score the trailer, depending on who is engaged to *produce* the trailer. In this particular case, I was asked to do both.

Movie trailers are essentially advertisements, and exist to generate interest in a film. Usually they display the film's most dazzling elements to draw the viewer in. It would be fair to say that certain liberties are

taken when editing movie trailers, in an attempt to create as enticing and exciting an experience as possible, and the music for a trailer may or not reflect the music used in the film itself. The bottom line is to sell the film in any way possible.

The trailer for *The Narrow Gate*, which you can download from www.soundonsound.com/sos/soundandvision/narrowgatebefore.mov is edited in such a way as to tease the viewer with snippets of the film, presenting a broad representation of its content. While the musical direction for the film was a combination of piano and string orchestra, it was more appropriate to use the latter in this case, as the producer was looking for maximum impact. The stage is set with a few scenes of New York City on the morning of September 11th. It then jumps around in the film with a few scenes of the main characters discussing their feelings after that day, followed by pace-quickenning scenes of Sarah Weber's paranoia as she seals the air vents in her apartment and stocks up on gas masks and duct tape. Finally, we have the depiction of events in Sarah's life on the day of the attacks, as well as a scene with a small child screaming for help in a car trapped in a tunnel, and a stark shot of an aeroplane flying over the city. The visuals build to a climax as the trailer goes to black and we hear the voice of the lead character shouting "oh my God!" All of this, in roughly 60 seconds!

Tempos, Timings & Markers

When preparing to score a scene in a film or a promo or trailer, it can be helpful to lay things out before you get started. Some programs such as *Digital Performer* allow you ►

About This Month's Film

The Narrow Gate is one of the first feature films to tackle the complex issues surrounding the events of September 11, 2001. However, its main themes are not the blockbuster, epic moments of burning buildings and crashing aeroplanes. Instead, it is a sensitive exploration of the reaction of average New Yorkers to the events as they unfold. The film follows the story of pregnant housewife Sarah Weber as she becomes obsessed with the events of that day while struggling to deal with the breakup of her marriage. Her paranoia escalates as she begins to imagine terrorist acts all around her. After witnessing a hate crime against Safiyah, a Muslim woman, she becomes

acutely aware of the bigotry and bias of her friends and family, and begins a friendship that expands her understanding and dampens her paranoia. Through this friendship, Sarah meets Rasheed, Safiyah's brother, who himself begins a dark descent into frustration and desperation as a result of unemployment and bias following the terrorist attacks. Through a chance encounter, Sarah and Rasheed find themselves confronting a difficult choice that could affect their lives, and those of the New Yorkers around them. *The Narrow Gate* was shot on Super 16mm film and directed by Laura Storm, with beautiful cinematography by Christopher La Vasseur.



Scenes from *The Narrow Gate* (clockwise from top left): lead character Sarah Weber and her daughter are deeply affected by the events of September 11th, 2001, which play out in the background of the film. They meet and befriend Safiyah and her son, and through them, Sarah encounters Safiyah's brother Rasheed, whose life has also been turned upside down, not directly by the attacks on New York, but by its follow-on effects.

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► to create a Film Cues layout to print out as an aid to scoring (see below for an example). This serves as a guide to the location of any significant changes that are desired, noting the specific time, tempo and musical bar/beat reference of each occurrence. In this case, after importing the supplied Quicktime movie of the trailer into *Digital Performer*, I created markers at the points where I felt there would be a significant musical change, breaking the trailer up into three sections.

A marker is simply a point in time that you can give a name to. They are handy for moving quickly around from section to section in your score, but more importantly, they can help you to calculate an appropriate tempo. In this trailer, most scenes fade in and out of black. This allows for some additional 'wiggle room' when calculating tempo and bars and beats so we can end up on downbeats when making changes. Looking at the trailer, the first significant change occurs at roughly 24 seconds. At this point, it's important to increase the tempo as we see the lead character obsessing over news reports.

The next big change occurs at roughly 38 seconds (I say roughly, because at these points the picture fades to black). We see Sarah desperately trying to make a call on her cell phone after the terrorist attacks. Finally, at 56 seconds, we see the aeroplane fly over the city, and hear the roar of the engines before cutting to black. If you can't tell that this is an important moment that calls out for some kind of 'sting', or significant musical event, it's time to start looking for another career! This is the peak of the trailer, the point to which everything builds up, and since dialogue follows it, it may be best to let the sound ring out. Sometimes your client will be very specific about where musical changes are to be made. Other times, you need to use your best judgement and make the change where it makes the most sense with the visuals.

Once you've finished adding your markers, you can start playing around with tempos.

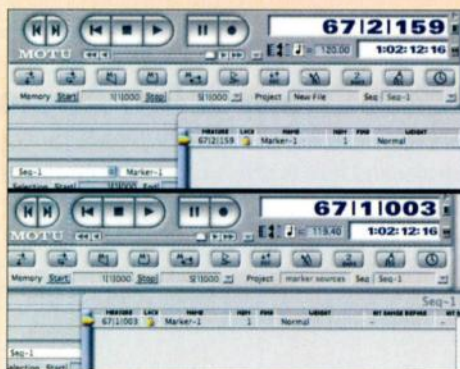
Working With Markers

Calculating tempos to accommodate cuts and hit points in film scoring can be an involved process. Luckily, we can simplify the process using markers in our sequencers. By placing markers at key points (the ones where we want a significant musical change or dramatic emphasis), we can manipulate our tempo in order to get the marker to align with the desired point. To do this effectively, we must lock the markers so they don't shift when we make a tempo change. In Digidesign's *Pro Tools*, markers are locked to their creation time; so a marker created to denote a significant visual event at a timecode reference of (say) 1:02:12:16 doesn't move if you change the tempo of the music happening at that point.

However, in other sequencers, such as *Digital Performer*, things work differently. Assuming the start time of our film is 1:00:00:00, and that the

sequencer's time base is 480 ticks per quarter note, a tempo of 120bpm will place us at 67/2/159 (that is, bar 67, 159 ticks past the start of beat 2) by the time that same timecode value, 1:02:12:16, rolls around. This isn't a very convenient spot for a musical change; in sequencing terms, it would be preferable for that important timecode reference to fall on the first beat of measure 67. But how do we achieve that? In *Digital Performer*, you do it by opening the Markers window and clicking in the Lock column to the left of the marker name (see the screenshots below). Now you can make slight adjustments to your tempo while watching your markers window until the marker is aligned to measure 67. In this case, we need to lower the tempo to just over 119bpm (199.40, to be exact). Now we've got a tempo that brings us to the first downbeat of a measure, making for an

opportune moment for a musical change (OK, not exactly — it's 67/1/003, which is close enough for demonstration purposes). *Digital Performer* also offers more sophisticated methods for calculating tempo changes to accommodate various hit points. However, this method will work with most sequencers, and is a quick and effective means to accomplish the task.



Changing tempos so that a significant musical change falls on the first beat of a measure in the score.

Make sure you lock your markers — in other words, you need to anchor them to their actual creation time, so they won't shift as you change the tempo (for more on this subject, see the box above). It's likely that when you first create your markers, your sequencer will be set to its default tempo, possibly 120bpm. And your markers are unlikely to fall on any downbeats in your sequencer (unless you've been plain lucky). While working with a rough idea of what my tempo should be, I make subtle adjustments to ensure that my next marker occurs as close to a downbeat as possible.

In this case, I chose to use a tempo of 85bpm, which would place my next marker on the fourth beat of the ninth measure. As I prefer to keep things neat and simple, I'll often enter a meter change in my sequencer at the measure before, so that I'll end up on a downbeat of 1 with my next marker. By entering a meter of 3/4 at the ninth measure, my next marker (labelled 'Apartment') begins on the first beat of measure 10. At this point, knowing I needed to increase the tempo, I settled on a tempo change to 100bpm and a meter of 6/8 to accommodate the musical motif I would use here. As that would put my next marker at beat 5 of bar 17, I added a meter change of 2/4 to place my next

musical change on the downbeat of bar 18.

This is but one way of many to approach coordinating tempo and markers in your score so your music is in sync with the film. All sequencers have some capacity to add markers and tempo changes, and some are more flexible than others, but you'll have to read the manual and learn what's possible with your sequencer of choice. The style of music you choose will also play a larger role in dictating the flexibility you'll have to make changes. It is certainly easier to manipulate tempo if you're scoring without a defined beat, such as a drum loop.

Your mission (should you choose to accept it...) is to score a big, bold musical event that will help drive customers to see the film. The version of the trailer I've given you to download contains only dialogue and sound effects; it's just as I received it. By all means refer to my Film Cue list on the left (or create your own), and be sure to use a full orchestra, as requested by the client. Build your tempo progressively, and make sure you have a big pay-off at the finish.

Next Month

In next month's instalment of this series, we'll take a look at the choices I made in scoring this trailer — and how I went about it... SOS



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Behringer Xenyx 2442FX Mixer

Paul White

The Xenyx 2442FX is an updated version of Behringer's Eurorack UB2442FX mixer, offering improved mic preamps, and 'British' vintage-style EQ. Also included as part of the package is a self-powered, two-channel USB audio interface that can be connected to the Tape In/Out phonos for recording the stereo output from the desk

The Xenyx range of analogue mixers offers improved sound quality and USB interfacing with computers, plus the extremely competitive pricing we've come to expect from Behringer.

and for stereo playback. This is a true four-buss console with a separate, dedicated stereo buss, so the group busses can be used as multitrack recording outputs at the

same time as some of the stereo channels are used for multitrack return monitoring. There's also been a bit of a cosmetic overhaul too.



150kHz, and is only 3dB down at 200kHz.

The mixer still adheres to the 19-inch format, with included rack ears that can be bolted to the sides of the chassis if you need them. Also included in the box is the USB interface, which has a captive USB cable and four unbalanced phono connectors (two-in, two-out). The layout of the mixer comprises eight mono mic/line input channels, two stereo input channels that can also double up as mono mic

channels, and two line-only stereo input channels.

This means that the maximum number of microphones that can be connected is 10, although that

should be enough for most small band gigging situations, and certainly sufficient for the majority of home recording applications. All eight mono channels have insert points and direct outputs, the latter being particularly useful for recording when you need more simultaneous

feeds than the four buss outputs can provide. Each channel has routing buttons to send it to the main Left/Right mix buss and to the four groups, but if you want to record directly from a channel output without sending it anywhere else, you can achieve this simply by not routing the channel to either the busses or the main outputs.

Conforming to the usual wedge-shaped profile, the mixer layout is absolutely identical to that of the UB2442FX, with the mic and line inputs, insert points and two-track phonos on the top panel, along with two headphone outlets and a 12V BNC connector for lighting power. To avoid overcrowding the top panel, the main and buss outs, the aux inputs and outputs, the direct outs and other connectors are on the rear panel. Both balanced jack and XLR versions of the main outputs are provided. Note that the four group outputs are doubled up onto eight output jacks so that you can leave an eight-track recorder or audio interface permanently connected; buss 1 feeds both sockets 1 and 5, 2 feeds 2 and 6, and so on, with the recorder then used to determine where the signal is actually recorded. A stereo TRS jack carries the output from the internal effects section and there's an effects bypass footswitch jack for use with an optional latching footswitch.

Global 48 Volt phantom power can be applied across all the mic inputs via a rocker switch on the rear panel next to the power switch, and the PSU is internal so there are no wall-warts to tread on or to lose. The

integral switched-mode power supply automatically adapts to any mains supply from 100 to 240V, at 50 or 60 Hz, without the need to switch voltages.

Maximum Effectiveness

The Xenyx 2442FX also incorporates a 24-bit digital effects processor, which I assume is based on their Virtualizer rack effects box, as it seems identical in architecture to the one used in the earlier incarnation of this console. It does come loaded with a different set of presets, however, which looks a bit more promising, as the original version had, in my opinion, too many effects that you'd never normally use and not enough sensible, bread-and-butter delays and reverbs.

The effects section still offers just presets, with the 99 options covering reverbs, ambience, delay, modulation, pitch-shift and many useful combination effects based on delay plus one other effect. The delay has no tap-tempo button, which I find rather limiting, but you have to keep in mind that this is a very inexpensive mixing console and it still offers a lot more functionality than some of its more costly



competitors.

The integral effects are fed from Aux 3 and come back into the mix via the Aux 3 return, but these send and return points are also available on the rear panel, if you wish to connect something else. There's also a stereo feed available from the effects processor output if you need it. In all, there are four sends: two switchable as a pair

SOUND ON SOUND

Behringer Xenyx 2442FX £289

pros

- Good sound quality with smooth-sounding EQ.
- Inexpensive
- Flexible for recording or live sound.
- Improved effects presets.
- Included USB audio interface.

cons

- Short faders.
- Effects have no tap-tempo function for setting delay times.

summary

Given its attractive price, the Behringer Xenyx 2442FX mixer has a lot to offer the small studio operator and the included USB interface is a bonus if you only need to record two channels at once.

The mic preamps in this console use the latest Behringer Xenyx circuitry, which is claimed to be an improvement over its predecessor, the Invisible-series preamp, while the EQ is now designed to recreate the vintage British EQ sound, by which I assume they mean things like the old Trident consoles from the 1970s. The overall frequency response of the mixer circuitry has been further extended, and is now within an impressive ± 1 dB from 10Hz up to

BEHRINGER XENYX 2442FX

▶ between pre- and post-fade, and two fixed as post-fade effects sends. All have stereo returns with both send and return level controls as well as the ability to solo the sends.

A two-character blue LED display shows the number of the current effects patch, while the effects categories and their locations are printed below. The effects signal can be routed to either the main output or groups. In live situations, this routing button can also double as an effects kill switch as long as you're not using the busses for anything else.

Channel View

As is now common with many of today's mixers, whilst all eight mono channels are identical, offering both mic and balanced line inputs, the stereo channels are equipped slightly differently. On the mono channels, the white Gain Trim knob is followed by an 18dB/octave, 75Hz low cut switch and a (non-bypassable) three-band EQ. The high and low EQ shelving filters operate at 12kHz and 80Hz respectively, with ±15dB gain range, while the mid sweep covers 100Hz to 8kHz. This is a useful frequency range as it means the upper bass frequencies are included, which isn't always the case, as swept mids often stop at 200 to 250Hz.

The stereo channels don't have swept mid EQs; the same high-and low-shelving controls are teamed with a pair of fixed-frequency mid-bands operating at 500Hz and 3kHz respectively. The standard mic channels all have balanced XLR and jack inputs (connecting the jack disables the XLR), whilst the first two stereo channels have stereo line inputs on balanced jacks and mono mic inputs, with the same switchable low-cut filters as the mono channels. Finally, we come to the two stereo, line-only channels, which have no low-cut switches, but feature the same four-band fixed EQ as the other stereo channels. All four aux sends are available to all channels, as is full routing to the two buss pairs or to the main output. Each channel also has its own Mute button, with amber status LED, and a Solo button, with a red status LED that also doubles as a

Alternatives

If you don't need the USB audio interface, the cheaper Behringer UB2442FX offers the same functionality, but with the older EQ and preamps and, in my opinion, a less useful choice of effects presets. It's hard to find anything else that offers so much functionality for the price, although the Alesis Firewire mixers are well worth a look and if your budget can extend a bit further, you have the Soundcraft FX range, which has the advantage of programmable effects. The Samson MDR10 is also an affordable alternative for basic home recording requirements.

Xenyx 1222FX: 12-channel version

The smaller Xenyx 1222FX is a simple 12:2 mixer with a fixed three-band EQ (mid set at 2.5kHz) on all channels. As with the Xenyx 2442FX, rack ears and a USB audio interface are included and power comes in directly from the mains. The first four inputs are mono mic/line channels, with switchable phantom power on the mic inputs, and the first two stereo channels can also function as mono mic channels; the final pair of stereo inputs are line-only. This mixer has the same effects section as the Xenyx 2442FX, but also includes a surround knob for widening the apparent width of the stereo effect.

On this console there are just two aux sends, one for pre-fade monitoring and the other feeding the internal effects, but with a jack output allowing it to be connected elsewhere. Two separate effects controls allow different amounts of effects to be routed to the main and monitor feeds, and there's also a voice canceller that, in effect, tries to subtract mono mid-range sounds to reduce the amount of vocal left in a mix. Next to this is a

Standby button that kills all the mic channels so you can play music in live gig interludes without having to mute the mic channels first.

All the channels have Mute buttons, but the Solo button is a casualty of economy, as is control-room monitor source switching. However, the mixer does include a nine-band graphic equaliser that can be used in the main or monitor signal path, and this includes LEDs in the slider caps that indicate when excessive activity, such as feedback, is occurring in that band. An octave-per-fader graphic equaliser is a bit of a blunt instrument for tackling feedback, but it's better than nothing.

There are no direct outs on this mixer (although the first four channels have inserts) and no busses, but using the included USB interface, it provides a very cost-effective means of recording and monitoring two tracks at a time, and the good effects section is a bonus. It's also a good choice for anyone who needs something simple that will double for demo recording and for small live gigs.



clip LED. The Pan/Balance controls determine the odd/even buss selection and left/right routing in the usual way, and there's a further large red Solo LED in the master section to let you know one or more Solo buttons are down. All the faders are 60mm types, and the master fader is ganged stereo.

Master Section

The master section is clearly set out, with the effects section at the top and the aux send and return level controls and send Solo buttons below. Preset effects are selected using the rotary Effects knob and loaded by

pressing the FX Program knob. Two additional controls enable the two effects returns to be added to the correspondingly numbered monitor mix, while the Aux 3 return (the internal FX section) can be routed either to the main stereo mix or to either of the two subgroup pairs. A further button solos all four aux return busses, so that you can easily hear any soloed channel with any added effects.

The control-room monitoring panel is set out for studio use, but with a shared phones and control-room level knob. You can, however, feed two sets of phones at once. ▶

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BEHRINGER XENYX 2442FX

► For monitoring, the control-room/phones source is switchable between two-track input, subgroups 1/2 or 3/4, or the main stereo mix. When a Solo button is pressed, the solo signal overrides the currently selected monitor source, but doesn't affect the main outputs. The Tape To Main button allows the stereo tape input phonos to be fed into the main stereo mix; if you were to use this to bring back the mixed output from a software sequencer, you would be able to monitor your sequencer tracks along with the live sounds passing through the mixer. It is to these Tape inputs and outputs that the included USB audio interface is most likely to be connected, which means that most of the time you'll want to monitor either just the two-track return or the two-track return plus the

I always find preset effects restricting, especially when it comes to delays, where you probably want to fine-tune the delay time, but on the whole the effect quality is good and this new selection of presets is infinitely more usable than before, both live and in the studio. In particular, there are several really nice vocal reverbs, whereas before you were pushed to find two or three that were actually useful.

In terms of quality, I was always surprised at how well the previous mic preamps performed. The phantom power circuitry seems perfectly happy with half a dozen condenser mics and some phantom-powered DI boxes connected at the same time. The new mic preamps sound both very low in noise and uncoloured to my ears, and there's also a



mixer's main output.

Metering is via a three-colour, 12-LED stereo bar-graph that normally follows the main stereo output levels, or the PFL level when Solo is being used. There's no metering at all for the group busses. All four group faders have separate Left and Right routing buttons for sending the group signal to the main stereo mix, as you may wish to do when subgrouping drums or backing vocals, for example.

User Impressions

Having used the predecessor to this mixer both for live work and as a small studio mixer in a friend's studio, I have always found the format to be pretty flexible, especially when you consider how little the mixer costs. It's fine for eight-track recording and mixing, or for use as a recording front-end if you're mixing 'in-the-box'. The fact that you now get a bundled USB audio interface is icing on the cake, as it avoids having to buy a separate interface if you're the type of user who records only one or two parts at a time.

The built-in effects are easy to use, as you'd expect from their preset nature; pick a number, push the button and, apart from setting the level, you're done.

sensible amount of headroom. Whilst only the main the inputs and outputs are balanced, hum and noise was not an issue, and the new EQ sounds pretty good, with a nice warmth and clarity to it. A three-band EQ will always be limited, but for adding a bit of gloss or for taking out a bit of low-end mud it works fine.

The included two-channel USB audio interface was recognised immediately by my Mac system, without the need to add any driver software, and the subjective audio quality I achieved from it was surprisingly good. In all, I feel the upgrade to this already workmanlike little mixer has been highly worthwhile, and within its price range it now offers a lot of flexibility to both the home studio owner and the band looking for a small live sound mixer with integral effects. **SOS**

Information

£ Xenyx 2442FX £289; 1222FX £187.
Prices include VAT.

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East West Symphonic Orchestra Pro XP

Orchestral Expansion Library For Mac OS X & Windows XP



East West and Quantum Leap's *Symphonic Orchestra* was one of the largest orchestral libraries ever released, at 19 DVDs for the full edition. However, it still wasn't enough for some people — so East West have released this 18-disc expander set...

Dave Stewart

Although impossible to pronounce and liable to antagonise your spellchecker, EWQLSO (East West/Quantum Leap's *Symphonic Orchestra*) has become a byword in the orchestral sampling world since its release in 2003. The result of a meeting of minds between sampling supremos Doug Rogers (East West) and Nick Phoenix of Quantum Leap, the original 67GB

four-volume set (reviewed in *SOS* in June 2004) gained widespread praise and is now the library of choice for many US composers and music directors. One oft-cited reason for its popularity is its big, built-in concert hall sound; the instruments were recorded simultaneously from three microphone positions in a 2500-seater orchestral venue, making EWQLSO the only full orchestral library on the market with six-channel surround sound capability. That's a great achievement in anyone's book.

Two years after the sessions for the original library, the *Symphonic Orchestra* production team (headed as before by the Grammy-winning recording engineer Professor Keith O Johnson) returned to the original orchestral hall with the same pool of players to record a new set of samples. At that time the library lacked marimba, celeste, piccolo trumpet, solo viola and solo double bass, and the implementation of performance styles was somewhat patchy. The new sessions addressed all that, and more. By the time Professor Johnson and the 100-strong tribe of musicians and technicians emerged bleary-eyed from the concert hall one month later, the *SO* project had expanded considerably. Editing and programming the new recordings took a year. Once trimmed down to size, the samples weighed in at 71GB, more than doubling the size of the original library.

Are You XPerienced?

Potential buyers should be aware that whatever edition they buy, they must own the equivalent original edition of the *Symphonic Orchestra* library in order to be able to use the *Professional Expansion (Pro XP)* set. This is because many of the programs in *Pro XP* use a mixture of original and new samples. There are other restrictions: the old and new samples must both be installed in the same folder on the same hard drive, so if the drive you use for the original library doesn't have sufficient space to install the new samples, you'll have to move the old samples to a drive big enough to hold both sets. However, if you



SO Pro XP running under the bundled Native Instruments Kompakt Player.

SOUND ON SOUND

East West/Quantum Leap *SO Pro Expansion*

pros

- *Pro XP's* new instruments and articulations plug important gaps in the original library.
- Using the same hall, players and mic positions has ensured total compatibility between the old and new samples.
- The musical performances are intelligently chosen and well played.
- The sound quality is uniformly excellent.
- The entire library can be reproduced in six-channel surround sound.

cons

- Having to install the new samples on the same drive as the original library will cause a few headaches, though hard drive manufacturers won't be complaining.
- The mutual incompatibility of program data between the old and new *Kompakt* players is a pain.

summary

Symphonic Orchestra's Professional Expansion doubles the size of the library, maintains its excellent quality and greatly enhances its musical depth. Its *Platinum Edition* costs a few bob, but then it would be silly to expect a work of this magnitude and quality to come cheap. Committed *SO* users will be delighted with the new samples, and for the undecided, the *Silver Edition's* original-plus-*XP* bundle is an affordable way of testing the water.

do that, projects which use the old samples won't be able to locate them! A workaround is explained in the manual, but it's tedious. If you want to use the new *Pro XP* samples on projects you started with the original library, you may end up having to duplicate the original samples on two hard drives (to check how much disk space the *Pro XP* libraries take up, see the 'Drive Planner' box over the page).

Unfortunately, that's not the end of it: the updated *Kompakt* player which ships with the library won't load the old programs, and the old player won't load the new programs either. D'oh! The *Pro XP* editions supposedly incorporate the old programs as well as providing new ones, but it turns out that although the old program names are retained, many of them have been reprogrammed to take advantage of the new samples. According to East West, the idea is to 'augment the original samples and provide more velocity layers and realism'. That's a good thing, but using old names for new programs is confusing — it would have been better if East West had renamed the new programs and included the originals in a separate folder as a courtesy to existing *Symphonic Orchestra* users. But it's not a show-stopper: anyone hankering after the old programs can still use the old *Kompakt Player* to load them, and Native Instruments' *Kontakt* sampler will happily load both new and old programs.

Another contentious revision sees the original keyswitch programs replaced by a new set which (at the time of writing) do not allow keyswitching between long and short notes. Moreover, there are no woodwind or brass short-note keyswitches. This has provoked wailing and gnashing of teeth among users, but help is at hand — Nick Phoenix is creating a more versatile set of keyswitches for the library which should be available in an update by the time you read this.

Going Platinum

The *Pro XP* package comes in the same formats as the original library: the full 18-DVD *Platinum Edition* provides all three miking positions and 24-bit samples, while for the financially

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EAST WEST SYMPHONIC ORCHESTRA PRO XP

► less well endowed, there are 16-bit, stereo-only *Gold* and *Silver* editions, the latter containing a reduced instrumentation and fewer samples per instrument (rumours that East West are planning a mono, eight-bit *Tin Edition* for skint musicians have been hotly denied). A version of East West's Steinway B grand piano is included in the *Pro XP Platinum* and *Gold* editions. For a complete breakdown of the three edition's contents, see www.soundsonline.com/EWQLSO_Comparison.pdf.

The 213-page operation manual included with the *Pro XP Edition* is a distinct improvement on the original. Crammed with useful tips (including sections on mixing in surround sound) and a detailed list of instruments, articulations and keyswitch layouts, its clear-minded, positive writing style helps throw light on the complexities of making music with such a big library. It's also compact enough to read in a dentist's waiting room — *Horse & Hound* magazine had better look over its shoulder.

Pearl Of Strings

From here on we'll concentrate on highlighting *Pro XP's* new instruments and articulations, starting with the strings: one significant step forward is that the new solo viola and double bass make it possible to program string quartet pieces. This viola is not just here to make up the numbers — it has been extensively sampled and makes a very strong, committed contribution. The player uses a fairly strong vibrato on most styles, including fine swelling 'expressive' samples and a fast octave slide up with terrific comedy potential. Marcato and spiccato bowings deliver some excellent, ultra-short, fiercely bowed staccato short notes programmed in 'round-robin' style, which avoids obvious sample repetition by cycling through alternative takes. Also equipped with nice lyrical volume swells, the solo double bass weighs in with its own stirring marcatos. Neither solo instrument's long notes are looped, but the double bass player elongates certain long notes by means of a distinct, almost exaggerated change of bow direction after four seconds — this could be seen as an expressive performance artefact, but the timing of the very obvious note reiteration it produces is likely to be at odds with the tempo of your music!

New, smaller string groups of four violins and three cellos facilitate the programming of chamber orchestra music. Although less opulent than the library's big string sections, their sound



Part of Professor Johnson's bespoke recording rig: four Pacific Microsonics A-D converters, a snip at a mere 30 thousand dollars apiece.



convincing). However, the soft-toned, more reflective delivery of the 'chamber ensemble flautando' samples I discovered hiding in the 'large string ensembles' folder came close to fitting the bill, even though they are played with no vibrato.

Pro XP's new string playing styles breathe life into *SO's* orchestra. The 11 violins get the most extensive makeover, acquiring stately, confident 'grand detaché' four-second notes, sul ponticello tremolos, gorgeous breathy, ethereal harmonics, fast up/down fifth-interval slides, grace note glissandi, *Psycho*-style 'eeks' (you know what I mean) and quick, tense, chromatic short-note mini-phrases which pay homage to the same film. If the latter don't scare you enough, there's a good selection of spooky violin section sound effects, including some truly ghastly, siren-like slow motion random semitone trills. Most of the string sections perform spiccato/staccatos, pizzicatos, col legno hits and Bartok pizzicato snaps, all given the 'round-robin' treatment. The 11 violins and 10 violas also have new 'repetitions' programs consisting of seven or eight-way 'round-robin' accented short notes, highly effective for rhythm passages. The violins' and cellos' mysteriously-named 'run simulator' programs turned out to be a layering of tremolo attacks and vibrato sustain samples. This creates a strong sound which carries a tune well, but the built-in vibrato renders it unrealistic for fast runs.

Q Leg Break

Many of the instruments in *Pro XP* have 'QLegato' programs, another good non-word to get your spellchecker going. ►

remains lush, and their vibrato sustains (which appear at first glance to be the only style provided) are looped. The chamber strings use two velocity layers; both of these have a fairly bright timbre, and I found myself wishing for a third, pp layer for soft sustains (I tried adjusting the filter cutoff to simulate this, but it didn't sound very

Drive Planner

Anyone planning to buy the *Symphonic Orchestra* library should think first about the hard disk space required by its samples. Here's a table of the different volume and edition sizes:

LIBRARIES	SIZE IN GIGABYTES
ORIGINAL LIBRARIES	
• Vol 1: Strings	27.9
• Vol 2: Woodwinds	16.5
• Vol 3: Brass	17.4
• Vol 4: Percussion	5.4
• Original Full Platinum Edition	67.2
• Original Full Gold Edition	15.0
• Original Full Silver Edition	2.4
PRO XP EDITIONS	
• Pro XP Strings	29.6
• Pro XP Woodwinds	10.1
• Pro XP Brass	24.9
• Pro XP Percussion	6.5
• Pro XP Platinum Edition	71.1
• Pro XP Gold Edition	21.0
• Pro XP Silver Edition	3.0
FULL LIBRARIES (ORIGINAL PLUS PRO XP EDITIONS)	
• Full Platinum Edition	138.3
• Full Gold Edition	36.0
• Full Silver Edition	5.4

Note: the four sections of the *Professional Expansion* are not available as separate volumes.

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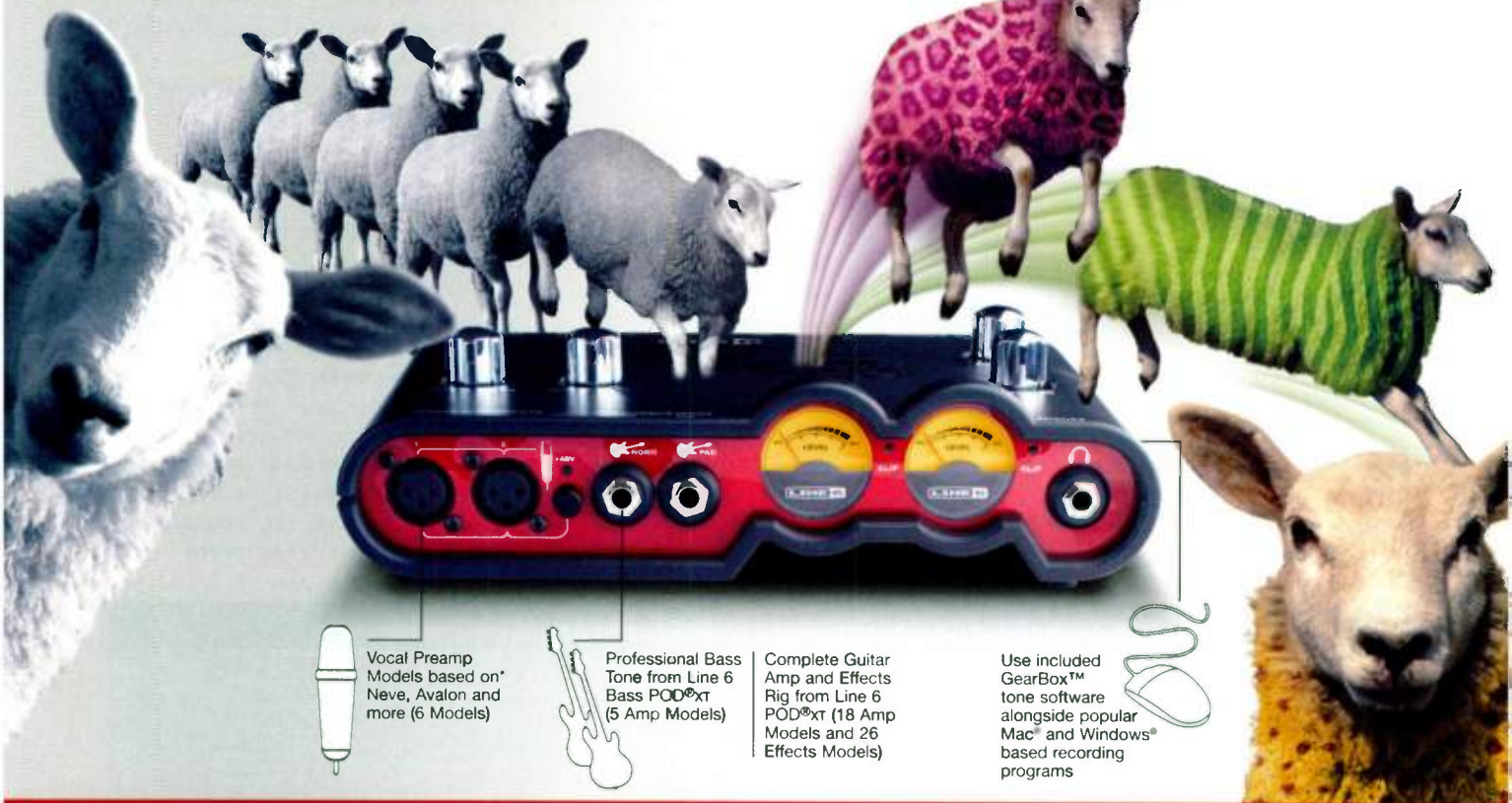
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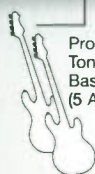
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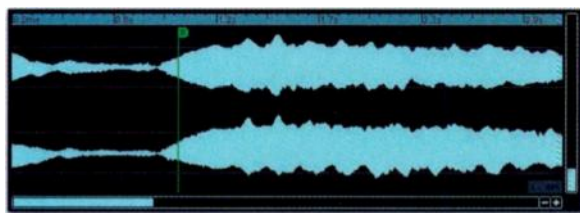


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EAST WEST SYMPHONIC ORCHESTRA PRO XP

► East West claim that QLegato is a new technology which 'creates unprecedentedly smooth connected lines' by using 'sustained notes extracted from real performances'. I loaded the solo violin's close-miked 'QLeg' option to investigate. Here's my report: the program gives a reasonably good legato simulation in which series of notes run together smoothly with no disruptive bow noises or 'attack bumps'. The smoothing effect (which is more apparent when the release trails are turned off) held up well on very fast, Stephane Grapelli-like jazz runs — however, I must say that although musically acceptable, the overall effect was nowhere near as realistic as that produced by the *Vienna Symphonic Library Performance Tool*, a sophisticated MIDI utility which tracks your performance and selects the appropriate sample for each note from a huge bank of interval-specific performances.

In an attempt to find out what makes QLegato tick, I loaded the solo violin 'QLeg' program into *Kontakt* and opened the sample edit window. As you can see from the screenshot below, which shows the waveform of one note (a mezzopiano B# above Middle 'C'), the raw sample consists



A sample of a 'Qlegato' solo violin from the *SO Pro XP* set, as seen in *NI Kontakt*.

of two notes played in succession with no intervening gap. The two notes are identically pitched: the sample start point (represented by the vertical green line with the 'S' flag) occurs after the player has



Looking towards the stage in the hall where the recordings for the *Symphonic Orchestra Pro XP Edition* were made.

stopped bowing the first note, but the continued ringing of the undamped vibrating string means that the second note doesn't start completely 'cold'. Notice that the second note's start point has been placed slightly after its initial attack — this removes the initial bow noise (or, in the case of a wind instrument, the breathy attack portion), causing the sample to speak more quickly and deliver an instant full-bodied tone. This

'attack removal' approach is also used to good effect in *Garrigan Personal Orchestra* and other sound libraries. Extracting single notes from a passage and trimming their attack is not a revolutionary new technique,

but it certainly helps the legato effect. The bottom line is that QLegato's note-smoothing capability is useful and helps make *Symphonic Orchestra* more versatile and expressive.

Out Of The Woods

The only new woodwind instrument in *Symphonic Orchestra Pro XP* is a second English horn (or *cor anglais* as Europeans call it). The new arrival is lyrical and expressive, with a generally more reflective, romantic tone than the original English horn. In the sustained program, the instrument's natural expression is enhanced by velocity-switching between subtle volume swells and long, looped vibrato notes which kick in on louder notes. The combination of the built-in slight crescendo, tasteful

Symphonic Orchestra Platinum Edition: Original Library & Pro XP Instruments

STRINGS

- 18 violins.
- 11 violins.
- 4 violins.
- 10 violas.
- 10 cellos.
- 3 cellos.
- 9 double basses.
- Solo violin.
- Solo viola.
- Solo cello.
- Solo double bass.
- Harp.

KEYBOARDS

- Harpsichord.*
- Piano.*

WOODWINDS

- 3 flutes.
- 3 clarinets.
- 3 oboes.
- Piccolo.
- Flute.
- Alto flute.
- Oboe.
- English horn.
- English horn 2.*
- Clarinet.
- Bass clarinet.
- Bassoon.
- Contrabassoon.

BRASS

- 4 trumpets.

- 2 trumpets.*
- 4 tenor & bass trombones.
- 6 French horns.
- 3 Wagner tubas.
- Piccolo trumpet.*
- Trumpet.
- Trumpet 2.*
- Trombone & bass trombone.
- French horn.
- Tuba.

DRUMS & CYMBALS

- Bass drum.
- Snare drum.
- Snare drum ensemble.

- Field drum.
- Field drum ensemble.
- Tenor drum.
- Funeral drum.
- Tom toms.
- Rototoms.*
- Taiko drums.*
- Crash cymbals (piatti).
- Suspended cymbals.

TUNED PERCUSSION

- Timpani.
- Tubular bells.
- Glockenspiel.
- Crotales.
- Xylophone.
- Marimba.*

- Vibraphone.
- Celeste.*

UNPITCHED PERCUSSION

- Tam tams.
- Anvils.
- Metal rail.
- Bell tree.
- Mark tree.
- Triangle.
- Castanets.
- Wood block.
- Claves.
- Ratchet.
- Guiro.*
- Slap stick.*

- Puilli sticks.*
- Vihraslap.
- Whistle.
- Slide whistle.
- Tambourine.
- Sleigh bells.*
- Artillery shells.*
- Steel plates.*
- Poppun.*
- Washboard.*
- Waterphone.*
- Wind machine.*

Note: instruments marked with an asterisk (**) are new in the *XP Pro Edition*.

incremental vibrato and lush concert hall acoustic is very enticing, creating an attractive sound for solo passages.

If ever there was an instrument you want to be able to play in legato style, it's the clarinet. In orchestral libraries its ability to deliver quicksilver runs is often compromised by slow attacks, but QLegato puts paid to that in by lopping off the front of the samples. I loaded the close-miked clarinet 'QLeg' patch, turned off the release trails and played some fast legato lines. As with the solo violin, this produced a decent legato effect which was musically acceptable without being entirely realistic. I also tried the old trick of making the instrument monophonic — after all, a clarinet can only play one note at a time — and that further improved the effect. Unlike the original clarinet sustain samples (which dwindle in volume after five seconds), the 'QLeg' versions are looped. The new bass clarinet sustains are also an improvement over the originals.

Pro XP's solo woodwind trills fill a hole in the original library, and sound particularly beautiful on the clarinet and bassoon. Other welcome additions are upward semitone grace notes played by flute, clarinet and the new English horn — the timing of these perky staccato ornaments is very precise and matches the delivery of the existing oboe grace notes. There are some fabulous fast chromatic octave runs from some solo woodwinds — though not tempo-specific, they are internally well coordinated, and if you play the runs chordally they finish at exactly the same time (a Quantum Leap trademark). The piccolo also delivers some idiomatic upward rips, generally well played though a little inconsistent in the bat-squeaky top register. These lively, mobile woodwind performances add instant orchestral colour and bring a welcome extra dimension to *Symphonic Orchestra*.

The inclusion of new flute, piccolo and oboe quiet notes gives the solo woodwinds greater potential for intimacy than before, although the omnipresent release trails tend to counteract this — fortunately, it's not difficult to reduce their volume in *Kompakt*. New 'round-robin' staccato programs have been created for the three-player flute, clarinet and oboe ensembles. I thought these sounded great, particularly the clarinets and oboes. The original library's excellent programmed woodwind ensembles were not included in the review copy of *Pro XP*, but Nick Phoenix has promised to reinstate them in an update.

Brass Polish

A second solo trumpet swells the ranks of *Pro XP's* brass. Although its QLeg no-vibrato option sounds pretty strong, the instrument's tuning is a little sour in places (particularly in the high register of its Qleg vibrato samples) and its tone is less commanding than the original library's trumpet. Nevertheless, it plays some handy crescendos (including one dramatic slow swell which mutates into a rude flutter-tongue raspberry halfway through) and its 10-way 'round-robin' staccatos sound very realistic. I was more impressed with the new 'two trumpets' section, which delivers strong sustains and very good, ultra-short 'repetition' staccatos. The muted samples, cutting and energising with a bright metallic sheen, are a real call to arms. The newly minted piccolo trumpet also sounds bright and amazingly steady — one can only admire the player's total control of the instrument, immaculate and wobble-free all the way up to the unfeasibly high 'C' top note.

Symphonic Orchestra's six French horns, prized by the company for their ability to deliver exciting *Pirates Of The Caribbean*-style adventure music, have been given a completely new set of musical effects. In these styles, the



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EAST WEST SYMPHONIC ORCHESTRA PRO XP

► horns sound as though they'd be more at home in Nosferatu's lair than on the high seas accompanying piratical high jinks — their three-semitone cluster chords are classic horror film fare, and the 'cluster bend' program (in which half the section quietly sustains a note while the other half slowly drifts down a semitone) has a wonderful, disturbingly dreamy effect. By way of contrast, the bottom notes of 'cluster gliss up' sound more like a slightly naff recording of a distant speedway race!

The six horns tread more traditional musical ground with trills, staccato 'repetitions' as described earlier (well played but lacking in dynamic layers) and some expansive Hollywood-esque crescendos. I feared that the so-called 'FX Hell' would be a return to nightmare territory, but it isn't what you'd expect: one of the horns plays a ploddy series of staccato eighth notes using unpredictable (yet somehow, all too familiar) atonal pitches while one or two other players throw in occasional supplementary random notes. Unless you've had a sheltered upbringing, it's not frightening or particularly funny; the only hellish thing about it would be having to notate it.

Repercussions

Tuned percussion gets a boost in *Pro XP* with the advent of marimba and celeste.



Recording the string ensembles. Doug Rogers of East West and Nick Phoenix of Quantum Leap (in a black suit and a stripy top respectively) are visible at the back of the picture.

Sampled at three velocities, the former is a great-sounding instrument, combining warmth and brightness in a nicely programmed, four-and-a-half octave patch which is enormous fun to play. The celeste is also very agreeable and really shows off the multi-miking — the far-miked 'surround' samples seem to be coming from another planet! Other new metal attractions include an octave of bowed crotales whose

high-pitched screeching will set your teeth on edge, sleigh bells given the 'round-robin' treatment for the easy creation of rhythm patterns, bell-like noises from artillery shell cases (presumably the explosives were removed beforehand) steel plates making Vic & Bob-style dull metal impacts and, topping the bill, Hugh Janville and his collection of comedy clanks!

The original library's excellent tom toms

Hollywood Calling

To avoid the RAM and CPU ravages brought about by using thousands of 24-bit samples to emulate an 80-piece orchestra, serious *Symphonic Orchestra* users run the library on multiple computers. According to Doug Rogers, a dream system would consist of eight computers, two for each module of the full *Platinum Edition*. Quantum Leap's Nick Phoenix owns such a rig, but apparently even that is insufficient to run his mixes live in six-channel surround!

US composer David Newman, creator of over 100 film scores including those for *The War Of The Roses*, *Heathers*, *Throw Momma From The Train*, *Galaxy Quest*, *The Nutty Professor* and *Serenity*, also runs *Symphonic Orchestra* on several computers. Here are the details of his setup, in the words of his technical assistant Marty Frasu.

"David uses these instruments to make demos for movie directors and producers — they are ultimately replaced by a real orchestra. This is different from our friend Joel

Goldsmith, who uses *SO Pro XP* for the music for *Stargate SG1* and *Stargate Atlantis*: his sampled orchestra does end up in the final product.

"The library is installed on six PCs, using two 80GB drives. Two PCs are for strings, one for brass, one for woodwinds, one for piano and

percussion, and one for a mixture of sounds. David uses *Logic 7* on a dual 2GHz Power Mac. He has 137 orchestra tracks in his *Logic Autoload* template alone, about 50 of which are dedicated to strings. Unlike other big-name composers, he plays everything himself, and doesn't farm anything out to orchestrators. David tends not to use the

the C0-C#0 range that you have to delete!

"We use *Kontakt 2* rather than the *Kompakt Player* that *Symphonic Orchestra* ships with. We made some minor modifications to some instruments — in some cases David wanted to extend the key range of some of the sounds. Things like that are just not possible with the *Kompakt Player*.

"For strings, David uses the library's programmed 50 and 70-piece string sections — the 70-piece 'Q Legato' and 'Butter legato' strings sound really nice. He uses layered combinations of the close, full and surround samples, so if he needs more definition on a string line he can increase the level of the close mics. This is exactly how it works when we mix the real orchestra — if you need a string line to 'speak' a little more, you turn up the close mic."

Of course, such lavish setups are beyond the reach of most aspiring composers, but if you're involved in film production and need to keep a large MIDI orchestra running live to

accommodate last-minute edits, using multiple computers is probably the only way to go. *Symphonic Orchestra*'s manual claims optimistically that 'very soon, performance issues will disappear as computers get faster'. Well, it's a nice thought...



Composer David Newman in his studio.

keyswitched instruments a lot — he prefers to keep different articulations (for example, legato and staccato strings) on different tracks. This is because his sequences go to a copyist who prints out parts for the orchestral musicians. If you use keyswitches, you end up with notes way down in

are augmented by *Pro XP's* set of rototoms — I must admit they sounded more like boobams to me, but either way these boingy tuned drums are an unusual and colourful sound source, especially ear-catching in the top octave. A pair of Japanese taiko drums also provides some agreeable low-end, vaguely ritualistic thumps and shell hits. New suspended cymbal rolls and tam tam effects help to fill out the orchestral percussion section, and traditionalists will be comforted by the inclusion of the seemingly obligatory, but entirely useless wind machine.

However, in *Pro XP's* percussion volume the best noises of all arguably come from a non-orchestral instrument — the waterphone, whose large menu of delightfully eerie, ethereal sounds will be welcomed with open arms by composers working on horror film projects!

Keys To My Harp

No orchestral library would be complete without harp glissandi. *Pro XP's* set sound extremely pleasant — chromatically sampled, they cover the major 6th, dominant 7th/9th, whole tone and straight major scales (the last

of which can of course double as a minor scale with the application of a little music theory). All glissandi are played up, down and up-and-down in a choice of two speeds. The execution is classic and unhurried, delivering the expensive-sounding majestic 'swoosh' we all enjoy.

As mentioned earlier, East West's Steinway B concert grand piano is included in the *Pro XP Edition*, though it's easy to overlook — it's hidden away in the percussion set (under 'Wood') and appears only in the 'F' (stage mics) list. Although it appears to be limited to three dynamic layers, and therefore won't really cut the mustard for very expressive, subtle solo work, I found the piano to be a playable, fine-tuned, well-recorded instrument with plenty of presence, which will more than hold its own in an orchestral arrangement. The harpsichord is another desirable bonus: it uses a single, simple stop with no octave doubling, giving a somewhat delicate, zither-like sound. While it lacks the grandiose, crashy bottom end you get from an octave-coupled harpsichord stop, it will still add a nice steely Baroque texture to an arrangement.

Conclusions

For those looking for a big, cinematic orchestral sound, *Symphonic Orchestra* always had the wow factor. With its new full instrumentation, additional 'chamber' sections and a more comprehensive menu of performance styles, the library is now capable of doing justice to old classical repertoire and new scores alike. Unashamedly designed with Hollywood in mind, the original library's showy exterior may have seemed a little brash to some, but now the precocious three-year-old child star is showing every sign of maturing into a durable class act. With the release of *Pro XP*, the *Symphonic Orchestra* has come of age. **EOS**

Information

£ *Symphonic Orchestra Professional Expansion Platinum Edition, £1999.99; Gold Edition, £649.99; Silver Edition, £199.99.*
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Classic Tracks

Madness 'Our House'



Producers Clive Langer and Alan Winstanley helped to make Madness one of the most successful British bands of the '80s.

Richard Buskin

It was in 1979 that Clive Langer and Alan Winstanley co-produced together for the first time, on the debut album by a zany bunch of ska-loving North Londoners known as Madness. Originally known as the Invaders when formed by Mike Barson, Chris Foreman and Lee Thompson in 1976, the band then evolved into Morris and the Minors with the addition of Graham 'Suggs' McPherson, Mark Bedford, Carl 'Chas Smash' Smyth and Dan Woodgate, before settling on the Madness moniker in homage to a Prince Buster song. Several of the members were also fans of Deaf School, the group that had launched Clive Langer's career as a guitarist during the mid-'70s, and, having got to know him, they impressed him with a demo of 'My Girl' and persuaded him to produce several tracks, including their debut single, 'The Prince', recorded on eight-track at Pathway Studios and released on Two-Tone in 1979.

Alan Winstanley, meanwhile, was in the midst of doing several projects for Stiff Records, engineering Wreckless Eric, Lene Lovich and Rachel Sweet, having previously started out at TW, a tiny basement studio in Fulham, south-west London, working with the Stranglers, the Buzzcocks, Joe Jackson and Generation X. So, when Madness' Top 20 UK success with 'The Prince' led to a record contract with Stiff, the stars were evidently in alignment. The band wanted Clive Langer to stay on board as producer; Langer, in turn, requested the technical cooperation of Winstanley, who had previously engineered some Deaf School demos and produced Langer's solo work. The fact that Stiff

co-founder Dave Robinson was familiar with Winstanley basically sealed the deal.

For all concerned, it was the start of a beautiful friendship, not least between Langer and Winstanley, who would become one of the most acclaimed production teams of the post-punk 'new wave' era. As well as 13 top 10 British singles with Madness, they had hits with Elvis Costello, Dexy's Midnight Runners, the Teardrop Explodes, Lloyd Cole & the Commotions and China Crisis, not to mention David Bowie and Mick Jagger's recording of 'Dancing In The Street' and Bowie's *Absolute Beginners* movie soundtrack.

The Right Balance

"While I engineered, Clive would get more involved with the songs' arrangements and we'd meet somewhere in the middle," is how Winstanley describes the collaboration. "Both of us worked on getting the performance, and that was probably one of our strengths — one could walk out of the room and the other could carry on, even with vocals. No one was in charge, we just took it in turns. In fact, when someone was singing, we were usually both there, so it was pretty equal, and then when it came to the vocal comping I would do that on my own. We were both also there for the other instruments, but if at some point one of us wanted to bugger off for a half-hour break because things were getting intense, that's what would happen; one of us could leave the control room while the other carried on alone. Still, 95 percent of the time or more, we were in there together."

Given all of the judgement calls that have to be made, is it always possible to be on the same wavelength? "We've had our arguments," is Winstanley's laughing reply. "Early on we'd

both argue our point, but as you grow older and a bit longer in the tooth you tend to think 'Oh, bollocks. Whatever.' In the early days, if either of us really felt strongly about something we would stick up for it, and sometimes we might even try something both ways. Neither of us was too proud to say 'OK, yeah, your idea is better.' So, it always worked out in the end."

"At the time of doing Madness we were kind of flying along together," adds Langer. "Alan's very precise and very particular, and I'm more slapdash and in a hurry and probably tend to like rougher-sounding records. That's a generalisation, because in the end we do like the same records, but sometimes the whole process with Alan can be laborious for me. He normally does the vocal comps whereas I'll do a lot more work in the rehearsal room on the arrangements,



Madness performing on cult British sitcom *The Young Ones* on 19th August 1982. Left to right: Mike Barson, Suggs, Chris Foreman, Dan 'Woody' Woodgate, Chas Smash, Mark Bedford, Lee Thompson.



deciding what instruments should play what where, how long the chorus should be and things like that. Still, we've got on fine considering how long we've worked together."

Growing Up With Madness

It was in June 1984 that Langer and Winstanley opened their own Westside Studios near London's Notting Hill Gate. A couple of years later, they bought Dave Gilmour's residential studio in Oxfordshire, which they renamed Outside. Outside would be sold to the Sarm Group in 1996 and be renamed Sarm Hook End, yet the duo would retain Westside until 2002, when a timely offer from Sanctuary Music would enable them to quit studio ownership just before that line of business became really bad news.

Meanwhile, as the hits flowed, the Madness sound began to evolve, retaining a

ska influence whilst conquering the world of mainstream pop. "We were creating fashion and following fashion," says Clive Langer. "As with most bands, we were looking over our shoulders to see what the Jam and Elvis Costello and the Specials were all doing, just checking out everything at home while being influenced by American records. So, I think we just evolved with the times, and obviously the songwriting also became more introspective, and that's because they were growing up. They were very young when we started and they were just having a laugh — they'd be happy to play in a bar and just get people to dance. But then they began writing about their life, having missed out while spending so much time on the road, and the result was these amazing songs that kept popping up and saving the albums.

"Even though I think many of the album

tracks were really good, you'd have to be a fan to get into them, but then we'd get a big single and we'd be off again, flying along. In fact, at one point they went to see Trevor Horn when Stiff thought it was maybe time for a change, but that's when 'Our House' popped out and so we maintained our relationship. I mean, we always had a great relationship with the band, but our professional relationship was maintained by their choice of songs or their songwriting and then us arranging the numbers and going through the studio process."

Fresh AIR

It was their fourth album *The Rise And Fall*, recorded at central London's AIR Studios as well as Genetic near Reading — built by Winstanley and producer Martin Rushent — that contained 'Our House'. "The first Madness ►

RECORDING 'OUR HOUSE'

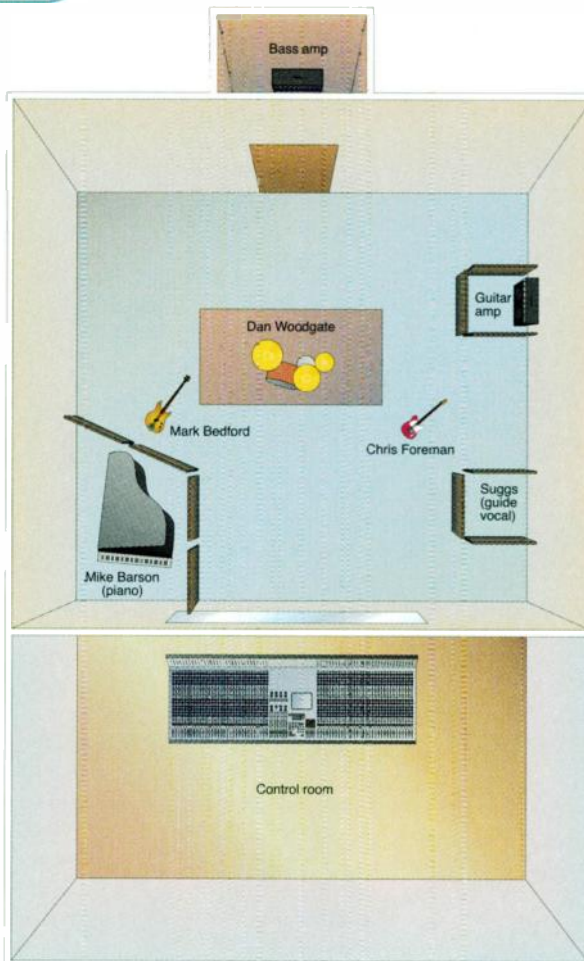
The layout of AIR's live room for the initial drum tracking sessions on 'Our House'.

► album was recorded at Eden and TW, the second was recorded entirely at Eden, and by the time we got to the third album we had the clout and Stiff had the money for it to be recorded at AIR," says Winstanley. "That's when the sound started to change and get a little bit more sophisticated. The guys' songwriting got more slick and so did the studio techniques, and that's why things evolved from the raw, rough sound of *One Step Beyond* to the slicker sound of *The Rise And Fall*."

"Many of the songs on *The Rise And Fall* essentially weren't up to it," adds Langer, "and that was maybe due to them being on the road and Mike [Barson] beginning to get a bit pissed off with the whole situation, but I still enjoyed making that album. Even though the songs weren't all that commercial, they were colourful and we could go down a certain road with each of them, whether we were adding a brass band or getting a bit of bhangra in there. So, it wasn't boring."

The Rise And Fall was recorded in AIR's Studio 1, which was equipped with a recently installed, custom-built 56-channel Neve A7971 console. "We recorded the rhythm section on 16-track, and then made up a 24-track slave for bass and drums and put away the 16-track tape to keep it fresh," Winstanley recalls. "We did everything else on the 24-track slave, and then, when it was time to mix, the 16-track came back out with bass, drums and piano. Because of the extra width, 16-track sounded a bit better than 24-track — at least, that's what we all thought. Whether you can hear the difference or not, I don't know, but we thought we could at the time. Still, by the time we got to the next [1984's *Keep Moving*] album and songs like 'Wings Of A Dove', where everything including the choir and the kitchen sink was on there, we really needed 48 tracks."

"We loved recording at AIR, and I was assisted there by Jeremy Allom and David Wooley, who were both house engineers. Even though I was the one with hands on the desk, those guys contributed a lot and deserved their credit. They did more than just assist and tape-op. I'd get them to do bits and pieces, and I've always done that. I mean, when the SSL came along with the tape remote in the middle of the desk, producers and engineers could sit there and operate that while the assistants made the tea or scratched their bollocks. Well, I wanted them to get involved. And also, if we were doing vocals and I was trying to concentrate on Suggs or whoever else was singing, I wouldn't want to be fussing around with drop-ins, so I'd get the assistants involved in all that sort of stuff."



That's why quite a few of the guys who worked at Westside have ended up being successful engineers and producers — they had a good start and good training."

House Music

When Langer and Winstanley first heard 'Our House' being performed at a rehearsal studio prior to the AIR sessions, both immediately thought the Chris Foreman/Carl Smyth composition was hit material. "It had a great beat, almost like The Kinks' 'You Really Got Me' or 'All Day And All Of The Night', where the snare drum lands in a space," Langer recalls. "All of the parts were there and Mike worked hard on it, as did the rest of the band,

and I just thought we had the chance of making the perfect pop record. I actually thought that a few times with Madness.

"I remember putting in two key changes instead of one at the end of the song, so as the outro went on you never knew where the beginning was; you'd probably lost sense of the key that the song was in. It was really exciting working on that, and if I say so myself, I was quite proud of it because the whole thing was quite clever and it worked. I've actually used that trick a fair bit. I normally go a tone and a half down — lots of people who've worked with me have heard me say 'What's this chorus sound like a tone and a half down?' — because it's a bit cabaret when you just go a tone up. It was during rehearsals that I suggested doing the 'Our House' outro a tone

and a half down, and when it came back it sounded a little bit boring, so I suggested then going to another key, Mike got very excited about that and we basically worked together on it.

"Even though we had a solid song, we could really push it to its limits and get David Bedford to write an exciting string arrangement. I think that really lifted it, the Western film-type strings in the background."

Recorded at AIR, these comprised four first violins and four second violins, broken down into pairs that were each miked with a Neumann U87, as well as four violas that were each miked with an 87 and two 'cellos that were miked with FET 47s.

You've Got To Have A Chorus

Stiff Records' Dave Robinson certainly knew what made a hit single, and when Madness were recording the Mike Barson and Lee Thompson composition 'House Of Fun' as a one-off single, its original title was 'Chemist Facade'. That was until Robinson turned up at the studio towards the end of the sessions and demanded to know 'Where's the fucking chorus?' At that point, what is now the bridge was then the chorus — 'This is a chemist, not a joke shop.'

Robinson wasn't impressed. "You've got to have a chorus," he insisted, and the result was that Mike Barson immediately sat down at the piano and wrote the 'Welcome to the house of fun' refrain.

"That meant we had to record it," says Alan

Winstanley. "However, we didn't want to re-record the whole song, so I copied the entire multitrack from that bridge and just used the drums, and then we overdubbed all of the chorus instruments and vocals onto that before I had to re-edit it into the multitrack. In this day and age, with crossfades and Pro Tools, it would be a piece of piss, but back then it was a nightmare. When Suggs sang 'Welcome' it was just before the downbeat of the bar, so when I edited it in it went 'Elcome to the house of fun,' completely missing out the 'W'. The only solution was for him to go back in and dub in all the 'welcomes'. That was quite a challenge, and all because the song's focus moved away from the chemist shop."

"Then there was Carl's really fast vocal in the last verse, almost pre-empting rap," Langer continues. "It was just so much fun and absorbing to work on that song, because you knew you were creating this very clever thing, without trying to be too clever."

"Carl had come a long way in a short time," adds Winstanley. "On the first album he wasn't even in the band. Only the other six guys appeared on the sleeve, even though he was the one shouting 'Hey, you!' on 'One Step Beyond'. That's all he was at that point; the kid who got up on stage and did the introduction as well as the nutty dancing. Then they let him into the band for the second album, and he was great, because he really wanted to contribute. He learned to play the trumpet, and even though he wasn't the greatest trumpet player in the world, he played it on 'Our House'. It took him a long time to actually nail it, but he wanted to do it and we didn't say 'Nah, bollocks, let's just get a session guy in.'

"On some of the tracks, including 'Our House', we actually did have a brass section, but Lee and Carl played as a part of that section, and on other songs Carl played the trumpet on his own. So, he really evolved from being the kid who just did the nutty dancing to someone who played the trumpet, learned to play the guitar and also wrote songs, including one of their biggest hits; certainly their biggest hit in America."

Getting The Drums

Whereas Madness played together as a live rhythm section on the first album, this changed over time to the point where, on *The Rise And Fall*, they still performed together, but only to capture Dan Woodgate's drums. All of the other parts — Mark Bedford's bass, Mike Barson's piano, Chris Foreman's guitar and Suggs's vocal — were subsequently re-recorded, usually in that order.

"Since the drums were initially the main thing we were going for, they were placed on a riser in the middle of the main room with no screens around the kit," Winstanley says. "There were booths and ante-rooms in that studio, so while Mark played just to the left of Woody, we'd have the bass amp tucked away in a small room, and the same went for the guitar amp of Chris, who played to Woody's right. That meant the separation was fine. At the same time, we screened off the Bosendorfer grand piano that Mike was playing, and as we weren't using this performance it didn't matter that the drums were spilling onto it, whereas the piano wasn't loud enough to spill onto

the kit. Suggs was also screened off while he did his guide vocal.

"During that period I was using an AKG D12 on the bass drum, a couple of Shure SM57s on the snare — one on top, one underneath — and Sennheiser 421s on the toms. On a later album, Woody also got into using tom-tom pads going through a drum synthesizer, but it was all real kit on *The Rise And Fall*. In fact, I remember overdubbing a real tom-tom beat on choruses two and four of 'Our House'. As for overheads, I used AIR's Coles mics, while there was an AKG 451 on the hi-hat and a couple of Neumann U87s as room mics.

"I remember renting a Ludwig Black Beauty snare drum from a record company for that album, and Woody actually ended up buying one because he liked the sound of it so much. At the same time, it became a staple part of Clive's and my drum sound for quite a few years — 'If you haven't got a Ludwig Black Beauty, we're going to rent one in.' And another trend that we started on that album was using a rifle mic, positioned high and pointing down on the kit as an extra room mic, trying to pinpoint the snare more than the other stuff. To be honest, I don't know if it bloody worked, but it sounded all right... It would have been hard not to get a good drum sound in that room. AIR Studio 1 was fantastic. It's a shame they moved to Hampstead, really."

Key Moments

While the piano was miked with a couple of Neumann U87s, Chris Foreman's Fender Twin and Mesa Boogie guitar amps were each recorded with a combination of Sennheiser 421 and Shure SM57, Mark Bedford's Ampeg B15 bass rig was miked with a FET 47, Lee Thompson's sax and Chas Smash's trumpet both went through U87s, and Suggs's vocals were sung into a valve Neumann U47. "His voice doubled sounds amazing," states Langer. "If it didn't have life, we'd always say 'Let's try doubling it.' That would normally work. And it was only if we wanted vocals at 11 in the morning and he was tired that we'd ever have problems."

"By that point he'd become quite a proficient singer, really," adds Winstanley. "Earlier on, he wasn't particularly great, but again, his voice was part of the band's sound. It wasn't hard getting a performance out of him. Occasionally, we might have to take him to the pub, get a few beers in him to loosen him up and then go back to do another vocal, but most of the time we'd do three, four takes and pick the best one. Occasionally, we'd do a comp, he would go back in and do another

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Clive Langer (right) and Alan Winstanley working with Madness around the time of 'Our House'.

▶ three or four takes, we would re-comp it and that might go on three or four times. To be honest, I can't remember what the case was with 'Our House'.

"What I do remember is that the vocals were a bit of a problem on that song because of all the key changes that Clive had come up with, and when the guys did the backing vocals it was always a problem trying to pitch to come back in for the key change. That was really hard, and so it took a long time to do all of the vocals and backing vocals on that song. They just couldn't get the pitch right for each upcoming key change."

Not that any of this bored or frustrated Clive Langer.

"I was quite excited because we all did backing vocals, and so I finally got my voice onto one of their tracks," he remarks. "Since the difficult thing was pitching into the next chorus, we had to play a piano part and have it on a spare track and we then sang along to that piano in order to enter the change in the right key. Now, having been on the road with that song for nearly 25 years, the guys are good at it."

Preparing Pianos

While Mike Barson played organs and synths on *The Rise And Fall*, his main instrument remained the grand piano, albeit one whose tone was considerably altered. "We went for that kind of bright honky-tonk sound," says Winstanley, "and in quite a lot of cases we double-tracked the piano and then varisped the machine slightly so that the double-track was out of tune. It was like the old trick George Martin used to do with the Beatles' arpeggio guitars, double-tracking them to make them sound like a 12-string. We did that a lot with Mike's parts and it was a bit bizarre, really, because we had one of the most

expensive pianos in the world, a Bosendorfer, and we'd try to make it sound as cheap as possible. In fact, I remember us sticking drawing pins into the hammers of that piano at AIR so that when they hit the strings the sound would be a lot more metallic. We didn't use that effect on every song, but it worked on some of them."

"I think Alan is really good at separating things," Langer adds. "We all wanted exciting sounds, and they weren't heavy sounds, so we couldn't just jack the amp up, and we were also dealing with piano on a lot of things. That bright piano was quite exciting. Because this was pre-sampler we used to try to get every sort of piano sound we could — we'd get marimbas, we'd get uprights, we'd get honky-tonk piano, and we'd have to get the real thing. Sometimes we'd record four tracks

of piano; one basic track, a second with the left-hand low notes, a third on which Alan might slightly detune the higher right-hand embellishments, and a fourth on which we'd possibly double the right hand with another octave.

"Still, the energy you hear on those records was also down to the playing — everyone played in an exciting manner. Mike Barson hits the keyboard very hard, and it doesn't sound the same when someone else plays the same parts. He has a style of his own that jumps out, and Dan was also really into his drum sounds so that they were always punchy and really controllable in the mix. Snare drums were very bright in those days, the bass was punchy and very audible — it wasn't subsonic or anything — and so if you put those elements together the results were often quite exhilarating. What's more, the fact that Alan does record in a very clean way means you have total control in the mix."

At The Mix

The mix of *The Rise And Fall* took place at Genetic in Berkshire, where most of the Madness mixes had taken place since day one... well, almost. "The *One Step Beyond* album was scheduled to be mixed at Genetic, but the studio wasn't finished at that time," explains Winstanley. "Martin Rushent and I were still building it, so when the equipment arrived we slung it in what was virtually a shed and that's where the first album was mixed. Thankfully, the studio itself was ready for the second album to be mixed there a year later, using an MCI console, and by the time of *The Rise And Fall* it had been replaced by an SSL E-series desk. We also did some stuff up in AIR Studio 4, which was a little SSL mix room.

"I like mixing on an SSL because of the



Clive Langer (right) and Alan Winstanley at their Westside Studios in 1998.

Beyond Harmony

Clive Langer and Alan Winstanley produced Madness' entire debut album *One Step Beyond* in three weeks: a week of recording at Eden Studios, a week of overdubs at TW and then a third week for the mix at Genetlc. Towards the the mix, Stiff Records' Dave Robinson dropped in to have a listen, and then announced that the title track would be the first single.

"We said 'Hang on a minute,'" Winstanley recalls. "At that point the track only lasted one minute, 10 seconds, and it was never intended to be a single. It was just a short instrumental, but Robbo insisted: 'Go once more around the houses and double up the whole song. If you remix it now you can have it on my desk by 10 in the morning.' When he said this it was about three in the morning, so when he buggered off we felt it was a bit late to do a whole remix. However, to demonstrate — and work out for ourselves — how the song would sound at twice the length, we just put the second half through [an Eventide] Harmonizer to make it sound a little bit different to the first half, tagged it together and copied it to seven-and-a-half ips, quarter-inch tape so Robbo could listen to it on the Revox in his office.

"Clive shoved the tape through the Stiff Records letterbox on his way home that morning, and then we

returned to the studio to mix it properly at double the length so that the second half sounded a bit different. However, by the time we got to the studio, Dave Robinson had already been to the mastering room and cut the record and it was practically on its way to the shops! So, we never really mixed it. That record was actually cut from the quarter-inch tape, with the song going through a Harmonizer halfway through. You can hear the guitars clanging, and the saxophone — as it happens, we always Harmonized the saxophone, and that was all part of the Madness sound, but on the second half of that song everything goes through the Harmonizer.

"Possibly thanks to his time as Jimi Hendrix's tour manager, Dave Robinson was partly deaf. I mean, his ears had no top end whatsoever. I remember one time when we were in his office, playing him mixes, and I noticed that one of the tweeters on his speakers had blown, but he couldn't tell. That's why I was quite disappointed with the finished master of the *One Step Beyond* album. As he couldn't hear much top end, he got the mastering engineer to really, really brighten it up. Of course, in those days we didn't have FM radio, it was all medium-wave, and by doing that it did make it sound better on the radio, but I also wanted it to sound good when the kids got the record home. That

wasn't the case, so over the years as the compilation albums have come out we've remastered those tracks and hopefully made them sound better.

"As for the Harmonized sax, that just came out of us trying to disguise the fact that Lee Thompson couldn't play in tune. And since it was such an identifiable part of the Madness sound, we would never consider getting in a session guy to play those parts. It was all part of the charm. In fact, when Lee taught himself to play sax, he didn't realise that it's a B flat instrument."

"We eventually discovered that his fingering was a semitone out," adds Langer, "so he was kind of blowing and moving the mouthpiece to try to compensate for that. It's because he wasn't quite on the note that he always sounded slightly out of tune, and that aspect of Madness was very exciting. We wanted to keep that old pub-y vibe, basing what we were doing on things like Thunderclap Newman's 'Something In The Air', while also going in for the whole German cabaret feel. And that's why, by the time of the *Rise And Fall* album, it was more a case of 'make it out of tune' than 'keep it out of tune'. I mean, when Lee found out that he'd been playing the sax wrong, he did learn to play it properly, but slightly out of tune was still what we wanted."

computer, but I'm not a big fan of SSL EQ. So, sound-wise I was always trying to get things as good as possible on the recording so that I wouldn't have to EQ too much on the mix. Obviously, that's not always possible, and so if I did have to then resort to EQ I would get a bit of outboard EQ for the mix.

"During recording of backing vocals, for example, if there were seven or eight parts I'd never leave all of those to the mix. That would have driven me nuts. I'd try to pre-mix them down to a stereo backing vocal track and then go the mix with that. To me, it always sounds better when you record them and do the mix right then and there than trying to recreate that a month down the line. So, once I'm happy with the balance, I just mix to stereo.

"I would quite often use a bit of slap delay on Suggs's vocals during the mix, and if we

needed a bit more room on the drum kit I'd use some kind of digital reverb on the snare. Of course, there was a lot of Harmonizer for Lee's sax, and in the cases where we hadn't double-tracked and varisped the piano for that honky-tonk sound I might sometimes put Harmonizer on that as well to add a bit of sparkle."

"In the end, I remember we removed one of the sections on 'Our House,'" adds Langer. "After listening back to the whole thing we basically decided there were too many sections, so that required a big edit. However, it was a great track, and everytime we put it up to do some more work it would be really exciting. When I hear that stuff now I still enjoy it, although it sounds very '80s in that it's quite precise and could have been a bit fatter. At the same time, I think they're

interesting records to listen to, like a jigsaw where the different parts fit together really well, and the fact that they are so representative of their era is due to the songwriting and the band's character and the guys' talent."

As well as being a huge UK hit, 'Our House' would become the only Madness song to attain top 10 status in America, where the band had previously been dropped by Sire due to disappointing sales. This caused *The Rise And Fall* to remain unissued there, yet 'Our House' prospered largely thanks to the efforts of the fledgling MTV, which played the video in heavy rotation following the single's Stateside release on the Geffen label in the summer of 1983. The track would subsequently be included on the hastily assembled US compilation, *Madness*. SOS



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M-Audio Axiom 25



Photos: Mark Ewing

Semi-weighted USB MIDI Controller Keyboard

Controller keyboards are fitting ever more control facilities into progressively smaller units costing less and less. Is the Axiom 25 M-Audio's best deal yet?

Paul Nagle

It doesn't seem so long ago that a two-octave keyboard would have been deemed wholly inadequate for most applications. However, as it's becoming increasingly common to gig with just a laptop and controller keyboard, the smaller the latter

are, the easier it will be to simply sling them in a rucksack and go. With more of us carrying a full studio on our back, or cramming it into a corner of the spare room, it's no surprise that many miniature keyboards are thriving.

The Axiom 25 is a cut-down version of M-Audio's controller range in terms of both keyboard size and — to a lesser extent — functionality. Actually, the only really

significant loss is of programmable sliders — there's no room for them!

Out Of The Box

The Axiom 25 is supplied with the sparsest of accessories. M-Audio evidently expect that you will use it in conjunction with a PC or Mac, and as such, they do not supply any form of power adaptor. When used with a computer, power is derived from the USB connection (a USB cable is supplied), but if you require your purchase to perform a more traditional MIDI role, another fiver on your budget should get you an external 12V adaptor. Sadly, there is no battery option.

There's no printed manual either, just a *Quick Start* guide (consisting of instructions on how to install the software) and a tour of the Axiom's presets. This latter — a single sheet of A4 — lists the 20 presets that are shipped; so if you use *Reason*, or *Cforce's Oddity*, *Imposcar*, or *Minimonsta*, you can be up and running right away. Also included are instructions on how to configure the Axiom for use with Ableton's *Live* — and a lite version of *Live* is included free with the keyboard. However (and this confused me at first), this version doesn't support any form of remote MIDI control, and therefore the instructions don't apply. This isn't exactly joined-up thinking if its inclusion was supposed to demonstrate the power of the Axiom!

Physically, the Axiom strikes you as 'chunky'. A rounded plastic body in austere grey provides a solid base for the semi-weighted two-octave keyboard. I'm guessing that the keyboard is the reason the Axiom is not more slimline. It boasts channel aftertouch and an excellent feel, and I revelled in what I reckoned to be the perfect compromise between a weighted piano action and the lighter response of a typical synth. This was a pleasant surprise in a controller that, at 6lbs, is still reasonably compact and lightweight.

The top right-hand side of the panel features eight velocity-sensitive pads that are ideal for banging in drum patterns — it's certainly far more fun using these for drum programming than a keyboard, and the pads are probably the biggest selling point after the keyboard action. The standard pitch and modulation wheels are rounded and responsive; all is good so far.

Instead of standard knobs, the Axiom features eight continuous encoders — more on these later. Finally, the buttons are of a decent size and are made of black rubber; they too seem designed to be tapped with confidence. Six of these are programmable and arrayed as standard transport controls, although they may be assigned to a variety of roles. Before I start to explore how this all works, I'll complete my tour with a quick look at the rear panel (pictured overleaf). This contains a MIDI in and Out socket, the USB port, the connector for the optional power adaptor, the On/Off switch, and quarter-inch inputs for sustain and expression pedals.

Programming

When you supply power, the display lights up in a rather glorious blue. Nine buttons directly beneath the display are used to recall memories and assign functions to the encoders, the buttons, pads and keyboard zones. There aren't dedicated buttons for everything, though; for example, to quickly send a snapshot of all controllers, the plus

SOUND ON SOUND

M-Audio Axiom 25 £149

pros

- Keyboard feels great and has aftertouch.
- Drum pads included.
- Bright, clear display.

cons

- No mains adaptor supplied.
- No printed manual.
- Supplied *Ableton Live Lite* doesn't support MIDI remote control.

summary

The Axiom 25 is an amazingly affordable chunky plastic controller keyboard with integrated drum pads and endless rotaries. Whilst these give no visual feedback, they will surely find favour with those using the appropriate software.

and minus keys are pressed together, or to invoke the the panic function (should you get any hanging notes), you press Mute and Null.

A number of deeper options are available courtesy of the Advanced button. Press this and various menus can be quickly accessed via the keyboard (whilst Advanced is active, the keyboard doesn't transmit notes). All the Advanced functions are printed in white above each key, from the lowest (Control Assign) to the top (which serves as an Enter key). It's all pretty easy to get around, and certainly a workable compromise given the panel space available.

The Axiom's controls are divided into three functional groups — referred to as A, B and C. Group A contains the keyboard, zone, aftertouch and mod wheel settings, whilst group B stores the assignments of the encoders and transport controls. This leaves the trigger pads defined in group C. Most of the time you won't even think about this grouping, but as each group can be recalled individually, this allows you to quickly mix and match controller definitions from several memory locations.

The Zone/Group button transforms the transport controls into Zone and Group selectors. Three keyboard zones are available and are activated/deactivated using the Loop,



A close-up of the keys below the display.

Rewind and Fast Forward buttons; to activate all three at once, press the three keys simultaneously.

Zones are something you'd more commonly associate with longer keyboards — there can only be limited uses for having three of them over a two-octave physical span. Nevertheless, you can split and layer zones on the MIDI channel(s) of your choice, each can be transposed independently and they can occupy any range of MIDI notes. Having set up your encoders, mod wheel, transport controls, programmable pedals and so on as required, you can store the result to one of the 20 memory locations. Despite the large display, there is no facility to name your patches.

Endless Spin

In a departure from most other controller keyboards, the Axiom is supplied with endless rotary encoders — eight of them. These encoders are subtly notched, making it easy to add single-value increments, but I found it harder to make smooth, fast sweeps until I discovered there were three different acceleration curves to choose from. These allow you to tailor the response depending on whether you wish to leap through large increments or perform fine tuning. You can even turn acceleration off if you only wish to work in discrete increments.

With practice, I was able to zip most of the way through a control's values with a single twirl of my fingers, but I couldn't say I truly mastered this. I did eventually learn to perform smooth fades by exerting smooth, even pressure (over multiple turns), but ultimately this type of control is something you'll either like or you won't. Until you turn an encoder (whereupon the display shows its value), there is no visual clue to its setting. Encoders therefore score highest when used with software — so you can see the values on-screen at all times. The last position of each encoder is remembered, so the Axiom always has an initial value to start from.

The action of the Mute and Null buttons on the Axiom's controls is important. Whilst Mute is active, the outputs of all controls are muted, so you can position any control to the stored value without creating any sudden leaps. Null, on the other hand, prevents data output until you pass through the stored parameter value. This is a slicker way of preventing sudden leaps, although it does require support from the connected software. The manual rightly points out that not all software caters for endless encoders, but does suggest various techniques to try and get it working. Finally, and still in pursuit of smoothness, you can send a snapshot of all current values prior to touching a control for the first time.

M-AUDIO AXIOM 25

Pads

The eight pads can be programmed for typical note on/off duties — they're ideal for triggering percussion. They can also be programmed as 'toggles' so that one hit of a pad generates a note on, and a second hit generates the note off; this is useful for starting and stopping loops. With nine possible response curves and three fixed velocity values, you should find one to suit your playing style — I certainly found them very comfortable to use.

One interesting application of the pads is for transmitting MIDI continuous controller (CC) values. If you remember the days of ARP synths, you'll recall that some had 'PPC' — proportional pitch control. This meant you could push a pad and generate bend or vibrato — and the harder you pushed, the more vibrato you got. The Axiom's pads can replicate this feat: each can send the controller message of your choice, and you can even define the range over which the pad transmits (as you can for the encoders, wheels and expression pedal too). So if you wanted to vary filter resonance between a value of 30 and 80, you'd set these values as your minimum and maximum. Then, whilst playing, just press the pad. This gives you a markedly different type of performance control compared to that offered by moving a knob or slider.

Supplied Software

The software and USB driver installation was straightforward — I always like it when I can write that! Actually, once this was done, I found very little on the supplied CD of interest — just the manual. There's a second CD too — the aforementioned Ableton *Live Lite* (version 4). This features four audio tracks, four MIDI tracks, Ableton's impressive loop handling, VST and audio effects support, software instruments, effects, and more. I won't try to sum up *Live* here as there have been plenty of reviews already, and, as I've already mentioned, you can't use the Axiom to remotely control this version. *Live* is clearly included as a tempter, but if you've never used it before, you get a tantalising glimpse of the power of the full program. Temporarily discarding the Axiom, I had oodles of fun dragging in a wide selection of loops and samples, playing with the effects and creating some fairly complex and interesting arrangements, all with practically no effort. In fact it was so damn easy I started to experience a combination of guilt and a sense of loss for all the years spent doing it the hard way...

You can also use *Enigma*, the free software editor, with the Axiom, but this isn't available on the CD of driver software; you need to

USB-To-MIDI Conversion



Even on a controller keyboard this affordable, you get expression- and sustain-pedal connectors, plus MIDI via a choice of USB and five-pin ports!

The Axiom also functions as a USB-to-MIDI interface, so you can connect a MIDI instrument to its five-pin MIDI In and route the data via USB into your computer with no need of a separate

MIDI interface. Similarly, you can send MIDI to the Axiom's USB port and route it out via its five-pin MIDI Out socket to control any external modules you may have.

download it from M-Audio's web site. It's worth the effort, though, because it renders assignment of all the Axiom's controllers, pads and zones beautifully simple. Editing the controller transmission of an encoder, button or pad is as intuitive as dragging the appropriate command to a graphical representation of the Axiom. So if you want to assign one of the pads to send MIDI notes, drag in the MIDI Notes option from a list, and then just set the actual note you want in the Controller Edit window. The software also allows you to manage a library of patches should the onboard limit of 20 prove inadequate.

The Axiom is capable of transmitting most types of MIDI data that you'll need — the exception being SysEx. In that respect, there are several preset SysEx datatypes, the most notable being MMC (MIDI Machine Control) which is used for transport functions.

M-Audio have devised an interesting method of assigning controllers other than the usual range of CCs. Thus, MMC, pitch bend, NRPNs, and aftertouch are treated as if they are tagged onto the end of the MIDI continuous controller range. For example, to assign a fine RPN value, use controller 133. A table of these is shown in the manual; it's all very simple and transparent to use.

Conclusions

For many, the feel of the keyboard and inclusion of drum pads will be enough to set the Axiom apart from its rivals. Certainly there's a reassuring solidity about the pads, and I really came to value dedicating them to key percussion voices. When using a small keyboard you often have it transposed and I, for one, tend to forget which octave I need for particular drums. This is a lovely solution.

Perhaps I'm just weary of spin, but I didn't find the endless encoders to my taste. I feel

that standard knobs are easier to get on with on a generic controller such as this; I missed the visual feedback. The display is large and clear so I wondered why it wasn't used to show the values of all the encoders at once. The display was pretty informative, though, and I was able to do everything I needed with the buttons and keyboard, although I found programming via the *Enigma* software to be even faster and easier. I'd recommend that all Axiom owners download the editor and give it a try.

Generally, I couldn't find much to dislike with the Axiom. I thought it was stingy not to include a power adaptor, because I tend to work with MIDI rather than go the USB/computer route. Similarly, a printed manual would have been useful, especially for the appendices and their additional controller lists, but these issues are hardly showstoppers. Inclusion of Ableton *Live Lite* was a curious choice, given its lack of remote controllability; however, I enjoyed using it. I've never subscribed to any 'gateway' theories before, but this program really could lure you down the path of serious addiction.

There is plenty of two-octave controller competition around, and the Axiom 25 is neither the slimmest, smallest, nor the cheapest. M-Audio are presumably hoping the inclusion of drum pads and the quality of the keyboard will give them an edge — and they may be right. Either way, we've never had so much choice at this price. **SO5**

Information

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YAMAHA M06

▶ discrete audio outputs from the M0.

One final omission from the M0 spec is onboard sampling, as is the case with the ES Rack. A broad overview of the main differences between the ES models and the M0 can be seen in the ES/ES Rack/M06/8 comparison chart on the right. Elsewhere, the spec of the M06/08 remains faithful to that of the ES6/7/8, the only other notable difference being in the number of Presets: the M0 has 512 Preset Voices as opposed to the ES's 768, but it doubles the number of available User Performances to 256.

The M0's sequencer is also identical to that of the ES, featuring the same highly flexible linear/pattern-based song construction. Song and Pattern data can be converted into user arpeggios, user phrases can be created, Patterns chained and so on. Each Song can have up to five Mixer Scenes, a form of 'snapshot' automation that enables sound and mix changes to occur during the course of the Song. Particularly useful are the 32 user programmable Mixer Templates — these allow you to store all the Parts, Effects, Mix and other settings associated with a particular song or musical style as a separate file, independent of any Song data. Just call up one of these saved Templates and you're ready to start sequencing without having to set everything up.

One dissimilarity with the ES's sequencer is that there is no integrated sample sequencing, since the M0 has no sampling option. One other 'downmarket' aspect of using the M0 multitimbrally is a drop in the number of simultaneous Insert Effects — on the ES keyboard and Rack, eight Inserts could be deployed amongst the 16 Parts, whilst on the M0 there are only three Insert Effects available. This, and the reduced 64-voice polyphony, will inevitably restrict what can be achieved when using the M0 as a one-stop production tool. That said, careful

ES/ES Rack/M06/8 Comparison

	MOTIF ES	ES RACK	M06/8
Polyphony	128 + PLG voices	128 + PLG voices	64
Sampling/ audio In	Yes/Stereo	No	No
Ribbon controller	Yes	—	No
Aftertouch	Yes	Received	Received
Breath control jack	Yes	—	No
Foot controller 2 jack	Yes	—	No
Smart Media card slot	Yes	No	No
External USB storage	Yes	No	Yes
Audio outputs	Stereo, 2x assignable	Stereo, 4x assignable	Stereo
S/PDIF digital output	Optional extra	Yes	Yes
Optical digital output	No	Yes	No
PLG expansion slots	3	2	None
mLAN connectivity	Optional extra	No	No
Preset arpeggios	1787	1787	1787
User arpeggios	256	None	256
Insert effects per Mixer/Multi	8	8	3
Preset voices	768	768	512
User voices	256	384	256
User Performances	128	128	256
User Multis/Mixes	128 Mixes	128 Multis	128 Mixes
Master Setups	128	—	128
DAW Remote Control	Yes	—	Yes

placement of program changes within the three tracks (Parts) that have Insert Effects assigned to them can give the illusion of a lot more going on, as each Part's Insert Effect will change to that associated with its particular Voice Patch.

Conclusion

Listening to the demo songs, you'd be forgiven for thinking that the M06 was designed purely for hip-hop, R&B, Trance and Acid Goth Handbag. But don't let them fool you — the M0's sound palette is much broader than that. Not that anyone into more, er, 'contemporary' styles will go unsatisfied. The economies mentioned, though seemingly many, don't significantly detract from the instrument as a whole, and I'd happily recommend the M0 not only as a creative tool in the studio, but as an

excellent live instrument that can be integrated very comfortably as the heart of a larger MIDI rig. If you were marooned on a desert island with an M06, with plenty of time to become totally familiar with every nook and cranny of the instrument (not to mention a spookily convenient electrical supply) you'd be turning out tracks that could compete favourably with a modest software-based virtual studio. Oh, and in case you were wondering, it plays perfectly in time! **ES**

Information

- E** M06, £949; M08 £1349. Prices include VAT.
- T** Yamaha-Kemble Brochure Line
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- W** www.yamaha-music.co.uk

Studio Connections

The Studio Connections Initiative was first discussed in the review of the Motif Rack ES. To recap, its aim is to integrate hardware-specific editing applications within software DAWs using Yamaha's Open Plug-in Technology (OPT) software format. This allows compatible hardware devices to appear within the DAW, and be edited or automated as if they were software plug-ins. All their settings (or simply those for a single device) can be stored along with the sequencer song data and recalled instantly — a concept referred to as Total Recall. To fully 'buy into' this concept, you will need an OPT-compatible DAW, and four (free) pieces of software: Yamaha's *Studio Manager*, the *M06/8 Voice Editor*, the *M06/8 Multi-Part Editor*, and the latest Yamaha USB driver. I'm assuming (and the manual suggests as much) that the *Studio Manager* software, Editors and driver are

bundled with the M06, despite the fact that they weren't included with the review model. However, this was no problem, as the latest PC and Mac versions of these are available for download at www.yamahasynth.com.

Studio Manager is invoked from within an OPT-compatible DAW, providing access to the M0 editors without having to run them as separate, external applications. Compatible devices' editing applications can also be operated remotely, meaning that a Yamaha 01X, for example, could be configured as a hardware control surface for the M06. The list of products that can make use of this system has grown slightly since the ES Rack was reviewed — DAWs currently compatible with Total Recall are Steinberg's *Cubase SX3* and *Nuendo*, and Yamaha's own *SQ01* (v2) sequencer, while the hardware devices supported are

Yamaha's DM2000, DM1000, 02R96, 01V96, SPX2000, S90ES, M06/08, the 01X and the original Motif and Motif ES keyboard and rack synths.

Even if your DAW is not OPT-compatible, you can still run *Studio Manager* as a separate application, which provides access to the M0 Editor programs. In this case, *Studio Manager*'s settings have to be saved as a separate file and reloaded manually when the song they refer to is required again. So one-click Total Recall and plug-in-synth style integration are not possible without an OPT-compatible DAW — but nevertheless, *Studio Manager* still offers an easy and convenient means of editing the M06 and organising its voicing data on a per-project basis. Further information can be found at www.studioconnections.org.

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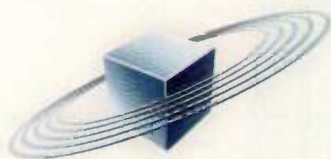
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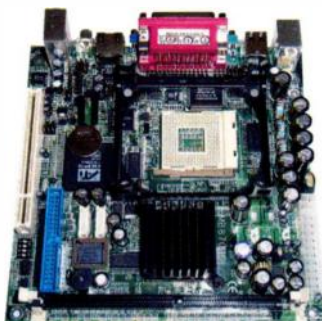
Martin Walker

More and more musicians are relying on laptops as their main music PCs, but they don't suit everyone, for various reasons. For example, most remain fairly fragile and not really up to the rigours of regular gigging unless handled very carefully and given their own padded bag or dedicated flightcase. If they do become damaged, there are few user-serviceable parts inside, with the exception of RAM and the hard drive, and for the same reason they are mostly difficult to upgrade. Finally, of course, they have no PCI slots, which restricts the audio interfaces you can use to PCMCIA, USB or Firewire, all of which mean another item of gear to cart about.

But there is another way. If you're in the market for a PC that's easily 'luggable', like a laptop, yet rather more robust, takes up far less space than a desktop or tower model, yet retains many of the latter's advantages, such as easy upgrading and largely user-replaceable parts, you may like to contemplate a rather different approach.

The Shuttle PC

The SFF (Small Form Factor) PC was virtually invented by Shuttle back in 2001 when they launched their XPC SV24 model, which featured a stylish, brushed-aluminium, cube-like case approximately a quarter the size of a typical desktop PC (typically 18 x 20 x 30cm). Shuttle now market a large family of such XPC products that will run both Intel and AMD processors, available either as complete systems or as 'XPC Barebones' kits pre-fitted with an integrated proprietary motherboard, special power supply and patented ICE (Integrated Cooling Engine) heatpipe cooling system. Over a million have been sold so far, and judging by the SOS Forums quite a few musicians have already taken advantage of them to save space and become more mobile. Shuttle cases are also extremely stylish, and the range now encompasses much of the latest PC technology, including PCI Express graphics slots and support for dual-core processors. You can carry them around easily in a bag or



Small PCs need small motherboards and, as you can see, the Mini-ITX format used by Shuttle PCs is far smaller than the ATX one found in most desktop/tower PCs, leaving little room for expansion slots.

Small Form Factor PCs For Music

The Small Form Factor (SFF) PC is a useful halfway house between the flexible but bulky desktop PC and the very portable but expensive and not easily upgradeable laptop. But how well does the SFF PC fit the bill for musicians? We find out.

backpack, fit replacement motherboards yourself if you ever fry a port, or install a suitable PCI adaptor card with extra ports.

Slimline Features

Of course, reducing size by a factor of four does entail some compromises. Firstly, Shuttle PCs use a Mini-ITX-format motherboard that can also be found in the set-top boxes that sit on top of TVs to provide them with Internet and games capability, and even in in-car PC systems. As you can see from the photograph and the table on this page, the Mini-ITX motherboard is far smaller than the more usual ATX format found in the majority of desktop/tower PCs.

Some Mini-ITX motherboards (like the one in the photograph) simply provide a single PCI expansion slot (although most Shuttle PCs can also house a standard AGP or PCI Express graphics cards — single or dual head). Those used to having between four and six PCI slots in their desktop PCs might consider a single one extremely restrictive, but for many musicians the days of needing multiple slots are over. Looking back at the PC systems I've reviewed in the last couple of years, the only ones I've received with more than one PCI slot occupied were simply using a

second one to add Firewire ports to a motherboard that didn't have this feature, and all Shuttle motherboards already have integral Firewire and USB 2.0 ports. Nevertheless, those hoping to fit a PCI soundcard in a Shuttle PC must bear in mind that their choices will be more limited than normal. Some of the longer soundcards, including models from Creamware and Lynx, will have to be ruled out straight away, as well as ones like the Emu models

Form Factor	Length	Width
ATX	12.0" (30.5cm)	9.6" (24.4cm)
Mini ATX	11.2" (28.4cm)	8.2" (20.8cm)
Flex ATX	9.0" (22.9cm)	7.5" (19.1cm)
Micro ATX	9.6" (24.4cm)	9.6" (24.4cm)
ITX	8.5" (21.5cm)	7.5" (19.1cm)
Mini-ITX	6.7" (17cm)	6.7" (17cm)
Nano-ITX	4.7" (12cm)	4.7" (12cm)

The Mini-ITX format used in Shuttle PCs is just 39 percent of the size of the standard AT-format motherboard found in the vast majority of PCs.

that require a second backplate position for a daughterboard.

The Shuttle PSU also has to be a lot smaller to leave enough room in the case for all the other hardware items, but with fewer expansion slots this is made easier because you only need a lower-wattage device: few Shuttle PCs offer power supplies with more than a 250W capacity. Although the 40mm power-supply fans of early Shuttle models could also be fairly noisy, more recent models feature much quieter power supplies designed by SilenX, while other Shuttle models, such as the ST62K, provide an external fanless line-lump PSU, which also gives the extra advantage of leaving significantly more room for expansion inside the PC case itself.

Shuttle Noise

Unlike a typical tower case, which normally ends up mounted on the floor under your desk, a Shuttle or other mini-PC is fairly likely to be placed close to you, like a laptop, which will make the noise from any cooling fans more annoying. Shuttle do publish extensive Acoustic Reports on all their XPC models, which you can read at http://global.shuttle.com/Support/Support_AcousticReport.asp.

Serious silencing requires volume to fit acoustic foam and large fans, so a Shuttle PC is never going to be as quiet as the quietest tower or rack cases. Nevertheless, Shuttle's target for their quiet systems is 30dBA at a distance of one metre, which is not that much louder than a typical specialist music PC, and it's possible to make them really quiet with various tweaks.

The most important thing is to choose the most appropriate Shuttle model. If you're really keen on low noise, select a processor and other hardware that don't require a lot of cooling. For instance, you can buy a Mini-ITX motherboard with a Pentium-M processor identical to that found in Centrino laptops, such as the one used in Shuttle's SD11G5 model. You can also keep cooling requirements down by fitting a modest graphics card that doesn't have its own cooling fan and doesn't generate a lot of heat of its own.

There are also various modifications you can carry out to further improve acoustic noise levels. For instance, cutting and fixing a sheet of Acoustipack or similar acoustic foam to the bottom of the case to decouple hard-drive noise from your desk can help, as can fitting a Fanmate speed controller on the outside back panel and running its cable inside to the CPU cooling fan. You can even try bolting a larger cooling fan onto the Shuttle rear panel, over the existing exhaust grille, using rubber damping mounts, and using it with a Fanmate controller that just keeps it ticking over but boosts airflow. With these mods it's possible to reduce acoustic noise levels to as far down as 16dBA at one metre — perfectly acceptable for recording in the same room with a microphone.

A typical example from the Shuttle range is the SN95G5V3, designed for 'power-hungry' users, which has a smart black aluminium chassis, 240W SilenX PSU, ICE heatpipe CPU cooler with 92mm fan and speed control, and a proprietary motherboard. The last features an Nvidia Nforce 3 chip set supporting AMD Socket 939 processors (including Athlon 64, FX and X2 models), up to 2GB of PC3200 RAM, one PCI slot and one ACP 8x/4x graphics slot, one front and one rear 6-pin Firewire port, up to six USB 2.0 ports and space for one 5.25-inch drive (such as a CD-R or DVD-R model) plus two 3.5-inch drives (either one internal hard drive and one front-panel floppy drive or two internal 3.5-inch hard drives). It also supports RAID 0, 1 and 0+1 drive arrays.

At just under £200 from some suppliers, this isn't that much more expensive than a quality tower case, PSU and motherboard combination, and you just need to add your choice of CPU, graphics card, SATA hard drive, optical drive and RAM. The total price should come to well below most laptops offering similar performance, especially if you already have a suitable monitor screen, keyboard and mouse.

Specialist Music Mini-PCs

If you want to build your own Shuttle PC, plenty of suppliers stock the Barebones systems, but one UK company that's regularly recommended for parts, support and rapid email advice is Kustom PCs. When I last looked at their web site they had a choice of eleven Mini Barebones systems and lots of accessories. However, for those who want a mini-PC that's already ready to rock, many of the specialist music PC

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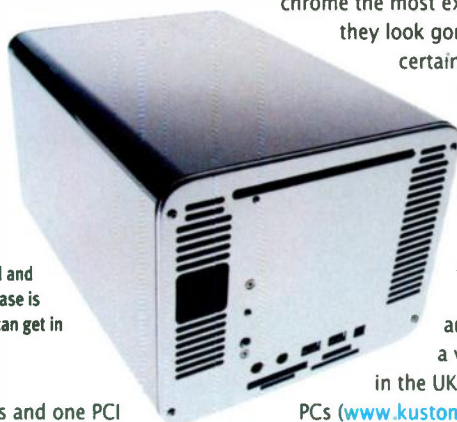
FIRST WE LISTEN

SMALL FORM FACTOR PCS FOR MUSIC

► suppliers have one in their range, and this approach will avoid any of the Firewire controller-chip incompatibilities that still plague those buying laptops. If you buy from a specialist supplier you shouldn't run into any problems, and if you do they can help you sort them out. Systems will also be soak-tested before despatch.

Red Submarine (www.sub.co.uk) offer the Micro Sub, a Shuttle design

Starting life as nine pounds of solid aluminium, then painstakingly hand-polished and chrome-plated, the Cubit 5 case is about as glamorous as you can get in the world of mini-PCs.



featuring one PCI Express and one PCI slot, a Pentium 4 processor of up to 3.8GHz clock speed and up to two hard drives. By the time you read this, Inta Audio (www.inta-audio.com) should have their new web site up and running, displaying the Shuttle-based systems that they have been shipping for some time. Millennium (www.music-pc.com) have the nicely named Musicube in their range, and although this looks like a Shuttle it actually uses a rather different compact case from motherboard manufacturer AOpen. Based around an Intel 865PE chip set and offering a choice of Celeron D 300-series or Pentium 500- or 600-series processors running at up to 3.4GHz, up to 1GB of RAM, one hard drive, one optical drive and one floppy drive, it features one AGP slot and one PCI slot.

Sleek & Chic

While Shuttle PC cases are undeniably stylish, the ultimate in chic must be the

Cubit 5 case range from UK design firm Hoojum (www.hoojum.com). Manufactured from 4kg of solid aluminium and then either mirror-chrome plated or finished in one of nine matt pastel colours, these cases are not cheap items, ranging from £115 to £300 depending on finish (black is cheapest, and chrome the most expensive). However,

they look gorgeous and will certainly become a talking point in your studio, although such beauty is perhaps best not exposed to the vagaries of the average gig. Hoojum cases are available from a variety of suppliers in the UK, including Kustom

PCs (www.kustompcs.co.uk) and Scan (www.scan.co.uk/hoojum). You can either buy them complete with an AMD Socket A or Intel Socket 775 motherboard, or use them to upgrade an existing Shuttle PC. One or two hard drives can be accommodated, although you need a special slimline optical drive. Moreover, Scan also offer both Shuttle and Cubit 5 Audio Workstation systems through their Scan 3XS (<http://3xs.scan.co.uk>) outlet, featuring Pentium 4 processors up to 3.8GHz clock speed.

Another stylish option for those who want a truly tiny PC is from Be Blu, whose anodised aluminium cases in black, silver, blue or gold are also available as stackable mini hi-fi-format Media Centre systems (see next section). For the enterprising DIY builder, their tiny bb012 computer case supports the Mini-ITX format and a single hard drive, and is powered by a 150W DC-DC converter. Those requiring less



With the Be Blu cases your PC can look exactly like a mini hi-fi system. They're available in complete Media Center systems and as empty cases suitable for housing your choice of mini-ITX motherboard.

powerful processors can choose the completely passive cooling option, which uses the case as a heatsink. However, some compromises are inevitable, and only 'short' expansion cards are supported.

Micro ATX Format

If you simply want a smaller PC than normal but don't demand a tiny one, you may find



If you want a luggable PC with more card expansion possibilities than a Shuttle, a Micro ATX-format motherboard, partnered with a case like the Aspire X-Qpack shown here, may fit the bill.

the Micro ATX-format motherboard more suitable. At 9.6 inches square, Micro ATX provides more expansion possibilities than

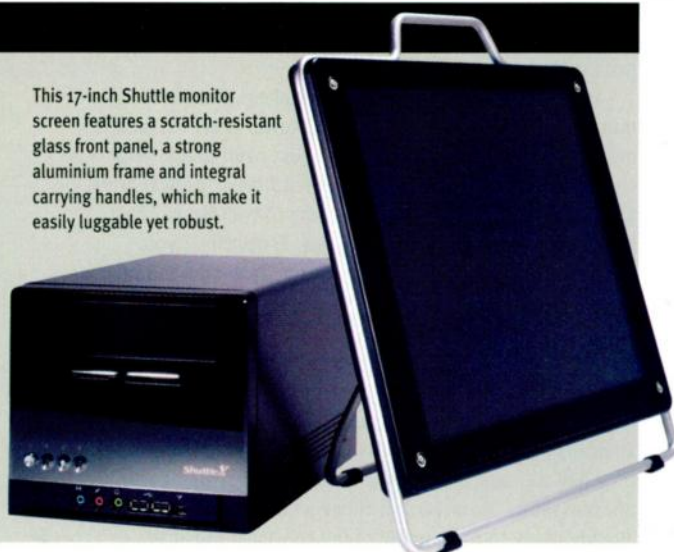
Suitable Screens

One huge advantage of a laptop is that its built-in screen display is largely protected once you close the lid. A mini-PC can, of course, be partnered with a standard TFT monitor screen, but many can be awkward to transport, as well as fragile, with the screen surface itself being prone to scratches and cracks.

If you're concerned about robustness, an AG Neovo LCD monitor (www.neovouk.com) with hardened optical glass built on top of the LCD panel might fit the bill. On their web site these screens are claimed to be stronger than a knife, with an image of someone cutting through an apple using a screen as a chopping board, so they ought to survive gigging quite well. At a typical price of £176 for their E17 17-inch model, these screens won't break the bank either.

Shuttle have a range of portable monitors to partner their XPC computer range, and two of them (namely the XP17 Temp AR and Temp AG models) also feature scratch-resistant glass panels to protect the TFT surface. The monitors can be used in landscape or portrait orientation and also have the added advantages of a strong aluminium frame, a stand that folds flat for travelling, and integral carrying handles, which together make them much tougher gigging companions.

This 17-inch Shuttle monitor screen features a scratch-resistant glass front panel, a strong aluminium frame and integral carrying handles, which make it easily luggable yet robust.



SMALL FORM FACTOR PCS FOR MUSIC

▶ Shuttle PCs, with most such motherboards offering one AGP and three PCI slots, which of course makes it easier to install soundcard/daughterboard combinations while still leaving a slot free for such things as extra Firewire ports or a PCMCIA adaptor. Also, unlike Shuttle PCs, which tend to provide a proprietary combination of motherboard and case, there's a much wider selection of suitable motherboards from various well-known manufacturers such as AOpen and Asus.

There are several styles of case to suit the Micro ATX format. If you want a small PC that fits more neatly into the living room



Taking your mini-PC on the road needn't be a worrying experience if you buy a suitable carrying case, such as this one from Shuttle.

you could investigate Media Center (sic) PCs, which run Microsoft's Windows XP Media Center Edition, are aimed at the 'home entertainment' market, and have a user interface and dedicated remote control (rather than a mouse) for accessing digital music, photos and DVDs, plus facilities for recording and watching TV programmes.

While you can buy many Media Center PCs as complete systems in standard

Further Information

- **Form Factors** (www.formfactors.org) provides lots of detailed information about the various motherboard form factors, as well as downloadable PDF files containing their detailed specifications.
- **Media Center PC World** (www.mediacenterpcworld.com) provide news, links to related product reviews elsewhere on the Internet and a useful FAQ explaining how Media Center 'home entertainment' PCs differ from more standard models. It's also a handy resource for ideas on case-style options and PC remote controls.
- **Mini-itx** (www.mini-itx.com) has news, reviews, an FAQ and projects (including some very novel case designs) related to the Mini-ITX form factor.
- **Mobile Tech Review** (www.mobiletechreview.com) has lots of information about PDAs and the Pocket PC operating system.

desktop and laptop cases, they are also available as 'PC Lifestyle' components in a other styles, such as slimline towers, built into the TV monitor, or masquerading as hi-fi separates, mini hi-fi systems or video recorders. Because these PCs need to fit into homes, manufacturers also tend to take more care over acoustic noise levels.

For DIY builds, there are plenty of empty cases in 'video recorder' format, often labelled as HTPC (Home Theatre PC). For instance, Quiet PC (www.quietpc.com) have quite a few available from companies such as Zalman and Ahanix, and while many in their range suit full-sized ATX motherboards, some models, such as the Ahanix MC301/2, are for the Micro ATX format and are styled like upmarket hi-fi components. However, although there's plenty of space to fit two internal hard drives and an optical drive, their low height (105mm) restricts them to half-height expansion cards. This will prevent many PCI soundcards being fitted, but this won't worry you if you intend to use a USB or Firewire interface.

For those musicians interested in complete systems in the 'video recorder' format, Red Sub's Mini-Sub system (reviewed back in SOS August 2003) is now up to a MkII version with upgraded audio and PCI Express expansion. It offers three PCI slots, one PCI Express x1 slot, and one PCI Express x16 graphics slot. You can either choose a black or silver Lian-Li PC-9320 case or a red case with Mac-like integral carrying handles, and at just over 130mm high both of these cases can house a fair range of expansion cards. Another advantage over the Shuttle format is that there's enough spare room inside to fit acoustic foam and specialist CPU silencing options.

A more portable Micro-ATX system could take advantage of the low-profile of the larger cube-like cases, such as the aluminium Aspire X-Qpack, available in a variety of colours. It has a built-in 420W ATX PSU, five drive bays, a 120mm fan and a handy carrying handle, measures 350mm x 284mm x 228mm and costs just £76 (available from Kustom PCs, among others).

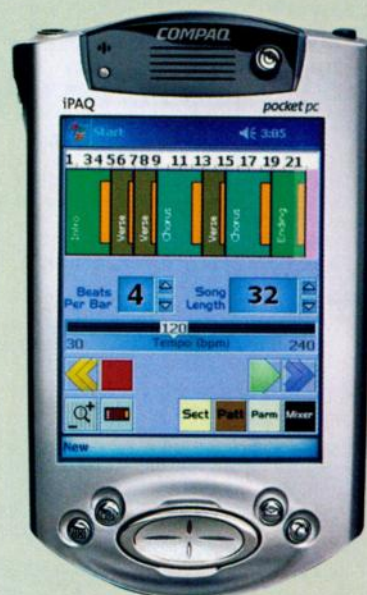
Carillon (www.carillondirect.com) have a similarly styled Micro ATX-format Cube model in their range of specialist music PCs. This can house up to three PCI cards and one AGP graphics card, and also has a more powerful 300W PSU than Shuttle PCs, as well as one external 5.25-inch drive bay and three internal 3.5-inch ones for up to three hard drives (one ATA and two SATA).

Final Thoughts

If you don't want your PC to dominate the room or you're specifically looking for

Music On The Move

If you want to make music on the move with an incredibly portable PC, why not consider a handheld PDA (Personal Digital Assistant) running Microsoft's Pocket PC operating system? Although these are not fully-fledged PCs and have to be connected to a standard PC for installation of applications and transfer of data, they can nevertheless run specialist sequencer programs such as the £40 Reason-like *Griff* from Planet Griff (www.planetgriff.com), which we reviewed in SOS May 2003 (www.soundonsound.com/sos/May03/articles/pocketpc.asp), or the more traditional staff notation of *Midnote* from PDA Musician (www.pdamusician.com).



One of the most portable music-making PCs around must be a Personal Digital Assistant PC running an application such as *Griff* – ideal if you want to make music the minute inspiration strikes.

a portable machine, this feature should at least have whetted your appetite, and may even have provided the perfect solution for your requirements. However, while investigating bijou solutions, don't forget to consider the number or size of expansion cards you need, and remember also that you're likely to place them a lot closer to your ears (see 'Shuttle Noise' box), so even if acoustic noise levels are low, they are unlikely to be as low as full-sized systems stuffed to the gills with specialist cooling solutions and lined with acoustic foam. If you're building your own mini-PC, also take care to check that both the motherboard chip set and its Firewire controller chip are compatible with whichever audio interface you want to use. If you're unsure, or don't fancy the DIY approach, there are plenty of ready-to-use mini systems available from specialist music PC suppliers. **SOS**

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Apple Core Duo iMac

Mark Wherry

The original iMac was a product that marked a turn in Apple's fortunes and designs towards the end of the '90s, so it's in many ways fitting that the iMac in its current form was the first Macintosh computer in Apple's product line to be (re)released with an Intel processor. Apple announced the transition from Power PC processors to Intel last year at the company's Worldwide Developer's Conference, and developers have had since then to prepare their applications and plug-ins for the new systems. As *Sound On Sound* has covered the transition in previous Apple Notes — especially April's in-depth look at the state of hardware and software on Intel-based Macs — this review will focus on the actual hardware and performance, rather than discussing the broader issues involved in the transition.

The Same, But Different

We last reviewed an iMac in *SOS* back in December 2004 (www.soundonsound.com/sos/dec04/articles/imacg5.htm). This was the first generation of the iMac to feature a G5 processor and the new 'Where did the computer go?' enclosure, to quote Apple's advertising campaign. Since it was pretty obvious where the computer went, Apple introduced a second generation of iMac G5 last October with a much sleeker version of the design, and it's on this second-generation design the new Intel-based iMacs are built.

The new Intel iMac, like its Power PC predecessors, is available in two, different-sized models. The 17-inch version (which is the one I tested), with a screen resolution of 1440 x 900 pixels, offers a 1.83GHz Core Duo processor, while the 20-inch model has a 1680 x 1050 resolution and a 2GHz Core Duo processor. As you may already know, the Core Duo processor is a dual-core processor, so it offers two processing cores and behaves like Apple's

previous dual-processor systems. This alone offers a tremendous performance increase for compatible music and audio software like *Logic* when compared to the previous single-core iMac G5 models.

However, unlike the 64-bit architecture of the G5, Intel's Core Duo is a 32-bit processor; so if you found yourself making use of 64-bit applications on the old iMac, this won't be possible on the new model. I don't think this is a big problem, though, since the main advantage of 64-bit processing is being able to address a large amount of memory, and the first and second-generation iMac G5s only supported up to 2 and 2.5 GB RAM respectively anyway. More importantly, to my knowledge there aren't yet any music or audio

When is an iMac not an iMac, but still an iMac? When it's a new model featuring an Intel processor. We take a look at Apple's first Intel-based Mac and see what the future holds for Mac musicians and audio engineers.

applications for OS X that have been optimised to address a 64-bit memory space in any case.

Speaking of memory, the first iMac G5 came with only 256MB RAM, which really wasn't enough. The second-generation model had 512MB, and this is also the case



Images courtesy of Apple

with the new Intel iMacs, which come with 512MB 667MHz DDR2 SDRAM and can be upgraded to 2GB. The iMac has two memory slots, which are accessed by unscrewing a panel at the bottom of the system, and there's one 512MB SODIMM card pre-installed.

When buying from Apple you can choose to have either 1 or 2 GB of installed memory for an additional £70 and £210.01 respectively, or you can purchase additional 512MB or 1GB memory cards from a vendor like Crucial for £88.11 or £124.54. The after-purchase upgrade works out a little more expensive, especially if you install two 1GB cards and have to discard the original 512MB card.

Cache In Hand

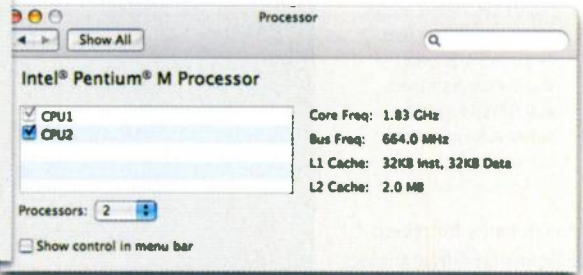
Despite the 64-bit and memory issues, the newer Core-Duo based architecture does offer performance improvements (as we'll see in a moment), partly thanks to its 2MB Level 2 cache, up from the 512k cache supplied with the iMac G5's processor. Caches are used to store frequently accessed data, and it's much quicker for a processor to access an item of data from a cache instead of the main memory, so a larger cache helps to keep the processor busy instead of waiting for data from main memory. The front-side buss speed of the system is now 667MHz, which is a little faster than the 633MHz of the previous 17-inch model, and a little slower than the 700MHz of the previous 20-inch model. Although the G5's architecture had a bigger buss in terms of bandwidth, the Core Duo architecture's buss has slightly less latency, which means memory access is much faster.

Like the second-generation G5 models, the Intel iMacs feature PCI Express-based ATI Radeon X1600 graphics hardware with 128MB GDDR3 memory, and the 20-inch model can be ordered with 256MB GDDR3 memory for an extra £50. For storage, the 17-inch iMac has a 160GB 7200rpm SATA drive, while the 20-inch iMac offers a 250GB drive instead. Both models feature a slot-loading 8x speed Superdrive, which is also capable of burning dual-layer discs at 2.4x speed.

The Intel iMacs also inherit the connectivity improvements introduced with the second-generation iMac G5. On the



Here's a screenshot many Mac users never expected to see... The 17-inch iMac features a 1.83GHz Intel Core Duo processor, which, as you can see in the Processor System Preference Panel, is based on the design of the Pentium M processor.



first-generation iMac G5 the ports were located in a vertical line on the back of the right-hand side of the computer, which looked a little untidy once you started plugging in a large number of peripherals. The newer machines now have the expansion ports running horizontally along the bottom of the computer (also on the back of the case), allowing you to loop cables neatly through the circular hole provided on the iMac's stand. There are three USB 2.0 ports, two Firewire 400 ports, a mini-DVI port for DVI, VGA and S-Video and composite output (via optionally available adaptors). Gigabit Ethernet is provided, which is great for those using Logic Node, of course, along with built-in Airport Extreme and Bluetooth 2. Apple's wireless keyboard and mouse are optional extras, but a standard wired keyboard and Mighty Mouse are provided as standard. I'm still not in love with the Mighty Mouse, but I do use one on a day-to-day basis since getting used to it.

There's a built-in microphone (which is useful, at least for the built-in iSight camera) and built-in stereo speakers that, like previous models, are located on the bottom of the iMac and reflect the audio off the desk towards the listener. There are also mini-jack line in and line out/headphone connections, the latter doubling as an optical S/PDIF output port.

Proof Of The Pudding

The new iMac was released at Macworld in January, and although I got one shortly after they became available, it didn't make sense to write a review until suitable software became available to give some kind of meaningful review for musicians and audio engineers. At the time of writing, the Universal Binary version of *Logic 7.2* was available, along with a Universal Binary beta version of Ableton's *Live 5.2*, so these were my main testing weapons.

While the 'how many instances and voices'-style test using *Logic* is not perfect, I've used it to test many Macs over the past few years, so it should provide some kind of

comparison with Power PC-based Macs running *Logic*. To keep the conditions somewhat consistent, as with other Macs we've tested, I used just the built-in sound hardware and a buffer size of 512 samples.

Starting with *Platinumverb*, I was able to run 88 instances with both of *Logic*'s CPU meters hitting boiling point. In Activity Monitor (a system profiling tool you can find in the Applications / Utilities folder) the *Logic Process* reported 163 percent usage (where each core is 100 percent), and the overall User system usage was 80 percent.

Staying with the reverb plug-ins, I next tried *Space Designer*, which produced some surprising results: I was able to run 30 simultaneous instances with about 90 percent User usage (and around 176 percent usage for the *Logic Process*). This is surprising when you consider the

Test Spec

- Apple 17-inch iMac with 1.83GHz Intel Core Duo Processor and 512MB RAM, running Mac OS 10.4.5.
- Tested with *Logic Pro 7.2* and *Ableton Live 5.2* beta 6 (Universal Binary).

SOUND ON SOUND

Apple Core Duo iMac
£929/£1229

pros

- In some situations, the Intel iMac gets close to the performance of previous high-end dual-G5 Power Mac systems.
- Quieter and cooler than the previous G5-based iMacs.
- A great feature set including Gigabit Ethernet, a dual-layer Superdrive, a built-in iSight camera and the new Front Row media software.

cons

- It's not the iMac's fault, but musicians and audio engineers won't get the most from this machine until more applications, drivers and plug-ins are compatible with Intel-based Macs.

summary

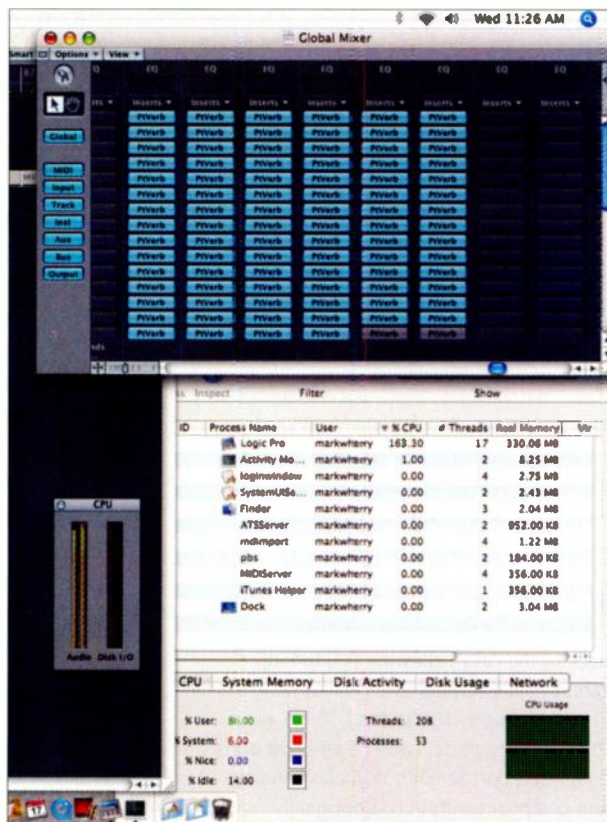
Even though software developers haven't caught up with Apple yet, Apple have almost certainly caught up with rest of the computer industry in terms of hardware and performance thanks to the new Intel Core Duo chips. With improvements in almost every area compared to the previous generations of iMac G5s, the Intel iMacs will be perfect entry-level systems for musicians and audio engineers once their software of choice is available in Intel-native code.

APPLE CORE DUO IMAC

Here's the Intel iMac running 88 *Platinumverbs* in *Logic Pro 7.2*. Not bad; but notice how even though *Logic's* CPU meters are flat out, the 80 percent User CPU usage in Activity Monitor suggests there may still be even more potential for performance improvements.

- ▶ benchmarks for reverb plug-ins on different Macs as shown in Figure 1, as you'll notice this is very close to the 34 instances I could run on my dual-2.7GHz Power Mac — a machine that was able to run almost twice as many *Platinumverbs* as the new iMac can manage. What's going on? We'll come back to this in just a moment.

Moving onto the number of instrument voices that can be played simultaneously, I was able to get 88 *Sculpture* voices with the 'Attack Flute' preset, via 11 instances of the instrument each playing eight voices. The *Logic Process* used about 175 percent of the system at this point and the User usage was around 87 percent. *Logic's EXS24* sampler was used for the final tests, and since the 512MB system memory wasn't going to be quite enough to use the Vienna Symphonic Library's Harp (HA_ES) instrument in 32-bit



storage mode, which would require over 700MB, I used the Stereo Grand patch instead from the original *EXS24* factory library. This is an instrument I've substituted before for systems with not quite enough memory, and it seems to give the same results as a larger instrument. As usual, *EXS24's* Virtual Memory option was disabled so as to provide the best performance capability.

In original storage mode (which, in this

case is 16-bit) with the filter disabled, *EXS24* was capable of playing 576 stereo voices simultaneously with 85 percent User usage (approximately 158 percent for the *Logic Process*). With the filter enabled, it was possible to play 448 voices with 88 percent User usage (around 186 percent for the *Logic Process*) and with 32-bit storage mode enabled and the filter disabled, 896 voices could be played with 86 percent User usage (about 170 percent for the *Logic Process*).

Overall, these results are pretty interesting. Obviously, the new Intel iMac is more powerful than its Power PC-based predecessor, and pretty much lives up to Apple's claim of being twice as fast. With the similarities in architecture between the new iMac and the Macbook Pro, you can see how much more powerful this new Mac portable will be compared to a Powerbook.

It's worth thinking about why the results for the *Space Designer* and *EXS24*-with-filter-enabled tests are so strong — the iMac beating out a dual-2.7GHz G5 Power Mac in the latter — when others, such as the *Platinumverb* and standard *EXS24* tests, are less impressive. While we can only speculate, not knowing the precise optimisations that have gone into *Logic 7.2* for Intel CPUs, it seems that any maths involving intensive Fourier transforms (such as the convolution function in *Space Designer* and *EXS24's* filter) is really strong on the Core Duo. While the G5 with its AltiVec instruction set is also very good at this kind of arithmetic, the SSE3 instruction set in the Core Duo has many instructions specifically for this purpose, and clearly it seems to be quite effective.

It's also interesting to note that the somewhat absurd (and, technically, a little exaggerated due to caching) voice counts achieved with the Power Mac G5 and 32-bit storage option in *EXS24* don't carry over to the Core Duo. Without knowing specific details of *EXS24's* design, I can only speculate that the G5's floating-point performance may have something to do with this, and that the higher-bandwidth buss helped large amounts of memory get moved around very quickly, despite the added latency. Other than moving memory quickly (for which AltiVec and SSE offer some instructions), there isn't a great deal you can do to optimise a basic sampling routing (if you take out the filters and any additional processing), and since the Core Duo architecture has both a fast buss and fast memory for moving data around, this is unlikely to be an issue.

A Live Comparison

In addition to *Logic*, I also looked at Ableton's *Live* because, unlike *Logic*, the

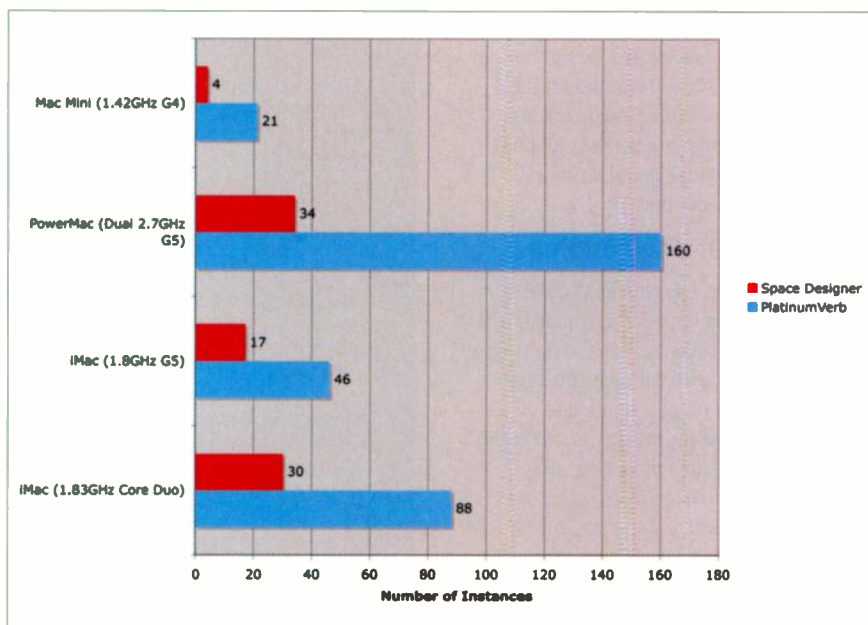


Figure 1: Here you can see the number of instances of reverb plug-ins that could be used simultaneously in *Logic* on various different Mac systems. The Intel iMac is almost twice as fast as the iMac G5, as Apple claim, but notice that for *Space Designer* the iMac is almost as capable as a dual-2.7GHz Power Mac.



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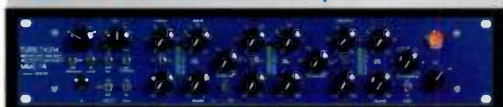
Focusrite Liquid Channel £1825



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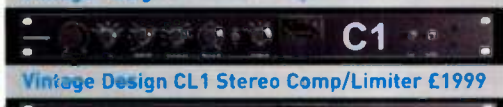
Tube-tech MMC 1a Channel Strip £2200



Vintage Design CA73 Mic Pre / EQ £1299



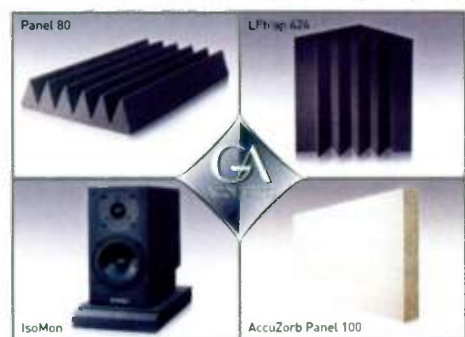
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APPLE CORE DUO IMAC

► current Power PC-only release version of *Live* is compatible with Rosetta, the dynamic binary translation software in Mac OS X that allows Power PC code to run on Intel-based Macs. As was discussed in last month's Apple Notes column, Rosetta is about compatibility rather than performance, so although most Power PC applications will run on Intel-based Macs, you won't see anywhere near the same level of performance as if the application had been recompiled into Intel-native code. I thought it would be interesting to compare the performance of *Live* running under Rosetta with *Live* running as a Universal Binary, along with *Live* running on a Power Mac for good measure.

A beta Universal Binary version of *Live* 5.2 was available at the time I did these tests, so that's what I opted to use. Rather than dig up an older version of *Live* for the 'Power PC code under Rosetta' test, I forced *Live* 5.2 to run under Rosetta by ticking the 'Open using Rosetta' box in the Finder's Get Info window for the *Live* package.

The first thing I did was load and play the supplied demo song, and here, under Rosetta, the Intel Mac played the first 16 bars with around 17 percent usage according to *Live*'s CPU meter, which equated to around 30 percent for the *Live* Process in Activity Monitor, and 24 percent User system usage. Once the song started using more resources at bar 17, the system kept running, although the audio was completely garbled. *Live* was reporting greater than 100 percent usage, while

Second-generation Improvements

Even before the inclusion of an Intel processor, the second-generation iMac G5 already offered a large number of improvements over its predecessor. Since the iMac has always been a consumer-oriented system, the second-generation iMac was the first Apple computer to include the Front Row software, allowing you to access your digital media from iTunes, iMovie, iPhoto and DVD Player with a unique iPod-like interface via the included infra-red remote control. While Front Row is not specifically of interest to the audio or music professional, it is quite a neat way of accessing music in iTunes without being sat in front of a computer, especially if you're playing back music for clients, for example.

Front Row (with the remote) is now being included with all recently introduced Apple hardware (including the Macbook Pro and the recently introduced Intel Mac Mini discussed in this month's Apple Notes), and it's interesting to note that the remote control also has uses with other applications. The plus and minus buttons control the system volume level at all times, for example, while in Apple's Keynote application you can use the play button to start the presentation

and the next and previous buttons to skip through slides. Hopefully more applications will offer support for the Apple Remote in the future, such as *Logic*.

The neatest thing about the remote control, though, is the way in which it attaches to the iMac enclosure: the left side of the computer, underneath the slot-load optical drive, is magnetic, so the remote simply sticks to the side of the computer.

The second-generation iMac G5 also introduced the idea of a built-in iSight camera (now extended to the Macbook Pro as well), which is great if only because it saves you have to buy or attach an extra peripheral to your Mac. While iChat isn't the most advanced video-conferencing package available, it is cheap and easy to use, and used by many professionals to attend recording sessions remotely, as well as meetings with collaborators and clients. There's also the included Photo Booth application, which turns your new iMac into a, well, photo booth, although to capture the full experience you'll have to put your iMac in the wardrobe and invite a few friends over.

Activity Monitor showed 73 percent for *Live* and 21 percent User usage.

As a side note, I have to say that, despite the performance hit, Rosetta is a pretty impressive technology to be able to run an application such as Ableton *Live* by translating binary instructions.

Running the Universal Binary version of *Live* with the native Intel code told a different story. The first 16 bars played with around 3 percent usage in *Live* (8.6

percent for the *Live* Process and 5 percent User usage), with the section from bar 17 showing 6 percent in *Live* (12 percent for the *Live* Process and 6 percent User usage). Interestingly, running the same song on my dual-2.7GHz G5 Power Mac showed approximately the same results in terms of processor usage.

The demo song gives some idea of relative performance, but this is obviously somewhat difficult to quantify. So I created a simple *Live* Set from scratch containing just one drum loop and decided to see how many of *Live*'s internal effects I could add to the channel before the Power PC version under Rosetta fell over. Working down the list, I added 12 plug-ins. *Live* reported 91 percent usage, while Activity Monitor reported 87 percent for the *Live* Process and 51 percent User usage, confirming that I was maxing out one of the cores. Adding the 13th plug-in (*Grain Delay*) killed the system.

Running this same test on the same system with the Intel-native *Live* code, the 12 plug-ins reported 11 percent system usage in *Live*, and in Activity Monitor 17 percent for the *Live* process and 9 percent User usage. On my Power Mac G5, running the same Power PC code as for Rosetta, the same *Live* Set required 9 percent of my system resources in *Live*, 17 percent for the *Live* Process and 23 percent User usage. I'm not sure why the User usage was higher on the G5 than on the Intel iMac, other than obviously there's something else in the background that's using processor resources.

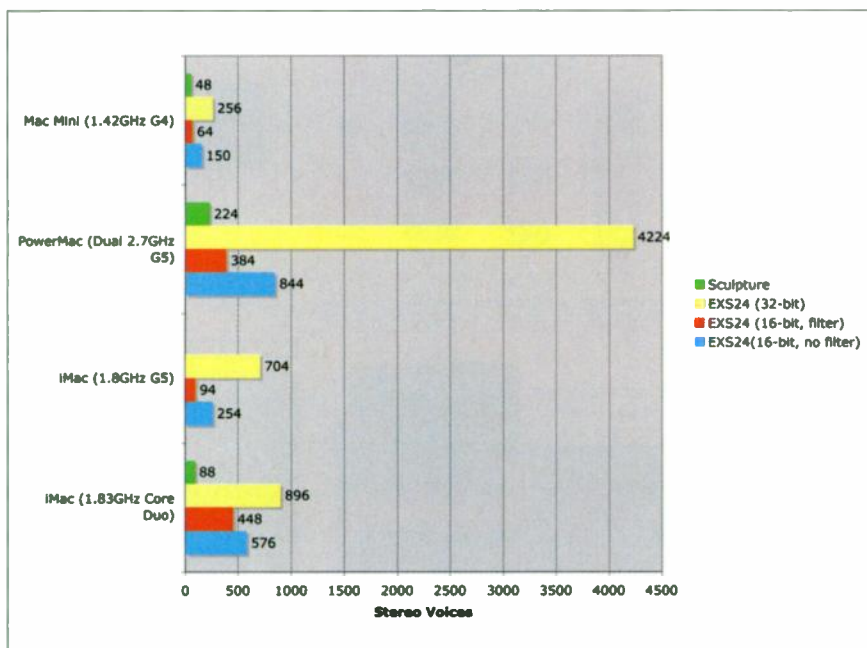


Figure 2: This chart shows the number of simultaneous voices that could be played on various Mac systems using *Logic Pro*'s *Sculpture* and *EXS24* instruments. *EXS24* performs exceptionally well in 32-bit storage mode on Power PC systems, but notice how the Intel iMac easily outperforms the 1.8GHz Power PC iMac in all other tests, and even the Power Mac when *EXS24*'s filter is enabled.

Overall, though, it's interesting to note that *Live*'s performance on the Intel iMac is shockingly close to the performance of a dual-2.7GHz Power Mac. Maybe it's not too surprising that *Live* is running so well on Intel processors, though, since the application has been cross-platform by design since its introduction, and probably contains a good deal of Intel-specific optimisations from the Windows version.

I Think Therefore iMac

The new iMac is a pretty impressive machine, and when you now consider the specifications you get in standard models, the price is compelling. The 17-inch iMac costs £929, while the 20-inch model is priced at £1229, and considering this now includes a built-in iSight camera, along with higher-end features such as Gigabit Ethernet and a dual-layer capable Superdrive, this really isn't such a bad deal. The supplied memory is at least usable (512MB), but you'll probably want to upgrade to either 1 or 2 GB RAM for serious use, and, as mentioned earlier, it's cheaper to do this at the time of purchase.

The other build-to-order option worth considering is a larger internal hard drive. Those buying the 20-inch iMac can order a 500GB drive for an extra £200, while it will be an extra £269.99 for those ordering the 17-inch model; alternatively, they can opt for the 250GB drive instead of the 160GB model for an additional £50. I think the 250GB drive (included with the 20-inch model as standard) is probably the way to go, since the 500GB option is quite expensive, and many people would rather keep their audio and video data on separate Firewire drives. This being so, it could be seen as a shame that the iMac doesn't offer a Firewire 800 port, but Apple seem to be making this a policy on all Intel-based Macs at the moment, and having a system where you might attach a 500GB Firewire drive to one Firewire port on the iMac and an audio interface to the other should work well enough for most users who are considering an iMac instead of a Power Mac.

When I reviewed the first-generation iMac G5, my conclusion was that these were capable entry-level machines, but the pricing back then combined with the introduction of a low-end Power Mac model meant it was hard to recommend the system as enthusiastically as I otherwise might have. This time round, since there have been no

announcements regarding the price or specifications of an Intel-based Power Mac, it's much easier to recommend an iMac if you're looking for a Mac system for less than £1500. The 17-inch iMac is actually £10 more than the original iMac G5, although you get so much more for that £10, while the first-generation 20-inch iMac G5 was around £100 more.

In terms of performance, I also want to add that it's quite surprising how cool and quiet the Intel-based iMac remains, even when running with high levels of CPU utilisation. The fan noise, especially in the first-generation iMac G5, used to be quite annoying, and you could feel how hot the system was getting by touching the top of the display, around the area of the vent on the back of the machine. All of this couldn't be different on the Intel iMacs: the fan noise was never as intrusive, and after having left my machine on for over a month now (and during the performance tests), it's still doesn't feel particularly warm to the touch.

The biggest problem with the Intel iMacs is, of course, software. If you run *Logic*, you're pretty much set as *Logic Pro/Express 7.2* runs really, really well on these new iMacs. However, if you rely on third-party hardware for which there are no Universal Binary drivers yet, or Audio Units for additional instruments and effects, now might not be the time to invest in an Intel-based Mac. This situation is changing almost daily, though: the *Live* Universal Binary beta shows great promise, Propellerheads have announced an Intel version of *Reason*, and Digidesign are bringing *Pro Tools LE* and *M-Powered* to Intel Mac users in May (see this month's Apple Notes for the latest Universal Binary news).

But there's no doubt that once enough Intel-native software is available, these are going to be great entry-level machines — and it's almost wrong to describe them as entry-level given some of the performance benchmarks we're already seeing. If you want a sub-£1500 Mac and you spend most of your time in *Logic*, an Intel iMac is a good way to go right now. And once your software of choice is available in Intel-native code, I'm sure this iMac will start looking more and more desirable. **SCS**

information

E 17-inch model £929; 20-inch model £1229.

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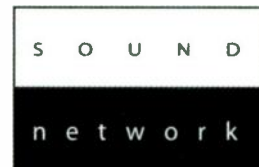
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Total Vocals

Vocal Recording & Production Masterclass

Everyone knows how much a classy vocal sound can add to any recording, but achieving this in the studio can seem something of a black art, so this month we demystify the recording, processing, and mixing techniques required to produce professional results.

Paul White

In theory, getting a good vocal sound should now be easier than ever, as studio quality microphones seem now to be available for little more than

pocket money. However, we still get lots of letters and emails at the SOS office about problems that musicians are encountering with this task, and we are often called on to advise on this topic in our regular Studio SOS visits. So I felt it would be valuable to put all

the pertinent information in one place. Clearly the vocalist will always be the most important factor — a great vocal recording takes a great singer — but if we assume for the moment that the singer is delivering a good performance, what ▶





Although figure-of-eight mics aren't the most common choice for lead vocals, there are occasions where their deep 90-degree rejection nulls are ideal for the task in hand. For example, if you need to record a vocalist while he is playing an acoustic guitar, the nulls can be angled to give much better separation between guitar and vocal than could be achieved with two cardioids.

'best buy' within a certain price range, but that's really impossible to answer in a meaningful way without knowing something about the voice being recorded. Most studio microphones, especially large-diaphragm models, have a distinct tonal character, so it's best to have a selection of microphones available, allowing you to select the preferred one for each recording task, even if that choice is only between two or three different models.

If your budget can reach this far, then the obvious choice is to get one fairly neutral mic, one with a warm, syrupy quality, and another with a bit of sizzle on the top end. You may also wish to consider a tube microphone, though these can sound very different — so different, in fact, that it's hard to say what the tube sound is. To me, the better tube mics sound crisp and clear without being harsh or sibilant, and they also add weight and density to the lower vocal frequencies. Those mics that deliberately overdrive the tube to get a 'warm' sound can end up sounding mushy, dull or just plain distorted. Fortunately most mic manufacturers have now realised that the best-sounding tube mic is the one that doesn't use the tube to create artificial distortion — what it contributes naturally is quite enough.

Now I wouldn't dare suggest that women are in any way 'difficult' as a species, but I have found that choosing the best microphone to suit a female singer is generally more difficult than for male singers. Maybe it's because their voices tend, on balance, to be smoother sounding than men's voices, which probably equates to less harmonic complexity — or at least, a lower level of some of those complex harmonics. This leaves the throaty elements of the sound more exposed, so if you pick the wrong microphone you can end up with what sounds like distortion when what you're really hearing are the less desirable throaty artifacts of the sound being emphasised. Close miking is pretty unforgiving of unattractive vocal characteristics anyway, but if you're unfortunate in choosing a mic that exaggerates these less attractive artifacts, you're in trouble from the start.

As you might expect, microphones with a strong presence peak in the upper mid-range are the most likely to give rise to

▶ can you do at the engineering end to capture this in its best possible light?

Choosing The Right Mic

Most pop vocal work is done using some kind of large-diaphragm, cardioid-pattern capacitor microphone, but there are exceptions. For example, some singers like to work with dynamic mics such as Shure SM58s, because the tonality suits their voice and/or the style of music. It's also perfectly possible to make a good vocal recording using a small-diaphragm capacitor

microphone and, in the right room, an omnidirectional microphone can give good results, so it's really a case of the end justifying the means.

Perhaps more relevant than the type or make of microphone is its tonal character, as matching the microphone to the singer is more important than many people appreciate — and if you've never had the chance to compare a range of different mics in a recording situation, that's quite understandable. Even now I still get phone calls from people asking which mic is the

Large-diaphragm Or Small-diaphragm?

The usual choice is a large-diaphragm capacitor microphone as many of these are designed to have a specific tonal colour, often described as warm, airy, smooth, sizzly and so on. By picking a model to suit the vocalist, you can produce an optimal recording, but by the same token, the wrong mic can make a singer sound worse than they should. Small-diaphragm mics tend to have

less off-axis coloration, and in general they are more accurate than large-diaphragm models. In my experience, they often make fine vocal microphones, although the large-diaphragm world does give you more choice over tonal colour. Nevertheless, large diaphragm mics now seem to have been adopted as the established, traditional method of recording vocals.

mics, and in cardioid mode they seem to pick up more of the room sound in close-miking situations than single-diaphragm models. The single-diaphragm mics always seem to produce a drier, more focused sound, which helps in situations where the amount of acoustic treatment that can be applied is limited. On the other hand, the dual-diaphragm model may deliver a more open sound, but often needs to be used in a more controlled environment to be effective.

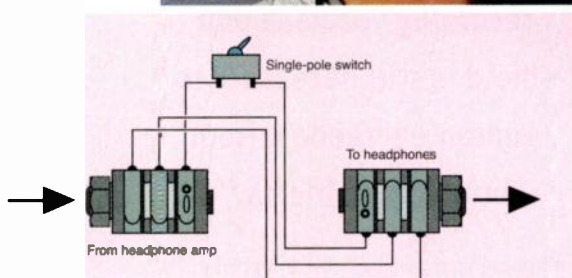
Acoustic Treatment For Vocals

As all microphone pickup patterns are three-dimensional, 'the sides' also pick up from above and below.

Even if your room is quiet and there's no traffic noise, unless the room has been designed by a studio acoustician there will be reflections from walls and other surfaces that bounce 'second-hand' vocals back into the microphone.

These reflections will be captured in addition to the direct sound of the voice, so you'll get the sound of the room overlaid on the sound you're actually after.

This is often a significant problem in the home studio, as there are reflective walls, ceilings and furniture conspiring to corrupt your vocal sound. While you might add reverb afterwards, you'll find that it doesn't hide the boxy tone caused by room reflections. Even people who've bought seriously professional-grade equipment fall foul of this problem. There's a parallel here with photography: even a budget camera can give you an artistically fantastic picture



if what is in front of the lens looks good and is correctly lit. But if the subject is badly lit, then no amount of upgrading will bring about a significant improvement in the end result.

Regular readers will know that there is a way to improve this situation without resorting to acoustic treatment of the whole room. All you need to do is improve the acoustics in the vicinity of the microphone. I think most people appreciate this on an instinctive level and, because I keep banging on about it, some musicians have tried using duvets for acoustic treatment.

However, a surprising number simply hang a duvet on the wall and then sing facing the duvet! This may help a little, as the duvet will absorb some of the sound that would otherwise bounce back off the wall, but it's far from the best solution. Think back to the cardioid mic's pickup pattern and you'll see that in the above scenario its least sensitive area (directly behind it) is now facing the duvet, while its sensitive front and sides are still picking up room reflections.

A better option is to hang the duvet behind the singer, as any reflections coming past the singer's head will otherwise be picked up by the extremely sensitive front of the microphone. To reduce side pickup, you can hang a double-size duvet in a curve or use two to form a 'V' shape and have the singer stand with their back facing into the apex. That still leaves the ceiling and floor as possible reflection sources, but a rug or carpet on the floor will help enormously. If

Comping & Tidying Up Your Vocal Takes

Even great vocalists sing better on some takes than on others, so it is common practice to record the same vocal part several times and then compile (or 'comp') the best phrases together into the final take. This is easy to do in a typical DAW as you can view the various takes on adjacent tracks, audition them, then separate out the phrases you wish to keep and move them to a new track. If you only cut in between phrases, your edits shouldn't be audible, but if you do have to edit during a continuous phrase, try to edit either just before a hard consonant or during a sustained sound such as 'eeh' or 'aah', using a short crossfade to hide the transition.

Breath noise is a natural part of singing, and if you remove it completely, the resulting track can sound unnatural. You can reduce excessive breath noise by



manually selecting the offending sections of the audio file and doing a destructive gain change to reduce the level by a few decibels or, if you're a little more cautious, you can use mix automation to do the same thing. It's also often possible to use a gate processor, setting the amount of gate attenuation when closed to around 6dB, rather than having it mute everything completely. The same techniques can be used to reduce headphone spill in sections where there is no singing, but this problem is easily avoided by using closed headphones in the first place. If your singer likes to work with one phone off, make up a special lead so that only one of the phones is working, as shown in the diagram above and explained in more detail in the article on cue monitoring in *SOS* January 2003.

► the ceiling is low, a foam panel above the mic and singer will do the trick nicely.

Improvised acoustic treatments made from duvets or blankets are effective at high frequencies and in the mid-range, but their efficiency falls off at low frequencies. In most cases, they work adequately over the vocal range, but doubling up the thickness or using a heavy, winter-grade duvet will improve their performance at the low end — useful when recording baritones. Such 'blanket' absorbers also work best when spaced away from a wall, so the best option, where practical, is to set up the vocal mic and absorbers out in the room, well away from the walls, but at the same time avoiding the very centre of the room, as that attracts its own set of special problems associated with room modes based on the room dimensions. As a final fix, you can shield the rear of the mic (after all, even a cardioid mic isn't totally deaf in the rear) by fixing a piece of acoustic foam close behind the microphone. Auralex make some neat devices of this type in triangle and butterfly shapes that slot onto the mic stand, but if looks don't concern you, a chunk of furniture foam will serve almost as well.

Shockmount & Pop Shield

Having got this far, can you now get on with your recording? Almost, but first you need to fit a pop shield a couple of inches in front of the microphone, otherwise you'll almost certainly get popping and banging on plosive sounds (usually 'B' and 'P' consonants), regardless of whether you're using a cardioid or omni mic. This is simply due to gusts of air being expelled from the mouth when a singer creates these sounds

and those gusts slam into the mic diaphragm, producing a loud thump. A fine-mesh shield between the mic and singer will break up those gusts and fix the problem. Various commercial nylon and metal mesh pop shields are available, but you can

“I still come across people trying to use microphones with no pop shield. Even if you're using a stage dynamic vocal mic for recording vocals, a pop shield is still necessary to guarantee freedom from popping problems.”

improvise your own from nylon stocking material stretched over a suitable hoop, if you prefer. Note that the foam wind shields that come with some mics are not very effective as pop shields, and they also tend to compromise the tone by filtering out some of the high end. I've covered this point many times before, but I make no excuse for repeating it, because I still come across people trying to use microphones with no pop shield. Even if you're using a stage dynamic vocal

mic for recording vocals, a pop shield is still necessary to guarantee freedom from popping problems.

While a microphone shockmount is not mandatory, it really helps cut out low-frequency vibrations coming up from the floor, as they are prone to do if the singer has a habit of tapping their feet! This can be a real problem on wooden floors, so a shockmount is highly recommended. Some mics come with a shockmount, but if not, inexpensive generic mounts are available for most microphones — they not only solve vibration problems, but also look cool.

Now you're ready to record, and given that modern recording systems offer so much headroom, I'd suggest not using compression or EQ at the recording stage, as recording flat leaves you more flexibility for adjusting the sound afterwards. More experienced engineers sometimes process as they record, but as you may have already discovered, what sounds right in isolation may not always sound right once all the other parts have been recorded, so until you have gained the necessary experience, it's safer to leave your options open. Just make sure you leave a few extra decibels of safety margin on your recording system, as it's not only guitarists who get louder when the red light goes on!

Getting The Best Performance

You'll need to set up a suitably balanced headphone mix for the singer, and in most cases giving the singer a little reverb in the phones will help their pitching and also make them feel more confident about their performance. Make sure you don't record the reverb, though, as you'll want the freedom to adjust it at the mixing stage. ►

Taking The Ssss Out Of Sibilance

No recording textbook would be complete without a discussion on de-essers, but in my experience they are very rarely needed. A de-esser is a technological solution to the physical problem where some singers produce very pronounced 'S' and 'T' sounds because of the way air moves around their teeth. In most instances, using a different microphone or moving the mic slightly above or below the singer's mouth is enough to reduce the problem to manageable proportions. You can also try fixing a pencil, vertically, right in front of the mic grille, holding it in place with a couple of elastic bands around the mic body. This shields the centre of the diaphragm, and definitely reduces sibilance, though the exact reasons have probably never been properly researched. Yet another solution is to put an extra layer of stocking material over your pop filter to attenuate the high end slightly.

However, where the problem is serious, electronic de-essing is

sometimes necessary. A de-esser is, essentially, a special type of compressor that only reacts to frequencies in the sibilance range (typically 3-6kHz). Simple de-essers will reduce the level of the entire audio signal when the level of the sibilant frequencies rises above a threshold you set. Unless the degree of processing is very light, this can impart a lisping quality to the vocals. Models that attenuate only the upper half of the audio spectrum are better, but the very best ones attenuate only frequencies in the sibilance band, leaving other frequencies unchanged.





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► Your 'bedside manner' can also make a big difference to the quality of the performance so try to be encouraging rather than critical, but at the same time make sure you capture enough takes to make up one good one.

If you intend to use a pitch-correction program or device, such as *Auto-Tune*, always apply this after recording — if the corrected sound is fed into the singer's headphone monitor mix, it will completely undermine their ability to control their pitching, and will result in a disastrous performance. Subdued lighting can also help get the singer in the right mood for the performance, but make sure you also look after the practicalities, such as making sure there is cool drinking water on hand and that the room is a comfortable temperature. Once you have captured that perfect vocal performance, you can polish it using EQ, compression, and reverb at the mixing

stage, and I have a number of suggestions for tackling this in the most effective way.

Mix Processing & Effects

Once you have compiled the best vocal take possible and cleaned up any unwanted noise in the pauses, what next? If pitching is still a problem, you can use Antares *Auto-Tune* or one of its competitors to automatically force the vocal pitch to the nearest note in a scale you set, or to the nearest semitone. That said, in my experience chromatic correction gives problems if the singer uses a lot of vibrato or if they scoop up to notes. I find it's best to take the time to get the scale right, then use the slowest pitch-correction rate that will do the job properly, as this gives the most natural sound. You can always automate the rate of correction if some parts of the song need more help than others. Where more drastic correction is needed, you

may be better off using a program such as Celemony *Melodyne* that allows you to fine-tune individual notes in a graphic environment. Less serious pitching issues can sometimes be resolved by processing individual words using a pitch-shift algorithm to push them up or down by the necessary few cents. You can even automate the amount of shift applied to different words or phrases if you have the patience.

When it comes to EQ, there are no standard settings. In an ideal world you'd have teamed the singer with the mic that best suited their voice, but in less-than-ideal conditions, removing some low mid-range in the 150-400Hz range can help clean up boxiness, while a broad boost at 8kHz and upwards can add 'air' and sizzle to the sound, but use as little as you can get away with. Using a low-cut filter to get rid of subsonic audio and breath rumble can also

Further Reading...

If you're interested in learning even more about the topics covered in this article, then head over to the *Sound On Sound* web site, where you can find a huge number of related articles from previous issues of the magazine:

- For more detailed information on choosing and using studio microphones check out 'What Mic Should I Buy First?' (*SOS* July 2003) and 'Getting Started With Condenser Mics' (*SOS* March 2005) for some pointers.

W www.soundonsound.com/sos/jul03/articles/firstmic.asp

W www.soundonsound.com/sos/mar05/articles/condensers.htm

- Managing any overdubbing session can be difficult, and vocal sessions can be particularly challenging. However, there's help at hand in 'Basic Overdubbing' (*SOS* March 2001), and you can also find advice on the important task of setting up the best headphone mix for the talent in 'Cue Monitoring Techniques' (*SOS* January 2003).

W www.soundonsound.com/sos/mar01/articles/basic.asp

W www.soundonsound.com/sos/jan03/articles/cuemonitoring.asp

- Equalisation is probably the most common processing tool applied to vocal recordings, so if you want a detailed explanation of what equalisers are, how they work, and how to get the best out of them, try 'Equalisers Explained' and 'Using Equalisation' from *SOS* July and August 2001 respectively.

W www.soundonsound.com/sos/jul01/articles/equalisers1.asp

W www.soundonsound.com/sos/Aug01/articles/usingeq.asp

- Compressors are not only extremely common in recording studios, but they are also vital to almost all modern vocal sounds. For an in-depth look at the different types of compression, as well as tips on making the most of your own outboard and plug-ins, have a look at our two-part 'Advanced Compression' masterclass that appeared in *SOS* December 2000 and January 2001.

W www.soundonsound.com/sos/dec00/articles/adcompression.htm

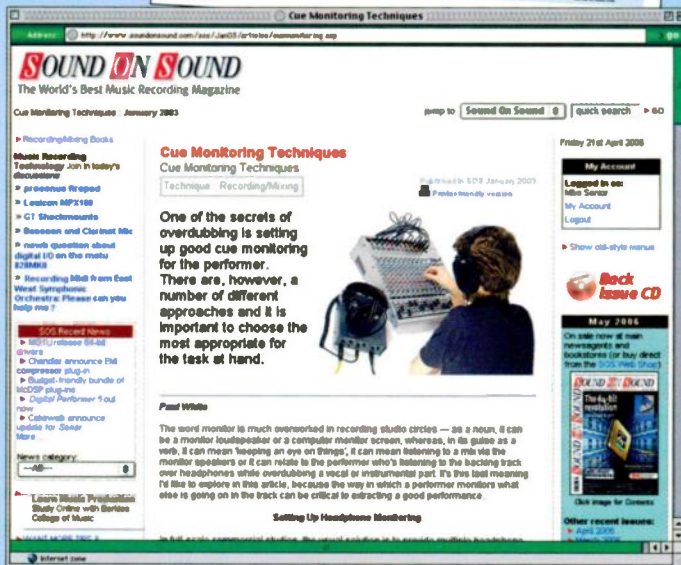
W www.soundonsound.com/sos/jan01/articles/advanced.asp

- We get asked questions about vocal reverb processing here in the *Sound On Sound* offices. This two-part 'Advanced Reverberation' article discusses all the common reverb types and algorithm parameters you might encounter, as well as going into some of the finer points of how to find the best settings for your particular track.

W www.soundonsound.com/sos/Oct01/articles/advancedreverb1.asp

W www.soundonsound.com/sos/Nov01/articles/advancedreverb2.asp

Mike Senior



be useful, though this is best done at source if your mic or preamp has a low-cut filter.

Reverb is also pretty much a question of taste, but for most classic vocal sounds I usually end up going back to a plate emulation, as these don't try to impose any particular room type on the sound. Combining this with a suitable short-ambience treatment (there are some lovely convolution reverbs available) also suits most voices. By balancing the two reverbs, you can get anything from a fairly upfront and focused vocal to a long ballad reverb, and I've had some success making the attack of the plate reverb slower or adding some pre-delay, as this keeps it out of the way of the ambience reverb. Vocal plate reverbs rarely need to be longer than 1.8 to 2.5 seconds, and in many cases rolling off some low end below 200Hz gives a cleaner and more lively sound. Putting a subtle repeating delay before the plate reverb can also produce a nice effect, provided that the music has enough space to allow the effect to breathe.

Should you wish to double-track the vocal part for any reason, the best results are obtained by doing it for real, getting the singer to duplicate their part on another track. You may even have enough spare parts left over from compiling your vocal that you can build a second track. Where the singer can't match the first performance closely enough, you have the option of slicing up the phrases and aligning them visually using your DAW's waveform display. Where this fails, you may have to resort to cheating using processing, though in my view none of the fake methods sound as good as the real thing. In the early days of recording, 'fake' double-tracking or Automatic Double-tracking (ADT) was often attempted using a short tape delay using a spare tape recorder. Somebody then tried to vary the delay time by slowing the tape reels by hand and accidentally invented flanging!

Although there are plug-ins that do a passable job of faking double-tracking from a single vocal, introducing pitch and time variation, you can get almost as good results by copying the vocal to a new track, then processing it with *Auto-Tune* or something similar, as this will create subtle pitch differences between the original and the copy. Adding a delay of 60-100ms to the second part can also enhance the illusion that there

are two different parts.

Keeping the vocal level nice and even is generally done with the aid of a compressor, aiming for around 6-8dB of gain reduction (using a ratio of between 2:1 and 6:1) on the loudest points in the track. We've written a lot on this subject, but the optimal attack and release time settings depend on the type of compressor or plug-in you are using. If you're unsure as to how to set these, take a peek at some of the presets and see what values they used, but don't expect a preset to work without further adjustment, as the correct threshold setting always depends on the level and dynamics of the signal being processed. However, compression alone isn't always enough to tame the dynamics of

some singers, so use your mix automation to bring up any words or syllables that are getting lost or to drop the level of those that stand out too much.

If you find it hard to judge how loud the vocals should be, try listening to the track from outside the door of your studio, which will make your mix sound more like it would on a domestic radio or hi-fi. From this perspective, the vocal should be clearly audible above the backing, but not so loud that it doesn't sound like part of the same performance. If in doubt, play a commercial record and listen to that from the same position. Ultimately this is a subjective decision and it takes experience to get it dead right every time. **SOS**



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Waves Y96K & Power Bundle

DSP Card & Plug-in Bundle For Yamaha Mixers & Multitrackers

Waves are tempting owners of Yamaha digital hardware with an updated DSP board and a new selection of additional plug-in processors.



Tom Flint

The three plug-ins in Waves' *Power Bundle* have already been reviewed by *SOS* in their Mac or PC incarnations, but they've now been ported to run on Yamaha's digital mixers and AW multitrack recorders that are fitted with either a software-updated Y56K card or the newly optimised Y96K. Both of these cards fit the YGDAI expansion slots built into the mixers and recorders, and provide a selection of Waves effects and processors together with eight channels of ADAT optical I/O. In this review I'll be taking a look at both the *Power Bundle* and the new Y96K card.

Both Y-series cards already come with bundled Waves plug-ins, including *Renaissance EQ* and *Compressor*, *L1 Ultramaximizer*, *Trueverb* reverb, *Super Tap*

delay and the self-explanatory Waves *De-Esser*. The *Power Bundle* adds three further plug-ins to the list — *Renaissance Vox*, *Renaissance Bass* and *L2 Ultramaximizer* — and these can also be purchased and installed individually if so desired.

Renaissance Vox is a very straightforward vocal compressor/limiter that combines elements of the *L1* limiter, *Renaissance Compressor* and a noise gate into a single interface featuring just three controls. *Renaissance Bass* is a simplified version of Waves' *Maxx Bass* enhancer, used for generating harmonic frequencies that deliver a more powerful-sounding bottom end. Once again, there are just a few controls for simplicity's sake, so setting it up is merely a case of adjusting the relative mix of harmonics and original bass, the effect's cut-off point and the output level.

L2 Ultramaximizer is very similar to *L1* although, if anything, it provides a little more warmth and a touch less clarity. It's also noteworthy that *L2* substitutes *L1*'s Digital/Analogue Domain button (for optimising the output signal headroom) with an ARC/Release option. ARC is Waves' variable release mechanism that changes the limiter's release time according to the demands of the source material, and has been designed to emulate characteristics of vintage buss compressors.

Powering Up

The *Power Bundle* software is freely downloadable from the Waves site, but can't be installed until a User Account is created and the software purchased, after which a code is sent via email. The card has to be placed in Update mode and hooked up to

your computer's parallel port before the install procedure can begin. Entering the code when prompted automatically generates a new Authorisation Challenge code, and both of these have to be copied into the on-line account, whereby yet another code is delivered for pasting back into the installer! It's all a bit longwinded, but quite an effective foil against piracy, I suspect.

It's a pity that the updater is Windows-only, and worrying to read that a power failure during the 30-minute update process may damage the card's OS. Once the download is complete, though, all the processors integrate into the system seamlessly, and their use is limited only by the capabilities of the card's DSP chips.

Class Of 96

The 56 and 96 cards are virtually identical, except that the latter can work at 48, 88.2 and 96 kHz, and can accept new plug-ins immediately. The 56K requires the installation of the free Maintenance Update software before it's ready to receive plug-ins, but that's not much of an issue, and the updater even includes the short version of the *Supertap Delay* found on the 96. The Y96K's firmware is optimised so that it can be easily integrated into the latest Yamaha digital mixers including the DM2000, DM1000, 02R96 and 01V96, although it will also work in an AW4416 or 2816. However, it is compatible with the older Yamaha mixers. Installing the card couldn't be easier; you just shove it in the slot and away you go. Patching it into the system is only as

SOUND ON SOUND

Waves Y96K £819

pros

- Ships with many industry-standard Waves processors.
- Now offers 88.2/96kHz option.
- Lots of Yamaha mixer compatibility options.

cons

- You need a computer with a parallel port to update the card.
- Installer only operates under Windows.
- Only four channels in 88.2/96kHz mode.

summary

Although a great addition to any AW-centred recording setup, this card is only a slight step on from the 56K.

SOUND ON SOUND

Waves Power Bundle £135

pros

- Very good quality effects and processors.

cons

- *L2* is not the most essential addition to the menu.

summary

The *Power Bundle* adds three professional-standard, easy-to-use plug-in processors for Yamaha mixers and recorders.

complicated as the host mixer makes it, and thereafter, its operation really is a no-brainer (for more on this, please refer to our original Y56K review at: www.soundonsound.com/sos/may02/articles/wavesy56k.asp).

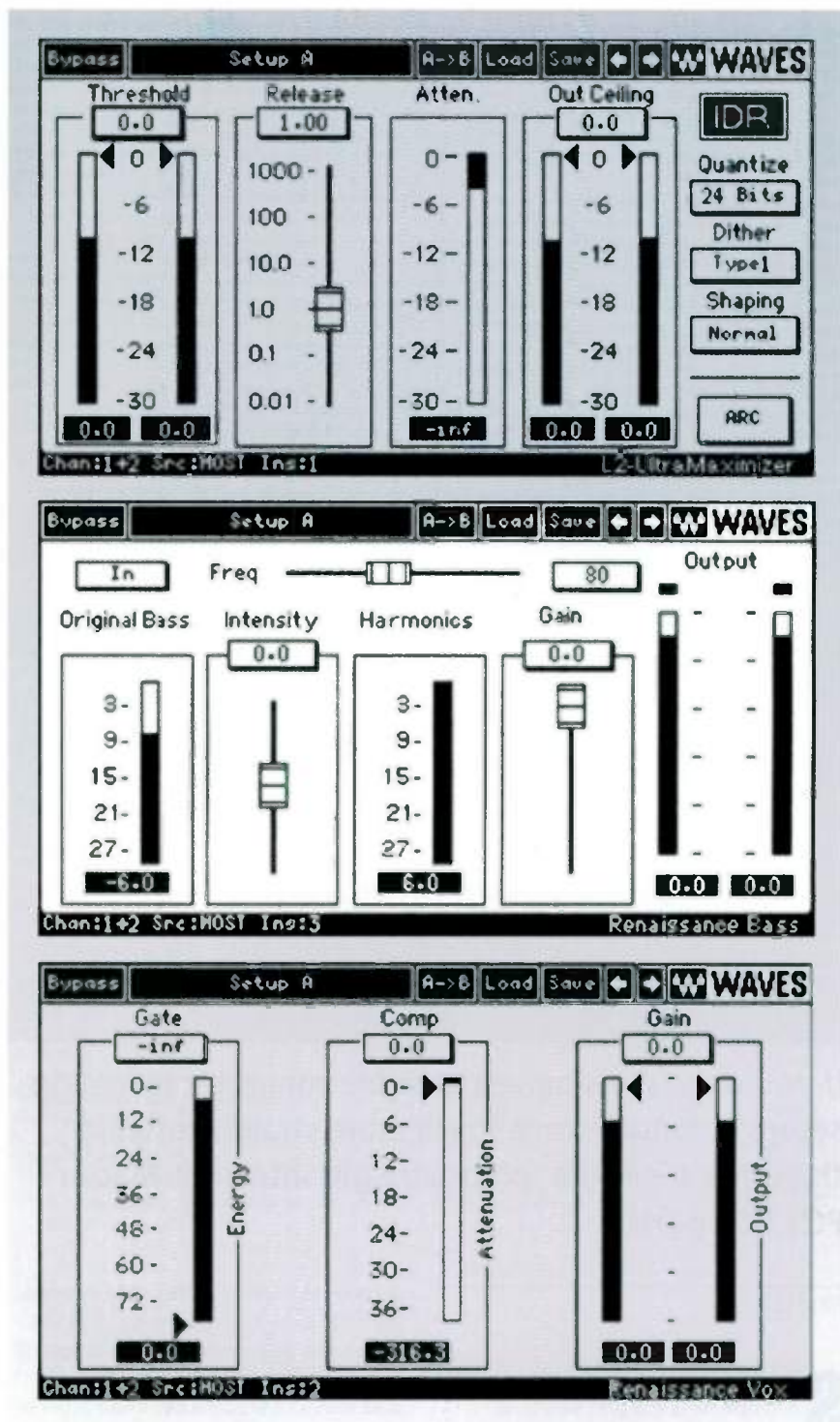
As is often the case, if you want to use the Y96K at higher sample rates, you will sacrifice valuable channels. In 44.1/48kHz mode, up to eight mono or four stereo channels of processing are available, each with five processor slots, but the channel count both for processing and ADAT I/O is halved in 88.2/96k mode. It's also a shame that the Y96K doesn't provide a USB port for its updates; given that many laptops no longer have serial ports.

New Plug-ins In Action

As you'd expect from tried and tested plug-ins, all three processors in the *Power Bundle* work extremely well, and seem to have the same glossy sound quality exhibited by the menu standards. It's probably fair to say that *L1* and *Renaissance Compressor* are already capable of doing roughly the same job as *L2* and *Renaissance Vox*, so these are not totally essential additions, but anyone regularly producing commercial recordings will probably find them worth having for the extra mix and mastering options. It's certainly tempting to go straight for the *Vox* processor when treating vocals and, more often than not, there's no need to look any further.

The value of *Renaissance Bass* is more obvious; although it's not a treatment for every occasion, it is unlike anything offered by Yamaha's internal effects, and can be really handy during mixing when something like the rhythm section needs a bit more clout to underpin the rest of the track. Indeed, it might have been better to include a high-frequency enhancer of some sort instead of *L2* (I find enhancers really useful during mixing, particularly for adding sparkle to vocals, and I also occasionally use them on whole mixes for mastering), as this is not something offered either by Yamaha's onboard effects processors or the Y cards, and it would nicely complement *Renaissance Bass*. Admittedly, Waves don't seem to have an existing plug-in that quite fits the bill, which is probably why they decided on *L2*, but there are other options that would develop the card's mastering credentials, such as their *C4* multi-band compressor. It may seem a little tight to make such complaints when, at £135 in the UK, the *Power Bundle* is such good value, but until other plug-ins are made available for the Yamaha cards, the options are important.

If you already have a Y56K card and use the old-style Yamaha mixers then there is little reason for purchasing the Y96K, as the system will be unable to take advantage of



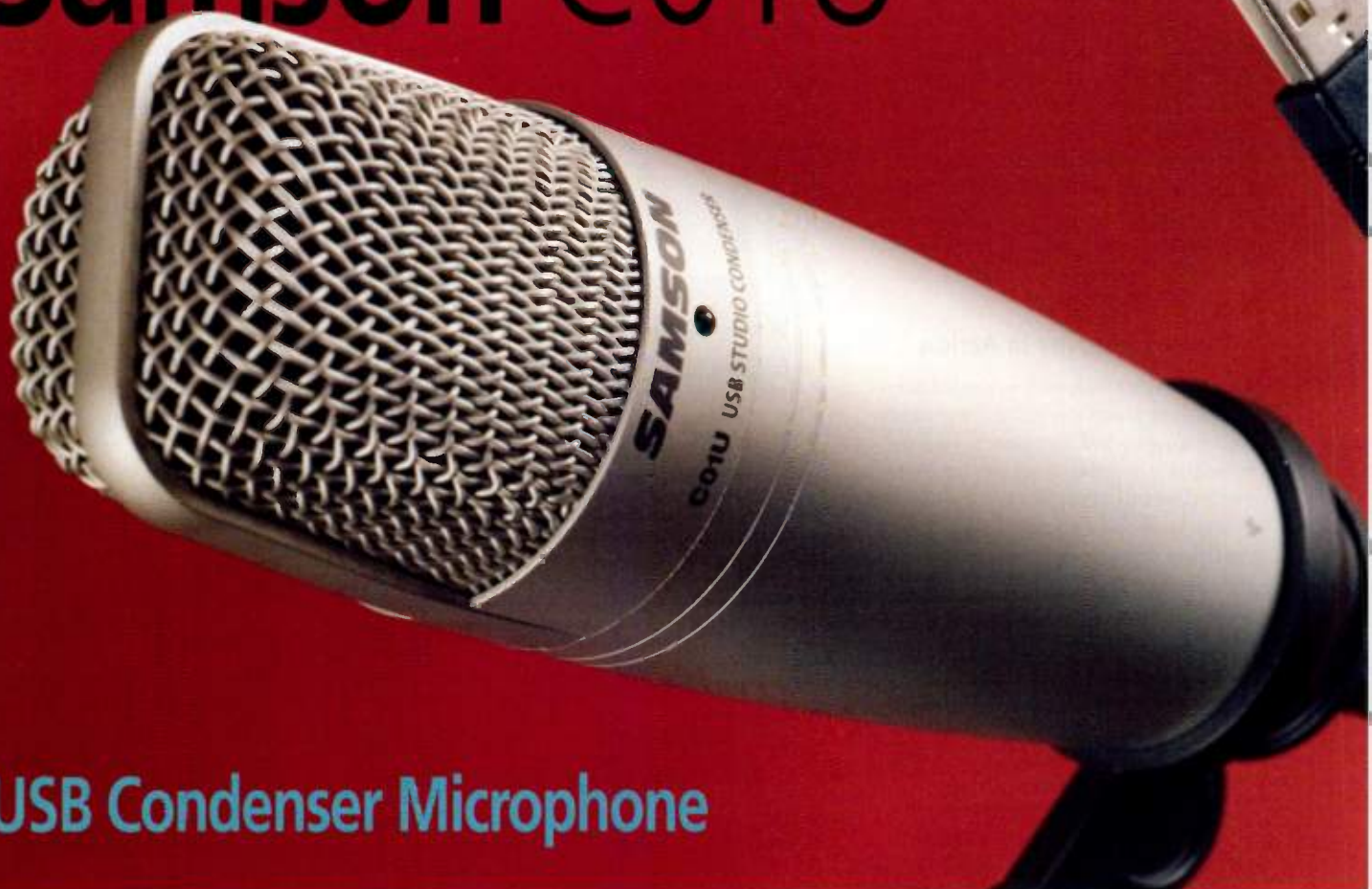
the improved processing, and once the free Maintenance Update is installed, even the 56K is able to run the *Power Bundle*. If, however, you've invested in any of Yamaha's more contemporary digital mixers, then it makes more sense to own the similarly specified Y96K. It's just a shame the channel count is cut in half at the higher sampling rates, and that updating still can't be done via a USB port, or without a Windows OS. It would also be comforting to know that Waves intend to make more of their products available to 'Y-card' owners at

similarly reasonable prices, as that would make the relatively expensive hardware more of an attractive purchase. **SS**

Information

- E** Power Bundle £135 (download only); Y96K £818.96. Prices include VAT
- T** Sonic Distribution +44 (0)1582 470260.
- F** +44 (0)1582 470269.
- E** sales@sonic-distribution.com
- W** www.sonic-distribution.com
- W** www.waves.com

Samson C01U



USB Condenser Microphone

If you want the simplest possible computer recording setup, it doesn't come much more straightforward than this: a mic that plugs straight into your Mac or PC's USB ports.

Paul White

Samson's C01U USB condenser microphone is a 'digital' version of their entry-level C01 back-electret, medium-diaphragm studio microphone. The 'digital' tag refers to the fact that it has a built-in analogue-to-digital converter and interface, enabling it to connect to a computer workstation via USB rather than the more usual analogue, balanced XLR cable. It outputs at 16-bit resolution and supports sample rates of 8, 11.025, 22.05, 44.1 and 48kHz. The convenience aspect of a USB microphone is undeniable for those working entirely on computers as it enables recordings to be made without buying any additional soundcard or audio interface,

although the computer does need an audio output of some kind in order for you to be able to hear your recordings. The direct USB output also allows the microphone to be used without a separate mic preamplifier or the source of phantom power that condenser mics normally require, as everything is powered from the USB port.

Judging by the specifications and the price, Samson have targetted this microphone at the entry-level home-studio user and multimedia market, as more demanding applications would probably require 24-bit output resolution, although Samson have gone to great lengths to make the best of the 16 bits available. The main limitation of most basic 'digital' microphones of this type is that the internal preamp has a fixed gain prior to the

SOUND ON SOUND

Samson C01U £69

pros

- Inexpensive.
- Needs no audio interface or mic preamp.
- Connects via a conventional USB cable.
- The downloadable *Soft Pre* applet installs a pre-conversion gain control that maintains the output resolution at normal operating levels.
- Included standmount (not a shockmount), USB cable and nylon storage pouch.

cons

- Basic mic is slightly noisy, though this shouldn't cause problems in normal studio applications.
- Digital noise does appear to be a significant problem in some Mac G5 systems.

summary

The C01U is a neat concept. Although it is based on a budget model that doesn't have the same technical specifications as more sophisticated (and more expensive) studio microphones, it can produce impressive results for close-miked vocals and instrument use. Laptop users who record on the move will particularly appreciate the fact that no other audio interface or mic preamp is required.



Photo: D&B Group

analogue-to-digital conversion stage, so you only get full resolution when the microphone is hearing the maximum signal level it can accept without clipping, but Samson have been quite clever in their design. Singing at an average level, a couple of inches from the C01U, resulted in a peak level of around -20dB, which with a fixed gain structure would knock at least three 'bits' off the available 16-bit resolution. This would be most undesirable, so Samson's engineers have added a two-stage variable analogue gain cell inside the microphone prior to the converter. If you just use the mic as it comes, the computer's own system gain control actually governs the mic's internal gain cell (in the Audio MIDI Setup controls, in the case of Mac OS). However, as documented in the manual, you can also download a control panel applet, called *Soft Pre*, from the Samson web site, and this can be used to control the internal gain of the mic. Up to +48dB of additional gain is available, and the applet also provides metering, variable-frequency low-cut filtering and a phase invert switch.

The Mac OS X *Soft Pre* applet is currently available as a free download from the Samson web site, although the Windows version was still under development at the time of this review. Mac users running OS 10.4 need to create an Aggregate Audio Device in the Audio MIDI Setup utility so that the Samson's input stream will be added to that of any existing audio interfaces. Those running older versions of

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SAMSON C01U

► Mac OS X can choose the mic as their default audio input. Once I'd installed the applet from the Samson web site and created an Aggregate audio driver, I put the applet control panel in the Dock so I could open it whenever necessary, although the mic was recognised by my system prior to the software installation. Samson tell me they have succeeded in running multiple C01Us via a USB hub, which opens up some interesting possibilities for the future.

Mechanically, the microphone is finished to a very high standard and feels reassuringly solid. It uses a 19mm cardioid back-electret capsule with a three-micron diaphragm, suspended on an internal shockmount. The design follows that of a typical 'classic' side-entry vocal mic and the frequency response is quoted as being flat within 1dB over the audio range. Its maximum SPL is quoted as a perfectly adequate 136dB, but there are no noise specs and, as I recall, one of my concerns with the original C01 was that it was a little noisy by comparison with more costly studio mics unless used for close-miking fairly loud sounds. There are no pad or low-cut switches on the mic, although the applet does provide a very effective low-cut filter with variable cutoff frequency. A green LED on the mic confirms that USB power is being received.

In Use

Once I'd connected the mic, I found there was a slightly higher latency than I expected for the chosen buffer size, and at 44.1kHz, I could still perceive a hint of delay when *Logi's* Audio Devices and Drivers page was set to 128 samples, although I think most singers would find this within acceptable limits. This may well have been an attribute



The downloadable *Soft Pre* applet allows software control over the C01U's gain cell and other attributes.

of the Aggregate driver, but as long as you can work with buffer sizes of 128 samples or under, the latency is fine.

Like the original C01, this mic does produce a low background hiss from its integral circuitry, although not enough to worry about when close-miking loud instruments or strong vocals. The noise is more evident on quieter instruments or voiceover work, but for typical studio applications the C01U can give good, clean results. Far more worrying, however, was a significant level of digital

background clutter riding above the hiss when I tested the mic on a dual-processor Mac G5. I asked Samson's UK distributors, Sound Technology, about this and they found they could replicate the problem on some (but not all) tower G5s, whereas all other Macs seemed quite happy. Switching to my G4 iBook confirmed that the digital noise was gone.

Tonally, the mic is fairly neutral, translating transient details rather better than a similarly priced dynamic mic would. It could certainly be used to record a very respectable vocal track, albeit without the transparency and shimmer of a top-class microphone.

Universal Appeal?

Although unashamedly entry-level, the C01U is quiet and clean enough to record vocals and instruments to a very acceptable standard, provided that they are close-miked, and its performance is well above that of any multimedia mics I've tested. As far as I can tell, the subjective performance of this mic is essentially the same as that of

Alternatives

Currently, there are only a couple of other USB-equipped condenser microphones, although this may well prove to be a growth area. SE Electronics' Do1 and Blue's Snowball are both rather more expensive than the C01U, but they also offer additional features such as the Do1's headphone socket.

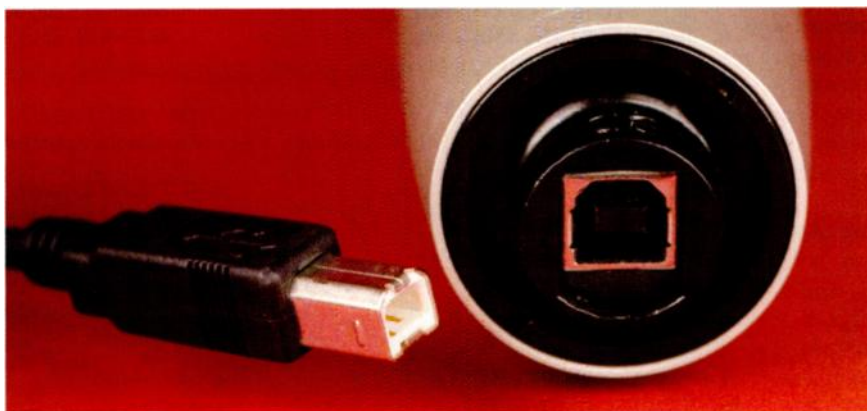


its wired counterpart, and that model has sold well for Samson. The digital noise issue will be a concern if you have a G5 tower-based studio system, but it could be argued that anyone with such a deluxe computer should be looking for a more sophisticated mic anyway!

I'm sure we'll be seeing a lot more USB mics in the future, but in my view, if they're going to approach the performance of a wired mic, they need to follow Samson's lead in providing some form of gain control or at least a choice of switchable gain settings prior to conversion. More serious models will also need a 24-bit output to provide adequate resolution at typical operating levels while still leaving some safety headroom. As it stands, the C01U is a very practical solution for entry-level users: who don't have an audio interface and, if used carefully, it can produce commendable results in a wide range of applications provided that the source being recorded isn't too quiet or distant. **ES**

Information

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With even the cheapest soundcards now offering 24-bit, 192kHz recording, is it still worth investing in high-end converters? Lynx certainly think so.



Lynx Aurora 16 & AES16

Martin Walker

With their Lynx One and Two soundcards (reviewed in *SOS* November 2000 and March 2002 respectively), Lynx Studio Technology have done more than any other company to dispel the myth that audio converters are inevitably compromised when mounted inside a computer. Lynx products are now to be found in lots of professional recording and mastering studios worldwide. However, many studios still use rackmounted converters or digital mixers, yet with the continued move to computer-based workstations, need a way to interface these to their Macs or PCs. With this in mind, Lynx introduced their AES16, which as its name suggests supports up to 16 input and output channels of AES-EBU digital audio at sample rates up to 192kHz. Now they have

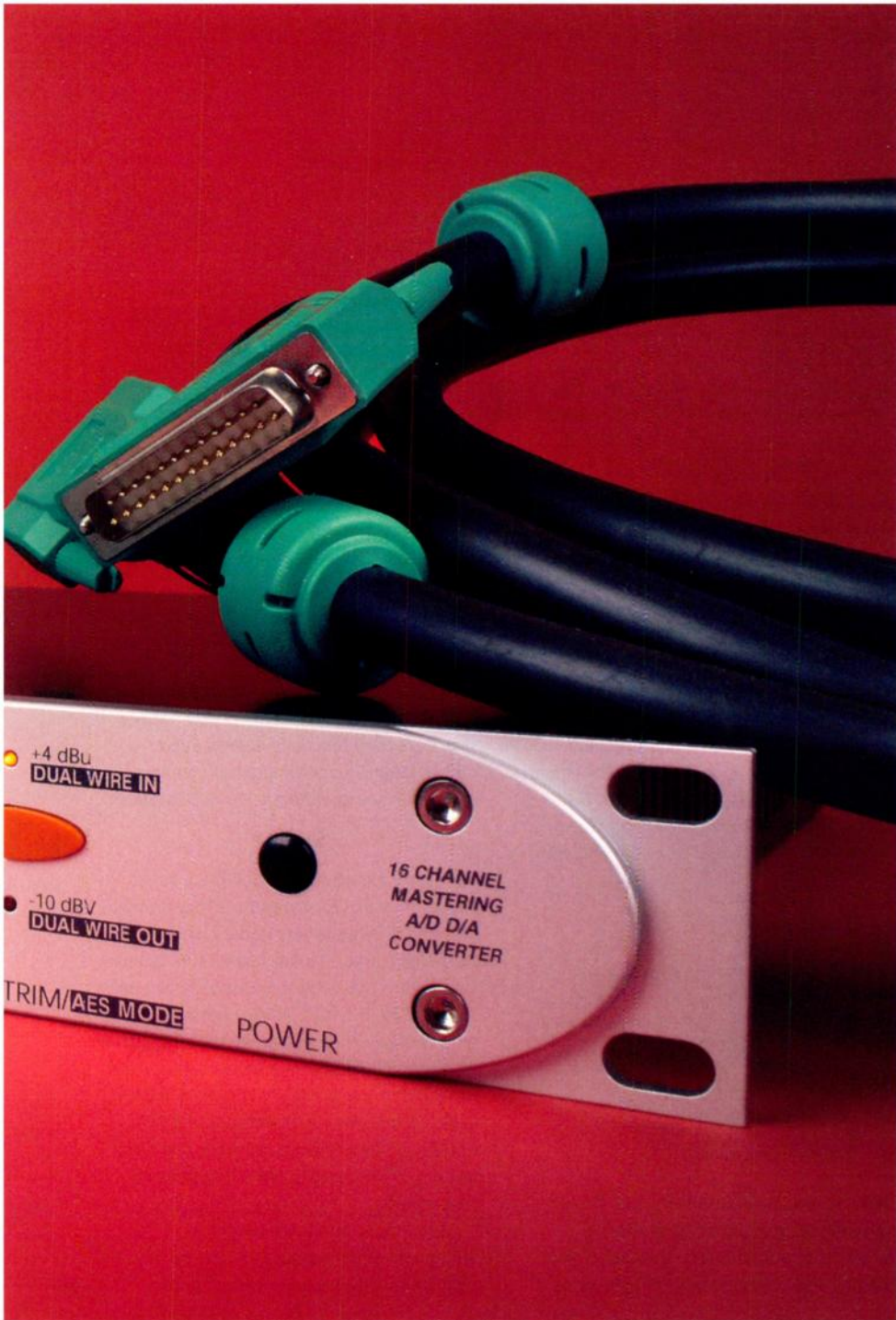
A-D/D-A Converter & Interface For Mac OS X & Windows

completed the circle by offering rackmount converters of their own with similarly high quality to that of their soundcards. The Aurora is available in eight-channel and 16-channel versions, and has already caused a stir in the audio community for offering such high quality at significantly lower prices than some competitors. Partnering Aurora converters with an AES16 card provides various additional features, which is why I decided to review them both together.

Aurora Overview

The Aurora rear panel has a standard IEC mains connector for its internal PSU, BNC

word clock in and out, MIDI In and Out (to control the Aurora mixer and update its firmware in the absence of an AES16 card), and a cover for the LSslot port that you can use to add the optional LT-ADAT expansion card, which offers two ADAT lightpipe inputs and outputs and supports high sample rates using S/MUX technology. The remaining ports are all DB25 connectors for Analogue In 1-8, Analogue Out 1-8, AES I/O 1-8, and (on the Aurora 16 only) Analogue In 9-16, Analogue Out 9-16 and AES I/O 9-16. Off-the-shelf cables from various third-party companies are available for direct connection to digital mixers and recorders from



Photos: Mark Ewing

manufacturers such as Mackie, Sony, Tascam and Yamaha.

Both the Aurora 8 and 16 models feature an uncluttered milled-aluminium front panel, and apart from the number of LED peak meters in the oval window, are identical. A sample rate button has a periphery of LED indicators displaying the current rate, from 44.1, 48, 88.2, 96, 176.4 and 192 kHz, with

Test Spec

- AES16 Windows 2000/XP version 2 build 13f drivers.
- PC with Intel Pentium 4C 2.8GHz processor with Hyperthreading, Asus P4P800 Deluxe motherboard with Intel 865PE chip set running 800MHz front side buss and 1GB DDR400 RAM, running Windows XP with Service Pack 2.
- Tested with Steinberg Cubase SX v3.1.0, NI Pro 53 v3.0, Tascam Gigastudio Orchestra v3.10.2270, Cakewalk Sonar v5.0.1.

six sync options. Of these, Ext/2 syncs to word clock at half the desired sample rate, for use with dual-wire AES-EBU devices — the Aurora 16 supports either 16 digital channels in single-wire mode, or eight in dual-wire mode — and LSlot is typically from the optional LT-ADAT card.

The associated Sync Source LED indicators flash in the absence of a suitable clock signal, while the adjacent Synchro Lock LED reflects one of the most potent features of the Aurora. When it detects a valid clock signal, it starts flashing at a low rate as it starts to analyse it, and during the next couple of minutes this flash rate increases several times as the two-stage system (the more typical phase-lock loop first, followed by a digitally controlled crystal-based secondary stage) performs its extensive number crunching, before the LED finally stops flashing once it's achieved the final

low-jitter clock state. Synchro Lock works on any external word clock signal and becomes active once you choose any clock source other than the Internal one. It even has a wide mode that can track off-frequency clocks, but its narrow mode works on the standard sample-rate frequencies and can reduce jitter by up to 3000:1.

The attractive oval meter window displays both input and output levels of either the analogue or digital signals, with the brightness of the lower green LED indicating signal strength, and the upper red LED showing signals close to clipping. There's also an IR/MIDI indicator in the same window, as well as the IR transceiver itself, which is used to control Aurora parameters from a handheld, laptop or desktop PC with suitable infra-red capabilities using IrDA protocols (no Mac version of the Aurora Remote software is yet available).

Next to the Meter button is an associated Trim/AES Mode button — with the Meter in analogue position you use it to switch operating levels between +4dBu and -10dBV, while in the digital position it lets you cycle between single-wire, dual-wire input, dual-wire output, or full dual-wire modes, depending on what digital gear you're connecting.

Up And Running

The Aurora 16 works fine as a stand-alone product, but I didn't investigate its infra-red options, since the AES16 card offers more comprehensive control. I connected the Aurora's AES Port A and Port B to the AES16 Port A and Port B using two Lynx AES1605 cables, each carrying eight channels of digital inputs and outputs. Since both have transformer-coupled I/O and Synchro Lock

SOUND ON SOUND

Lynx Aurora 16 & AES16

pros

- Aurora offers superb converter quality and small footprint for such a powerful piece of gear.
- Keen price for 16 channels of mastering-quality 192kHz A-D and D-A conversion.
- Excellent Synchro Lock jitter reduction on both the AES16 and Aurora.
- Comprehensive DSP mixing.
- Rock-solid low-latency AES16 drivers.

cons

- ADAT and Toslink optical I/O is a cost option, not standard, for both Aurora and AES16.

summary

The Aurora 16 offers a huge amount of conversion in one tiny rackmount box, with superb audio quality, and partnered by the AES16 provides an incredibly convenient yet powerful low-latency front end for a professional DAW.

LYNX AURORA & AES16



The Aurora connects to the outside world using a bank of D-Sub connectors.

- ▶ jitter reduction you can apparently place the Aurora converters up to 500 feet away from the AES16 if required.

With the Aurora front-panel Analogue Out set to AES In, the Digital In set to Analogue In and AES routed to Analogue Out you can now use the Aurora 16 as a 16-channel external A-D/D-A converter box directly piped to your chosen computer recording software. The Aurora can also be accessed in a similar way from Lynx Two/L22 cards, using their LStream ports and the optional Aurora External LStream kit (just \$60 — no UK price yet), although there are various sample-rate limitations — full details are in the Aurora PDF manual, downloadable from the Lynx web site.

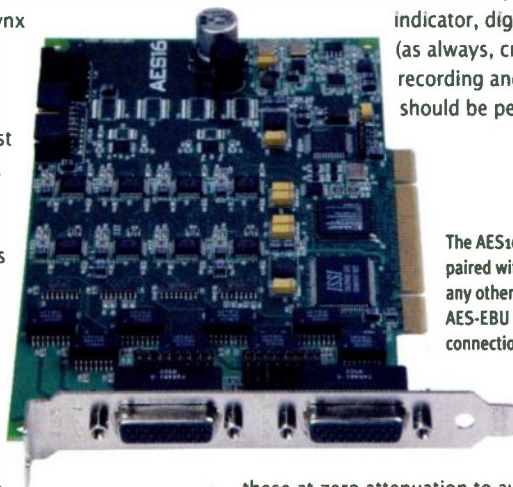
I downloaded the latest Windows 2000/XP version 2 build 13f drivers for the AES16 from the Lynx web site and had no problems installing them in my PC. With the Aurora Sync Source set to its recommended setting of AES A, the Synchro Lock soon locked onto the clock from the AES16 card; you can select a sample rate from your software and the Aurora front-panel indicator will follow.

The Lynx Mixer utility provides zero-latency 32-channel 32-bit DSP mixing, with comprehensive routing options, real-time software metering, and access to a host of other parameters. It comprises three sub-windows relating to inputs, outputs and general functions. The Adaptor window provides a full read-out of the current system clock information including the Synchro Lock status, and that of the various digital input and output signals currently active.

The Record/Play window lets you patch any of the 16 Digital or 16 LStream signals to each channel of the on-board 16-channel DSP mixer, and also provides peak metering, mute button and various dithering options for optimally reducing incoming data from 24-bit to lower bit depths. There are also

useful dropout counters for both recording and playback, so you know if any glitches have been detected since the start of each process.

The Outputs window provides versatile low-latency monitor mixing options. It lets you mix your choice of up to four record or playback signals from the 16 of each that are available, each with its own mute button, and then offers overall mute, overload indicator, digital level faders (as always, critical recording and mixdown should be performed with



The AES16 card can be paired with the Aurora or any other converter offering AES-EBU digital connections.

these at zero attenuation to avoid throwing away digital resolution), peak-reading meters, and output dither. Usefully, if you use any ASIO Direct Monitoring functions

provided by your sequencer, the third and fourth Lynx monitor inputs on each enabled channel are automatically routed and labelled for you.

You can save and restore all your settings as mixer Scenes, and overall the Lynx Mixer is one of the most comprehensive that I've used. However, it remains extremely straightforward to use, unlike many others that cram their functions onto multiple tabbed pages in one window so you never manage to see everything you need at once.

In Use

As I rather expected, the Rightmark *Audio Analyser* results for the Aurora 16 measured via the AES16 were very good. The dynamic range measured 115.5dBA across all sample rates, while the frequency response had only dropped by -0.1dB at a very low 6Hz and extended to 21kHz with a 44.1kHz sample rate and to 35kHz with a 96kHz sample rate, though it dropped back to 25kHz at 192kHz. THD (Total Harmonic Distortion) and IMD (Intermodulation Distortion) were both very low at 0.0005 percent and 0.001 percent respectively.

All of these figures are roughly on a par with many other interfaces — indeed, my own Emu 1820M manages a 2dB better

AES16 Overview

The AES16 card is available in three versions: without cables, in an XLR version shipped with two six-foot D-sub-to-XLR breakout cables, and in an SRC version with eight channels of on-board sample-rate-conversion and the same set of cables. Like the Aurora, the AES16 incorporates Synchro Lock jitter reduction. The card itself has two 26-pin D-sub connectors on the backplate. These can be configured using jumpers either to provide four stereo digital ins and outs each, or eight stereo digital ins on one and eight stereo digital outs on the other, depending on what gear you want to connect it to.

Also on the card are header ports for Clock In and Out, which enable you to run multiple AES16 cards in perfect sync given sufficient PCI slots (up to eight in a PC, four under Mac OS X, but only one under OS 9), and an LStream header port for optional expansion cards — for instance, the LS-ADAT provides two ADAT ins and outs plus an ADAT Sync In. Detailed connection options for such gear as Yamaha digital mixers, Apogee's

AD16/DA16, Rosetta and AD8000 converters, TC Electronic's DSP6000 and Mackie's HDR 24/96 and D8b are provided in the helpful manual, also available as a free PDF download. You can also use a simple adaptor cable to connect an unbalanced S/PDIF source to the AES16's balanced inputs, but will require a format converter if you wish to connect the higher-voltage AES-EBU output levels to an S/PDIF input.

AES16 drivers are available for Windows 2000, XP and XP Pro x64, supporting the ASIO 2.0, WDM, MME, Direct Sound, Direct Kernel Streaming and GSIF 2.0 standards (the last are 32-bit only, as Tascam don't yet have a 64-bit version of *Gigastudio*). Mac owners get ASIO 2.0 drivers for OS 9 and Core Audio for OS X. One obvious question is whether a PCI Express version of the AES16 is in the offing, and Lynx told me that like many other manufacturers they are working on PCIe offerings, but that no specific announcements had yet been made.

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LYNX AURORA & AES16

► dynamic range — but they don't tell the whole story, which is why critical listening tests are still so important. It was obvious within the first few seconds that the AES16/Aurora partnership could beat the 1820M with one hand tied behind its back. Imaging was so pin-point sharp I could almost reach out and touch each instrument, and I've never been able to listen so far into reverb tails before, while high frequencies sounded brittle on the Emu 1820M compared with the top-end sweetness of the Aurora.

For Lynx Two/L22 owners who are wondering how the Aurora compares, Lynx told me that in essence the Aurora series is based on the Lynx Two/L22, but takes advantage of several component improvements, including the converter chips, so the Aurora's audio quality is slightly ahead on noise floor and distortion levels.

It's generally recommended that in large systems the A-D converter should provide the clock during recording, and the D-A converter during playback, to minimise jitter— external clocks use phase-lock loop circuitry that may compromise this. However, with the Aurora 16 Synchro Lock active I couldn't detect any degradation at all, whether I clocked it from its own internal

Brief Technical Specs

Aurora 16 Converters

- Sample Rates: 44.1, 48, 88.2, 96, 176.4 and 192 kHz.
- Analogue I/O: 16 balanced input and output channels across four DB25 multi-pin connectors, +4dBu nominal (+20dBu max) or -10dBV nominal (+6dBu max).
- Digital I/O: 16 input and output channels in AES-EBU format across two DB25 multi-pin connectors.
- Sync I/O: word clock in and out, MIDI In and Out, Synchro Lock for jitter reduction, LSlot expansion port.
- Dynamic range: 117dBa.

- Frequency response: 20Hz to 20kHz ±0.1dB.
- THD+Noise: 0.00045 percent at -1dBFS.

AES16 PCI card

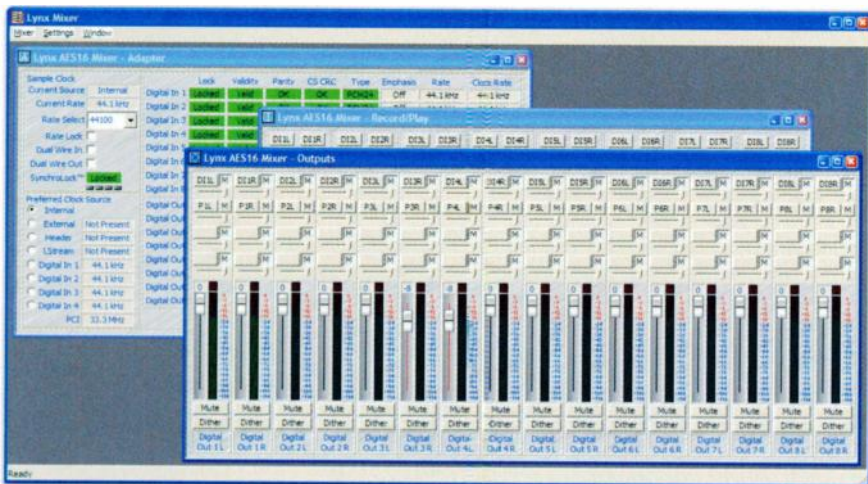
- Sample rates: 44.1, 48, 88.2, 96, 176.4 and 192 kHz.
- Digital I/O: 16 input and outputs channels in single-wire mode (eight input and output channels in dual-wire mode), all transformer-coupled in 24-bit AES-EBU format, LStream header expansion port.
- Sync I/O: word clock in and out, Header Clock in and out for linking up to four PCI cards, Synchro Lock for jitter reduction.

clock or externally from the AES16. The AES16 drivers also proved to be extremely good — I easily managed the lowest 32-sample buffer setting in *Cubase SX3* for just 0.7ms latency at 44.1kHz, as I did in *Sonar 5*, and although the GSIF 2.0 drivers were unusual in following the ASIO buffer size (most provide a fixed size), they also worked well down to the lowest buffer setting, offering a 2ms latency at 44.1kHz. Meanwhile, *Pro 53* provided typical Play Ahead settings of 30ms for Direct Sound and 45ms for MME. The only problem I had was

omitting features that you may or may not use. For instance, competing converters from other companies may offer ADAT and Toslink optical I/O as standard, but if this is important to you, you can add it to the Aurora via the LT-ADAT card for around £220. Real-time dithering for CD or DAT reference copies isn't built-in to the Aurora itself, either, but you get it when the AES16 is attached. Likewise, sample-rate-conversion is not offered as standard, but if you partner the Aurora 16 with the AES16-SRC you get eight channels of this at mastering quality if you need it.

Indeed, with its extremely low latency, rock-solid drivers and versatile digital mixer, the AES16 card is an excellent partner for anyone who wants to neatly integrate up to 16 channels of high-end 192kHz converters with PC/Mac software like *Cubase SX*, *Logic*, *Nuendo* and *Sonar*. Even rival manufacturers like Benchmark Media Systems and Mytek Digital recommend the AES16 for partnering with their own converters.

I would always advise anyone about to buy professional converters to find a dealer who can audition several side-by-side, or offer several for a trial period, as each is likely to sound slightly different and have a slightly different feature set that may sway your final decision. Nevertheless, to my ears the Lynx Aurora range offers something special, and can compete on audio quality with converters from other companies such as Apogee, Lavry and Mytek, but often at a significantly lower price per channel. Lynx have done it again! **EOS**



The Lynx AES16 Mixer utility offers zero-latency mixing with up to 32 channels at 32-bit resolution and comprehensive metering, plus handy scene save/restore functions for live recording and broadcast applications.

Alternatives

Competition at the high end of the converter market is hot, although the Aurora 16 is very competitively priced. British manufacturers Prism Sound offer the Dream ADA 8XR, which can be configured to offer either 16 channels of A-D or D-A conversion, or eight in each direction, and its various interfacing options allow it to connect to computers via Firewire, AES-EBU or as a replacement for Digidesign interfaces in a Pro Tools HD rig. Apogee's Rosetta 800 also offers eight channels of A-D and D-A conversion, with similar interfacing choices, while Mytek's 8X192 adds ADAT and Sonic HD options too. Benchmark Media and Lavry Engineering also manufacture innovative multi-channel mastering-grade converters, though a third-party AES-EBU soundcard (such as the AES16!) would be needed to connect them to a Mac or PC.

with *Sonar* and its WDM/KS driver choice, where I experienced severe juddering at all latency settings, but given that ASIO performance in the same application was perfect with 0.7ms latency at 44.1kHz, I suspect few people will worry about this.

Final Thoughts

Each interface in the Lynx range has in turn gained an enthusiastic following among those demanding high-quality audio, and the Aurora series continues this trend. Sixteen channels of A-D and D-A converters of this quality seems a bargain at around £2300, and I suspect Lynx keep prices down by

information

- £ Aurora 16 £2344; Aurora 8 £1639; AES16 £640; LT-ADAT expansion card £222. Prices include VAT.
- T HHB Communications +44 (0)20 8962 5000.
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Studio SOS

This month the team travel to Wales to mix vocals, acoustic guitars, and a troublesome hurdy-gurdy!

Paul White

There's no denying that we get less snow in England than we used to, but whenever it does snow, you can bet that Hugh and I will be out in some remote corner of the country doing a Studio SOS visit. This time it was to visit Paul 'Spyder' Fitzpatrick, who'd relocated his studio from his native Manchester to a mobile home outside his friend's farmhouse, on top of an

850-foot hill just south of the Snowdonia National Park in Wales. The climb to the top of the hill was via a winding, snow-covered dirt track, with a steep slope offering slithery oblivion on one side, and innumerable kamikaze sheep on the other! We needed GPS navigation to find the place, as the nearest village had a name that looked like a bad hand of Scrabble with all the vowels removed, but Paul welcomed us with the obligatory Hobnobs and hot coffee while we chatted to find out what kinds of problems he was having.

Checking Out The Studio

Paul's studio, based around a DigiDesign Digi 001 interface and *Pro Tools* software, is set up at one end of the lounge of his residential caravan. A corridor runs down one side of the structure to the lounge area

and, as Paul has his studio set up along the wall where the corridor enters the room, it is offset to one side of the room rather than being symmetrical. Ergonomically, this seemed the best place for it, so we decided to leave it there. Paul was a little worried that his passive Celestion F1 monitors might not be accurate enough for monitoring, and the lack of acoustic treatment was affecting both the quality of the monitoring and also his ability to record vocals in the same room without suffering coloration from the wall and window reflections. The light curtains fitted



The monitors were supported by cardboard boxes, which wasn't ideal. Paul & Hugh recommended building sturdier stands out of MDF for better stability, but as the materials for doing this weren't available, Hugh slipped a couple of Auralex Mo Pads under the speakers to try to cut down on vibrations reaching the desk surface.

over the windows weren't really adequate to control the acoustics, so Paul's only real concession to acoustic treatment had been to place some of the furniture cushions behind the monitors.

Although fairly simple, the studio includes a surprising amount of outboard gear, as Paul mixes through a Behringer 8000A analogue mixer rather than within *Pro Tools*. Partly this is because he likes this way of working, but it's also because his 400MHz Mac G4 stalls under the load if he uses more than a small number of processing plug-ins. To expand the number of physical outputs from the Digi 001 Paul had added a Fostex VC8 expander, so that he can have 16 independent feeds going into the mixer from *Pro Tools*.

For effects, Paul has an old Alesis MIDlverb unit that he likes for its crunchy reverb sound when overdriven, and he also has a TC Electronic M•One XL dual-engine reverb for more conventional applications. Other effects come from Line 6 delay and filter units, and he has an original Line 6 Pod for recording guitar, though he prefers to mic up his old Watkins Dominator amplifier. Processing comes from an Alesis 3630

compressor and a Behringer quad gate, while any synthesized sounds triggered over MIDI come from a Korg NS5R sound module. As ever, the first task was to play some test music and see what the monitoring system sounded like.

Acoustics Tweaks

The little Celestions were being powered from a Cambridge A1 hi-fi amp, and despite their size they sounded tight and detailed with a sensibly flat tonal balance, albeit without any real deep bass. However, the imaging was being compromised by reflections from around the room and by scattering from the computer VDU and the effects rack between the speakers. The speakers themselves were propped up on cardboard boxes rather than being on proper stands.

There was little we could do about this on the day other than adjust the speaker heights and angles by fitting Auralex Mo Pads beneath them, but, as Paul is clearly a very practical person, he can easily build a more substantial shelf from MDF or chipboard and then use solid blocks or purpose-built MDF boxes to give the

speakers the height they need. In an ideal world, the speakers should also be slightly forward of the computer monitor to eliminate reflections from that source, but with the present setup, this wasn't practical, so we settled for getting the monitors as far forward as we could.

To avoid damaging the walls, we propped up the Auralex foam we'd taken with us just to demonstrate the effect it had, and Paul agreed to find a way to make the fixings more secure while still being removable. A pelmet runs around much of the room, so our old friend the picture-rail hook could be used here. For the side walls and ceiling, Paul planned to use Velcro pads, which seemed as good a solution as any. The arrangement we arrived at was one panel either side of the monitoring position at head height, one fixed to the ceiling above the mixer and three suspended vertically over the window that covered most of the back wall of the room. By hanging these on the pelmet, there would be an air gap of three to four inches behind the foam that would increase its effectiveness at low frequencies. My suggestion was that any vocals could be

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► recorded with the singer standing with their back to these panels to cut down on reflections. Paul has a Rode NT1A as his main vocal mic, so setting this to a cardioid pattern should give good results in this situation.

After making these adjustments to the room and the monitor positions, we played our test tracks again and found the imaging to be very noticeably improved, and the Mo Pads had evened out the bass end, as well as reducing some of the resonances of the cardboard boxes and shelf, although the speakers still lacked deep bass. When the budget allows, Paul plans to replace his speakers with active monitors (or at least add a suitable subwoofer), but in the meantime, he'll need to avoid the temptation to EQ his bass sounds to make them sound larger than life on these speakers, as that will result in bass-heavy mixes when played on full-range systems elsewhere. Constant referencing to well-balanced commercial tracks while mixing would help avoid this problem, effectively resetting the aural memory of how the mix should sound on those speakers.

One further problem we identified was caused by Paul's use of a low, lightweight, folding chair. This placed his head almost exactly midway between the floor and ceiling, and we noticed that the perceived bass level dropped even further in this position. Raising the seat position by as little as 12 inches avoided this, so a new seat would be a wise investment.

Studio Configuration Advice

With the monitoring improved, we could now get down to helping Paul with his mix problems, as he'd been working on a track for a female singer and was having trouble interpreting her artistic demands. The track was essentially a piece for vocal and acoustic guitar, but it was underpinned with a hurdy-gurdy drone and augmented by some subtle strings later in the song. There was no bass and no formal drum part, though Paul had used some sparse percussion courtesy of Spectrasonics' *Stylus* to drive the track. His problem was that the singer wanted the recording to have a free, outdoor feel to it, with an element of

distance about the hurdy-gurdy part, but Paul's reverbs sounded too heavy and room-like. He was also unsure about his use of EQ and compression, especially in the light of his distrust of his monitoring system.

We noticed that to play his *Pro Tools* mix, Paul had to press the Record Pause button on his CD recorder, as he'd wired everything up to monitor via this piece of equipment. He was also using the mixer's main outputs rather than the control-room outputs, which



A few well-placed pieces of foam soon had the stereo imaging under control.

meant he couldn't solo tracks on the mixer and also couldn't control the volume other than via his power amplifier. He'd done this because he suspected that the main outputs were quieter than the monitor outputs, but we decided to try rewiring the system more logically anyway. This entailed connecting the control-room outputs to the power amplifier in the usual way, then connecting the CD recorder as an external two-track machine, fed from the mixer's main outputs and returned via the two-track return jacks. This didn't seem unduly noisy and in any event the CD recorder could still be fed from the mixer's main stereo outputs, so any noise audible on the monitors due to a noisy control-room output stage won't be recorded to the final master. This arrangement would also make it easy to compare reference CDs to his mixes as he builds them up, simply by flipping the two-track return switch.

While the mixer has dedicated aux returns, Paul had instead decided to use the desk 'dub' style, where spare channels are used as aux returns. This has the advantage of greater controllability, and also enables other effects to be added to the effects returns via the channel aux sends. The TC Electronic reverb can be configured in

a number of ways. For the current song, Paul was using it in dual-engine mode, where each engine provides a different reverb effect and is fed in mono from one of the two inputs. The two reverbs then each generate a stereo output and both stereo outs are summed at the unit's stereo output jacks.

It is also possible to use the unit as two mono-in, mono-out reverbs, but in most instances stereo works best, so I panned the two outputs hard left and right rather than leaving them in mono as Paul had. Each of the two reverb inputs was hardwired to a post-fade send on the mixer, so essentially it behaved as two more or less independent reverb processors, but with their outputs coming back on a single pair of faders. The relative balance of the two stereo reverbs could be controlled with a knob on the TC Electronic box itself, or just by adjusting the aux send level to each input.

He'd also used the same 'channels as returns' setup for his Altesis reverb and for his

Line 6 delay and filter. Strictly speaking, a filter is an insert effect rather than a send effect, as you don't normally want to mix in any of the dry sound, but if this is fed from a pre-fade send rather than from the more usual post-fade send, you can arrange to have a 'wet only' effect by turning the send up and the channel fader down.

Hands-on Mixing Tips

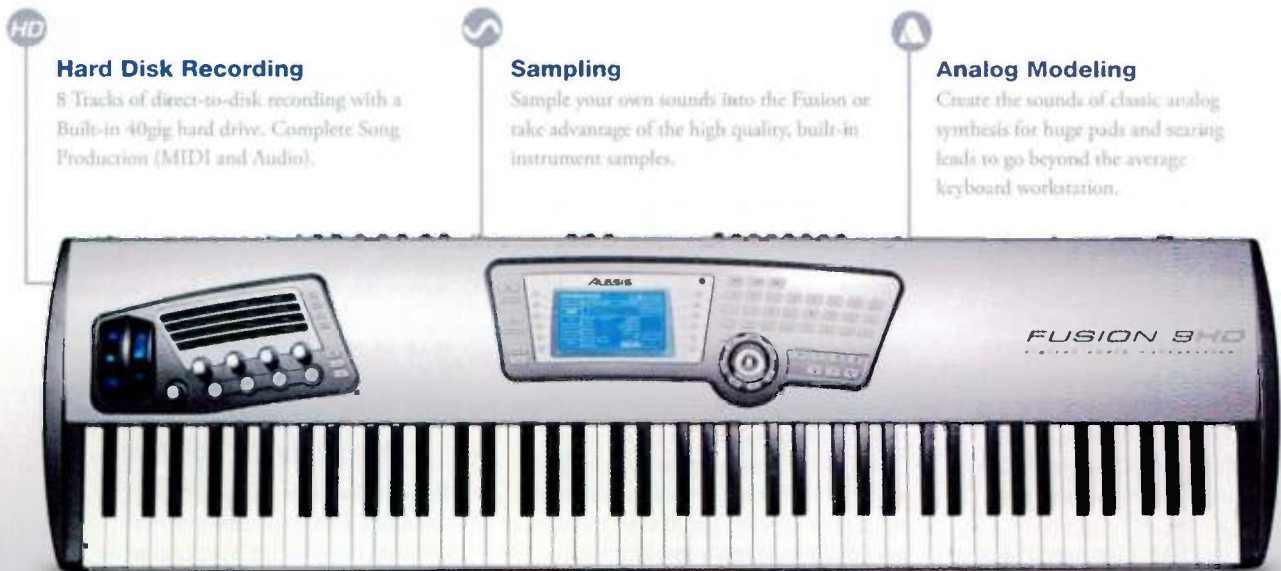
Once we'd got Paul's mix up in *Pro Tools*, I started by listening to the acoustic-guitar track. This had been supplied to him as a WAV file from the artist, so he had no control over how this was recorded — it sounded DI'd to us. She wanted a warm sound, but Paul's EQ treatment had made it sound too woolly at the low end, so I re-EQ'd it using some lower mid-range cut to tame the boxiness that so often creeps in. As usual, we located the problem frequency by creating a narrow boost and then sweeping it through the mid-range until it picked up the boxy honk we wanted to tone down. To get rid of any really low end that wasn't doing anything constructive for the sound, I set the lowest EQ band as a low-cut filter and swept it up to around 80Hz.

Paul had also used some very heavy compression with threshold settings of

Fu·sion

(fyoo'zhən) n. 1. The merging of different elements into a union 2. A union resulting from fusing: "A fusion of sound and technology emerged." 3. A complete music workstation

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fig 1: Alesis Fusion 8HD



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fig 2: Alesis Fusion 6HD

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Once the team had done what they could for the monitoring, Paul demonstrated how to go about getting a good vocal sound without over-processing.

▶ around -25dB, so there was a lot of gain reduction making the guitar seem unnecessarily squashed. This was remedied by setting the threshold higher so that there was only 6-8dB of gain reduction. Because Paul's computer can't run more than one *Realverb* reverb plug-in at a time without waving the white flag, we decided to use a sparing amount of whatever reverb we set up for the vocals just to take the edge off the guitar, and as I wanted to experiment using the software reverb on the hurdy-gurdy, this meant using the TC Electronic unit for the vocals and guitar.

Paul had over compressed the vocals, which not only makes the sound appear squashed but also brings up room-acoustic problems in the quieter passages and at the ends of phrases where the level tails off. The EQ he'd used also made the vocals sound rather thin, so I zeroed the EQ to make a fresh start and pushed the compression threshold up to reduce the amount of gain reduction. On the whole I felt the basic vocal sound was good, but there was a nasal honk in the 1kHz region that needed addressing, so I located this using the usual sweep method, then applied a few decibels of cut at that frequency. A hint of 'air' EQ at around 12kHz added a little sparkle and that was pretty much it. The biggest challenge was to find that light and airy reverb that would give the sound an outdoor feel.



In the end I used a combination of two reverbs from the TC Electronic unit: an ambience patch set up on send one and a shortish plate on send two. By combining these, the vocal retained an intimate feel without sounding too dry. Although the vocal pitching was pretty good, there were still a few slightly suspect parts where notes tailed off, so I decided to use a light touch of Antares *Auto-Tune* to fix this. Paul hadn't really got to grips with *Auto-Tune*, so I showed him that the main thing is to set a key that matches the vocal part and then to set the correction speed slow enough to get rid of the clichéd 'yodel-effect' that we've all come to know and love — and eventually hate! I generally set the tracking speed to fast, just to check the scale I have picked is correct for the song, and then

I back it off to halfway or even a little lower so that the pitch-correction would only be applied to sustained notes. This worked perfectly, so *Auto-Tune* was applied to the main vocal and also to a double-tracked version that Paul wanted to bring in on the choruses. As the artist had fairly rigid ideas about where any additional backing vocals and string synth parts should come in, I left these for Paul to arrange with her.

Hurdy-gurdy Polishing

That left the hurdy-gurdy, which is essentially a bagpipe substitute for asthmatics! Strings are used instead of pipes, and these are forced to drone by turning a handle, but the audible effect is much the same! The dry recording sounded too abrasive and upfront, so rather than trying to beat this into submission using EQ, I thought I'd try using the *Realverb* plug-in to create a short reverb with a restrained high end that could be used to create a more realistic impression of distance. This particular reverb also has a distance parameter that aids the impression. Once processed, the hurdy-gurdy sat nicely under the guitar, lending a Celtic feel, but without making its presence too obvious. Paul planned to use automation to bring this up in the intro and between verses, but to drop it back when the vocal was present.

Although it wasn't our intention to finish the track, we got the bare bones of it sounding fairly sweet, and Paul saved our version so that he could come back to it and continue work later. He also saved our TC Electronic M-One and *Realverb* reverb patches for future use before we once more braved the snow-covered roads to return home. **ES**

Session Comments

Paul Fitzpatrick: "I got some invaluable advice from Paul and Hugh, including EQ'ing tips for acoustic guitar, vocal-treatment tricks, reverb settings, and some pointers on sorting out the hurdy-gurdy. This helped on the mix I was working on, making the acoustic guitar and hurdy-gurdy sit better together — quite a task in such an unusual studio. The introduction of Auralex foam was pretty amazing, and stopped the room sounding like the inside of a big shoe box! I am now busy with picture hooks and MDF, and on Paul White's advice I am now looking to purchase a subwoofer before I get back to mixing again. I have a couple of remixes to work on for other artists and I look forward to now being more confident in the final result. So, thanks to Paul and Hugh for braving the snowy mountains — I hope you enjoyed the day as much as I did!"



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STEINBERG WAVELAB 6

▶ sneeze during a live classical concert. The copious and informative PDF manual provides plenty of operational details, although you'll need skill and a lot of practice to perform such miracles invisibly.

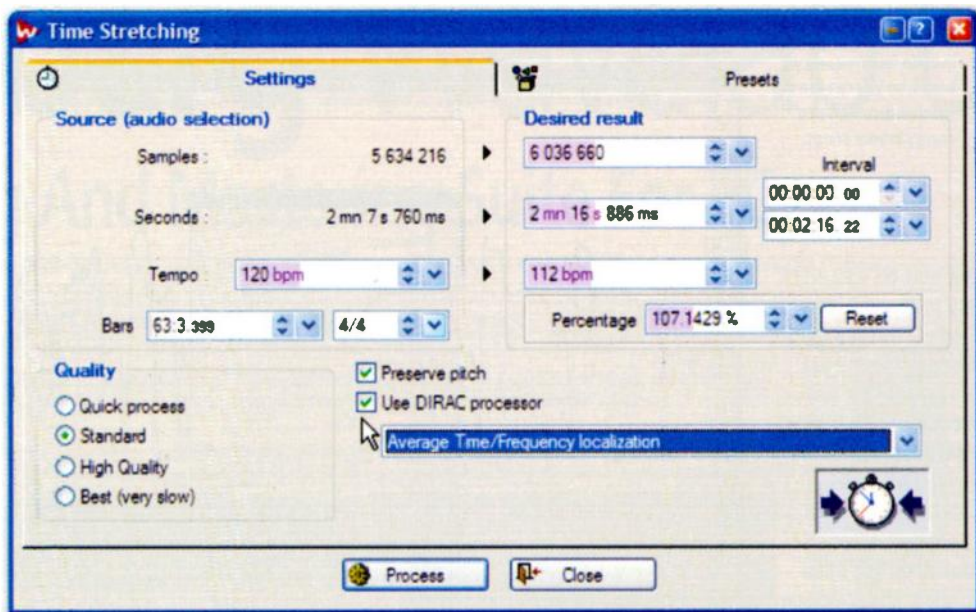
Master Section Processing

With Master Section processing you can treat the whole file in real time through a chain of up to eight plug-ins. These plug-ins are either fed from a frequency spectrum defined by the region you select, or from the remainder of the frequency spectrum, while the non-effected part of the spectrum can either be mixed in at the output of the Master Section, or discarded altogether for more radical treatments. The latter mode is also useful when fine-tuning the effected part prior to recombining the two.

While Surgical processing is one of the most sophisticated tools there is for audio restoration, Master Section processing offers a huge range of new creative options, such as frequency-selective reverb, flanging and chorus, auto-panning of different parts of the spectrum and narrow-band distortion of drum loops. By the time I tried out spectrally limited delays and echoes my head was reeling with new possibilities. Occasionally the selected and non-selected parts got



It may not look impressive, but the new *Crystal* sample-rate conversion plug-in offers significantly more transparent results than previous algorithms, and also shows the new interface sported by generic plug-ins.



Tucked away in the Time-stretch and Pitch-shift windows is a new set of DIRAC processing algorithms, providing arguably the cleanest results available anywhere.

slightly out of sync after removing complex plug-ins from the chain in real time, but I'm happy to forgive such a small bug in the delay compensation, especially as clicking on the Play button pulled everything back together perfectly.

On The Level

After the excitement of Spectrum Editing, the new Loudness Envelope display option seems mundane by comparison. It shows loudness over time in various predefined frequency bands, and up to four curves can be chosen from Main (overall), low-pass, band-pass and high-pass. By studying them you can learn a lot about frequency distribution through a song, or the amount of compression used. However, recalculation

of the display for a complete track can take a long time, even if you're just resizing or zooming the window, so if you need to do this, switch back to Wave display first.

The Audio Analysis menu options now also include a Loudness Distribution window that plots the most frequent, rather than the average, loudness level in any file. On this display, most modern finished songs appear as a single horizontal lobe, but unaccompanied vocals and classical tracks display significantly wider or more numerous lobes, indicating a far greater variation in dynamics. You can store up to three different results to compare different tracks.

Another related function is the off-line Level Envelope processor that lets you apply a user-defined envelope to any or all of your file. This is far more versatile than the previous Fade processes, especially with its 'smooth envelope' function that turns lines into curves. Yet another enveloping function

Smaller Improvements

Global improvements in *Wavelab 6* include enhanced file read/write performance and the removal of all limitations on file size, plus a noticeably slicker graphic interface and icons. There are also many smaller additions and improvements that prove really helpful. Here are some that particularly appealed to me:

- *Wavelab* has always had a comprehensive Key Commands section allowing you to assign keyboard shortcuts to most operations, but this has now been extended to include MIDI command options, which makes it a lot easier to couple *Wavelab* up to MIDI controllers or sync it to other applications. *Wavelab* can now also be slaved to ASIO Positioning Protocol for sample-accurate sync.

- The Rename File function can now automatically update any references to the file in all other open documents, and rename any associated peak and marker files. This is particularly handy if you want to rename an individual track used in one or more Montages, since in the past the next time you opened them you'd get 'file not found' problems. There's also a Batch file-renaming tool with more comprehensive features.

- The old Wave Scope oscilloscope display has been renamed Oscilloscope and been augmented by a new Waveform Scope that displays a real-time drawing of the audio signal being monitored — anyone who has ever used a high-persistence

storage 'scope will know exactly what to expect, and it's a handy way to monitor an in-progress recording to check that everything's OK.

- Generic plug-ins without a dedicated graphic interface finally appear with a full set of slider controls, rather than the previous rather primitive parameter pages and a single rotary knob.

- The new Edit Folders dialogue lets you specify all the document, work and temporary folders used by *Wavelab*, while graphic peak files can now be stored separately from the audio files.

- An improved Insert Silence tool now lets you load in an audio file to use as background noise instead of true silence, with adjustable gain and fade in/out at the edges.

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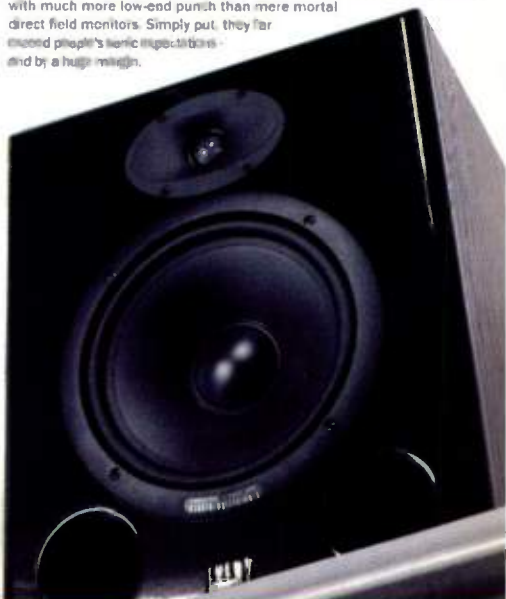
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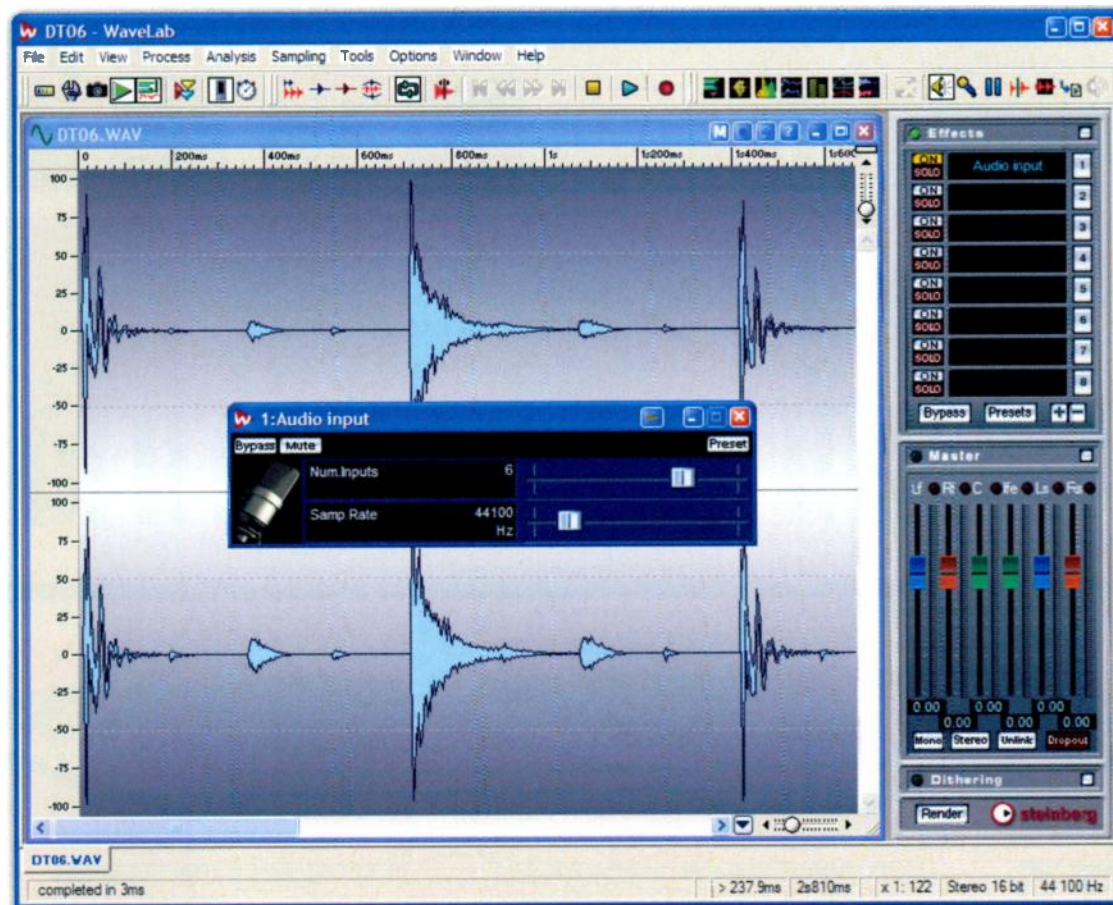


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STEINBERG WAVELAB 6



The newly refined *Audio Input* plug-in now lets you record incoming signals to up to eight audio channels simultaneously, for live surround recording and treatment.

classical music, percussion and so on, and I found they imposed significantly fewer artifacts on long stretches than the previous algorithms.

Also new in the process menu is a Pitch Quantise option that works on monophonic lines to correct intonation problems; you can define the reference

▶ that I found particularly useful is the Effect Morphing: you apply plug-in effects to whatever part of your file you wish, open this new window, create a user-defined envelope, and *WaveLab* then mixes in the most recent (unprocessed) Undo file to fade the effect in/out as you wish. I also found this a very useful way to avoid clicks when you want to process only part of a file.

The previous Normalise process has become Level Normaliser, and is joined by Loudness Normaliser, which works with RMS levels to set a loudness and is thus far more appropriate than the conventional peak level adjustment when you're trying to make individual tracks sit in an album context. There's also a new Pan Normaliser which can balance the peak or RMS levels across stereo channels. Finally, the level/pan meters now have K-Metering options, as defined by renowned mastering engineer Bob Katz, which you use in connection with calibrated monitor levels to ensure repeatable high-quality mastering results without compromising dynamics or squashing transients.

New Treatments

Previous *WaveLab* versions offered the same sample-rate conversion algorithms as *Cubase* and *Nuendo*, but *WaveLab 6* includes a new SRC Crystal Resampler that's gaining

much praise for its conversion accuracy — it's significantly more transparent, and roughly on a par with Voxengo's highly acclaimed *rBrain Pro*.

Also, tucked away inside both the Time-stretch and Pitch Correction processing windows is an innocuous new tick box that should bring a big smile to all those who do a lot of work with loops. The 'Use DIRAC processor' option switches in possibly the best available time-stretch/pitch-shifting algorithm available on the market today, albeit at the expense of longer processing times. There are six variations on the DIRAC algorithm for dealing with different kinds of source material such as instruments, voices,

frequency, pitch tolerance and slur time. It's a sort of poor man's *Auto-Tune*, and can also be persuaded to perform subtle Cher-like robotic glitches at extreme settings.

Two new plug-ins appear in the Master Section under a new ASIO heading, and only function with ASIO drivers. *Audio Input* replaces the previous 'Live Input' function, letting you capture any incoming signal from your audio interface hardware with Master Section effects, but is far more versatile since the plug-in window lets you select any number of input channels from one to eight, and your choice of sample rate. It must always be loaded in the topmost effect slot. *External Gear* can only be used once in the chain, and as its name suggests,

Previous *WaveLab* Reviews In *SOS*

- **WaveLab 5: February 2005**
www.soundonsound.com/sos/feb05/articles/steinbergwavelab5.htm
- **WaveLab 4: May 2002**
www.soundonsound.com/sos/may02/articles/wavelab4.asp
- **WaveLab 3: March 2000**
www.soundonsound.com/sos/mar00/articles/wavelab.htm
- **WaveLab 2: June 1998**
www.soundonsound.com/sos/jun98/articles/wavelab.html
- **WaveLab 1.6: October 1997**
www.soundonsound.com/sos/1997_articles/oct97/steinbergwavelab.html
- **WaveLab 1.5: February 1997**
www.soundonsound.com/sos/1997_articles/feb97/steinbergwavelab.html
- **WaveLab 1.01: August 1996**
www.soundonsound.com/sos/1996_articles/aug96/steinbergwavelab.html

System Requirements

All Steinberg recommend for running *Wavelab 6* is a PC with any Pentium 4, Athlon or Opteron processor of 2.4GHz or faster, running Windows 2000 or XP, and 1GB of RAM. Unlike multitrack applications where lots of simultaneous plug-ins and soft synths are likely to be required, this seems entirely reasonable, and even the quoted minimum requirements of a Pentium III/Athlon 800MHz processor and 256MB of RAM seem feasible to me as long as you don't attempt complex plug-in chains.

it lets you plumb in hardware effects to spare ASIO input/output pairs. The latency of the send/return loop can be automatically compensated for, just as in the latest versions of *Cubase* and *Nuendo*.

The Master Section itself also benefits from a few new options. You can now store its current set of plug-ins with an audio file, its display now indicates both 'plug-ins active' (green) and 'global bypass' (red) states, and the plug-ins organiser now recognises folders. However, for me the most useful new function is Smart Bypass, which compensates for any change in

loudness when processing a file, so that you can A/B switch between the original and processed versions and hear the change in sound quality rather than the change in level. The stand-alone *Harbal* application does this as well, and it's an extremely useful tool when making mastering decisions.

Final Thoughts

Those who aren't yet *Wavelab* users might consider £470 a lot of money for an audio editing, mastering, restoration and CD/DVD burning application, but considering that *Wavelab 1.6* — the first version I reviewed, back in *SOS* October 1997 — was already £399, the price seems eminently reasonable considering the absolutely vast array of features that has been added since. I feel more comfortable working in the *Wavelab* environment than with any other audio application I've ever used, and rely on it a great deal for my day-to-day work. It has rarely let me down over the last nine years.

I can see a few laptop owners sticking with their existing *Wavelab* version to avoid the inconvenience of the new dongle, but

Test Spec

- *Wavelab v6.00a* build 285).
- PC with Intel Pentium 4C 2.8GHz processor with Hyperthreading, Asus P4P800 Deluxe motherboard with Intel 865PE chip set, running 800MHz front side buss and 1GB DDR400 RAM, Emu 1820M and Echo Mia soundcards, running Windows XP Service Pack 2.

those with desktop PCs would be fools not to upgrade, especially since existing *Wavelab 5* owners can do so for just £70. Even at £130, version 3 and 4 owners should find this upgrade a bargain given the huge number of new features it adds to their arsenal of editing options. **SSS**

Information

- £ £470 upgrade from version 5 £70; upgrade from version 3 or 4 £130. Prices include VAT.
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Latin World



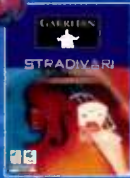
Latin World™ sets the new standard for Latin-American music production. For the first time you have your own complete Latin band layed out on the keyboard: drum-, percussion- (all recorded individually and in full stereo!), bass-, guitar- loops and a marvelous horn section sorted by music style, keys and harmonic progressions (4 basic keys with up to 6 different progressions).

4.7Gb ready to play thanks to Native Instruments Intakt Player

£117
inc VAT

STRADIVARI SOLO VIOLIN (GARRITAN)

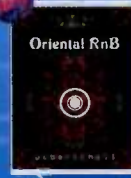
The Stradivari Violin is regarded by experts as the best violin ever made and a genuine Stradivari violin is worth millions. An instrument of this distinction required a unique way to faithfully capture and recreate its sound quality and playability. "Sonic Morphing" technologies provided the answer. The result is extraordinary levels of realism, expressiveness and performance.



KONTAKT 2 DVD-ROM - £129

ORIENTAL RnB (UEBERSCHALL)

Oriental RnB is the ultimate point where the east and the west intercept on the highest musical and sonic level. This very point is touched by spicy oriental flavour combined with modern dance, pop and RnB tunes. Oriental RnB comes with Ueberschall's brand new "Elastik Engine" technology with all the functionality which is needed for professional use.



VST+AU+RTAS INSTRUMENT - £69

OUTER LIMITS (ZERO-G)

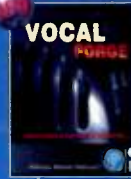
Ian Boddy's follow-up to his critically acclaimed Morphology Kompakt instrument but this time he has delved deeper and darker than ever before. With 4Gb of sounds, from shimmering pads, to mysterious drones, menacing mechanisms to strange vocal synthesis! It is a journey through dreams and nightmares, full of sounds beyond your imagination.



VST+AU+DX+RTAS INSTRUMENT - £115

VOCAL FORGE (ZERO-G)

A uniquely inspiring new library featuring 800 patches and over 2,500 samples in 1.2 Gb of brand new material sourced entirely from pro vocal performances. Male and female MCs, sweet R+B, gospel singers, dance and pop vocals all recorded with accompanying harmonies. Plus there is a vocal Toolbox loaded with single vocal lines, effected vocals & FX.



VST+AU+DX+RTAS INSTRUMENT - £115

JAZZ & BIG BAND (GARRITAN)

From the producers of the award-winning Garrigan Personal Orchestra comes this comprehensive Jazz & Big Band collection featuring Saxophone, Keyboards and a superb Rhythm Section - over 50 individual instruments in all. Now you can create realistic-sounding Jazz & Big Band arrangements quickly & easily.



VST+AU+DX+RTAS INSTRUMENT - £169

PERSONAL ORCHESTRA (GARRITAN)

Personal Orchestra contains samples of all the major instruments in a symphony orchestra: strings, brass, woodwinds, and percussion, as well as a Steinway concert grand piano, a Stradivari violin, concert harps, a Rudolf von Beckerath concert pipe organ, a harpsichord, and many other exquisite instruments.



VST+AU+DX+RTAS INSTRUMENT - £169

REAL GUITAR 2L (MUSIC LAB)

RealGuitar 2 is here! Now you can create realistic solo and accompaniment guitar parts quicker and easier than ever before! RealGuitar 2L version is equipped with the powerful MIDI Pattern Library for easily creating guitar accompaniment tracks. RealGuitar allows you to perform guitar parts with a whole new level of expression.



VST+AU+DX+RTAS INSTRUMENT - £133

IVORY (SYNTHOGY)

Three Glorious Grands in one multi-platform Virtual Instrument. The largest, most skillfully designed Grand Piano virtual instrument ever! Over 4000 samples are combined with a sample-playback engine built from the ground up to bring out the resonance, response and character of the world's finest Concert Grands.



VST+AU+RTAS INSTRUMENT - £189

VINTAGE KEYBOARD COLLECTION (SCARBEE)

Includes the class leading RSF73 (Rhodes Stage Piano MK1 73) and WEP (Wurlitzer 200A), electric pianos, as well as two new instruments the D6-C (Hohner Clavinet D6), and the rare N-HP (Hohner Planet N). "If no-compromise electric piano sounds are what you're after, this is the best solution on the market" - Future Music



VST+AU+DXI INSTRUMENT - £242

SUPERIOR CUSTOM & VINTAGE (TOONTRACK)

Custom & Vintage is the follow-up to the award-winning DFH SUPERICA. Custom & Vintage comes with a superb selection of Vintage and Custom drumkits, snares and cymbals played by world renowned British drummer Chris Whitten, produced and engineered by Peter Henderson. This is the drum tool to create classic drumtracks.



VST+AU+REWIKI INSTRUMENT £166

HIP HOP UNDERGROUND (UEBERSCHALL)

Tight groovez, Dope beats & Mad Flava! With over 140 high quality construction kits and more than 2.2 Gb of Content! Look forward to enjoying a massive Library jam packed with Drums & Percussions, Bases, Chords, Vocals, FX & fms of single drumsounds. The sound library comes along with the brandnew "Elastik" loop player.



VST+AU+RTAS INSTRUMENT - £69

60s A GO GO (UEBERSCHALL)

Authentic retro loops & samples inspired by lounge, easy listening, french and italian film music from the fabulous sixties. Played on real vintage instruments and amps! Over 1.5 GB sample material to give your productions real 60s retro vibrations. The sound library comes with the brandnew "Elastik" loop player.



VST+AU+RTAS INSTRUMENT - £69

BLUE (ROB PAPER)

Following the huge success of 'Albino', Rob Paper delivers his latest cross-fuser virtual synthesizer featuring FM Synthesis, Phase Distortion Synthesis, Wave Shaping Synthesis and Subtractive Synthesis in one creative combination! "Blue is an excellent-sounding, highly individual software synth that is full of surprises and a joy to use" - SOS



VST+AU INSTRUMENT - £132.95

THE RESOURCE (UEBERSCHALL)

The complete content of BPM120, VLP*20, VCP120 and PLP*20 - now in one plug-in! 10Gb of beats, licks, chords and percussion. 16370 loops and single sounds (11843 loops and 4527 single sounds) including Ueberschall's new ELASTIK loop player. An upgrade is available from either BPM-, VLP-, VCP- or PLP120 for just £99.



VST+AU+RTAS INSTRUMENT - £166

BROKEN BREAKS (LOOPMASTERS)

The ultimate sample collection for breakbeat enthusiasts working in all genres of modern music production, bringing an incredible collection of future classic beats and breaks to studios worldwide. Features over 770 brand new Breakbeat Samples, over 450 single hit drum samples and 44 pre-programmed Super Funked Drum kits ready to load directly into your sampler!



ACID+WAV+EXS+HALION+KONTAKT+NNXT+REX - £39.95

DEEP TRANCE & TECHNO (LOOPMASTERS)

Dedicated to the producers of underground Trance and Techno music, featuring a mind blowing collection of over 1,500 brand new samples ready to fuse into your tracks with minimal fuss, and maximum impact. Heavy Club beats, Soaring Pads, Filtered Arpeggios, Pulsating Basslines and Full Fat Samples! Inspired by Anjunabeats, Platipus Records, Nebulae and Nukleuz.



ACID+WAV+EXS+HALION+KONTAKT+NNXT+REX - £39.95

FIRESTORM (ZERO-G)

The ultimate Drum & Bass multi format sample beast produced by long time veteran of the scene DJ 'Producer Stakka. This massive 24 bit 1Gb library has been 2 years in the making and puts cutting edge production at your fingertips. With over 950 samples in numerous formats, it is packed to the brim with fresh and exciting sounds.



ACID+WAV+EXS+HALION+KONTAKT+REASONREFILL+REX - £59.95

URBAN ELEMENTZ (ZERO-G)

Over 1350 samples and 1.5Gb of the coolest freshest hip hop and R&B in the business - direct from NYC, Urban Elementz is a brand new collection of East Coast Hip Hop and R&B loops and samples crammed full of earth-breaking beats, cool keys, pimpin' basses, slicky guitars, synths, strings, licks, fills, percussion, fx and more!



ACID+WAV+EXS+HALION+KONTAKT+REASONREFILL+REX - £59.95

DRUMMEAR (TEKNIKS)

DrummEAR is Tekniks first DvD release dedicated to drum loops and hits for Logic's powerful EXS24 Sampler. Recorded in various studios throughout Norway using the very best mics, outboard equipment and desks for quality sonic delivery. As well as the 5 multisampled kits there is also a huge amount of grooves to get you started.



EXS24 DVD-ROM - £59.95

COMBINATIONS (LOOPMASTERS)

The Combinations refill from Loopmasters contains over 800Mb of content from the Origin Series range of award winning pro sample libraries, including hundreds of brand new combinator instruments and Reason patches for all serious Reason 3+ producers. Representing amazing value for money and pro quality, the best has just got better!



REASON REFILL - £39.95

RUSH (BIG FISH AUDIO)

If you want the latest sounds for your Progressive House and Trance productions, then what you need is Rush! From ethereal synths to driving bass, all the material you need to get your tracks into the biggest clubs is right here. Over 1.3 gigabytes of pure adrenaline, plus a bonus folder of 420 extra drum hits and loops.



APPLE LOOPS+REX+WAV - £55

CHILL (BIG FISH AUDIO)

Downtempo Loops and Beats! Enter into a different state of mind with Chill. This loungin' set of construction kits draws from jazz, hip hop, dub, funk, soul, ambient, and pop to create a whole new downtempo experience. Drums, guitars, keys, electric and acoustic bass, flutes and more get screwwhere between 60 and 110 bpm.



APPLE LOOPS+REX+WAV - £55

NU METAL CITY (BIG FISH AUDIO)

A head-banging collection of construction kits covering a variety of styles, including Nu Metal, Metalcore, Death Metal, and Industrial Rock. Inspired by artists such as Slipknot, Korn, Anthrax, and Nine Inch Nails, NU METAL CITY features live and programmed drums, screamin' guitars, electric bass synths, turntable FX, and atmospheres.



APPLE LOOPS+REX+WAV - £39.95

DRUMATIC PERCUSSIVES (BIG FISH AUDIO)

Bunker 8 has finally opened the passages to its vaults and gives the ardent samplists what they are most thirsty for; access to the raw, unadulterated single hit samples that have made Bunker 8 Digital Labs so world renowned. 6500 samples makes this one of the most extensive drum and percussion libraries ever!



BATTERY+HALION+KONTAKT+REASONREFILL+WAV - £55

LOUNGIN HOUSE (EQUIPPED MUSIC)

Want to delve deeper into the naked, intimate sound of House? Welcome inside the hypnotic and seductive grooves of Loungin' House. Luxurious dance floor beats, mixed with sexy latin style percussion, lush chords and more. With over 4Gb of material, this is the ultimate House groove toolbox for Stylus RMX and Reason users!



REX2+WAV - £79.95

NU JAZZ FUNK (EQUIPPED MUSIC)

Can't get enough of those wild, syncopated funky beats of Nu Jazz? Then enter the brazilian flavoured sounds and moods of Nu Jazz Funk. Super funky broken beats, mixed up with jazzy rhodes, moogy basses, percussion and more. This is the ultimate Nu Jazz groovebox for Stylus RMX and Reason users!



REX2+WAV - £79.95

THE COLLECTION (NINE VOLT AUDIO)

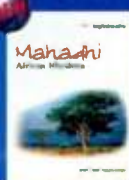
This triple DVD collection contains the complete Downtempo Guitars Vol 2, Electronic Guitars and Chopped Guitars libraries. An indispensable collection of unique and flexible loops suitable for virtually any musical occasion. All loops have been recorded in 24-bit resolution and are presented in Stylus RMX, REX2, WAV and Reason ReFill formats.



ACID+WAV+REX+REFILL+RMX - £95

MAHADHI (BIG FISH AUDIO)

Mahadhi ya Afrika! In Africa, traditional music is not written down, but handed down from generation to generation. You'll feel that tradition as you dance to the 'rhythms of Africa with this collection of live percussion loops. If you want to experience this culture in its purest form, Mahadhi puts the rhythms of Africa at your fingertips.



APPLE LOOPS+REX+WAV - £55



Horn Section

£117.00

Unbelievable but true: no other plug-in lets you create such a flexible, authentic-sounding horn section as easily! Key, tempo, scale - everything at the touch of a button or even automatically synced. Even the single notes of a single voice can be individually worked like MIDI. Uncountable variations within seconds!

This is possible through a combination of live-recorded licks and the unique Melodyne technology from Celemony. The horn sections consist of baritone, tenor, and alto sax, trombone, trumpet and flute and were recorded with studio professionals playing high-quality instruments using no hall effect.

The styles run from 60s/70s Soul and Funk, Disco, 80s Pop, 90s Acid Jazz, Nu Jazz, Rock, Funk, House, RnB, HipHop up to the most current hit productions.



Liquid Instruments 1.1 available now



ueberschall

ESI Pro Jam Mate UG1

USB electric guitar

These days, manufacturers seem obsessed with sticking USB sockets on anything that comes to hand, so I was half expecting ESI's Jam Mate to be a USB-equipped piece of toast. In fact, it's an electric guitar that can be connected directly to a Mac or PC's USB socket.

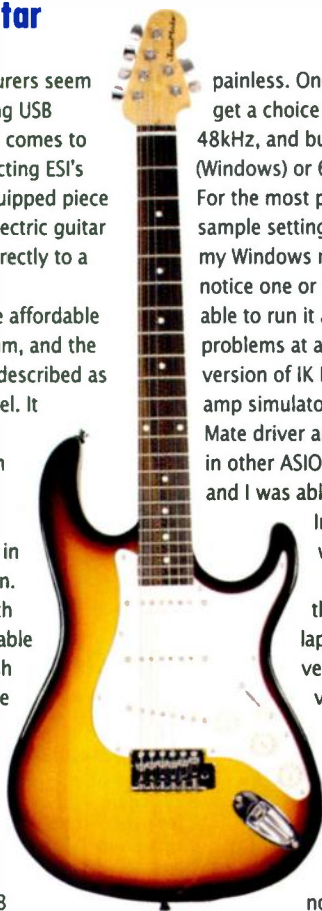
At £169.99, it's at the affordable end of the guitar spectrum, and the instrument itself is best described as a decent beginner's model. It has a very light wooden body with a rather garish yellow sunburst finish, a floating-bridge vibrato, three single-coil pickups in a Strat-style configuration. The 25.5-inch scale length neck has a pretty reasonable fret job and a good lowish action out of the box. The Jam Mate is supplied with a very generous selection of extras including spare strings, a strap, a gig bag, a pair of headphones, and both jack-to-jack and USB cables.

You can use the Jam Mate as a normal electric guitar, but hidden away next to the strap button is a deeply recessed USB socket (pictured right), which does a surprisingly good job of retaining the connector; I had been worried about the possibility of accidentally disconnecting the thing, but it's no more of a risk than is the case with a normal guitar lead. However, it does stop you standing the guitar on its end, which is a nuisance. When used in USB mode, the quarter-inch jack socket acts as a headphone amplifier, so in theory, you don't need any other audio hardware to record to your Mac or PC.

Under Mac OS X, the Jam Mate is class-compliant and shouldn't need additional drivers; these are needed on the PC, but the installation process is

painless. Once up and running, you get a choice of sample rates up to 48kHz, and buffer sizes from 80 (Windows) or 64 (Mac) to 2048 samples. For the most part, the default 128-sample setting worked pretty well on my Windows machine, though I did notice one or two dropouts, and I was able to run it at 64 samples with no problems at all on the Mac. A cut-down version of IK Multimedia's *Amplitude* amp simulator is supplied, but the Jam Mate driver also shows up as an option in other ASIO-compatible applications, and I was able to use it in Native Instruments' *Guitar Rig 2* without problems.

It wasn't all roses, though. On my Windows laptop, the Jam Mate was very noisy when connected via USB, and the added noise was much more intrusive than the usual hums and buzzes: it was a full-frequency hiss that was easily audible over the top of whatever note or chord was playing, so noise gating didn't really help. This didn't happen on my Mac, so it's clearly not a fundamental fault with the guitar, but I never managed to isolate the cause.



The Jam Mate's existence begs the question 'Who needs a USB guitar, anyway?', and I imagine the concept will be most appealing to guitarists who are dipping a toe in the waters of computer audio for the first time. Anyone who's half serious about recording is likely to need a more comprehensive interface that can accept line and mic inputs, but the Jam Mate certainly provides a neat way of jamming along to iTunes, and a laptop is a lot more portable than most guitar amplifiers. *Sam Inglis*

SUMMARY: It's a guitar. With a USB connector.
Intermusic +44 (0)1202 696963.
www.usbband.com

COOL STUFF

The latest offering from **Seymour Duncan** is not a pickup but a stompbox, the **Twin Tube Classic**. This two-channel guitar preamp uses a pair of NOS (new old stock) subminiature Philips 6021 dual-triode vacuum tubes, providing up to 90dB of gain. Its Rhythm and Lead channels each have Volume and Gain controls and there are global Bass and Treble tone controls, and bypass and channel selection footswitches. The Twin Tube Classic runs off a 16V AC mains transformer and uses a toroidal transformer to supply the high plate voltage required for the valves to work properly. It'll be available in June and costs £199.95. Aria UK +44 (0)20 8572 0033.

www.seymourduncan.com



Also new this month, the **Metal Muff** (£69) is the latest distortion pedal from **Electro-Harmonix**. It provides up to +18dB of gain and has an additional, switchable top boost circuit with its own level control. The usual Volume and Distortion controls are accompanied by a three-band EQ. A second new addition to the Muff family, the **Little Big Muff** (£49.95), is a compact overdrive pedal with Sustain, Tone and Volume controls and a sound that apparently sits somewhere between the US- and Russian-made Big Muff effects [*That's enough Muff — Ed*]. A third new pedal, called the **Hog** (£299), is a sophisticated polyphonic octave generator and guitar synth effect. Along with two envelopes and a resonant low-pass filter, the Hog allows you to mix ten different pitch intervals (original pitch, one fifth up, one octave up and so on) via ten faders, promising perfect polyphonic tracking. You can also connect an expression pedal — the Hog's seven different Expression Modes include pedal control of pitch, filter frequency and volume. All three pedals should be available by the time you read this. Hotrox UK +44 (0)115 987 3163.

www.hotroxuk.com www.ehx.com



TECHNIQUE

Can a power soak really give you 'loud tone' without volume?

Using a 'power soak', or speaker attenuator, allows you to turn up a guitar amplifier to the point where it produces its optimum distortion and compression, but then regulate the actual volume of the loudspeaker(s) it is driving. In the home studio, where volume levels may be restricted, this allows you to still record using valve (tube) output-stage distortion. There's no point in using a speaker attenuator with a solid-state amp. You might as well just turn the amp's master volume down, as there are no tonal advantages to running a solid-state amp at high volume. You might get some speaker compression and cone break-up, and you'll get some interaction with the guitar if you are in the same room as the speakers, but that's all.

To provide independent regulation of speaker volume, the power soak needs to be patched in between your amp and its speakers and must incorporate a 'dummy load', consisting of a number of large resistors, so that the power from the amplifier has got somewhere to go when it's not going into the speaker. Instead of being turned into sound by the motion of the speaker, it will be turned into heat and safely dissipated. If you run a solid-state amp with no 'load' (ie. no speaker connected), it will see it as an infinite impedance, which just reduces the amp's output to zero. Drive a valve amp into no

load for even a few seconds and you could be looking at a very large repair bill.

It is very important for the health of the amplifier that the dummy load section of a power soak should have an adequate power rating and also replicate, as far as possible, the exact load that the amp was designed to drive. This is why power soaks often have one specific impedance that they are designed to work at — 8Ω, 16Ω and so on. To operate at high levels without risking damage to the amplifier a power soak must also replicate the 'impedance curve' of a real speaker — loudspeakers do not present a constant load at all frequencies; the impedance rises at high frequencies and there is always a peak at the resonant frequency. Although some early designs of power soak were purely resistive and led to frequent amplifier breakdowns, any reputable modern design will now provide an appropriate 'reactive' load, like a speaker.

There is, in practice, a limit to how far you can attenuate the amp/speaker link and still have it produce a desirable quality of output. THD's renowned Hotplate attenuator (www.thdelectronics.com), which has one of the better reputations in this field, actually incorporates the speaker as part of the total load and its smaller attenuation settings — -4dB and -8dB — sound quite acceptable. As attenuation is increased, it



becomes necessary to utilise the on-board EQ switches to boost lows and highs, then when you reach the full dummy-load setting which allows attenuation right down to zero, the sound becomes so limited at both frequency extremes that you probably wouldn't want to record it anyway. The Richter Control attenuator, from UK manufacturer Sequis (www.motherload.co.uk), utilises a different design that gives it a slightly more open sound at very high attenuation settings, but it can only pass a maximum of 50 percent of the input to the speaker.

It is possible to achieve really good recorded results with attenuators, but the key to making the most of them is to recognise the point at which they are doing more harm than good. A major part of the sound of a loud electric guitar comes from the electro-mechanical behaviour of the speaker and its

interaction with the amplifier's output transformer. At very low levels, neither of these will be occurring in anything like the same way, so it is not really surprising that it doesn't sound the same. If you find yourself having to attenuate your amp beyond the point where it sounds good, try using a full dummy load setting and then take a DI signal from the attenuator out to a speaker simulator, in either hardware or software. This will often sound far more real than an over-attenuated speaker. Alternatively, feed the attenuator into a different speaker to the one you normally use. A small speaker driven hard will invariably sound much more authentic on distorted guitar than a large speaker barely working, and with the attenuator you can set the exact power level where cone break-up starts to occur. *Dave Lockwood*

COOL STUFF

The new **Hughes & Kettner Switchblade** is a fully-programmable four-channel valve amp with built-in digital effects. The four independent channels — Clean, Crunch, Lead and Ultra — are controlled by a seemingly conventional set of knobs, but up to 128 presets (incorporating gain, master volume, EQ and effects settings) can be stored and recalled via MIDI or using the included footswitch. As well as the on-board digital reverb, delay and modulation (chorus, flanger or tremolo) effects sections, there's an effects loop for an external processor. The 100W Switchblade 100 Head uses two 12AX7 preamp valves and four EL34s in the power amp. It's available now and costs £1049, with 50W, 1 x 12 and 100W, 2 x 12 combo versions equipped with Eminence speakers on the way. SCV London +44 (0)20 8418 0778.

www.scvlondononline.co.uk www.hughes-and-kettner.com



Yellow Tools Independence

Software Sampler

Building on their modular software instruments,

Yellow Tools' Independence is a combined software sampler and workstation synth. But it faces a lot of competition. What makes it stand out from the rest?



Nick Magnus

Software samplers are rapidly becoming staple tools for many musicians. Kontakt, Gigastudio, Halion and EXS24 are amongst the best-known of these, and now German company Yellow Tools are making their bid for megasample stardom with *Independence*, a 'modular sonic workstation' designed to stream large sample libraries directly from hard disk in similar fashion to the above-named titles.

Independence promises not only a highly detailed and customisable level of control over your sampled material, but also superior ease of use and intuitive operation — so does it live up to its promises?

Installation

Yellow Tools are clearly determined to impress from the outset — the box (shown above right) is absurdly huge, occupying twice the shelf space of standard software packaging! Within its capacious interior are one software installation CD, three DVDs

The default Modules View, showing the *Origami LE* convolution reverb applied to Layer 3 as an insert effect.



carrying the 16GB *Independence* library (of which more below), a 144-page manual and a USB dongle (which is usually sold separately). The dongle is used in conjunction with the included *Yellow Tools Key Manager* software, and is Yellow Tools' chosen method of combating software piracy. The combination also provides a convenient means of product activation for their range of virtual instruments. The range can be installed on as many computers as you like — as long as you have that dongle with you, the program can be run — and only one dongle is needed to run any Yellow Tools program. If your sample library is located on an external Firewire/USB drive, you can install the main program multiple times, and carry the library and dongle around with you. However, Yellow Tools warn that if you lose your dongle, they will not replace it, so if you don't plan on buying *Independence* a second time, you'll need to guard it with your life.

The instructions for installing the software and supplied library and 'activating' the dongle are ambiguous (an unfortunate by-product of the user manual's less-than-perfect English translation) but once understood, the procedure is straightforward, if long-winded. The *Independence* program is installed first — you'll need at least 512MB of RAM, a 1.4GHz Pentium PC or 1GHz Mac running Mac OS 10.4, and 16GB of disk space for the library — and VST, DXI, RTAS and stand-alone versions are provided. I chose to install the VST, DXI and stand-alone versions. During the program installation, you will be



Mapping View, including the waveform of the currently selected Zone, with its start, end and loop points. The Zone's velocity crossfade area can be clearly seen.

asked if you wish to install the 'Independence Basic Path' to your main drive. This tells *Independence* where your main sample library resides. However, as it's now common practice for people to have dedicated drives for sample streaming, I recommend saying 'no' to this, and setting the Basic Path to the drive of your choice from within *Independence* after installation is complete.

Next, the *Key Manager* should be installed. When this is done, you insert the dongle into a spare USB port and run *Key Manager*. If your computer is connected to the Internet, activating the dongle is simply a matter of clicking the 'Activate Product' button and typing in the Activation Key which is subsequently generated. If your studio computer is without a Net connection (like mine), *Key Manager* saves a small file which has to be emailed to Yellow Tools for activation (in my case, they mailed it back within half an hour). You then put the activated file back into the *Key Manager* folder on your music computer, run *Key Manager* again and click on 'load file' to authorise the program for your specific USB dongle.

Installing the supplied 16GB sample library is simply a matter of copying the files from the three DVDs to the hard drive of your choice — which should also be the location you specify as your 'Basic Path'. The library is of consistently high quality, though the choice of instruments is slightly lacking in variety considering the disk space they occupy, and contains little in the way of surprises. There are orchestral strings, woodwind, brass and percussion (all derived from the Kirk Hunter

orchestral library), acoustic and electric pianos, guitars and basses, alto and baritone saxophones, a selection of world, tonal and ethnic percussion, electric and acoustic drum and percussion kits, some synth waveform building-blocks, and a handful of the above instruments with Indian or Turkish tuning models pre-applied. The orchestral strings, brass, woodwind and saxes make good use of keyswitching, although I encountered some severe glitching with these instruments, making their use a rather hit-and-miss affair.

Layout & Architecture

When started, *Independence* defaults to the Modules view, which is divided into three panes: the left pane is where Layers, or instruments, are loaded. Adjacent to this is a list of parameters that apply to the overall Project and the currently selected Layer Set and Layer. The larger panes on the right offer six available views: Modules (the default view seen opposite), Mapping (shown above), Performance, Mixer, Preferences and Key Status. Most of the detailed editing is done from the Modules and Mapping views. The Mixer view (shown on the last page of this article) affords access to *Independence's* output, buss and auxiliary effects-routing options, whilst Performance view deals with the setting up of note repetitions (referred to as 'Alternates') and Advanced Legato mode (see overleaf for more on this). Key Status informs you which Yellow Tools products are currently activated on your dongle.

Like any sampler, software or otherwise, *Independence* has a hierarchical structure. The

SOUND ON SOUND

Yellow Tools Independence
£299

pros

- Unlimited everything (computer permitting!).
- Excellent sound quality.
- Enhanced performance tools for added realism.

cons

- Audio glitching on certain keyswitched instruments.
- Needs a third-party program to translate non-native libraries.
- No loop crossfading, timestretching, positional crossfading of Zones, or effects automation.

summary

Look past the hyperbole and you'll discover a worthy and capable alternative to the established software samplers. Although lacking some features found in other programs (eg. timestretch and drag-and-drop assignments), *Independence* makes up for this in other areas with sophisticated performance-oriented tools such as Advanced Legato, powerful keyswitching capabilities and a highly flexible system for handling note repetitions. As ever, it's a case of swings and roundabouts!

YELLOW TOOLS INDEPENDENCE

► largest element is the Project — that's everything loaded into the current instance of *Independence*. This divides into Layer Sets, Layers, Sections/Alternates and Zones. When you load an instrument from the library, it appears as a Layer which can be assigned its own MIDI channel, output and other settings. Layers reside in turn within Layer Sets, of which 16 are available, labelled A to P, and each can contain an unlimited number of Layers, although only 16 MIDI channels are available to each instance of *Independence*. The Layer/Layer Set arrangement is among *Independence's* strongest features, and allows the construction of some very complex and detailed instruments, especially when employing keyswitch functions, which are typically used to jump between different articulations of one instrument.

In programs such as NI's *Kontakt*, keyswitches trigger different groups of samples from within a single instrument patch. This requires either having such a patch already designed, or custom-building one from scratch. *Independence* operates this way too, but has an additional trick up its sleeve — you can also keyswitch complete Layers. So you could load separate marcato, arco and pizzicato instruments (Layers) into one Layer Set, then configure those complete Layers to be keyswitchable. Repeat use of such a setup is very easy — saving Layer Sets to disk enables you to recall that 'super-strings' setup at will.

Each Layer has its own set of global parameters. Besides the standard volume, pitch, pan and MIDI channel settings in the Basics section, you can select from a library of more than 50 special tunings, among them

Stop Press: Version 1.0.4 Update

Since the main body of this review was written, Version 1.0.4 has been released, bringing compatibility with *Logic v7.2*, *Digital Performer* and *Pro Tools 7*. Also included are features designed to enhance live performance. Firstly, there's now a 'pre-cache' option which (to quote Yellow Tools), allows you to 'pre-load Layers into *Independence* which are available immediately when you activate them, without any additional loading time' These pre-loaded Layers can then be instantly activated using MIDI program changes. Two pre-caching options are available for Layers: 'All' and 'My Favourites'. I tried the 'My Favourites' approach first — and sure enough the three patches I had saved to that folder opened instantly when selected from the drop-down

menu. Frustratingly, though, I could find no way of calling them up using program changes. The 'All' option fared less well; after an interminable wait my computer slowed to a crawl, was eventually brought to its knees, and had to be shut down.

Improvements to the 'Slice Mode' are also mentioned, but apart from the addition of an automatic BPM calculator, no details are given; otherwise, this appears to function exactly as before. The promised new MIDI indicator is easier to spot (there's just the one for an entire instance of *Independence*) and a MIDI panic button is now included, which effectively halts all *Independence* activity and mutes further MIDI input. It could certainly be useful in a live situation.

Arabic, Indian and Chinese scales.

Disk streaming can be turned off individually for any Layer. That Layer's samples are then loaded into RAM, which reduces the workload on your overburdened hard drive! Another nice touch is RAM Auto-Clean — when activated, samples not being used in a song are deleted from RAM, again reducing the load on your computer's resources. A global Auto-Clean switch would have been useful to clean up all Layers in a Project at once, rather than having to treat each individually.

MIDI Basics include transpose, MIDI channel, and the controller number assigned to Hold (sustain pedal). MIDI Extended parameters allow the setting of velocity range, key range and delay (in other words, the time elapsing before a Layer sounds after receiving a 'note on' message). The Scale parameter defines a Layer's response to velocity within

a restricted range, and is useful for matching 'switchover volume' between two velocity-switched Layers.

Dynamic Range parameters further tailor a Layer's volume response to velocity, including the response curve of the Layer itself and the received MIDI velocity curve from an external MIDI controller keyboard, which can compensate for weighted keyboards with particularly heavy actions or steep velocity curves. This is also where you specify trigger keys to enable keyswitching between complete Layers, as mentioned earlier.

Finally, the Polyphony parameters dictate maximum polyphony for a Layer, release time for 'killed' voices when that polyphony is exceeded, the maximum number of voices played by any single repeated note (independent of the maximum polyphony) and release time for those 'killed' voices. Both these release times eliminate unpleasant 'clicks' when voices are killed by excess polyphony, and can even be used creatively to ensure monophonic sounds move from note to note in a smooth, legato fashion, particularly when using slow attack and release envelopes.

Sections & Alternates

Layers can be subdivided into Sections and Alternates. Sections are collections of samples (Zones) within one Layer, used to sub-divide it into easily manageable 'groups'. For example, a single Layer might contain a complete drum kit with the drums 'sectioned' by type: cymbals in one Section, toms in another, and so on. Each Section can then be edited separately, making it easy to apply the same filter, envelope, insert effect or modulator to all samples within that Section. Multiple selections and editing of Sections are also possible.

Alternates are collections of Sections that help to create realistic-sounding note repetition by 'cycling' several different



Performance View, with various samples set up in the upper half of the window to play as Alternates for more realistic note repetition.

Test Spec

PC REVIEW SYSTEM

- 2.4GHz Pentium 4 PC with 1GB of RAM running Windows XP.
- Cakewalk *Sonar 5 Producer Edition*.
- *Independence* versions reviewed: v1.0.3 & 1.0.4. Versions 1.0.5 and 1.0.6 followed in rapid succession at the end of the review period, but not in time to be considered in this review.

sampled variations for each consecutively played note. A typical application would be the up and down bowing strokes of a violin. Here, you would assign 'up' strokes to one Section and 'down' strokes to another, then set an Alternate to step sequentially from one Section to the other each time a note is played. *Independence* also lets you define a maximum time-frame outside which the 'alternation' will not occur, so that only notes played above a set speed will cycle between samples. The 32 steps available enable this technique to introduce natural-sounding tonal variations, for example, by cycling through 10 different samples of a loud snare drum. Cycling can also be randomised to inject further tonal unpredictability. Alternates are manipulated just like individual Sections,

so when selecting an Alternate for editing, you must further specify which Sections used in that Alternate are to be included in the selection. Subsequent edits will then be applied simultaneously to all selected elements. It looks horribly complicated in print, yet it's easily understood with the program in front of you!

The lowest level of hierarchy is the Zone, which is basically a single sample mapped to one or more keys. Layers, Sections and Alternates can be saved and reloaded as independent items. Maybe this was the inspiration for the program's title?

Mapping View

To assist in the keymapping of imported samples, *Independence* offers various Auto Mapping options. These options include Chromatic (for assembling a collection of loops on adjacent keys), Multi-key (for assembling a multisampled instrument), One-Key (multiple samples assigned to one key with predetermined velocity layers) and 'X-Y-Z'. Of these, the Multi-key option requires that your sample names include either note names or key numbers. If they do, *Independence* can work out how a multiple selection of samples should be mapped based on that information. The

Advanced Legato

Whilst it's possible to obtain basic monophonic legato effects by restricting a Layer's polyphony to one voice and adjusting the Layer Release parameter to 'paint over the cracks', *Independence* has a purpose-built Advanced Legato Mode that deals with this in great detail. Found in the lower pane of the Performance view, the parameters for this address a variable set of conditions.

'Key Range' restricts the key range to which the legato effect is applied; legato notes are monophonic, but notes outside this range retain their normal polyphony. 'Skip' adjusts the sample start time for incoming legato notes in milliseconds, so bypassing any initial attack and allowing smooth note transitions ('Random' provides a variation on this, unpredictably adjusting the Skip time for a less predictable sound). Finally, 'Threshold' sets the attack time of the incoming legato note, and 'T Curve' adjusts the attack time response curve.

This alone would satisfy most applications — but *Independence* has grander ideas! Legato can be applied not just to an entire Layer, but to individual Sections and Alternates — and with that in mind, the additional Option and Target parameters offer some very neat tricks. In the Option line, for example, you can specify the behaviour of additional sonic details such as the guitar finger noises, breaths and squeaks that might occur between notes. It's even possible to decide which noise variations are heard depending on your keyboard playing direction — eg. upward or downward fret slides on a guitar. For really realistic legato, the Target line allows you to specify a further sample layer (eg. hammer-ons, pull-offs) as your 'destination' legato notes — assuming you have the appropriate samples at your disposal. And as icing on the cake, a 'ghost' note, such as a creak, click, or even a sigh, mutes the final note of your phrase. How's that for detail?



A close-up of the Advanced Legato parameters in the lower half of the Performance View.

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Jamie Cullum

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How modulation assignments appear in Modules View. Sources are on the left, control panels for appropriate destinations are on the right.

► 'X-Y-Z' option is even more clever, but requires a very specific naming convention to work. It's a bit like 3D mapping — *Independence* works out all the Zones, Sections and velocity layers required to create an up-and-running instrument from a bunch of imported samples, with just a single mouse-click. However for this to work, your samples must be named exactly to an X-Y-Z convention, where X is the key number, Y is the velocity zone and Z is the Section/Alternate number. Curiously, drag-and-drop from the browser onto the key map is not supported, so importing samples individually involves selecting a sample, setting its root key and clicking 'execute'. Clicking and dragging on the upper, lower or side boundaries of a mapped Zone adjusts its velocity range and key range — the same method used by NI's *Kontakt*. Velocity crossfades per Zone can also be set using the relevant value fields, with the added enhancement of adjustable curves for each fade area. Sadly, positional crossfading of Zones does not appear to be possible — a curious omission.

Basic sample editing tools are provided in the Mapping view; click on a single Zone and its sample waveform appears above, with adjustable markers for sample start, end and loop points. There is no provision for multiple loops or loop crossfading, although alternate looping is supported. There are no real-time timestretching functions either, although *Independence* does include Beat Slicing, which works in a virtually identical manner to the Beat Machine in NI's *Kontakt*, subdividing loops into individual beat slices, which are then automatically mapped to the keyboard. An accompanying MIDI file for each sliced loop is saved to disk, and when you re-import this to your sequencer, it triggers the slices sequentially to reconstruct the original loop, allowing playback at a varying range of tempos. *Independence's* automatic beat



detection is not as accurate as *Kontakt's*, though, and requires a fair amount of manual fine-tuning to achieve good results.

Modulation

Numerous modulation sources and destinations can be applied, both globally to a complete Layer and on a more detailed level by delving into the individual Sections and Alternates. This is done from the Modules view, in the lower left section of the right-hand pane (see above). You select the item you wish to edit (the whole Layer, a Section or an Alternate), click on the 'new modifier' drop-down menu, then select your desired source (mod wheel, velocity, MIDI controller, and so on) and it appears in a box in the window below. In this box you choose the destination, percentage range and response curve of the modulator.

Amongst the usual mod sources (such as velocity, mod and pitch wheels and aftertouch) are exotic such as freely definable (sync'able) envelopes, LFOs, glide, MIDI controllers and a step modulator. If an internal source such as an LFO or an envelope

is chosen, a corresponding control box appears in the window to the right, containing appropriate parameters for that source. Edits and modulation assignments can also be simultaneously performed on several Sections/Alternates. By clicking the Content button, an overview of all existing Sections and Alternates appears on the left, allowing for multiple selection of the Sections/Alternates you wish to include in the editing process. Insert Effects (see the box on effects layer) can similarly be applied to a whole Layer or just to selected Sections or Alternates.

Filters & Mixer

Independence has nine filters, comprising low-, high- and band-pass types in 2dB, 4dB, and 6dB-per-octave variations. Setting the cutoff and resonance is accomplished either by positioning a dot on the 2D 'pad' or by using the mouse to scroll the numerical values up and down (the second method is the most common way of altering values in *Independence*).

A global Filter can be applied to the overall

Importing Other Libraries & Samples

Although it's not currently possible to import third-party sample libraries directly into *Independence*, Yellow Tools have been working in tandem with Chicken Systems, the makers of the sample-conversion software *Translator*. The result is *Translator Independence Edition*, which Yellow Tools are recommending as an add-on purchase. Windows XP users currently stand to benefit more from this, as the XP version supports quite a number of formats; the Mac OS X version supports fewer.

If you own any of Yellow Tools' other sample-based virtual instruments (eg. *Culture*, *Candy* or *Majestic*) *Independence* is capable of loading sounds from these instruments, offering

enhanced editing flexibility as well as a handy means of rationalising those sounds into a single program. WAV and AIFF files can also be imported, mapped, and resaved as *Independence* files. However, owing to an insufficiently clear conceptual explanation in the manual, this initially caused great confusion. This is because *Independence* can only import files that are located in the 'Audio Files' folder, itself located in the *Independence* Basic Path. But surely that doesn't mean that you have to duplicate all of your mega-huge library in this folder just so that *Independence* can use it? Fortunately not!

However, what you do have to put there is what

Yellow Tools call an 'alias' for the files you wish to import into that folder. Unfortunately, the manual omits to explain (for the benefit of PC users like me) that an alias is the Mac equivalent of a shortcut on a PC. But an alias of what? The actual wave files? No, that would be a very messy way of dealing with even a modestly sized library, and it doesn't work anyway. A trawl through the *Independence* web forum came up with the answer — it needs to be an alias of the folder(s) that the required samples normally live in. And it worked — after copying shortcuts to all my sample library folders, the samples inside them became accessible from the *Independence* browser pane.

Layer or selectively to specified Sections; when applying a filter to a Section, an additional ABS (absolute) box appears. When activated for a Section, this allows you to 'separate' that Section's filter settings from the global filter setting — it operates independently (that word again...) from the overall Layer's filter setting. When the filter ABS is not active for a Section, its settings are added to (or subtracted from) the Layer's filter settings. Five additional filters are also provided amongst the complement of Insert Effects.

Another strong feature of *Independence*, the Mixer section allows for unlimited channels, busses and Groups. Each Layer is automatically provided with its own Mixer channel, and Sections within Layers can be individually routed to their own Custom channels if desired. Effects can be inserted directly to each Layer or Custom channel, as well as being inserted to buss channels for use as auxiliary effects. If a serial chain of several Effects is inserted to one channel, that chain can be saved as a Bank and conveniently recalled at any time. Groups function just as they would on a hardware moving-fader mixer; a selection of channels can be linked so their faders move in parallel. Sensibly, Grouped faders move relatively to each other, maintaining their correct volume ratio. The possible setups and routings are almost limitless, allowing virtually any mixer environment to be created. One limitation, however, is that no more than five buss sends are available for each channel, although the number of actual buss channels is theoretically unlimited. Annoyingly, it's not possible to give channels or busses custom names — they are always cryptically referred to by names such as 'A Layer 01', 'Custom 04' or 'Buss 2', which makes navigating the mixer rather slow if you're working with a large number of channels and effects. Being able to name channels and busses as 'Piano' or 'Reverb' would clarify matters considerably!

Conclusions

Independence compares favourably with the competition, with NI's *Kontakt* perhaps being its closest rival. Reservations come to mind, however — some personal, some practical. In the personal department, I found *Independence's* user interface to be cosmetically rather cold and uninspiring — and like it or not, the look of a program has a lot to do with the way you respond to and interact with it. Programs that employ knobs, faders and other hardware analogies arguably have a more 'friendly' feel, providing immediate and meaningful visual feedback. On the other hand, those 'hardware' graphics take up a lot of screen space, and *Independence's* largely numerically-based

Built-in Effects

Independence features a useful and versatile selection of built-in effects that can be used both as Insert effects (to a Layer, Section or Alternate) and as auxiliary effects in the Mixer section. As per the *Independence* philosophy, a potentially unlimited number of effects can be applied if your computer can cope! Their interfaces are a combination of 'knobby' graphics

and numerical value fields, and each effect can be minimised to a 'strip' to conserve screen space. Even though you would not normally use effects such as pan or compression as auxiliary effects, the flexibility is still there to do it if that's what you want. Space restrictions preclude a detailed description of every one, but here's a brief rundown of what's on offer.

EFFECT TYPE	COMMENTS
EQUALISERS	
'4-band parametric'	High/low shelving + two sweepable.
'6-band parametric'	High/low shelving + four sweepable.
'3-band vintage'	Control over gain (up to 3x) and frequency.
FILTERS	
'X-filter'	Variable response, from low-pass to band-pass to high-pass.
Filter follower	Cutoff follows gain curve.
'Low-cut'	Shelving with variable dB-per-octave slope.
'High-cut'	Shelving filter with a variable slope.
Multimode	A mix of low-, band- and high-pass.
DYNAMICS	
Compressor	Up to 5ms 'look-ahead'.
Limiter	—
Gate	—
MODULATION	
Chorus	—
Flanger	—
Phaser	—
Vynliser	Noise effects overlay.
DISTORTION	
'Time clipper'	—
Bit reduction	—
Dual-band distortion	Control over gain (up to 2x), crossover frequency and 'colour'.
Tube distortion	—
DELAYS	
Delay	Stereo delay.
Echo	Mono, with delay count and ping-pong width.
'HELPERS'	
Volume	—
Panorama	Left/right balance + stereo width reduction + autopan.
'X-Y panorama'	Combined stereo width and overall left/right position.
Phase invert	—
Sample delay	Individual left/right delay times, five seconds maximum.
Level meter	A handy visual reference.
REVERBS	
Reverb	A basic reverb, with simple parameters.
Reverb two	Additional early-reflection parameters.
'SPECIAL'	
<i>Origami LE</i>	Convolution reverb.

Worthy of special mention is *Origami LE*, the convolution reverb. Its surprisingly low CPU usage and low latency mean you don't have to shy away from using this one! A small library of reverb impulses is provided to get you going, but happily *Origami LE* can import any other impulses you may have — as long as they (or aliases of their 'home' folders) are present in the Audio Files folder in *Independence's* Basic Path. Editing is limited, yet enough basic tools (including EQ and a room 'positioner') are provided to achieve excellent results.

Regarding effects automation, there appears to be no facility for this. By contrast, NI *Kontakt* allows for MIDI automation of its effects when they're applied as either insert or send effects within an instrument. It's not so in *Independence*, which is a shame.

parameter displays allow more information to be visible at once. Secondly, I tend to greet overly frequent claims of 'worldwide unique' features with scepticism (*Independence's* supposedly 'very unique' Beat Slicer comes to mind). Nevertheless, *Independence* can lay claim to some unique implementations of certain features, such as Advanced Legato mode and their method of setting up Alternates. Yellow Tools should also be

commended for their 'unlimited everything' design philosophy, and are clearly looking ahead to the imminent proliferation of 64-bit, dual-processor computers that can actually take full advantage of this 'unlimited' headroom. Certain performance issues should be mentioned — namely the inexplicable and occasionally severe glitching that occurred when playing certain sounds. These glitches sounded characteristic of disk streaming

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► errors, yet they persisted even when the Read Model was changed from disk streaming to RAM. Curiously, this could occur with only a single sound loaded, while playing very few notes, and seemed to affect sounds including keyswitchable Sections more than others. Also, when switching between Read Models, *Independence* occasionally displayed a tendency to get 'stuck' — sometimes for a couple of minutes — whereafter the whole computer would slow to a crawl and a restart was necessary. Finally, despite trying every conceivable audio I/O combination, I wasn't able to get so much as a peep out of my Mixtreme soundcard using the stand-alone version — a problem not encountered with any other stand-alone program I own. Otherwise, *Independence* seemed solid and reliable enough, coping bravely with the nonsensical test pieces I threw at it, and even seemed happy to stream samples simultaneously alongside *Kontakt*,

Extensions

Independence can be further turbo-boosted with the addition of optional software Extensions. However, at the time of writing, scant information is provided on Yellow Tools' web site concerning the three available: the Pro Groove Extension ('tempo-independent grooves with unique manipulation of speed, sequence and length') the Pro Surround Extension ('support of any professional surround format up to 8.1') and the Pro Effekt Extension ('an additional Insert bank' of enhanced effects). These software modules are sold separately, and the price is quoted on the Yellow Tools web site as US\$99 per module.

Yellow Tools would like it to be, and certainly not how most people would choose to allot their precious time when musical inspiration is chomping at the bit! The bottom line? Whilst *Independence's*



The Mixer view showing three Layer channels, two Custom channels and two Buss channels. Buss 2 has been opened to display the Aux send Reverb effect inside.

Kompakt and *Intakt*. It's also very kind on CPU usage, barely reaching 35 percent on my machine even when playing six busy multitimbral parts and with a number of effects, including *Origami LE*, patched in. On a more general note, it would be nice to see some of those *Translator* routines integrated as part of the *Independence* program, much as *Kontakt* supports third-party sample libraries. There's only so much mileage in the supplied library, and although the importing and remapping of your own samples is possible, it's not always the no-brainer that

workmanlike user interface may not be to everyone's taste, there's no denying that it has a lot to offer the adventurous samplist. If you're looking to invest in a software sampler, you should check it out. **SOS**

information

- £ *Independence*, £299; Yellow Tools key, £24.99. Prices Include VAT.
- T Sonlc8 +44 (0)8701 657456.
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- W www.yellowtools.us

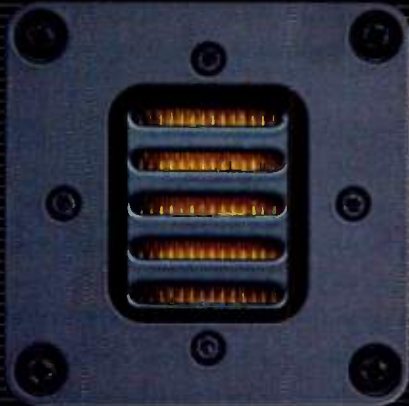


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When British traditional music got a dose of rock & roll excitement, it was an American who sat in the producer's chair. Oh, and Joe Boyd also discovered a little-known band called the Pink Floyd...

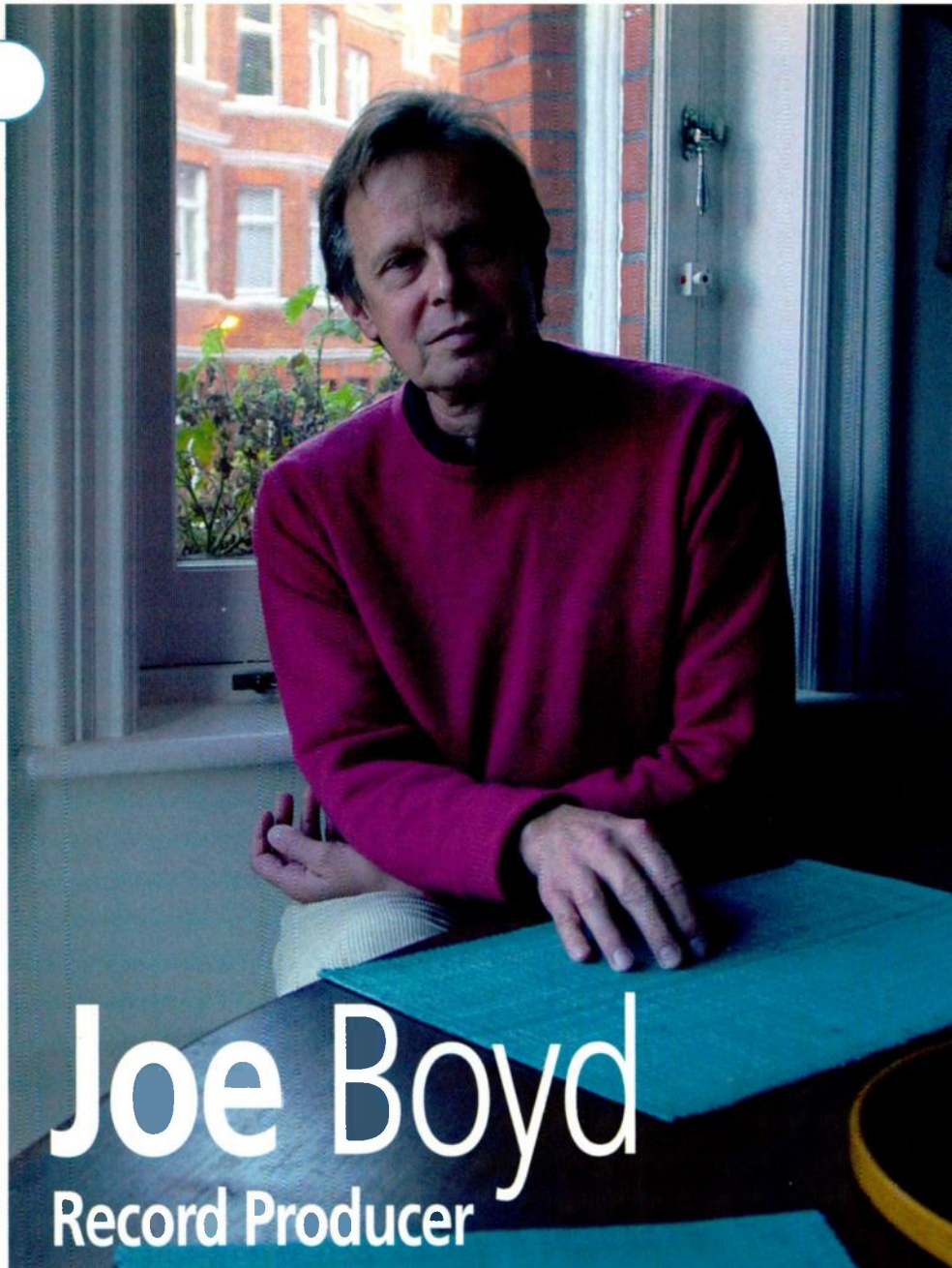
Sam Inglis

Sometimes, the work of a single record producer comes to define an entire musical genre; and it's hard to think of a better example than Joe Boyd. Despite his other achievements, which range from founding the legendary UFO Club in the '60s to championing world music in the '80s, his name will probably forever be associated with the British folk-rock movement of the '70s. Boyd's work with artists such as the Incredible String Band, Fairport Convention, Richard and Linda Thompson and Fotheringay fused folk tradition with innovative arrangements and modern production values to great effect. Even records by the likes of Nick Drake and Vashti Bunyan that made little impact at the time have since become very influential.

Joe Boyd himself was actually born and raised on the other side of the Atlantic. He began his career in Boston as an assistant to Elektra producer Paul Rothchild, who would go on to produce seminal albums for the Doors, Janis Joplin and Love, and Boyd credits Rothchild as his biggest influence in terms of how a record should sound. "To me, still, if I listen back to the records of the '60s, [*the Doors*] *Strange Days* is the best-sounding record of the '60s. It's just an amazing job of recording. I think Paul was a great record producer, and even though I didn't get specific lessons in microphone placement or whatever, I saw the way that he ran the session and liked to listen to things — listening back to takes and saying 'more of this and that'. My ears got used to his way of hearing."

London Calling

With Rothchild's help, Boyd secured a job with Elektra's London office, and in early



Joe Boyd

Record Producer

1966 he landed in a city where a musical revolution was in full swing. Based in Soho, Boyd was eager to sign the new bands he encountered, but his boss wasn't so keen. "Jac Holzman, who ran Elektra, was more interested in my organising the marketing and promotion. It wasn't about me running round and scouting for new artists — he was a bit nervous about someone three thousand miles away with an Elektra chequebook in his hand."

However, Boyd managed to bring with him a commitment for at least one A&R task, contributing to a Rothchild-produced blues compilation. "I persuaded them to let me add an English blues band, and I lucked into getting Eric Clapton and Stevie Winwood singing 'Crossroads'. We went to the old Olympic studios in George Street, before they moved to Barnes, and Keith Grant was the engineer. Keith just did the technical side and I worried about the music. I wasn't looking too closely at what he was doing. Everybody set up in the room, there was no drum booth or anything, and we just made

the tracks, but then Jac Holzman grabbed the tape and took it back to New York to mix, which was a disappointment."

The door was open, but although Boyd later managed to convince Elektra to sign the Incredible String Band, he remained frustrated at not being able to offer a deal to other artists he believed in. "We were very conscious of the need to find artists that would be successful to make a career for yourself. I found the Incredible String Band while I was working for Elektra. Then I found Pink Floyd, but Holzman refused to sign them. I tried to sign the Move, also. You could almost describe it as a feeding frenzy — bands were appearing and getting signed a week later."

Changing Seasons

Eventually, Elektra decided to dispense with Joe Boyd's services, and he chose to remain in England and set up his own production company, Witchseason Productions. "Holzman agreed that I would continue to produce the Incredible String Band, and

initially there was a production company set up in order to do a deal with Polydor for the Pink Floyd. They were going to sign to Polydor through my production company, but just before the contracts were signed, the Floyd got a new agent who said 'I can get a much better deal than this from EMI.' We made the first single and EMI said 'We like this, we'll sign the Floyd, but we don't want any outside producers.' It was an interesting cusp period, because Decca and EMI were the dominant labels and they had their own studios and they had in-house producers, and that was the way they liked it. And in a way, the success of George Martin and the Beatles reinforced them in the idea that this was the model."

Boyd's decision was, however, justified when he landed a lavish production deal with Polydor — or so he thought. "I liked Polydor because there was this German guy called Horst Schmolzi who was in charge of A&R, and he was doing all these deals that horrified the other labels. He was giving everybody complete freedom — go where you like, do what you like, just give me the master tape. In a year and a half he signed the Bee Gees, Cream, Hendrix, Brian Auger and Julie Driscoll, and the Who. It was an incredible period, but he was spending too much money so the Germans recalled him.

"When Horst got dragged back to Germany, I got very horrified by the people who replaced him. They'd given me a huge amount of money, but I had never signed a contract. So I then had a chance meeting with [Island Records boss] Chris Blackwell, and he said 'Why didn't you bring me Fairport Convention? I really liked that record.' And I said 'I thought you were just a West Indian label.' He said 'No, no, no, it's all changed now. We've signed Spooky Tooth and Jethro Tull and all these other acts.' So we did a deal, and he gave me the money to pay pack Polydor. So I ended up with Blackwell and had a great time. Island was a great company in those days."

Touchy Wood

So began a lengthy and fruitful partnership between Joe Boyd and Island, which would continue even after Boyd set up his own Hannibal label. Perhaps even more important to Boyd's work, however, was his relationship with engineer John Wood. It was Wood's technical ability that helped Boyd realise the sounds he envisioned, and together they formed one of the most enduring producer-engineer teams. The pair first encountered one another during Boyd's days at Elektra. "Holzman had this weird series on Elektra called 'Sounds of the Zodiac' — an album for Leos, an album for Cancers, an album for Libras — and because

English session musicians were a lot cheaper, and particularly the string players were a lot better than what you got in New York, they would do the projects in London. So Holzman sent me a letter of instruction that I should get £200 or something out of the bank, and go down to this studio to pay the musicians cash at the end of the session. I went to the studio where they were doing this stuff, and it was Sound Techniques in Chelsea, and the engineer was John Wood.

"So I met John Wood and I liked him, and I liked the feel of the studio; it was a little smaller, a little more intimate than Olympic, which was a big place. The next project I had was a record with Martin Carthy and Dave Swarbrick, and I decided to do it at Sound Techniques. John had never heard that kind of music before, he knew nothing about folk music, but it just worked. It was a pleasure to be there and to work with him, and that became my sonic home for the next four years or so. I worked with John both there and in other studios until John pretty much moved out of the record business in the early '80s."

Boyd is quick to stress that it was an equal partnership, which worked because the engineer was not simply an instrument of the producer's will. "One of the unique aspects of my relationship with the engineer in those days was that John sassed a lot. When other people who were used to working on sessions would come and work with us there were a lot of raised eyebrows. Basically, John does not suffer fools gladly, and that was the way I learned how to work, and I relied on it. If I'm working with somebody and I'm the client or I'm the boss or I'm the producer, they're going to go 'Yes sir, of course, anything you say, that's great.' That makes me very nervous, because you don't know whether you're right. And so I liked the fact that I'd say 'Let's do this,' and John would say 'You what? You must be out of your fucking mind!' And then I'd have to think about how certain I was about wanting to do something. I found it a great way of working, and John made a huge contribution to those records.

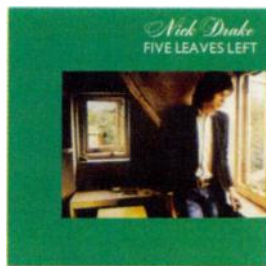
"In a way I would say that there were three stages to the process. The first stage concerned the relationship with the artist about the music — what were we really doing here? — which was my job. Then came the actual recording, in which John took a stronger role than I did, in terms of the process — we'll have the guitars here and the drums here, that was all John. And then once the sound was all set up, I got involved again, saying 'Let's do it again a little faster,' or 'Let's do it again a little slower,' or 'I don't like the way you're

singing it.'

"It's very hard to separate how everything worked out. John, clearly, was responsible for the kind of sound that is on those records, but I think also I had a part to play. I like to think there are similarities between the way my records sound and the way Rothschild's records sound, that I had a kind of image in mind of the way that I wanted things to sound, and I would push John to get it more like that without knowing technically how to do it. It was just a great partnership and it worked very well. He learned about a lot of different music through the things I brought through the door, and I learned a huge amount about making records."

Discovering Nick Drake

It's a common complaint these days that record companies are only interested in signing safe artists with obvious commercial appeal, and that anyone not meeting immediate success will be dropped before they get the opportunity to build a career. Whether that's true or not, it's certainly hard to imagine anyone today emulating Joe Boyd's tireless pursuit of new artists. And without Joe Boyd, it seems very unlikely that artists such as Nick Drake would ever have made it into the studio.



"Nick Drake only ever played a few May Balls in Cambridge, or for friends, and he played at a Vietnam protest at the Roundhouse. Ashley Hutchings [of Fairport

Convention] saw him and gave me his phone number, and I called him up and he brought in a tape, and I thought it was great.

I believe the tape he brought me had three songs on it, 'I Was Made To Love Magic', 'Time Has Told Me', and 'The Thoughts Of Mary Jane', and apart from the addition of other instruments, I don't think the final recordings, in terms of Nick's singing and his guitar part, are any different on the master from what they were on the demo. So I just heard that and I thought 'Wow, this is really unusual and really original.'"

Joe Boyd cites Drake's first album as one of his most exciting production jobs. "We never did demos that I can recall. With Nick,



► I think I sat down one evening and he played me all his songs. They were all great, so I wrote notes of songs and titles and we discussed how to approach them. That was exciting for me, because Fairport Convention and Incredible String Band were self-contained units, so you were pretty much playing with the hand you were dealt

stark, simple record [*Pink Moon*] to follow that as a kind of rebuke, that we'd overdone it a little bit on *Bryter Layter*.

"The thing about Nick is that all his vocals were recorded live because he was an impeccable singer. You didn't even have to listen to him. You could listen to everybody else, monitor everybody else and just turn

overdubbed it in New York and brought it back. And John Wood said 'What the hell do you think this sounds like? This piano's out of tune!'

"Aside from Rocky Dzidzornu's conga drums on 'Three Hours', there was no percussion on *Five Leaves Left*, but there's drums all over *Bryter Layter*, and that

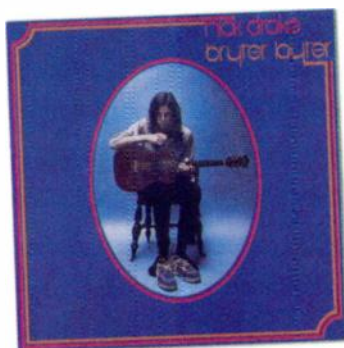


John Wood (left) and John Cale at Sound Techniques Studio in Chelsea.

in the studio. Whereas with Nick, you had this opportunity to say 'Well, should we get Danny Thompson to play bass, should we get Ray Warleigh to play sax?' As a producer you could be much more creative, or much more potentially intrusive, because he was kind of a blank canvas.

"He agreed that he wanted strings and stuff, and he was the one who came up with [*orchestrator*] Robert Kirby, who was his friend from Cambridge, so he took a very strong role in all that, but he was very timid. When you suggested something, he would sort of go 'Oh, OK,' and it was very hard to tell whether he was genuinely enthusiastic or whether he was too bashful to object. I think he was very happy with *Five Leaves Left*, but I'm not sure exactly what he felt about [*second album*] *Bryter Layter*. I took his insistence on doing a

him off, because you knew that he was going to be fine. All those string arrangements on *Five Leaves Left* were recorded live, with him playing guitar and singing, or in the case of 'Way To Blue', just singing. And even with Harry Robinson and the 12- or 14-piece orchestra on 'River Man' Nick sang it live, I think right out in the room, not in a booth. There was some baffling, but that was for the sake of the string sound, not to allow us to overdub vocals. Some of the stuff, like Richard Thompson on 'Time Has Told Me' and Paul Harris's piano on 'Man In A Shed' was overdubbed. We did a version of 'Man In A Shed' when Paul Harris was in London, and we decided it wasn't right but we liked Harris's part, so I went and



changes everything. Generally, I would say the tracks with drums were recorded bass, drums, Nick's guitar and voice, and then we might overdub horns, we'd add a saxophone or backing vocals as an overdub."

No Going Back

During the '80s, Joe Boyd's interests turned increasingly to world music. However, a new generation of American musicians was discovering his back catalogue, and looked to him to instil their records with the same magic. The results, he now feels, were not wholly successful — in part because those musicians were not the equal of the originals. "There was a period in the middle '80s when I got rung up suddenly by young bands who liked Fairport Convention or Nick Drake or Richard Thompson or whatever, and wanted me to work with them. So I did: I did a couple of records back to back at Livingston Studios with Jerry Boys [*a protégé of John Wood and Sound Techniques*] for REM and 10,000 Maniacs. Both records are kind



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► of OK, and there are critics who say they are great records, but the fact is that neither record did really succeed, and they are not, I think, my finest hour as a producer.

"There are a number of reasons, but one of the reasons I think is that I approached making those records very much in the way I approached making Fairport records. I did records in the '70s with some of the best drummers in LA playing drums, or in New York with Steve Gadd, and working with Fairport or Richard and Linda Thompson, we had Dave Mattacks. And so, to me, you go in, you get ready to play, and you record it. And you don't get everything live, but you at least get a track which feels live, and you use that as the foundation on which to add other things. You get a track which isn't necessarily perfect, but it has an energy, and even if you haven't got the vocal or the guitar solo, you've got this foundation which has so much life and energy that what you put on to it has to respond to that. So you get little moments in the vocal where it's actually responding to something that feels surprising, an energy gets through the headphones into the vocalist's head and out through their mouth, and so even though it's not quite the same as live, it gives a good impression of liveness in the mix.



"And so I approached it the same way with those groups. Sometimes in the heat of the moment it's hard to be 100 percent sure that you've got the best track you can possibly get before you say 'OK, take down the drum kit, now we're going onto the next stage.' And I've found that when you have a really good track, you add bits to it and it just keeps getting better. And when you start adding things that should be augmenting the track, but it doesn't, it just sounds worse, then you know that you haven't really got a track in the first place. And that's what happened with those two records. The more I listened to them, and the more we did vocals, and the more we added guitar parts, the more I realised that it wasn't Steve Gadd on drums. It was OK, it

Old-fashioned Sound

Conscious of the risk of sounding like an "old fart", Joe Boyd nevertheless maintains the superiority of traditional musicianship and recording technique. "If you look back through the last six or seven years of the recording industry, what are the two most surprising big records that have sold millions of copies that no-one expected to sell millions? Norah Jones and Buena Vista Social Club. And they're both recorded in the most perversely and deliberately antiquated fashion. They're both, basically, done in the way records were made in the '50s and '60s. You talk about this to young producers and they look at you as if you're out of your mind, but the sound of those records is a huge factor in what's made them successful.

"The most beautiful sound you can get is running straight to stereo on half-inch tape at 30ips, with no Dolby. That's on analogue, and that's my idea of a good time. Everything else is a compromise in terms of the warmth, the space, the three-dimensionality of the sound. During my time at Sound Techniques we went from four-track to eight-track to 16-track, and then the beginning of the decline when we went to

24-track. Each doubling of tracks was simultaneous with a doubling of tape width, you got two, four, eight, 16, but then you went from 16-track to 24-track on the same tape width, and so the width of each track head was smaller. The 16-track two-inch is a fantastic-sounding medium. Twenty-four-track two-inch is not such a fantastic-sounding medium by comparison. There's just so much more air and richness of sound in a 16-track two-inch tape than there is in a 24-track two-inch tape. It's just mathematics, everything is 50 percent smaller.

"All over the world, you go to developing countries, and you go there the first time and it's this fantastic old room full of wood, full of German microphones, a lot of valve equipment, German board from the '60s or something like that. You come back two years later and it's all been ripped apart, and they say 'Oh, we've got this fantastic digital equipment, it's all much better,' and they've deadened the room, and got rid of their EMT plates. There's a whole generation growing up that's used to shiny, two-dimensional sound, and they don't see the point."

just wasn't really good. And with both those groups, the next record they did, without me, was a huge gold record, and you listen to those and subsequent records, and I'm

1960s as they happened to Boyd, and it's one of the most entertaining books about the music business you're ever likely to read. Not only was Boyd seemingly at the




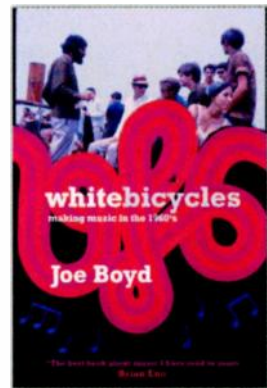
sure that each one of them has a click track. Clearly, my successors as producer immediately knew that these drummers were not the kind of drummers that you did tracks with. You lay down a click and you got them to play over it to build up a track that would stand up on radio, and I didn't do that. They wanted that kind of production, the life and energy they'd heard in some of the records I'd produced, so it wasn't as if I was trying to force them into something they didn't want to do, but the truth is that what they really needed was someone to say 'Here, put on these headphones."

Some Trip

Joe Boyd's latest project is not a record but a book. *White Bicycles* is the story of the



centre of almost everything that happened in London's music scene but — as the blurb says — he can actually remember it. Some people have all the luck... 



White Bicycles is published by Serpent's Tail Press on May 27th, ISBN: 1852429127.



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SERIOUS ABOUT SOUND

SE Electronics Mini & 2200A

Condenser Microphones

These two new SE models may come in at an entry-level price, but they are both highly capable capacitor mics, each with a distinctly different sound character.

Paul White

Microphone manufacturer SE Electronics are a US-registered company with their own production and design facility in Shanghai, China. Over the past few years they've managed to carve out a reputation that sets them apart, both visually and philosophically, from the many 'me-too' Chinese mic brands, most of which originate from a handful of very large microphone factories in Beijing and Shanghai. Both of the studio capacitor mics we're looking at here are from the affordable end of the SE range, and both are side-entry, large-diaphragm, cardioid-pattern models designed primarily for recording vocals. However, each can also double up as a general-purpose instrument mic.

The Mini

The SE Mini is an attractively priced, fixed

SOUND ON SOUND

SE Electronics Mini & 2200A
£119/149

pros

- Both mics offer good performance for the price.
- 2200A comes with shockmount.
- Both mics come with strong aluminium cases.

cons

- Although the noise figures for these mics are typical of many of their competitors, I still feel that it should be possible to bring the figures down by a couple of dBs.

summary

Both mics offer good value but have distinctly different characters, with the 2200A offering a more flattering sound that is smoother at the high end and warmer at the low end.



cardioid-pattern microphone that comes in a very nice (and compact) aluminium case. There's no shockmount included, but the integral swivel mount (which comes with a mic-stand thread adaptor) can be removed if you want to use the optional shockmount with the microphone. The Mini's true capacitor capsule is slightly larger than that used in the 2200A, so I'm assuming that this is one of SE's 1.08-inch designs. Visually, the mic features a conventional mesh basket over a very short, stubby body (95mm x 146mm overall) not entirely dissimilar in proportion to a well-known European mic of enviable provenance, but there the similarity ends. The Mini is unashamedly a no-frills microphone and has no pad or roll-off switches. SE appear to have cut features rather than build quality in order to meet their target selling price, which makes sense to me. There's a red SE logo to tell you which side to sing into, and that's about it.

Despite its simplicity and low cost, the Mini is a very capable little microphone and



Both mics come with an aluminium case as standard.

even without a pad it can handle SPLs as loud as you're likely to encounter in the

studio (130dB), with the possible exception of the kind of levels that occur inside a kick drum or the bell of a very loud brass instrument. Its frequency response extends from 20Hz to 20kHz (although without a frequency plot or roll-off limits this doesn't convey much useful information, and gives no clue as to the position or shape of any presence boost). The Mini's sensitivity is a very typical 20mV/Pa: -37dBV ± 2dB (0dB=1V/Pa 1kHz) and the output impedance is 200Ω — again, typical for this type of microphone. Equivalent Noise Level is quoted as 18dB, A-weighted; low enough to be insignificant for most close-miked applications, although given the figures achieved by companies such as Rode for mics in a similar price range, I feel it could be a little lower. Phantom power (48V, ± 4V) is required to operate the microphone.

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Blue Sky have earned an impressive reputation for their monitors over the last few years. So much so, in fact, that their Pro Desk series has become the monitor of choice at George Lucas's Skywalker Sound audio post-production facility, with over 50 systems installed so far.

The Pro Desk 5.1 system comprises five Satellite 5 two-way speakers, a Sub 8 subwoofer and a Bass Management Controller. Unlike a lot of other manufacturers, whose approach is to use a sub merely to extend the low-end, Blue Sky's system lets the sub handle all of the low frequencies, leaving the satellite speakers to behave as the mid-range and high-frequency drivers would in a conventional three-way speaker.

The Sub 8 features a single eight-inch, long-throw driver with a two-inch voice coil, which has a concave aluminium cone. Powered by a discrete bipolar 100W amplifier, the Sub 8 feeds the satellites a 80Hz high-pass filtered signal and is responsible for the 20 to 200Hz part of the frequency range. The Satellite 5 has a tweeter with a three-quarter-inch soft diaphragm and a 5.25-inch mid-range driver, again with a concave aluminium cone. The speaker is powered by a 60W amplifier and

offers a frequency response of 200Hz to 20kHz, which, when combined with the Sub 8, gives the whole system a full 20Hz to 20kHz range. The Sub 8 and the Satellite 5s feature independent gain controls and are connected with conventional XLR leads via Blue Sky's Bass Management Controller.

It's obvious why a system like this would be desirable to a Hollywood post-production house, but whether you're working at Skywalker Sound or in your spare room, you need decent monitoring to make decent mixes. If you would like to win this great monitoring system, simply fill out the form below and send it back to us. Please ensure your entry and your subscription details (if you're subscribing for the first time) reach us by the competition closing date:

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Sequentix P3

Hardware MIDI Sequencer

If you thought the days of hardware sequencing were past, think again — Sequentix's P3 is a tremendously flexible MIDI sequencer whose power is concealed beneath a cool retro exterior. We step to it...

Derek Johnson

Practically any piece of kit we could want in our ideal electronic music studio can be replicated in 21st-century software. Recording, audio editing and manipulation, simulating real instruments (electronic or acoustic) — it can all be done from the desktop.

This is generally a good thing for all sorts of reasons. The virtual studio is much more compact (and tidier) than its hardware forebear for a start. And who misses crackly leads? However, the virtual approach isn't well suited to everything. Hardware instruments have a hands-on element, and the last few years have seen an upsurge in nostalgia for the knobs, sliders and buttons that festooned pre-MIDI synths, drum machines and sequencers. They don't replicate well in software, and accessing their on-screen equivalents with a mouse is really not the same experience. Hence the rising tide of external hardware control surfaces, and the ever-present global cottage industry in knobby instruments — worldwide, there's probably more choice of analogue and analogue-style instruments, modules and controllers than there was during the '70s and early '80s. They're usually better made and more stable, too!

Analogue-style sequencing has often been the subject of software recreation — bizarrely, many examples are available for the all-but-defunct Atari ST and its relations. Though the results can be useful and often stimulating, the lack of true hands-on interaction on the ST is particularly noticeable — hence the popularity of classic originals and modern recreations. By analogue sequencing, I refer to devices that

Sequentix P3 £499

pros

- Nice chunky design.
- Easy to use once you get into it.
- Incredible flexibility extrapolated from an essentially simple concept.
- Sequentix is a company that enjoys fantastic interaction with its user base.

cons

- No gate and CV outputs for analogue purists.
- Display rather small.

summary

If you've enjoyed using analogue sequencers in the past, I think the P3 will top any experience you've had so far. If analogue-style sequencing with MIDI instruments appeals to you, you should check it out!

offer a limited number of steps — say 16 — each of which is equipped with a couple of knobs that typically govern the values of control voltages routed to analogue synths. One row of voltages is usually routed to oscillator pitch and the other(s) to whatever elements the operator requires. Voltages in a pure analogue system can, if patched appropriately, produce timbral changes, introduce rhythmic interest, apply transpositions to other sequencers, and so on. However you decide to patch such a sequencer into a system, the knobs can be tweaked on the fly as the sequence

plays back, creating a dynamic (and also potentially unrepeatably) performance.

A P3, Please, Bob

And now you're about to learn of one more such device: the P3 sequencer from Sequentix Music Systems. The name may be new, but Sequentix main man Colin Fraser has been around on the electronic music scene for a while. A visit to his personal web site (www.colinfraser.com) reveals an almost unhealthy interest in the guts of Roland's classic TR808 and TR909 beatboxes. He's also managed to rework chunks of the original (and quite wretched) operating system for Roland's otherwise awesome JX10 super synth, for which he definitely deserves a gold star.

Anyhow, Colin also has a slightly less unhealthy interest in analogue-style step sequencing, and for years he developed and sold an intriguing example as a kit. However, changes in EU law have meant that Colin can no longer sell this kit to members of the public, so he has turned to manufacturing finished versions of the device that he now calls the P3. And why not? After all, most of us would rather be making music than soldering.

Conceptually, the P3 straddles both the analogue and modern digital worlds; it's taken the analogue sequencer's approach to creating music, but then given it software that speaks MIDI. The interface will be familiar to anyone with experience of classic or modern examples of the analogue step

Alternatives

Although the last few years have seen the release of several analogue-style step sequencers with multiple rows of knobs, none of these has quite the same feature-set as the P3. Analogue Systems' RS200 sequencer and Analogue Solutions' Oberkorn are both three-channel 16-step devices, but they don't have built-in MIDI output (although the Oberkorn has MIDI In, so MIDI sequencers and synths can at least talk to it). Mind you, the lack of a MIDI Out on the RS200 and the Oberkorn is fair enough, as both are designed to drive analogue CV/Gate-driven modular synth systems, so they're not directly comparable to the P3. Doepfer's MAQ16/3, on the other hand, is also a three-channel, 16-step affair and *does* have MIDI, but it doesn't have the P3's advanced ability to combine and offset sequences of different lengths and timebases. All the options mentioned here cost roughly the same as the P3 in the UK, and have been reviewed in SOS: see the links on the right.



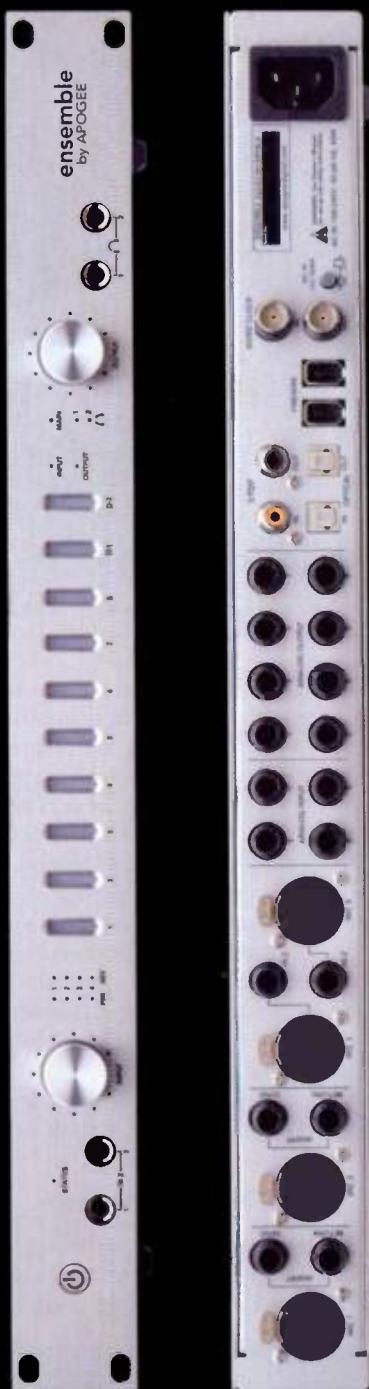
DOEPFER MAQ16/3
W www.soundonsound.com/sos/feb98/articles/doepfer.html

ANALOGUE SYSTEMS RS200
W www.soundonsound.com/sos/jan99/articles/rsinter.185.htm

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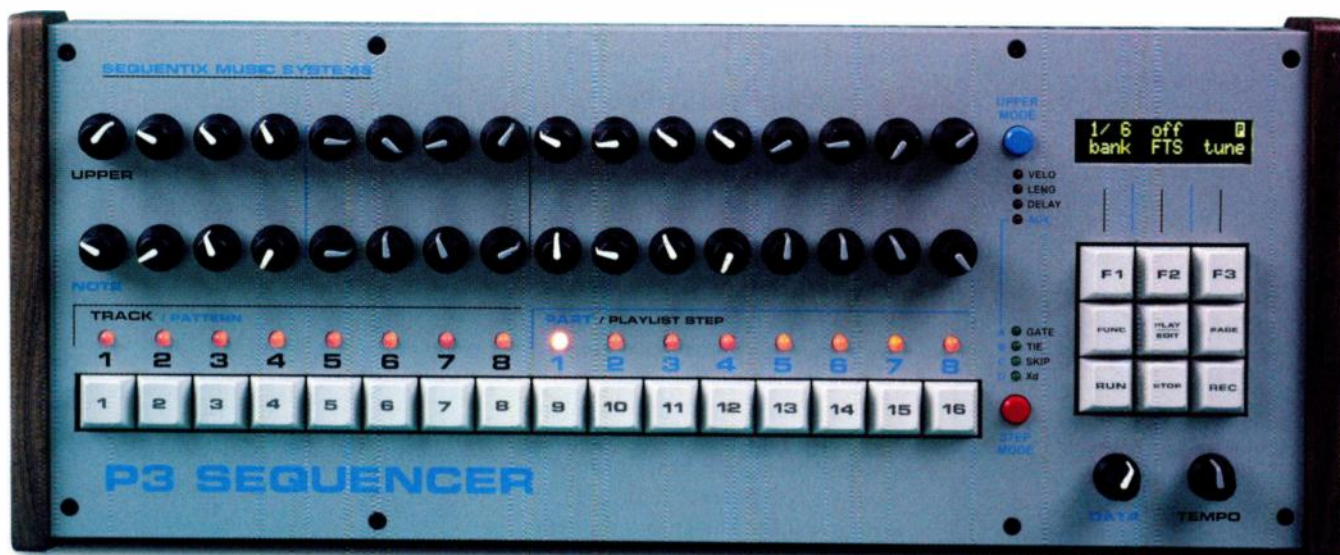
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SEQUENTIX P3



Don't you just want to get tweaking? With its inviting, chunky keys and fat 1970s *Space 1999*-style lettering, the P3 is a design classic, and looks like something Jon Pertwee would be seen adjusting in a 1973 episode of *Doctor Who*. Probably whilst uttering the phrase, "I'll just reverse the polarity of the neutron flow"...

► sequencer: data generated is controlled by two rows of 16 knobs, and a row of 16 buttons. If you're familiar with competing products (see the 'Alternatives' box on the previous page), you might be thinking that other similar machines offer three rows of knobs or have a larger panel festooned with even more knobs. However, as you start to investigate the P3 in more depth, you discover that it's an eight-track device capable of much more than competing machines without moving too far from its essential remit. In a nod to more modern ideas of sequencer design, the P3 is fully pattern-based and those patterns can be chained and manipulated to create phrases outside the basic 16-step limit.

Physical Presence

The design and layout of something that aims to be hands-on is important, so let's have a look at the package as a whole. The

P3's build is solid with just the slightest air of home brew about it, but in a good way. There are no real rough edges, and quality components and machining are apparent throughout. We're in a world of chunky knobs and buttons which remind you immediately of Roland's classic 1970s MC4 microcomposer and related devices. Even the activity LEDs appear chunky, and the wooden end cheeks are definitely solid. Before you ask, the P3 can be rackmounted if you wish; the necessary 'ears' come as part of the package.

Layout and labelling is clear and straightforward, although accessing the operating system through the two-line, 16-character LCD can initially be a little involved. Most of the panel is dominated by the 16-strong rows of knobs and buttons. However, as we'll see, two rows of knobs is not quite the compromise you might expect; they transmit a wide range of data on

multiple channels that can be quickly accessed on the fly. The buttons also double up, depending on which operating mode you're in, though they mainly let you enable or disable steps and select patterns. The LEDs located immediately above the buttons have three possible colours — red, green, amber — which handily provide visual feedback depending on the currently selected mode. A 3x3 matrix of buttons beneath the LCD provides transport control and access to the OS, and three function keys line up with display parameters. A dedicated data knob governs parameter changes and another knob controls tempo. Finally, there are two buttons — Upper Mode and Step Mode — with associated functions that change depending on what mode you're in. In general, they're used to select different operating modes for the rows of knobs, letting you quickly adjust step velocity, length, and delay as well as setting step

OS Updates & v3.1.006

The P3 does everything its designer planned for it: it works now, it works well, and you most certainly should buy one if its feature set appeals. In short, it's a mature, stable, and reliable product. Nevertheless, the OS is in a constant state of tweaking, as you'll discover if you keep up with the P3's Yahoo group (<http://groups.yahoo.com/group/analogue-sequencer>). Colin Fraser responds regularly to user queries here, and users can interact and swap tips. You'll also hear about regular software updates — the OS is being tweaked all the time to meet user requirements, add new features and fix the very occasional bug. Fortunately, the process of updating is not a problem, since Colin supplies the upgrades as MIDI SysEx dumps that any user can easily handle. His reasoning is that while there's space left in the CPU flash RAM, it might as well be used for something! So at the time I was finishing this

review, there was talk of an alternate P3 operating system being developed which would be dedicated to rhythm programming. This isn't quite as odd as you might think: the P3 OS can easily be changed via SysEx and your data can be offloaded and reloaded in the same way. Moreover, it seems that the average P3 user is quite loyal: several users have more than one, and to them, the idea of one P3 dedicated to rhythm generation and another given over to music is quite attractive.

While completing this review, I heard that a major OS update, v3.1.006, was being planned, and managed to get a sneak preview of some of the new features from Colin. There's quite a list of new stuff, and I can only briefly summarise. Modifier keys now have added Help messages, there's direct access to Pattern Edit and Play Mode pages (by holding down the Page key and pressing various step keys), and there's a Quick Configuration

option in Pattern Edit that offers preset aux configurations. A much-anticipated polyphonic record mode moves the P3 closer to modern ideas of what sequencers can do, and one of two new 'dub' modes just records notes into gaps. There are also some new facilities for remote control of record and track muting/unmuting functions via MIDI continuous controller messages, which make the P3 even better suited for live use. Less interesting but potentially useful are a buffer overflow warning — you'll get this with a MIDI data loop — and the display can now show your choice of sharps or flats for the black notes! A new PDF manual containing details of all these new features is planned to accompany the update [Note: the update, complete with new PDF manual, was released on the Sequentix web site just as this review was going to press. See www.sequentix.com/seq_download.htm for details — Ed].

gate time and enabling you to tie steps (to create legato effects), or skip them altogether. The P3 controls have a certain amount of multifunctionality that initially seems confusing, but is straightforward once you've played around for a bit. Entries on that small LCD usually help, too — once you're familiar with their abbreviated forms, that is!

Round the back, a single MIDI In is joined by no less than four MIDI Outs. Currently, these outs all transmit identical data, but it should be simple enough for you to set up target instruments to accept the notes or data on the MIDI channels that are required. In addition, there's a further five-pin DIN socket labelled 'Sync'. On the review model, this transmitted Roland-style DIN Sync, allowing pre-MIDI devices such as the TR808, TB303 or MC202 to be easily synchronised to the P3. This socket can also be wired to transmit MIDI Clock, a cleaner option to deriving the clock from MIDI Outs that are also sending note and controller data (potentially a lot of the latter).

Power comes from an external supply, inevitably. A PSU is supplied to British purchasers but non-UK customers will have to provide their own, although fortunately any off-the-shelf 9V AC/DC supply will do the trick.

Inside The Box

It's worth summarising the P3's hierarchy. Its memory is divided first into a number of Banks; a Bank contains a collection of Patterns for each of the eight Tracks. The user has control here, since the Banks can be customised. Depending on your needs,

Test Spec

• P3 OS version reviewed: v3.1.005 (version 3.1.006 was posted to the Sequentix web site just before this review went to press, but not in time to be considered in this review. However, see the 'OS Updates' box opposite for more on this update).

you can select three Banks of 16 Patterns per track, six Banks of eight Patterns per track or 12 Banks of four Patterns per track. Think of a Bank as a 'patch' or overall song containing the data for one performance, and you can see that more complicated 'songs' can be compiled at the cost of fewer 'songs' available on board. In addition, a Bank contains eight Parts that provide Pattern Playlists for each Track; there are eight Playlists for each Part. Patterns chained in a Playlist can be further manipulated, and it's worth remembering that each *track* has its own independent Playlist. This sounds complicated, but the P3 manages it quite elegantly.

A look at a Pattern reveals the depth going on here. It's easy to think of each of the eight tracks in a Pattern as a 'row' of knobs, as one might with a more ordinary sequencer, but the P3's approach means that although most editing is done with rows of knobs, you can output much more than just pitch values or one type of continuous controller data with each step. To summarise, each step in a Pattern generates a pitch and velocity value, can be assigned a delay, length, gate time and tie value (the latter for producing held notes and legato effects), and/or can be skipped entirely. A transpose defeat switch for each

step (also available for a whole track) means that a global transpose command, such as might occur when chaining patterns, is ignored; you might prefer this when working with drum or percussive sounds. What's more, there are four auxiliary 'functions' per step, each of which could be assigned to any MIDI controller or to so-called auxiliary events (of which there are four, entitled A to D).

You've also control over pattern length (up to 16 steps) and 'timebase', with a range of resolutions of between a whole note and 32nd-note triplet. Interestingly, Patterns that run simultaneously can have different lengths and timebases and there are options to randomise and reverse playback of tracks. A sort of pitch-quantise tool lets you force your work to any of a wide range of scale types, turning randomly-entered or unattractively out-of-tune pitches into some sort of harmony. You'll also discover real-time note capture and pattern modulation — tracks and patterns can interact with each other such that, with or without your intervention, new melodic or textural material will be generated by the P3 itself. The result is rather like algorithmic composition where you make the rules as the sequencer plays, though you have the option of intervening and taking over at any time.

The focus in much modern multitrack sequencing tends to be on the notes. But of course, MIDI allows the recording and generation of a wide range of controller information for dynamic parameter control. In a sophisticated MIDI-equipped device such as the P3, you can take this concept

"I didn't want to believe that such a simple idea could work. Unfortunately, it does." - Steve Levine



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SEQUENTIX P3

► a step forward (or is that a step backward?) in that the controllers can be routed and re-routed (in the P3's software, of course, as well as within target MIDI devices) in a conceptually similar way to repatching modular synth patch leads. Thus, with the P3, you're free to transmit notes and controller data, and manipulate both as they are playing back. And this is a core P3 concept; pretty much any operation can be applied to a performance *while* the sequencer is playing back. You rarely have to hit stop or interrupt a performance.

Let's Operate

The sequencer has three operation modes: Play, Pattern Edit and Playlist Edit. Obviously, the various knobs and buttons behave differently depending on what mode you're in, but pay attention to that little display: a flash in one corner reminds you of which mode you're in, and the parameters listed are often unique to each mode. One thing that usually doesn't change when you switch modes is sequence playback, as mentioned above. And not only are you largely free to move around the OS without

simple: start a pattern, and enable the steps you'd like to play with the row of buttons. Middle 'C' will be playing back, but you change the note values with the bottom row of knobs. And that's it — an instant pattern. If the wide note range is too much for you, you can constrain it to an octave or two or whatever makes life easier for you, and post-note-entry help is available with the aforementioned 'force to scale' option which pitch-quantises your pattern.

You'll get used to swapping between modes as you get to know the P3, and move to Pattern Edit to access a huge range of parameters to make the pattern work for you — and that's before you bring the other eight tracks into play. The standard parameters work well enough — gate, tie, velocity — but you can add 'delay' to the mix for a little unpredictability, and throw in the auxiliary events, which can be assigned to any MIDI controller you like. Auxiliary events essentially boil down to a way of using parameter values from one P3 track to alter the parameters of another track. Operations named grab, swap and push should give a flavour of what you can do,

during recording, each note in that chord will be assigned to a consecutive step in the current Pattern. It's not a true arpeggiator, but coupled with the programmable transposition options in the Playlists, or the accumulators, the effect is as good as.

We'll look at Playlists in a moment, but it's worth noting that Parts can be chained in Play Mode: just press a lower and a higher Part button and all the Parts in between will cycle. A Playlist feels initially like a simple Pattern: there are eight steps, each of which can accommodate one Pattern. But as mentioned earlier, each of the P3's eight tracks can have its own Playlist, and each step can be transposed and repeated up to eight times. That equals 64 'bars' in total, but remember that you can change the rules during playback, of both Patterns and Playlists, and that Pattern track data can be influencing other tracks during playback. You may find yourself operating mainly in Playlist mode, especially when you remember that Patterns can be written from scratch — and edited — while a Playlist is playing back.

There is a lot of precise control available



As befits a hardware sequencer, the P3 has four MIDI Out sockets to its one MIDI In. There's also a DIN Sync socket (the leftmost DIN socket) for connection to old Roland gear that uses this pre-MIDI sync protocol.

needing to stop and start playback, but notes and other standard Pattern data can be created in all three modes, although the approaches are a little different.

When powered up, the P3 is in Play mode. The first eight buttons are used to mute and unmute patterns (mutes can be automated, too), or to select Parts in the current Playlist. The second eight buttons select Playlists; up to eight Playlists can be instantly linked to form longer patterns. The LCD initially seems to be too small for the job expected, but in Play mode it easily accesses no fewer than six pages of three parameters each, arranged in two switchable 'columns', with three function buttons selecting parameters for editing. The display works in a similar way, with different numbers of pages, in the other operating modes.

Making a sequence from scratch is

and the data operated upon includes notes, velocity, length, delay settings, and more. Auxiliary events don't change patterns — that is, the data being processed doesn't change, although its playback will be audibly different. It gets more complicated, both sonically and in terms of operation, when you introduce the Accumulator, which operates on notes, velocities and auxiliary D, to the mix. Basically, with this engaged, the values of these parameters will be cumulatively added every time the Pattern loops around — so things will get 'louder' or transpose by a given amount each time a Pattern plays through.

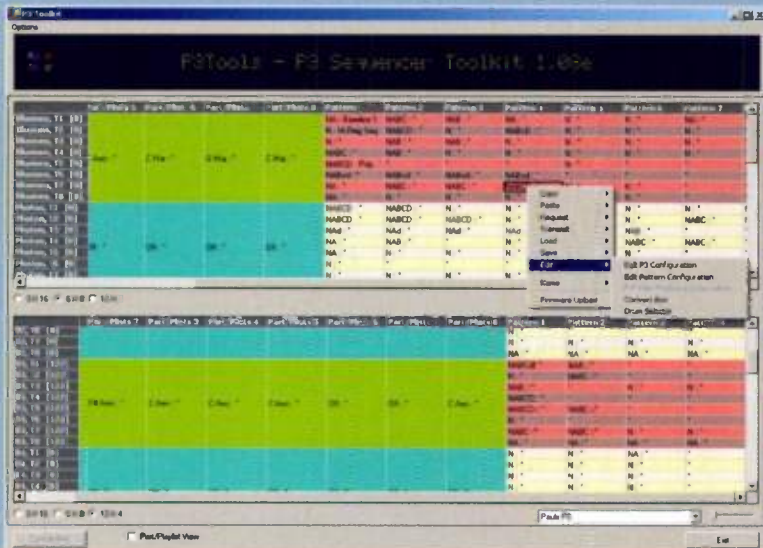
The true step-time pattern creation of the P3 is enhanced by a number of real-time record options, which allow you to tweak knobs while patterns play and have the movements recorded. A variant of this is 'Arpeggio Capture': if you play in a chord

here, once you've sorted out what the knobs do in the different levels of OS. Learn the rules and you can quickly achieve planned results. But one of the joys of analogue systems of any kind is the influence of chance — nudging a knob or button unexpectedly and getting a result. The P3 isn't as unstable as a genuine analogue sequencer (its knobs, remember, aren't transmitting real voltages, so there's no drift or fractional values), but chance has been built into the feature set. The note and 'upper' randomiser option are two obvious examples: use them and you fill a pattern with unexpected values. But being able to rotate existing patterns (by moving or retarding their start step) can produce an unexpected change in feel or something completely new. Auxiliary events can also have a hand in generating new material that you might not have expected.

A Windows Editor

The P3's MIDI spec offers a lot of creative flexibility, but it also opens the sequencer up to third parties. If you join and lurk on the P3's Yahoo Group you'll discover the work of one Dave Jones. His *P3Tools* software is resolutely Windows-only, but provides a straightforward way to manage many global P3 functions. You'll need Microsoft's NET Framework for the package to run (and a P3, obviously), but once

you have these, the software will let you configure MIDI ports, upgrade firmware, upload Patterns, Parts, Playlists and configuration data, give meaningful names to Banks, Parts, Playlists and Patterns and more. It's a most worthy effort, particularly as it costs precisely nothing. All Dave asks is that if you find *P3Tools* useful, you send him some of the music you make with your P3!



Dave Jones' *P3Tools* software.

Conclusions

I *could*, if pushed, have a whinge about the P3's cost. But while it's not cheap, its price is not completely out to lunch. There are other analogue sequencers being built now that hover in this same price bracket but are nowhere near as ambitious. And there's little else to complain about. The deceptively compact display has been cleverly deployed and the OS is logical and easy to navigate — once you put in the time to learn it.

The P3 isn't a replacement for traditional software (or hardware) sequencing (although there are musicians who use Sequentix's box to the exclusion of other options). However, it allows you to work in ways that wouldn't occur to you in a software environment, as well as with drum machine, real-time record and step-record methodologies. You'll certainly generate results that wouldn't arise in software — the knobs have a lot to do with this. All you have to do is move past the initial learning curve and get used to the display, and then your focus will stay on working with the knobs and manipulating sound. The interaction of patterns and the ability to have events influence each other means that you will always find surprises and

new ways of generating material that are unique to any P3 owner.

I could see a place for the P3 in any creative musician's collection. It's a great live tool, whether for the diehard dance brigade or those following a Jean-Michel Jarre or Tangerine Dream-like furrow. In the studio, it can be a brilliant source of inspiration. It goes much further than its competition in its approach to sequencing whilst keeping to its 'knobby analogue' ethos, and its ability to mangle and recombine existing material without offloading data to a software sequencer is very welcome — although of course if you wish, you can lock the P3 to a software sequencer and record a Playlist or the results of your noodling. In short, there's no other product, soft or hard, that exactly matches what's on offer here. If you've any leanings in the direction of knobby analogue sequencing, you're probably already a P3 owner or are saving up to become one. It's a winner. **SOS**

information

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Kenton Pro Solo MkII

MIDI-CV Converter

If you're still using pre-MIDI synths, the chances are you'll already be using a Kenton converter to interface them with your more modern MIDI gear. We check out this upgrade to the faithful Pro Solo...

Gordon Reid

While writing this review, I looked back to see when I first used a Pro Solo. It came as a shock to discover that it was more than a decade ago, since when countless numbers of these chunky little boxes have been getting on with their jobs, connecting vintage monosynths to the MIDI studios of the modern world.

After its launch, Kenton upgraded the product's firmware on numerous occasions. They added Auto sync, extended the note range, added All Notes Off, and provided additional clock divide ratios to extend the number of analogue drum machines that the Pro Solo could sync to MIDI. Nonetheless, it was not without its faults; its method for showing numbers above 99 was clumsy and, on a practical level, its ability to produce just CV, Gate and a single auxiliary voltage was a bit limiting at times. So it's great to see that Kenton have relaunched the Pro Solo in a new, smart livery, with enhanced Aux and LFO capabilities and an improved user interface. Enter the Pro Solo MkII.

Getting Started

The original Pro Solo was designed around three buttons (Select, Dec and Inc) plus single-character and dual-character seven-segment displays. It offered 20 parameters identified as 0 to 9 and A to J, as shown in the box opposite. The MkII version looks similar, but has an enhanced set of options, with 36 parameters labelled in



groups from 01 to 45, which you can see reproduced on the front panel in the picture above (or in full in the box overleaf if you'd rather not squint too much). The MkII also has a much nicer user interface.

On the earlier model, you pressed the Select button to scroll through the menu, with the parameter identity displayed in the single-character display and its value in the dual-character display. To change direction, you had to hold the Select button for two seconds and then continue to press it to move between parameters in the other

direction. On the MkII, the Select button toggles between showing the parameter number in the dual-character display and the parameter value in the same display, and you can then scroll up or down either using the Inc and Dec buttons. This is much nicer.

Likewise, the way that parameter values above 99 are displayed on the MkII is greatly improved. In the past, 'n' denoted values from 100 to 109, '-nn' denoted values from 110 to 119, and '~nn' from 120 to 127. On the MkII, the single-character display shows a '1' (for one hundred) when appropriate. In the grand scheme of things, this is a small difference, but it makes the MkII more pleasant to use.

Once you've configured the Pro Solo MkII as you want it, you can press and hold the Select button for six seconds and the current configuration is stored in the unit's non-volatile EPROM. If you get it wrong, you can restore the defaults by switching the unit off and then holding down the three buttons while switching it on again.

Facilities

Round the back (shown overleaf), the Pro Solo offers six sockets. The MIDI In and the input for a standard 9V power supply are self-explanatory. In contrast, and depending upon the parameter values selected, the CV out offers Volt-per-octave and Hertz-per-Volt control voltages, the Gate also provides S-Trig, the Aux can carry a clock, and the

SOUND ON SOUND

Kenton Pro Solo MkII £110

pros

- Well built, compact, and robust.
- Stable and accurate MIDI-to-CV conversion.
- Well-chosen extra facilities.
- A straightforward and clear user interface.
- A straightforward and clear manual.
- It's inexpensive.

cons

- Umm... umm...

summary

The original Pro Solo was a good choice for anyone who required MIDI-to-CV facilities for a limited number of analogue synths: that is, just one at a time. The Pro Solo MkII is better thought-out, better featured, and, for fewer of your quids, it's an even better choice.

MIDI Thru doubles (triples?) as a Sync24 output or carries Aux2 and Aux3 signals.

The parameter menu suggests that the Pro Solo MkII is much more than a simple converter, and so it is. In addition to parameters that allow you to configure its operation for multiple playing styles (trigger mode, note priority and so on) and to allocate MIDI controllers so that the analogue beastie at the far end jumps through the hoops you want, it offers a comprehensive LFO, portamento, MIDI Sync, three auxiliary controllers, and SysEx.

Starting with the LFO, this offers nine

addition, you can define the point in its cycle at which the LFO is retrIGGERED, and three additional parameters allow you to determine the maximum and minimum values of the LFO applied to the pitch CV, and the amount of LFO applied after a reset.

Portamento is also provided so that you can create glides on analogue synths that don't have this, but its functionality is expanded over that of the original Pro Solo by the addition of Fixed Rate and Fixed Time options. These determine whether you define the time taken to move across a given interval, or the time taken to slew

“The original Pro Solo was a good choice... The Pro Solo MkII is better thought-out, better featured, and, for fewer of your quids, it's an even better choice.”

waveshapes (including Sample & Hold) with a user-defined frequency or 10 values of MIDI Sync, and you can control the depth of the effect applied to the CV using controllers such as pitch-bend, aftertouch, velocity, and MIDI continuous controllers (CCs). In


from one note to the next, irrespective of the interval concerned.

The original Pro Solo offered an Auxiliary CV, which could be determined from any of 125 MIDI controllers and CCs, with user-definable maximum, minimum, and

The Original Pro Solo Menu

OPTIONS	FUNCTION
0	MIDI receive channel.
1	Portamento time.
2	LFO frequency.
3	LFO waveform.
4	LFO MIDI sync.
5	LFO to CV controller number.
6	LFO to Aux controller.
7	Portamento controller.
8	Aux controller.
9	Aux minimum value.
A	Aux maximum value.
b	Aux reset value.
C	Pitch-bend range.
d	Transpose value.
E	Fine-tune value.
F	Scale.
g	Multiple trigger.
H	Note priority.
i	CV/Hz select.
J	Gate type select.

reset values. You could then choose from 123 MIDI controllers and CCs to determine how much of the internal LFO was applied to the Aux CV. This made the auxiliary extremely flexible; for example, you could use a modulation wheel to determine the



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KENTON PRO SOLO MKII

▶ unaffected CV and then use aftertouch to apply the LFO, thus modulating the Aux CV before routing it to the destination of your choice on the analogue synth. To all of this, the Pro Solo MkII adds key scaling and the now ubiquitous minimum, maximum and reset values of the LFO applied to the auxiliary CV. The most obvious application for the new parameters is to open and modulate a filter when playing up the keyboard, but this is only one of many possible uses if you have a modular synth.

Other new facilities include the ability to translate MIDI Clock into a stream of pulses so that you can drive arpeggiators and drum machines of various ppqn standards (pulses per quarter note). More radically, you can use the MIDI Thru socket as either a Sync 24 output or for two further auxiliary CVs derived from pins 1 and 3. Don't get too excited... Aux2 and Aux3 are not continuous controllers, and can assume just two values, 0V and +5V, but Kenton added them so that users could control the accent and slide inputs on modified TB303s. Although you need a suitable cable to use Aux2 and Aux3, I have no doubt that many other uses will be found for them.

The Pro Solo MkII also responds to SysEx. You can define a device number, and the clear manual gives explicit information about the data structure used. I can't see many people using this, but if you want to ensure that only the analogue synth being controlled by the MIDI-CV converter responds to certain messages, this might be a suitable way to achieve this.

Finally, in addition to its use as



The rear panel may look extraordinarily simple, but there's more to the three plain-looking jack sockets than meets the eye — they're capable of outputting control voltages in a bewildering variety of formats. Even the MIDI Thru can carry Sync 24 or Aux signals as well as MIDI.

a converter, the Pro Solo MkII offers a MIDI analysis mode. It's a bit arcane, but if you have no other way to check that the correct MIDI signals are flying around, it's a useful tool to have to hand. There's not much to say other than that it works, and that with a bit of practice it's not hard to use.

Good Things, Small Packages

If you are controlling a single synth and the combination of pitch CV, Gate, an Aux CV, and two additional Gate/pulse outputs is sufficient (which it should be), the Pro Solo MkII is a neat solution. It performs with minimal hassle, converts MIDI notes to CVs accurately and, to my ears, responds rapidly. Furthermore, the extra functions are well chosen, and they all add to its usefulness. To illustrate this, consider the Minimoog, which lacks a dedicated LFO, and has neither pressure or velocity sensitivity. With the Pro Solo MkII in Volt-per-octave and S-Trig modes, you can use Kenton's LFO to

free up Oscillator 3 from modulation duties, use the LFO to CV controller parameters to make the Minimoog pressure-sensitive, and route the auxiliary CV to the synth's VCA input to make it velocity-sensitive. In addition, the Pro Solo recognises sustain pedal messages for legato playing, and its note buffer makes it possible to trill and smooth uneven arpeggios. If all of that isn't worth a few quid, I don't know what is.

Ah yes... the price. In 1995, the Pro Solo was slated to cost a psychologically pleasing £99, but Kenton found that a cheap DAC wasn't accurate enough to meet its standards. Consequently, a higher-spec device was used, and this increased the price by £20. In my view, this was a wise decision; £119 for a good converter was money well spent, whereas £99 for something unsatisfactory would have been a waste. Today, the Pro Solo MkII retails for £109 (although this does not include the 9V PSU) and, given that this is a better product for a price equivalent to no more than £80 a decade ago, it represents excellent value.

Conclusions

I like things that not only do what they promise, but do it well with a minimum of fuss. In these days of computer-based packages of code that hang, freeze, or wobble at the slightest excuse, trouble-free operation has become something of a luxury. OK, I accept that you wouldn't expect much hassle from a single-channel MIDI-to-CV converter, but even here there's room for poor operation, dodgy menu structures and crashes. Happily, this review — in which I cross-tested the Pro Solo MkII with a Roland Alpha Juno 2 and a Korg T2EX at one end, and a Roland SH101 and an ARP Odyssey at the other — passed faultlessly. I like it. SO5

information

£ £109.98 including VAT.
 T Kenton Electronics +44 (0)20 8544 9200.
 F +44 (0)20 8544 9300.
 W www.kenton.co.uk

The Pro Solo MkII Menu

OPTIONS	FUNCTION (PRO SOLO MKII)	OPTIONS	FUNCTION (PRO SOLO MKII)
GENERAL			
01	MIDI receive channel.	23	Aux reset value.
NOTE			
02	Multiple trigger.	24	Key scale to Aux.*
03	Note priority (low/high/new).	25	LFO to Aux controller number.
04	Pitchbend range.	26	LFO to Aux minimum value.*
05	Portamento controller number.	27	LFO to Aux maximum value.*
06	Portamento time/rate.	28	LFO to Aux reset value.*
07	Portamento type.*	LFO	
08	LFO to CV controller number.	30	LFO rate.
09	LFO to CV minimum value.*	31	LFO waveshape.
10	LFO to CV maximum value.*	32	LFO MIDI sync.
11	LFO to CV reset value.*	33	LFO sync start point.*
12	Coarse tune (semitones).	34	Key On resets LFO wave.*
13	Fine tune.	OTHER	
14	Scale.	40	Continue = start.*
15	CV/Hz select.	41	Clock divide.*
16	Gate type select.	42	Thru/Sync24/Aux2&3 select.*
AUX1			
20	Aux controller number.	43	Aux2 controller number.*
21	Aux minimum value.	44	Aux3 controller number.*
22	Aux maximum value.	45	SysEx device number.*

Note: parameters marked with an asterisk (***) are new to the Pro Solo MkII.

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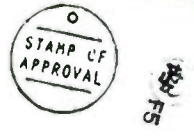
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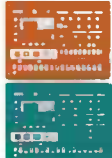
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Sony Sound Series: Trance NRG2

Acidised WAV

It is not surprising that Sony sells a large collection of music loop CDs; they are one of the largest media providers in the world, as well as the owner of *Acid* and the rest of the Sonic Foundry line. The express version of *Acid* is even on their latest dance disk, *Trance NRG2*, in case your DAW doesn't do time stretching.

Trance includes almost 500 separate hits or loops. The loops run from one measure up to eight and, as can be expected in a dance genre collection, most of the content is rhythm oriented with drums taking up almost one third of the files. The drums are divided into eight folders, including complete 'four on the floor' and 'backbeats' to almost full kit 'combo hats' and 'perc,' as well as 'kicks' and 'cymbals'. There are a couple of kick loops here, but mostly single hits, ranging from the subsonic to meaty mid-range. The cymbal folder contains mainly short high-hats beats.

Overall, there is plenty of good stuff to work with, by either dragging in whole loops or building up a beat from several. The 58 basses are synthesized loops, including some juicy

filtered files. Some of the loops can practically build a track by themselves, including 008 and 013 in the 'Basslines' folder. They are variations of the same bouncy echoed pattern and I immediately flagged them for use.

The Progressive, Trance and Techno Synths folders each contain 50-plus synth riffs. Most of the synth sounds, including those in the Lead folder, are brash and in-your-face to cut through the beat. Still, there are choices of mellower and organ-like sounds not built on pulse and saw waves. Whichever way you choose to go, there are enough variations of the same sounds that you can switch beats without having to switch synths. The Leads, Pads and SFX folders each contain 20-plus files. The pads do what pads are supposed to do, while over half the SFX folder is made up of enveloped analogue-filter 'space' sounds. These had me reaching for an envelope knob, so they must work. The remaining FX files are nice hits that could work in any style of electronic music. The 'Vox' folder contains only eight files, consisting of heavily processed, female spoken phrases. While there is nothing wrong with the performance or processing, the limited number makes their use problematic, except as isolated drops. All the files I tried worked fine with *Sonar's* Groove Clip function, and while my drag and drop



experiments won't be making the dance charts, it was easy to come up with trance-style tracks. There is enough good stuff here to make more than a few songs, with time and a little talent. I always audition loop CDs to see if I can use them in styles other than the approved genre. *Trance NRG2* scores highly here, too. There is nothing for the folk or jazz crowd, unless your sensibilities are different to mine, but plenty for other styles — from hard-edged pop to just plain hard. *Alan Tubbs*

Acidised WAV CD-ROM, \$39.95 including VAT.
Sony www.sonymediasoftware.com

Big Fish Elements: Traditional Jazz

Multi-format

Elements: Traditional Jazz, from Big Fish Audio, is a construction kit-based library providing some 600MB of loops in each of three formats. I tested the Acidized WAV loops in *Acid Pro 5*, but the same content is also provided in Apple Loops and REX formats on the single DVD-ROM. There are no prizes for guessing the musical target here — *Elements: Traditional Jazz* is exactly what its title claims. The loops consist of plenty of brushed drumming, acoustic piano, double bass and warm, smooth-sounding electric guitar. All the audio is presented in a 24-bit/44.1 kHz stereo format and the recordings seem to be very well made.

A total of 22 construction kits are provided in the library and these range in tempo from a slow and seductive 65 bpm through to a somewhat hotter 129bpm — although there is nothing too frenetic here. Within each kit, there are either three or four loops, plus, for convenience when auditioning, a pre-mixed loop. The main loops always contain a drum loop and bass loop, while the other elements are either an electric guitar loop or piano loop, or both. This might sound a little on the skimpy side



as far as construction kit formats go, but in many of the kits the loops are 12 or 16 bars long — essentially a complete 'chorus' (once through the chord pattern). The other interesting feature of the library — and this is made very clear by the inclusion of tempo and key details in the folder names used for each of the kits — is that several of the construction kits are clearly intended to be used together. For example, six of the kits are at 90bpm in B-minor and I found these very easy to chain together into a single musical piece.

Throughout the library, the playing seems to be of a very good standard and, as I have a fondness for slow, bluesy jazz, I found the lower tempo, minor key kits particularly appealing — suitably mellow and sleazy. That said, the up-tempo

material is also very good, including a nice 123bpm kit based on a walking bass in Bb that somehow made me think of classic *Tom and Jerry* cartoons. Whilst only four main loops within a single kit might seem a little constraining, of course, one of the main features of jazz is improvisation and most guitar, piano, sax or violin players could while away many a happy solo by just layering the drums and bass loops and adding their own elements over the top.

Elements: Traditional Jazz is probably aimed at a fairly narrow market. While real jazz aficionados would probably prefer to roll their own, the library probably would appeal to media composers who are not jazz specialists but need a genuine-sounding resource to dip into for the occasional traditional jazz sounding cue — although do bear in mind that, as with many other Big Fish Audio collections, the license does not allow the loops to be used for library music production. *Elements: Traditional Jazz* might not be the biggest jazz loop collection available, but the material sounds authentic, is well played and, at this price, will not break anyone's bank. Hmmmm... nice! *John Walden*

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Big Fish Raging Guitars

Kontakt Instrument

There are no prizes for guessing what Big Fish Audio's *Raging Guitars* is all about! Supplied as a Kontakt Instrument for both Mac and PC, this collection is dominated by multi-sampled guitar programmes featuring various degrees of distortion. Both the sound and playing styles are aimed very squarely at modern rock genres — from Lostprophets through Linkin Park with a nod at Marilyn Manson in passing. The library is supplied on three DVD-ROM discs and spans 11GB in total. While this considerable size is, in part, due to the large number of different programmes, it is also because many of the individual samples are very long — hit a power chord and it sustains to a gentle fade some 30-plus seconds later with no sample looping involved.

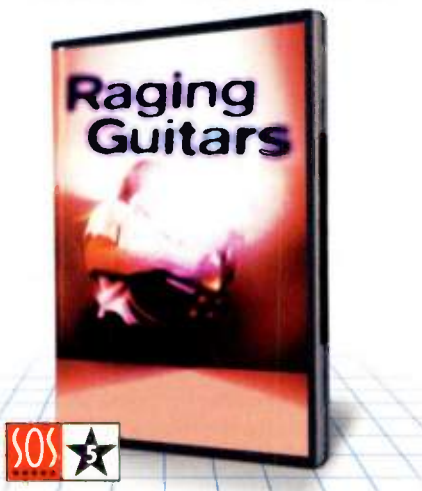
A variety of programme types are included. These start with four types of sustained Chords: Power, Major, Minor and Add9. In each case, these are supplied in a range of just over two octaves with both up and down strokes within the same programme. This section also includes some 'Special Effects' programmes and some of these are a real highlight, particularly those that feature the use of tremolo. These will sync to the tempo of your host sequencer and form a great rhythmic bed for a particular song section. As in other areas of the library, programmes are supplied with different levels of distortion applied and a selection of mono, stereo or multi-tracked versions. Distortion levels move from mild (labelled T1 in the programme names) through to rip-your-face off levels (T3). Further variety is provided by a number of keyswitched programmes where, for example, all chord types are available from a single programme.

The aptly named Chugs section provides both very short or, via use of the Mod Wheel, slightly longer chord 'chugs'. I think these are all based around fifth intervals and they are excellent for building up simple power chord sequences — think of the introductory guitar line to the Foo Fighters 'All My Life' and you will have an idea of what might be done with these programmes.

Four sections — Hammer-On, Muted, Octaves and Single Notes (the latter in various forms, with bends, hammer-ons and mutes and different degrees of

distortion/multi-layering) — are all based upon single-note rather than chord samples. The Hammer-On samples are not repeated hammering but a single, rapid hammer-on and the effect is similar to a single note but with a slightly softer attack. Any of these programmes could be used to create basic melody lines but, like any expressive lead instrument, constructing a convincing solo using samples — particularly something to mimic a little guitar shredding — is a difficult trick to perform. That said, the sustained samples work very well for constructing harmony guitar lines and, given the saturated, overdriven sound, it is possible to create some Brian May, or the Darkness-style textures. In contrast, the Mute programmes provide an alternative to the Chug samples and can easily be used to construct full chord sequences. For these samples, alternate notes produce up and down strokes, while using the sustain pedal gives a slightly longer note.

In the Extras section is a selection of fret



noise, cable noise, some excellent (and surprisingly playable) feedback programmes and some muted strums. The highlight of this section is, however, the group of Really Special Effects that provides a further ten highly processed guitar sounds. As with the Special Effects in the Chords section, these include processing by wah, various other filters and tremolo. As suggested by programme names such as Elf Space Chatter and Far Cry, this is almost synth-like territory — but both weird and wonderful.

In contrast with the majority of the material, a Construction Kit section makes up the final portion of the library. Some 17 construction kits are included, with the programme names indicating the original tempo and key. In each kit, a series of

complete loops are mapped between C1 and B1. These use Kontakt's Time Machine mode and so will sync to the host sequencer tempo. From C2 upwards, some of these loops are then presented pre-sliced using the Beat Machine mode. These can therefore be used to create your own variations on the main loops. While these programmes suffer the same limitations as any construction kit samples, what is here is excellent and I found it very easy to pick one or two loops to get a basic song idea started and then add some variation using a combination of the beat-sliced samples and some original guitar parts. The musical styles here are modern and you might add Puddle Of Mud or more recent Metallica to the list of 'influences' given above — *Raging Guitars* is more about contemporary rock than '80s Def Leppard or Motley Crüe.

As with all Kontakt instruments, there's also some useful additional effects processing on offer: Brightness, Saturation (a compression-like effect), Chorus, Reverb and Stereo Delay (which syncs to host tempo) all provide some further creative options.

The style of *Raging Guitars* is very much contemporary and even within the construction kits the emphasis is not on 'flash'. As a result, there is probably not much here that a competent rock guitarist might not be happy to play for themselves. However, the library is very easy to use and, in particular rock styles (think some nu-metal or rap-rock), a deliberately sampled rock guitar is part of the production — and *Raging Guitars* does that very well. Although the documentation doesn't specify this, I think all the material has been recorded from a standard 6-string electric (most of the chord patches seem to stop at D below a standard low E tuning). Given the musical styles, some 7-string samples might not have gone amiss to give that lower register vibe that is a favourite from the heavier end of the rock world. That said, the only other real downside is the price, which may put off some potential punters. Otherwise, with the Chord, Special Effects and Construction Kits as the obvious highlights, *Raging Guitars* is an ideal way for non-guitarists to add a slab of some modern rock guitar to their productions. *John Walden*

Kontakt Instrument for PC/Mac DVD-ROMs, £169.00 including VAT.

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Preparing For A Performance With Ableton Live

They say one step in planning saves two in execution — and that certainly applies to doing a performance with *Ableton Live*.

Craig Anderton

Sometimes it seems as if there are as many ways to use *Live* as there are people who own it. For some, it's a digital audio workstation with amazing loop capabilities. For others, it's a DJ program. Some wouldn't think of using *Live* without *Rewiring* it into a host program, and others see it as a songwriting tool.

To me, it's a musical instrument that just happens to look and feel like a software sequencing program. And like any other musical instrument, it requires practice. Putting together one of my live sets involves a lot of preparation; this article covers the steps leading up to actually performing a remix-type set with *Live*. The three main steps for me, other than practising with *Live* itself, are:

- Optimise existing loops and create any additional loops that might be needed.
- Transfer the loops into *Live* and create and organise Scenes.
- Add real-time control.

In this article we'll check out the first two elements; real-time control will be the subject of a future article.

Goals For Optimised *Live* Loops

Live already has some excellent stretching algorithms, so why not just throw the files in there, and let *Live* do its thing?

The main reason is fidelity. What *Live* does in terms of preserving fidelity when doing complex real-time stretching is amazing, but using files that require no stretching, or that you stretch off-line using the highest possible fidelity and then import



The notes in the Master section may seem cryptic, but they were chosen to jog my memory about specific steps I needed to take in *Live* when transitioning from one Scene to another.

into *Live*, can improve the overall sound quality. However, note that in some cases importing a loop into *Live* will produce the best results because it offers algorithms other programs don't, so always try *Live*'s stretching as well.

Another reason is compatibility. *Live 5* doesn't support REX files, so if you want to use those, you'll need to convert them into WAV or AIFF files. Similarly, although *Live* can read 'Acidised' WAV files, it does not read the *Acidisation* markers that optimise an *Acidised* file for time-stretching. While this usually isn't a problem because of the quality of *Live*'s time-stretching, there are situations where *Live*'s algorithms will not stretch as well as carefully edited *Acidisation*.

For example, suppose you have a drum part with a repetitive 16th-note closed hi-hat pattern, but with some open hi-hats that last an eighth note. Using *Live*'s Beats stretching option, you'd choose 16th notes in order to 'slice' the closed hi-hats properly. But because *Live* slices at every 16th note in

beats mode, there will be a slice in the middle of the sustained hi-hat eighth notes that will probably add a discontinuity to the sound. If you set Beats to eighth notes, though, then the closed hi-hat parts won't slice properly (although they may end up with cool swing effects, depending on the tempo).

In this case, you may be better off bringing the *Acidised* file into a host that reads *Acidisation* markers (such as Sony's *Acid* or Cakewalk's *Sonar*), time-stretch as needed, then export the file at the same tempo as the *Live* project so it slides right in without having to do any stretching. The reason I say 'may' is because some samples are poorly *Acidised* in the sense that no-one took the time to edit the *Acidisation* markers for optimum results, so the files may very well sound better when brought into *Live* and stretched using *Live*'s algorithms.

Yet another reason to create loops that, if used together in a Scene, are the same length, is that it makes it easier to 'track' what's going on in a Scene. For example,

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Preparing REX & Acidised Files For Live

Granted, this section isn't strictly about *Live* tips, in the sense that they require the use of other programs. Still, the reason for doing this is to produce the best possible *Live* performance, so bear with me — the results are worth it. Note that these techniques assume you know what the ultimate project tempo will be in *Live*.

We covered how to process a REX file for use in *Live* in the April issue, so refer to that article for details. For those who missed it, the basic idea is to import the file into Propellerhead's *Recycle* program, set the tempo to the *Live* Project's tempo, optimise the loop's stretching at that tempo using *Recycle*'s available tools, then export the file as a single sample suitable for importing into your *Live* project.

To optimise *Acidised* files for use in *Live*, there are two main tools: Sony *Acid* and Cakewalk *Sonar*. Before describing the process, though, we need to discuss *Acidisation* briefly.

As with REX files, *Acidisation* depends on finding discrete blocks of sound, and marking their start points with markers (the end of one block is, *de facto*, the start of another). As with REX files these are stretched, but there is also a significant amount of DSP brought into play, especially with sustained files. Suppose there's a marker every quarter note with a sustained pad; *Acid* will apply crossfading and DSP-based stretching to try to make as smooth a sustained sound as possible. This is simply not possible with the REX protocol.

Because of the stretching and crossfading, it's essential that the *Acidisation* markers be placed properly with percussive material. If a marker goes before a percussive transient, you'll hear flanging when the file is slowed down because the single transient gets stretched into two transients as the algorithm strives to 'fill up' the space between where the marker falls, and the actual transient. This is a particular problem with drums played by a human, as hits may be slightly off the beat.

Marker placement with sustained sounds is not as critical; proper placement often involves experimenting and listening to what sounds right. For example, with some pads it's possible to put a marker every quarter note, or every whole note.

Acidisation is an art as much as a science, which is perhaps why many libraries suffer from



This drum loop was played by a real drummer, so the timing isn't perfect. *Sonar* originally put markers on every 16th note; but the one circled in blue was moved slightly late compared to the beat in order to fall exactly on the note transient, thus producing the best possible *Acidisation*.

sloppy *Acidisation*. If you stretch poorly *Acidised* files, they'll probably sound worse than if you just used *Live*'s algorithms. However, if you're savvy enough to edit the markers, you can often stretch a file over a wide tempo range (typically -20 to +100 percent) with excellent sonic results.

When *Acidising* non-*Acidised* files, I find that *Acid Pro 5* does a better job of analysing files and placing edit points; but for editing existing files, *Sonar 5* offers additional features (the ability to change pan, gain, and pitch for each slice) that you might want to exploit.

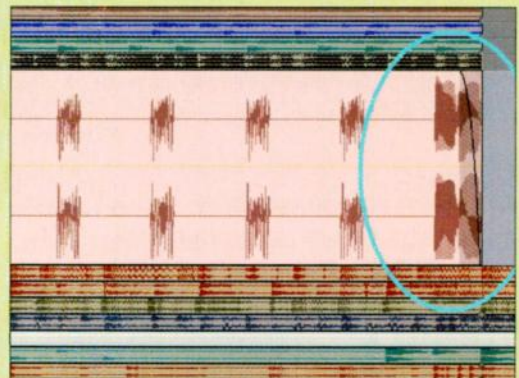
Here's the basic procedure to prepare *Acidised* files for use with *Live*: begin by loading the *Acidised* file into *Acid* or *Sonar* and adjust the host tempo for *Live*'s project tempo. Edit the *Acidisation* markers for the best possible sound quality at the target tempo and save the file as a WAV or AIFF file. With *Acid*, this is the usual save procedure. *Sonar* does the same thing, but there's also a shortcut — drag the *Acidised* file to

Here a fade-out has been added to remove a click that normally occurred at the end of the Clip.

the desktop, and it's saved.

Another tip is that if the file is a straight WAV and hasn't been *Acidised*, I check to make sure the file will loop without clicks. If not, I'll add a fade at the attack, decay, or both, depending on what's needed prior to adding the *Acidisation* markers.

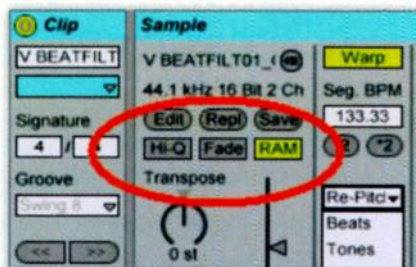
This isn't absolutely necessary, as *Live* has a clever Fade option that does this automatically. However, as you can probably tell, I like to get everything as close as possible to ideal before the file goes into *Live*.



▶ one at a time. Either click and drag around the Clips you want to edit, or select a Clip then Shift or Ctrl-click (Shift or Apple-click) to select additional Clips.

Because the loops we've described are already prepared at the project tempo, you don't have to do any complex stretching and can simply Re-pitch the selected loops should there be any slight timing differences of a few samples here and there. Of course, you don't want to do this with loops that you're stretching using *Live*'s stretch algorithms.

Another use for editing multiple Clips simultaneously is converting them all into RAM Clips, which is especially important with laptops. Laptop hard drives tend to run more slowly than desktops (5400 vs 7200



Here are two crucial parameters for laptop use: turn off Hi-Q and turn on RAM. Fade is optional, depending on whether a loop generates a click when it repeats.

or more rpm) for both noise and power-consumption considerations. With a 5400rpm drive, even trying to run 20 or so Clips will probably cause audio problems

because the hard drive can't keep up. Converting as many Clips as possible to RAM Clips (consistent with your computer's ability to hold them) solves this problem.

Our last two tweaks are simple: Turn off Hi-Q to reduce CPU drain if needed (but leave it on if your computer has enough power), and turn off Fade if you added a short attack and decay as part of the loop preparation process. If you didn't, then enable Fade on a per-loop basis if needed to eliminate audible clicks when the loop repeats.

The only remaining preparation work is to hook up a control surface, as it's a whole lot more fun to slam faders than it is to do everything through a mouse and keyboard. But interfacing with *Live* is another story, for another time. See you then! [ES](#)



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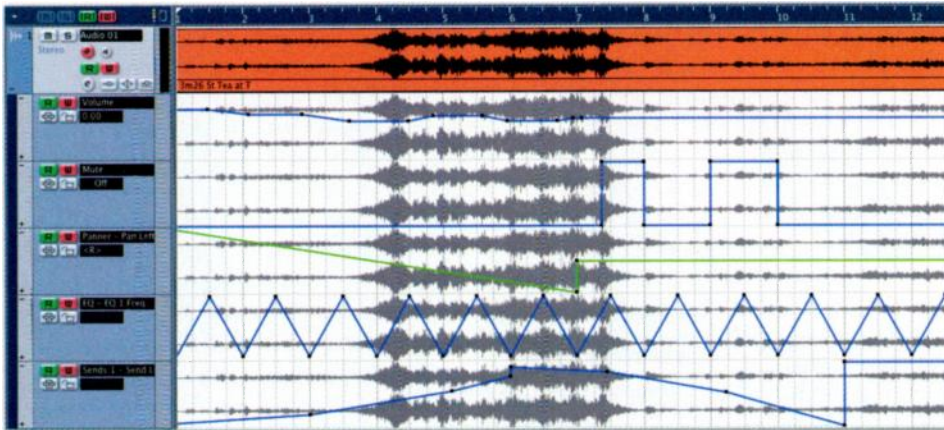
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Using Automation

In Cubase SX



All the parameters that can be automated on a track are displayed and edited in independent Automation Sub-tracks, which, rather neatly, are displayed with the data from the parent track in the background.

When *Cubase VST* became *Cubase SX*, one of the big improvements was a better automation system for audio-based tracks and channels. This month, we show you how to make the most of this newer system.

Mark Wherry

When you're working with a mixer, such as the one built into *Cubase*, there will probably come a time when you find yourself moving the mixer controls and thinking 'Wouldn't it be great to record these movements as part of the performance?' Indeed it would. And that's one of the great advantages of computer-based mixing systems (no matter whether implemented with a hardware surface or purely in software): the ability to record and play back the movements of various mixer parameters, which we refer to as automation.

Automation 101

The basic operation of working with automation in *Cubase* is fairly straightforward. For example, say you have an audio track and you want to automate the volume fader. To do this, simply click the track's [W] Write Enable button, press play, move the fader to taste, and then press stop. In a nutshell, once a track's Write Enable button is active, any parameters that can be automated on that track will be 'armed' for automation so that when the transport is active (which is to say you either pressed play or record), any adjustments made to armed parameters will be stored at the appropriate time location.

Once you've written automation data to a track, it's a good idea to deactivate the Write Enable button to avoid any accidents, and then, for the automation data to play back, you need to make sure the track's [R] Read Enable button is activated. You can toggle the Read and Write Enable buttons for all tracks simultaneously by clicking the 'All Automation to Write/Read Status' buttons at the very top of the track List (labelled [W] and [R]).

So once a track is armed for automation, what parameters are actually recorded? In the case of audio-based tracks, you can automate Volume, Pan and Mute, the built-in channel EQ parameters, and Level and Enable parameters

for each send. Any parameters for insert plug-ins you're using on the track that's being enabled to write automation are also included. You'll notice that plug-in windows also include Read and Write Enable automation buttons, and these can be used independently of the track or channel on which the plug-in is used. For example, if you have an insert plug-in on an audio track and enable the track's Write Enable button, the plug-in's Write Enable button will also become active. However, the reverse isn't true, so enabling a plug-in's Write Enable button doesn't activate automation for all the parameters on the appropriate track.

As an aside, it's important to stress that in the current version of *Cubase*, when a track's Write Enable button is active, the movements of all automatable parameters are recorded — it isn't possible to arm only certain parameters for automation (with the exception of plug-ins, as we've just discussed).

Getting On The Right Track

In the same way that MIDI Events are used to record MIDI data in *Cubase*, Automation Events are created to store automation



Cubase represents mixer channels that don't play back Audio Events as Automation tracks on the Project window's Track List, and automatically organises them into folders by channel type.

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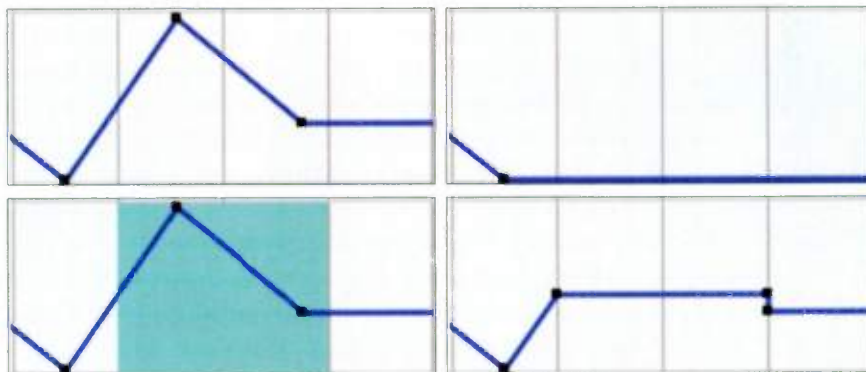
USING AUTOMATION

► actions, such as dragging a fader. And since MIDI Events are recorded onto MIDI tracks, it therefore makes sense that Automation Events are recorded onto Automation tracks — or, to be more precise, Automation Sub-tracks. When you automate a parameter on a track, the Automation Events created get stored on Automation Sub-tracks within the actual track whose parameter is being automated. And, to make life simpler when you're trying to edit Automation Events, each parameter that can be automated on an audio track (including plug-ins) has its own independent Automation Sub-track for Automation Events.

To see an Automation Sub-track in the Track List on the Project window, simply click the relevant track's 'Show/Hide Automation' button in the track List (which is the little '+' symbol in the bottom-left corner of the track). By default, the first Automation Sub-track revealed is for Volume, although you can change this, as we'll see in just a minute. You can see more Automation Sub-tracks by clicking the Append Automation track button (the '+' symbol at the bottom of an



The parameter windows for audio tracks show which parameters can be automated. If any insert plug-ins were used on a given track, the parameters for these plug-ins would show up in this window when you were adding parameters to be automated for that track.



The top left screen shows three Automation Events. If the last two were deleted with the Object Selection Tool, the events depicted in the top right screen would be the result. However, if you selected a Region containing the last two Events with the Range Selection tool, as in the bottom left screen, and pressed Backspace, the results would be as those shown in the bottom right-hand screen.

Automation Sub-track). You'll notice that the '+' symbol changes to a '-' symbol on the main track once Sub-tracks are being displayed.

Clicking the '-' symbol on the main track hides all Automation Sub-tracks currently being viewed for that track, but the good news is that when you click '+' again on that track, all of the previously visible Automation Sub-tracks are displayed again — you don't have to add them one at a time. To hide individual Automation Sub-tracks once they've been appended, simply click the '-' Hide Automation track symbol on the Automation Sub-track you want to hide. It's important to note that hiding and showing Automation tracks only affects what you see: it isn't the case that only Automation tracks that are visible are played back.

Before we go any further, I want to mention some important exceptions to the operation of Automation Sub-tracks for audio-based channels that don't contain any Audio Events, such as Input/Output channels, Group, FX, Rewire and VST Instrument channels. With these channels, the track you'll see on the Project window is actually an Automation track representing the appropriate channel on the mixer, and *Cubase* will automatically organise these Automation tracks into different folders based on channel types. So if you want to find the Automation track for a Group channel, you'll find it in the Group Channels folder in the Track List.

For VST Instruments, there are always at least two Automation tracks created: one for the actual Instrument (useful for controlling the plug-in's parameters), and additional tracks for each output of the Instrument, for adjusting levels and output settings. You'll notice that *Cubase* organises the VST Instrument Automation tracks into Sub-folders so that Automation tracks for different VST Instruments remain separate.

With the exception of Input and Output channels, Automation tracks for all channels appear in the Track List as they're created.

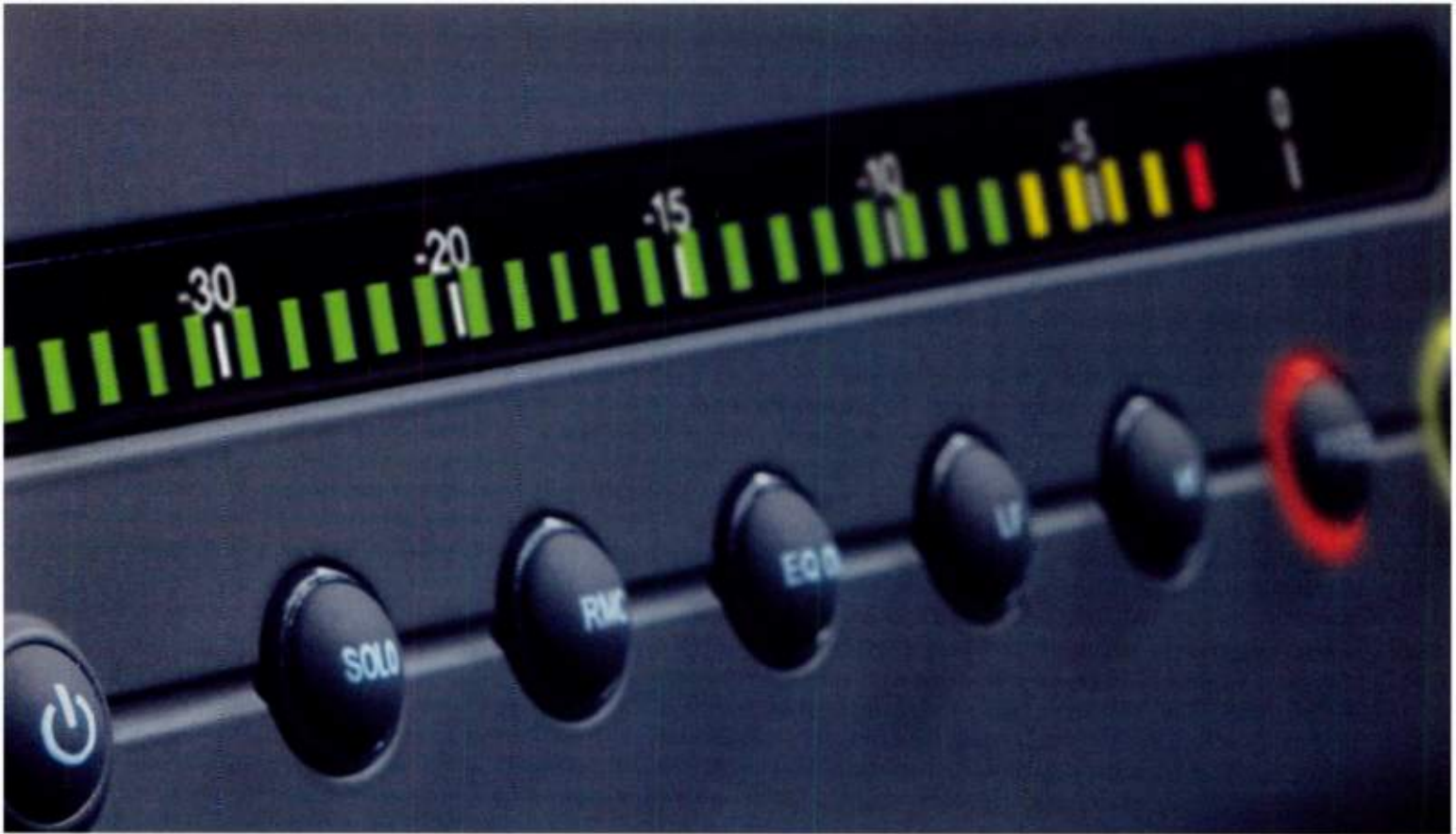
Although at least one pair of Input and Output channels always exists on the mixer, the appropriate Automation tracks are not added to the Track List until an Input or Output channel's Write Automation button is activated for the first time. For example, you'll see Automation tracks for the Input and Output channels appear on the Project window if you click the 'All Automation to Write Status' button.

Working With Automation Tracks

Automation tracks (or Sub-tracks) generally show Volume Automation Events by default, but you can change this by clicking on the name of the current parameter (such as Volume) and selecting More from the pop-up menu. You'll notice the pop-up menu itself offers a choice of parameters, but when you click More, the Add Parameter window will be displayed, allowing you to see (and choose) any of the parameters for that track that can be automated. If you want to quickly see Automation tracks for every parameter within a track for which Automation Events have been recorded, you can simply right-click (or Control-click on Mac) on the track in question and choose 'Show Used Automation'.

You'll notice that each Automation Sub-track has its own set of Read and Write Enable buttons, but unfortunately, as mentioned earlier, these don't work independently in the current version of *Cubase*. Although you can't enable automation to be written only for certain parameters, however, it is possible to prevent automation from being played back on certain parameters. Automation tracks offer a handy Mute Automation control, and when this button is enabled, as you might expect, Automation Events on that Sub-track will not be played back.

Automation tracks offer a graphical representation of Automation Events that have been recorded, and you can edit these



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USING AUTOMATION

▶ Events (or create new ones if you have no pre-recorded automation and want to create some from scratch) just like any other Events in *Cubase*. Each Event is represented as a black point, and you'll notice that *Cubase* automatically interpolates between Automation Events, so that a fade-in requires just two points — a start point and an end point — leaving *Cubase* to smoothly fill in the transition. Note that Read Enable must be active on a track for Automation Events to be edited — otherwise, the automation data appears as a grey line.

With the Object Selection (arrow) Tool, Automation Events can be edited by simply dragging them around: once selected, they turn red, and can be deleted by pressing Backspace. More than one Automation Event can be selected and edited (and deleted) simultaneously, and you can create new Automation Events by clicking on the blue line that joins the Events. You can also draw in multiple Automation Events with the Draw Tool, or use the various shapes accessible from the Line Tool.

One Tool that comes in extremely handy when you're editing Automation Events is the

Range Selection Tool, which we've discussed in *Cubase* technique articles in the past. Unlike some Events in *Cubase*, Automation Events can't be Alt/Option-dragged to copy them (even when many are selected), so the Range Selection Tool is especially handy as a way of copying a range of Automation Events. Once you've dragged out a range, you can either move the entire block, or copy it by dragging with Alt/Option held down.

You can also delete the block by pressing Backspace, and the result achieved will differ slightly from deleting a selection of Events made with the Object Selection Tool. Imagine you have three Automation Events and you select the latter two with the Object Selection Tool, then press Backspace. The Events are deleted as if they never existed, and the value of the first Automation Event is carried forward, even during the timeline where the other Events previously existed. However, if you selected the same latter two Automation Events with the Range Selection Tool and pressed Backspace, *Cubase* would automatically add Automation Events at the start and end of the Range Selection points, to preserve the value of the automation data that

previously existed at these two points before the Events within the Range were deleted (see the illustrations on the previous page for a pictorial explanation).

One final issue to be aware of when you're working with Automation Events is that *Cubase* has an option called Automation follows Events, in the Edit menu, which is enabled by default. This means that if there's an Event on the main track, such as an Audio Event on an Audio track, any Automation Events that fall under that Audio Event will also be moved when you move the Audio Event. This behaviour applies to both copying and moving. Therefore, if you want to ensure that Automation Events are dealt with independently of any Events on the parent track, you'll have to disable the 'Automation Follows Events' option.

That's all we've got space for this month, but next month we'll continue our exploration of automation and look at the different modes for writing automation in *Cubase SX*, using hardware control surfaces, and looking at the issues you'll face if you use both MIDI Controller and automation data on MIDI tracks simultaneously. **ES**

Running Cubase On Intel Macs With Rosetta

Although Universal Binary versions of many popular music and audio applications are now shipping or being tested, at the time of writing Steinberg have yet to announce a schedule for the availability of a native Mac-Intel version of *Cubase*. However, if you find yourself using an Intel-based iMac, Macbook Pro or Mac Mini, the good news is that *Cubase* will run on these systems thanks to Apple's dynamic binary translation technology, Rosetta, which basically lets you run Power PC applications on Intel Macs. (See April's *SOS* for more about Universal Binaries and Rosetta, www.soundonsound.com/sos/apr06/articles/applenotes_0406.htm).

The fact that *Cubase* will run on an Intel Mac is partly due to the fact that Syncrosoft, the company who provide the copy-protection drivers and dongle for *Cubase*, have already released a Mac Intel-compatible version of the License Control Center (LCC) software, which includes the drivers

required to make the USB dongle work on Intel-based Macs. So if you want to run *Cubase* under Rosetta, make sure you download and install the latest version of LCC from Syncrosoft's web site (www.syncrosoft.com).

I tested *Cubase SX 3.1.1* (build 944) on a 17-inch iMac with a 1.83GHz Core Duo processor, and the user interface felt surprisingly snappy (or rather, no less snappy than usual!). The only area where you feel the performance hit of the Power PC code being translated for the Intel processor by Rosetta is, of course, audio performance, such as when you're running instrument and effects plug-ins. However, the good news is that *Cubase* running under Rosetta is still able to make use of both the Core Duo's processor cores when running plug-ins. Using a single A1 instrument as a sound source, I was able to run 12 *Reverb A* instances simultaneously, by running six active instances of each of two FX channels, which were sent the A1's

signal from the VST instrument channel.

Although *Cubase* under Rosetta can make use of any attached hardware running via native Intel drivers, such as the USB dongle, MIDI interfaces, or an audio device like RME's Fireface 800, you won't be able to use Intel-native plug-ins or Rewire applications. In order for *Cubase* to see plug-ins and Rewire applications under Rosetta, they also have to be running under Rosetta, which means that previous Power PC VST plug-ins can be used, in addition to the Power PC versions of Rewire applications such as *Reason* and *Live*.

Given the performance limitations of Rosetta, running the current Power PC version of *Cubase* on an Intel-based Mac isn't something to be recommended right now. However, the fact that it does at least work might help you out if you get stuck in a situation where you need to be able to open a Project, check something, or export a MIDI file or track to another system.



Cubase SX 3.1.1 running under Rosetta on an Intel iMac.

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► be enough. This option needs to be un-ticked only if there's something like a fade-in that could affect the accuracy of the reading.

Fade-In/Fade-Out

The usual way of adding a fade with *Sonar* is to drag the upper corner of a clip inwards; dragging inwards from the beginning creates a fade-in and from the end a fade-out. There's the choice of a linear fade, an exponential fade or a reverse exponential fade, but that's about it for the 'normal' fade options.

The Fade/Envelope DSP option offers a far more flexible way of creating fades (but note that it works only with standard audio clips, not groove clips). The fade can occur anywhere within a clip, so you first need to choose the area to be faded.

1. If you want the fade to apply to the entire clip, just click on the clip and skip to step three.
2. If you want the fade to apply to a portion of the clip, select the track (click on the track header's track number) containing the relevant clip, then click and drag across the timeline to select the part of the clip to be faded. That portion of the clip becomes shaded.
3. Go Process / Audio / Fade/Envelope.

Cakewalk Musikmesse News

The *Sonar 5.2* update (for both 32-bit and native x64 versions of *Sonar 5 Producer Edition* and *Sonar 5 Studio Edition*) is now available as a free download for registered customers at www.cakewalk.com. V5.2 supports VST 2.4, which provides 64-bit double-precision audio quality through VST effects and instruments, and compatibility with Windows XP Professional x64 Edition. (Note that *Sonar 5*'s Bit Bridge technology allows pre-VST 2.4 plug-ins to run in *Sonar*'s x64 environment.)

Other features include reception of MIDI output data from VST instrument plug-ins (*Groove Agent* fans take note), the ability to host Waves VST plug-ins as well as Waves Direct X ones, routing of up to 4096 MIDI channels to any

Rewire device, and extended control-surface capabilities. In addition, the update addresses issues concerning Universal Audio's UAD1 card, VST automation and the Piano Roll and Inline Piano Roll views.

Cakewalk have also announced the free *Rapture 1.1* update, which provides Mac-Intel support (I'm still getting used to writing the words 'Mac support' in an article about Cakewalk products!), as well as support for Power PC-based Macs, and some usability enhancements. Finally, the *Dimension Pro 1.2* update also turns it into a Universal application that runs natively on Mac-Intel systems, as well as adding native RTAS/Pro Tools plug-in support, REX file support and a variety of new features.

4. If you find the type of fade you want in the Name field's drop-down menu, select it, then skip to step six.
5. If you want to create a custom fade, select the fade curve that's closest to what you want, move the mouse over a node until the cursor turns into a pencil, then move the node. To add a node, move the mouse over the line until the pencil tool appears, then click. To remove a node, drag it on top of an adjacent node. You can also revert to the original curve by clicking on the Reset button.
6. Click on 'OK' to apply the fade.

A useful fade shape that's not in *Sonar*'s 'normal' fade repertoire is an S-curve (see screen below). I use it with video fade-outs, where the music needs to drop off but then stay constant while there's a credit or copyright notice. Then, when the video fades quickly to black, the audio follows.

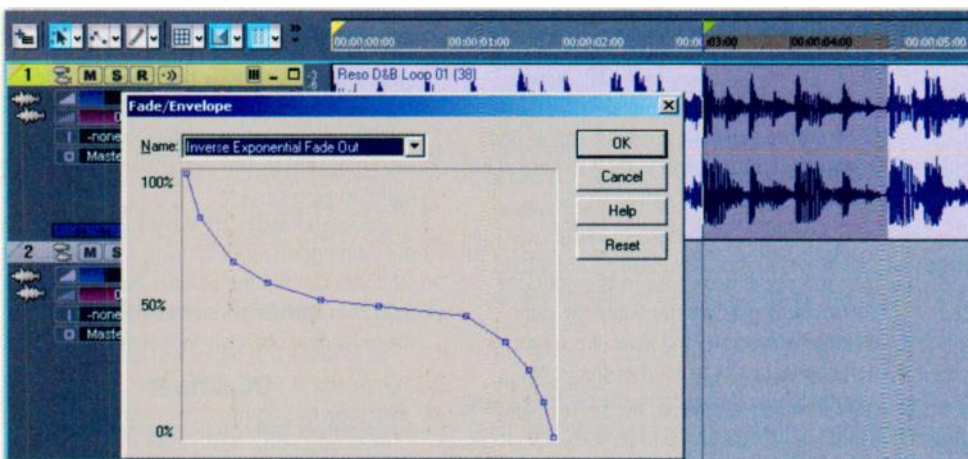
Crossfade

This works similarly to fade, except that you select two overlapping clips (actually, you can select more than two, but this may lead to unpredictable crossfade results) and go Process / Audio / Crossfade. The selected clips needn't be on consecutively-numbered tracks; they can be anywhere in the project, as long as they overlap (see bottom screen, left).

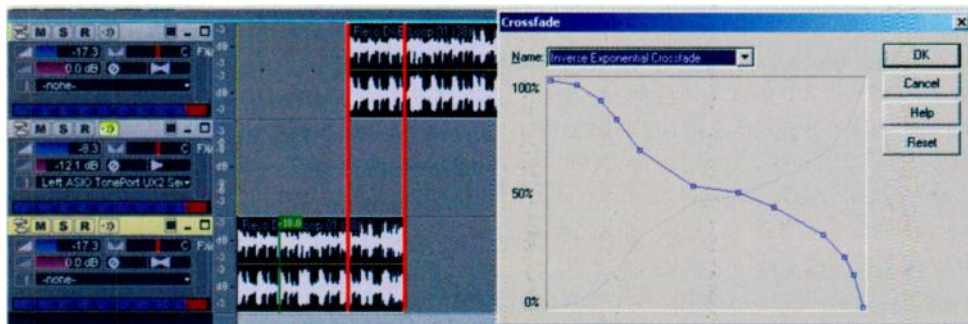
As with fade, you can create custom crossfade envelopes. For example, if you're creating a 'dance mix' type of tune and doing a long crossfade between two clips, you can have one track get quieter, then a little louder, then quieter, then a bit louder, and then finally fade out — with the other track mirroring these changes. It's definitely more flexible, although less convenient, than using *Sonar*'s usual automatic crossfade function.

Reverse

This has no adjustable parameters; just go Process / Audio Reverse and any selected clips are flipped so that the clip plays from end to beginning rather than beginning to end. It's ideal for imitating psychedelic backwards-tape effects, or for creating backwards Satanic messages to drive people who have too much time on their hands crazy! ☹



An S-curve fade, created by moving the nodes as desired and adding a few nodes, has been applied to a portion of the waveform.



Crossfade is about to be applied to two overlapping clips (the overlapping area is outlined in red for clarity). Note the custom curve, and the fact that the tracks don't have to be numbered consecutively.

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Using Global Markers

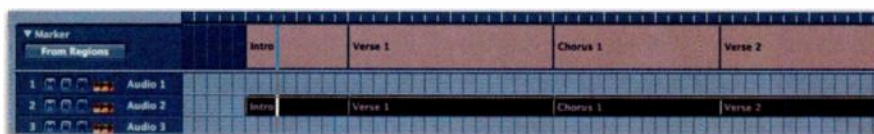
Markers have always been available in *Logic*, but the new Global Tracks feature, introduced in version 7, makes them much easier to use and manipulate than in earlier versions.

In Logic

Stephen Bennett

Markers can be really useful when you want to define parts of a Song, or for helping you to quickly move to different sections of your recording. They can be placed anywhere on the timeline, and each one can display text information. Using Markers can help make it easier to come back to work on a project after several months or even years, when you've probably forgotten what that horrible noise on track 12 was actually meant to be — in my case, it's usually my singing.

Creating Markers is still most easily done by using the key command 'Create marker' or one of its close cousins, but the Marker Global Track adds some new ways to get



As you can see, Markers can be used to delineate regions within Songs, such as intro, verse and chorus...

Markers into your Song. If you create a Marker using a key command, it will appear on the Marker Global Track, assuming you have made that track visible by using the Global Track Components item in the View menu. As you can resize this Global Track you can make the Marker text more or less easily readable, or you can hide it if you don't want anyone to see what you've written there. If you click the little arrow on the Marker track, you can collapse the display and hide Markers without

removing the whole Global Track from the screen.

Markers on the Global Track can easily be resized by dragging their corners, moved by dragging the whole Marker or deleted by selecting the Marker and pressing the Delete key. The 'From Regions' button on the Marker Track probably isn't so useful for creating Markers unless you have a few specific Regions defining different parts of your Song. When I record a live band I usually split the recordings into various

Useful Marker Tools

Here's a handy list of Global Marker Track Tools and shortcuts:

- If you drag a Marker to the timeline, the start and end Loop points are set to the beginning and end of the Marker, and the Loop icon is switched on. This makes it really easy to set up Loop points based on various sections of a Song.
- If you hold down the Apple key and click on the Marker Track, a Marker will be created at the mouse position. Existing Markers will be split as necessary to accommodate the new Marker.
- To rename a Marker directly on the Marker Track, double-click on it while holding down the Control, Alt and Apple keys.
- Clicking on a Marker while holding down the Alt key places the Song Position Line at the start of the Marker. If *Logic* is playing, playback will commence from the position at the start of the Marker.
- You can copy a Marker by dragging while holding down the Alt key.
- To change the Marker's colour, select the Marker and use the View menu's Colour Picker window. Giving Markers different colours can really speed up navigation in a complex Song.
- There is a comprehensive range of Marker key commands available. I find that assigning commands to the Goto group allows me to whizz around a Song that has lots of Markers in it.

Command	Key	MIDI
Global Commands		
Create Marker		- 78
Create Marker without rounding		
Create Marker by Regions		
Delete Marker		
Open Marker List...		- 69
Open Marker List as Float...		
Open Marker Text...		- 88
Open Marker Text as Float...		
Set Locators by Marker & Enable Cycle		
Set Locators by previous Marker & Enable Cycle		
Set Locators by next Marker & Enable Cycle		
Goto Previous Marker		
Goto Next Marker		
Goto Marker Number...		- 75
Quick Edit Marker		
Goto Marker Number 1		⇧1
Goto Marker Number 2		⇧2
Goto Marker Number 3		⇧3
Goto Marker Number 4		⇧4
Goto Marker Number 5		⇧5
Goto Marker Number 6		⇧6
Goto Marker Number 7		⇧7
Goto Marker Number 8		⇧8
Goto Marker Number 9		⇧9
Goto Marker Number 10		
Goto Marker Number 11		
Goto Marker Number 12		
Goto Marker Number 13		
Goto Marker Number 14		
Goto Marker Number 15		
Goto Marker Number 16		
Goto Marker Number 17		
Goto Marker Number 18		
Goto Marker Number 19		
Goto Marker Number 20		
Remove Scene Markers		
Various Windows		
Tools Marker Track		

Logic offers a broad selection of Key Commands for managing your Markers.

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- ▶ parts and give the Regions useful names like 'Verse One' and 'Chorus Two'. I then highlight these Regions and use the 'From Regions' button to quickly create useful Markers — names will be assigned automatically up from the Regions themselves (as in the screen on the previous page). If you double-click on a Marker the Marker text box will open — this is a fully functional notepad and you have complete control of font, size, type and colour. If you enter a line of text and press Return, the paragraph created will be displayed on a new line in the Marker Global Track (see screen below), which is really useful for making notes, especially if you have a large Global Track visible — just drag down the



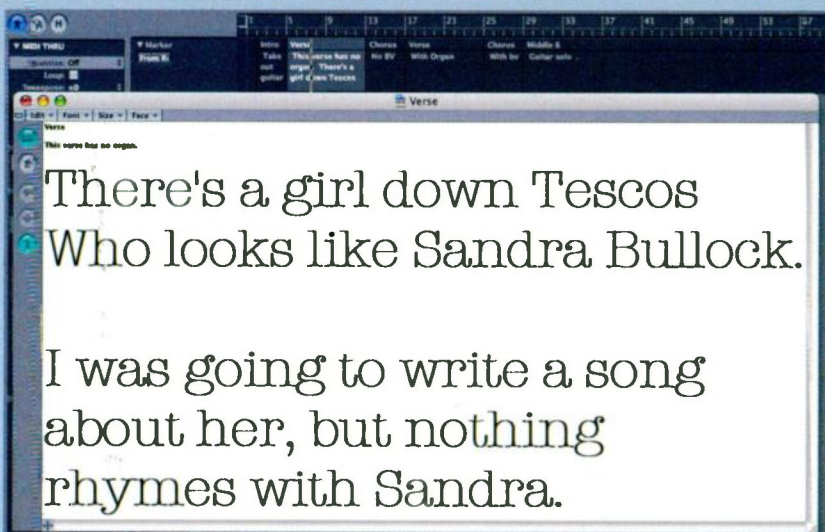
Markers can also contain much more detailed information.

bottom line of the track to do this.

Once created, you can use the groups of Marker key commands, 'Goto Marker Number', 'Next Marker' and 'Last Marker' to easily navigate around the Song.

While you can still use the 'old' method of creating and manipulating Markers, the

Logic's Notepad.



A Marker can also serve as the *Logic* equivalent of a notepad, since it's up to you to determine font and size. It can also function as an impromptu autocue for lyrics.

If I had a penny for every time I've been asked 'Why, oh why doesn't *Logic* have a notepad?' I'd probably have just about enough money to buy a pencil and pad. The questioner usually goes on to ask 'Why can't I have somewhere to note down stuff like amp settings or guitar types or microphone positions or what the singer was wearing, which can then be reloaded along with the corresponding *Logic* Song?' The complainant usually concludes with a brisk 'I'm off to *Cubase!*' before I finally agree that *Logic* doesn't have a notepad — but that it has a lot of notepads! Every Marker you create in *Logic* is a notepad that can contain several hundred characters. You can

choose the font type, size and text colour.

I usually have a Marker at the start of the Song containing overall information, such as who is playing what part and with what instrument, and other useful notes that I may need when I come back to the Song in the future. I also insert Markers when and where needed along the Song's timeline. If you open the Marker text window with the 'Open Text as Float Window' (Options menu / Marker sub-menu) and make sure the 'running man' icon is on, the text in the window will change as *Logic* plays past each Marker. I often use this feature, with really, really big text, to display lyrics as a Song plays.

Global Track simplifies their use and gives you easier access to their features. Getting into the habit of peppering your Songs with

Markers not only helps you navigate, but can be a useful reminder as to how things were when you last loaded them in. **ES**

Logic News

Logic 7.2 has brought much improved hardware controller support. It's now much easier to see which physical control is adjusting which *Logic* function by using the Track Control Bar. This is displayed on the Arrange page and shows which tracks are being accessed by a control surface. You can have a different colour for each hardware controller you are using, so it's much easier to monitor what your surfaces are doing when you twiddle a knob. More 'named' external controllers are directly supported too — which makes the whole thing a lot more 'plug and play' than in the past. Personally, I prefer the combination of external hardware controller and mouse when working in *Logic*, so any enhancement in this area is a boon.

Despite these improvements, there's always room for some extra third-party software help when it comes to using hardware controllers. For example, if you are using a surface that supports the *Logic/Mackie* Control protocols, but doesn't have a physical display (such as the Behringer BCF2000), you can use John Pitcairn's *LC Xview* to

emulate the display found on a 'real' *Logic/Mackie* Control. It's a fairly simple program that runs alongside *Logic* and you can use up to 32 instances, one for each hardware controller you have. You can download a demo or the full version for \$20 from www.opuslocus.com.

I've recently finished shooting my first 'narrative' film after making a few music videos. Digital film-making is currently enjoying the same kind of revolution that music production did in the '90s, and it's now feasible to produce high-quality work just with a home computer and an affordable camcorder. The music videos were all done in *Final Cut Pro*, as the soundtracks were, by their nature, somewhat fixed. For this film, I'm using *Logic* in conjunction with *Final Cut* not just to produce the music — I won the commission to score my film, though the competition was tight — but for all the post-production of the speech tracks, spot effects and other audio editing work.

Once I'd edited the film in *FCP*, I exported the voice track and any backgrounds as an XML file and loaded it directly into *Logic*. I then used *Logic's*

noise reduction to remove background hiss and noise, EQ to fatten up the rather thin sound captured by my recording microphone, a noise gate to remove the slight reverb picked up from the room and compression to increase voice intelligibility. I then mixed back in a small amount of pre-recorded room noise and some *Space Designer* reverbs to simulate the various recording spaces. The result was then mixed, exported and re-imported back into *Final Cut*. This has all worked beautifully and transformed my dialogue recordings into something that wouldn't sound out of place at a cinema. Next, I'll be using *Logic* to record the music alongside a Quicktime movie rough-cut of the film and importing the mixes into *Final Cut* to complete the sound edit. Doing this all myself has taught me several things: that being writer, director, cinematographer, editor, sound engineer and composer makes the usual task of being composer, recording engineer, mixer and mastering engineer seem like a walk in the park, and that *Logic* and *Final Cut* finally work together seamlessly after the problems manifest in earlier versions.

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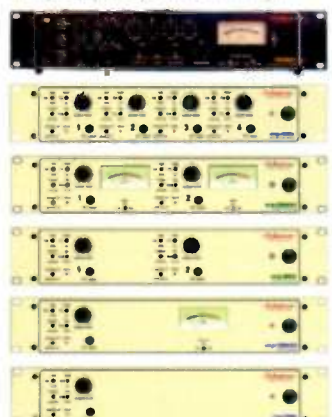
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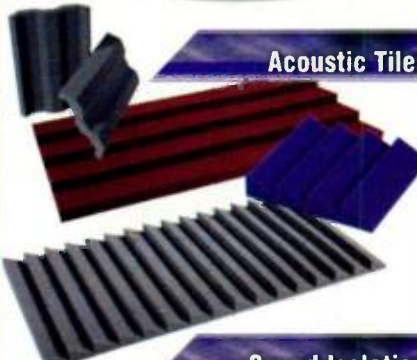


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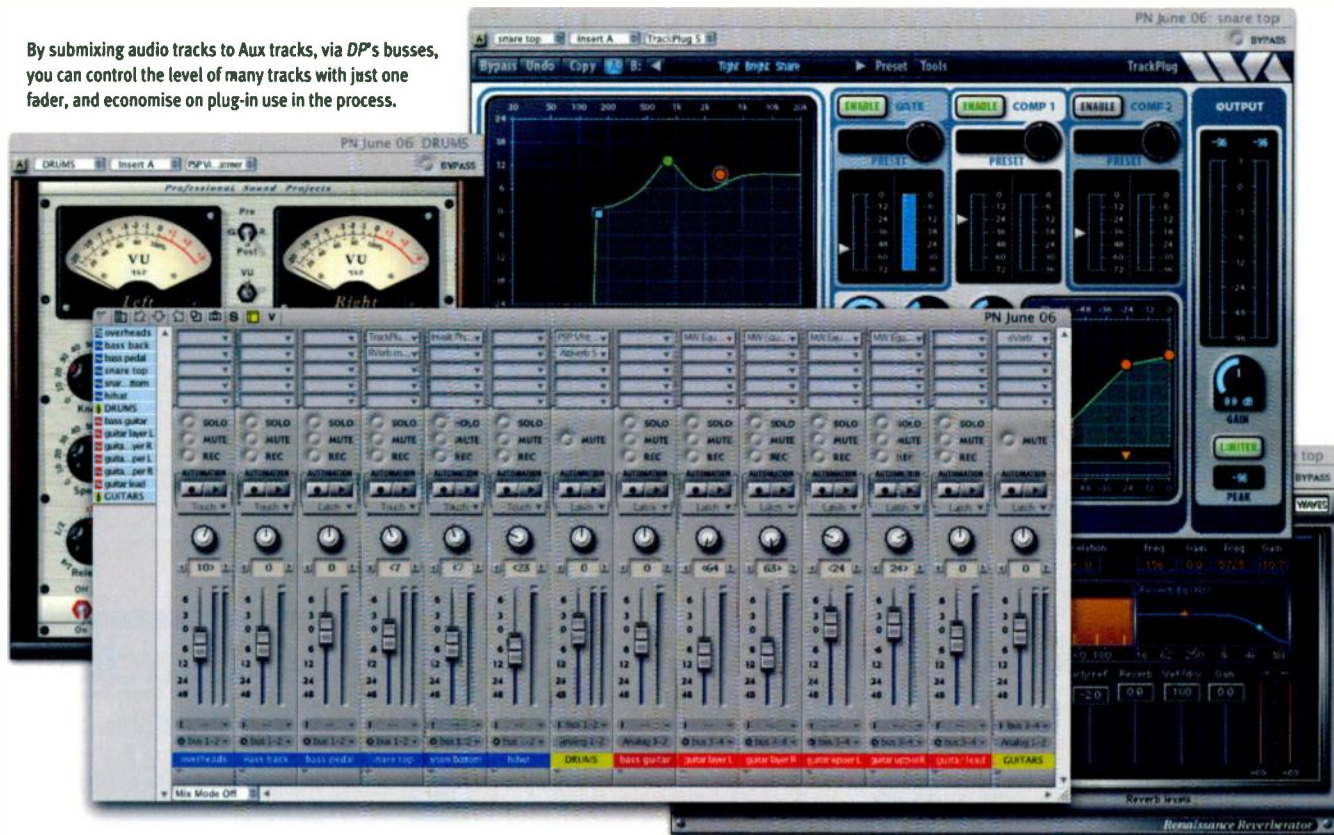
Bass Traps



Roominator Kits



By submixing audio tracks to Aux tracks, via DP's busses, you can control the level of many tracks with just one fader, and economise on plug-in use in the process.



Mix Magic

Effective Mixdown With Digital Performer

Your next project might be a four-track demo or a 100-track surround mix for cinema. Either way, at some stage you're going to have to mix it — but with DP on your side, that doesn't need to be a headache.

Robin Bigwood

The mixdown stage of a project can be exciting — it's often a moment when things start to sound really good and individual tracks begin to work well together. It's also the stage at which you can confidently bring into play all those fabulous plug-ins we all shell out so much for! But start off in the wrong way and managing multiple tracks can become tricky. It's all too easy to be overwhelmed by so many mixer channels, become swamped in plug-in windows and end up feeling as though you're going backwards. So this month we'll take a look at how some of DP's features can help you make light work of mix management, and how some different

approaches to mixing can make your mixes quicker and better sounding.

The Mixing Board

This might seem rather obvious, but if you're going to mix you really need to know your way around the Mixing Board window. As is the case with most features in *Digital Performer*, the Mixing Board is highly configurable, hides a few tricks up its sleeve and repays some 'power user' knowledge.

If you're using DP 4.5 or later, you should know that the Mixing Board is an option for display in either the central or 'side-bar' cells of the Consolidated Window. This is a great feature for providing ready access to the mixer while you're working on your project, but for me (and most other DP users I know) the better visibility and

flexibility that comes with the Mixing Board being 'popped out' into its own window is far preferable when it comes to actually mixing. It's easily achieved: just click the Mixing Board title-bar button that looks like an arrow pointing up and to the right, and in the new window that appears click the 'Zoom' button (a small square superimposed on a bigger square) to make the Mixing Board appear full-size.

You can also click the Mondrian-esque 'Expand' title-bar button (or hit Alt-Apple-E) to show (or hide) the Track Selector List, which allows you to choose which tracks are visible at any time. If your Mixing Board shows no tracks, you can be confident that's because no tracks are highlighted in the Track Selector List, and you can quickly reveal them all by clicking on the first track

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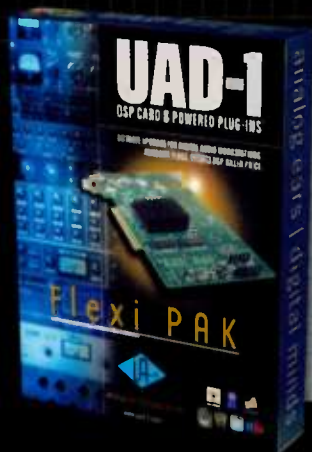
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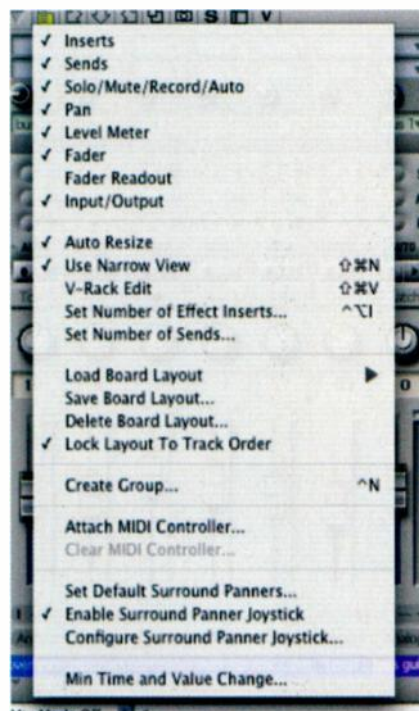
EFFECTIVE MIXDOWN TECHNIQUES

► in the list and dragging down to the last, rather than laboriously clicking each individually.

Other features of the Mixing Board are accessed from its mini-menu. The topmost options of this menu provide a way to customise your view of the Mixing Board, hiding or showing individual sections. If you're not using any sends, for example, these can be hidden, and you might decide to hide 'Fader Readout' if you're happier using your ears and don't want to be bothered with exact track-level values. If only you could do the same for Pans...

The next group of mini-menu options is very useful. Auto-resize, which is 'on' by default, causes the popped-out Mixing Board window to resize automatically every time you hide or show tracks with the Track Selector List — very tidy. The 'Set Number of Effects Inserts' and 'Set Number of Effects Sends' options are great if you're into more complex and extensive mix architectures (of which more in a minute), allowing for a rather overwhelming maximum of 20 insert and 20 send slots. You'd need a big monitor! The 'Use Narrow View' option (Shift-Apple-N) is useful for everyone, as it cuts the width of any Mixing Board view by about a third, squeezing more tracks on to your screen. You lose fader scales and send buttons, but nothing else.

Finally, in this little examination of the Mixing Board's nether regions, I can't speak highly enough of the mini-menu's 'Lock



A surprising amount of customisation of 'look and feel' of the Mixing Board is available from its mini-menu. This is also where you can easily create Track Groups and set up MIDI control of faders and pans.

Quick Tips

- The Name Game: Track colour can help you navigate your Mixing Board, but there's nothing like good track naming to take away the last vestiges of uncertainty. Just Alt-click a track name in the Mixing Board, Tracks Overview or Sequence Editor to rename it. DP can cope with very long track names, but bear in mind that anything over about 11 characters will be abbreviated in the Mixing Board.
- On The Busses: If you habitually use a lot of busses for creating submixes and handling Aux

Send routing and other tasks, it can be confusing keeping track of which you've used and which you haven't. If this bothers you enough, you can actually name busses and buss pairs, making configuration in the Mixing Board much clearer. This is done in the Audio Bundles window, accessed from the Studio menu, or with Shift-U, under the Busses tab. Just Alt-click a buss name to rename it. In the same place you can also delete unused busses and set up many new ones in one fell swoop.

Layout to Track Order' option. This simply keeps track ordering in the Mixing Board, Tracks Overview and Sequence Editor window harmonised, so that changes to track order in one are reflected in the others. For big mixes, where you'd probably have a concept of left-to-right or up-and-down grouping of tracks into drums, guitars, vocals, and so on, this is invaluable and means that tracks are always where you expect, whichever window you're using.

Knowing your way around the Mixing Board is crucial, but how you actually set up your mix, and the strategies you employ for handling signal-flow and routing, are what can determine whether you — and your computer — cope with a mix or not! So read on for some suggestions regarding good mix practice, which make the most of DP's signal-routing and effects-handling features.

Auxiliary Power

DP uses busses to mix multiple signals together, just as in an analogue mixer. Often you'll be using Main Out 1-2 or Built-in Audio 1-2 as an output for all your audio tracks, as these are busses that are already 'wired-up' to your audio hardware. However, DP also has busses that aren't, such as 'Buss 1-2', and these are for routing signals from place to place within the Mixing Board. So what has this got to do with mixing? Well, by configuring related tracks (such as all your drum tracks) to output to their own buss pair, and then creating a new Aux track with this same buss pair as an input, you create a drum 'subgroup' that combines all your drum tracks into a single channel. The overall level of your drums can then be adjusted using a single fader, and plug-ins can be placed in the subgroup's insert slots rather than on all the drum tracks individually. It doesn't stop with drums, either — you can usefully end up with subgroups for guitars, backing vocals, software instruments, percussion, and any other group of related tracks. For a big mix, it can mean the difference between dealing with six faders and dealing with 60.

The screenshot at the start of the article shows a simple subgroup setup: a 12-track

recording of drums and guitars (coloured blue and red respectively) equipped with two subgroup Aux tracks (coloured yellow). There are a few interesting things to note from this typical setup:

- First, you need separate buss pairs for each subgroup aux you want to create: here, drums are submixed to buss 1-2 and guitars to buss 3-4.
- Second, while both subgroup Aux tracks are carrying plug-ins that treat the entire submix, the individual tracks can still have their own plug-ins where necessary — note the reverb on the snare-drum track and EQs on the guitar tracks.
- Third, because the submixes are taking place via stereo busses, the pan positions of the tracks that feed them are preserved in the Aux track subgroups.
- Finally, not every track needs to be submixed. In this example, the bass guitar track stays directly routed to the Main Outs.

Setting up subgroups is easy. Just create an Aux track and set its input to be an unused buss pair and its output to be your main hardware output pair (such as 'Main Out

'W' Is For Wonderful

DP's Track Groups are tremendously powerful (see page 210), and you can read more about them in the Performer Notes column from April 2003's *Sound On Sound* (www.soundonsound.com/sos/apr03/articles/performernotes0403.asp). However, there's an additional keyboard shortcut that's incredibly handy in many mix situations — the 'W' key. In the Mixing Board, if you drag a fader while holding down the 'W' key, all other visible faders also move, maintaining their relative positions. This works for Pan controls too, and for Mute and Solo status, and for Automation record and play. This little shortcut makes it fast and easy to control multiple mix elements without bothering with Track Groups, and if you use the Track Selector list to control which tracks are visible you can decide exactly which tracks are included in the temporary group.

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Essential Mix Plug-Ins

General mixing techniques aside, what specific plug-ins are best to use for different tasks? Here's a quick run-down of the ones I personally can't live without:

- **EQ & Compression:** *Masterworks Equalizer* is fabulous for general EQ use, and using its Type III curves can give a really punchy sound. The low-cut filter is also superb for reducing unnecessary low end. Don't be afraid to use it on all your tracks! For conventional wide-band compression its probably best to look at third-party plug-ins. For a freebie, *Blockfish* (www.digitalfishphones.com) is remarkable, while *Trackplug* (www.wavearts.com) is an immensely useful channel strip. *Vintagewarmer* (www.pspaudioware.com) seems to make everything sound better, and can operate in single- or multi-band modes, so it's useful on individual tracks as well as submixes. Don't overlook the *Masterworks Compressor* either: it works beautifully on submixes.
- **Reverbs:** Although it's no Lexicon 960, I do make use of *Everb* rather a lot,

especially its early reflections and pre-delay), the shareware *Ambience* (www.smartelectronix.com) or the wonderful *Altverb* (www.audioease.com). *Renaissance Reverberator* (www.waves.com) is also rather nice, and is more flexible than most other non-convolution reverbs.

- **Delays:** *Echo* and *Delay* are useful, but for more creative stuff and flanging I'd recommend PSP Audioware's *PSP42* and *PSP84*. For chorus, the freeware *Monstachorus* (www.betabugsaudio.com) is great, and the likes of Audioease's *Deep Phase Nine* and the freeware *Supaphaser* (www.smartelectronix.com) will both more than fit the bill for phasing.

DP's bundled plug-ins, freeware VST or Audio Unit offerings and full-price third-party products all have their place in producing a great-sounding mix.



- ▶ 1-2'). Then, for any track you want to submix to this Aux, choose the same buss pair for its output.

Send Secrets

If submixing using busses and Aux tracks can make your mix more manageable, bringing in Aux Sends can be even more

useful, and can have a dramatic positive impact on processor usage.

Consider a mix featuring 16 tracks of bass, guitars, drums, piano and vocals, all recorded dry but all needing reverb to help them blend together and to create a realistic feel. You could add a reverb plug-in to every track, but as well as taking forever to set up

and being really cumbersome to adjust *en masse*, those reverbs would represent an enormous processor hit, enough to bring an older Mac to its knees. You could also submix the lot and put one reverb on the Aux-track subgroup. This would be great in terms of processor hit (one reverb instead of 16) but terrible in terms of controllability,

with all tracks picking up exactly the same amount of reverb. Fortunately, there's a third way.

The idea is that you create an Aux track, set its input as an unused buss or buss pair and its output as your main hardware output, and place in one of its insert slots your reverb of choice. Then, in the Mixing Board, configure on all your tracks an Aux Send, with the same buss as you just chose for your reverb Aux track. These Aux Sends 'split off' a duplicate of the original dry signal from each track and route it to the Aux track carrying the reverb plug-in. Because the amount of signal split from each track is controlled by the Aux Send level knob, you decide how much reverb signal is added to individual tracks.

This is a great way of working with reverbs, and it



Here, 16 tracks are utilising their Aux Sends to share a single reverb and still retain individual control over reverb levels — a flexible and very economical arrangement. The Mixing Board is shown in its narrow view mode, with a cut-down insert and send section.

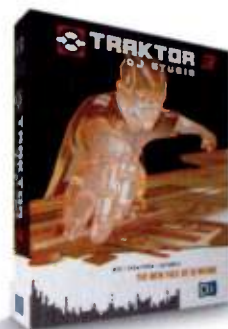
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EFFECTIVE MIXDOWN TECHNIQUES

► works equally well for various delay effects, too. It's important to note, though, that you'll achieve the best results if you set your Aux reverbs or delays to output a 100 percent wet signal. This is because the dry signal is already accounted for in the original tracks' signals (which are still routed to your main outputs in the normal way). You don't need the plug-in to add any more dry signal.

Mix Management

One of the problems with all DAW software like *DP* is that the mouse only allows you to adjust one fader at a time. So unless you blow some cash on a hardware control surface, what can you do? The answer is: a lot! For starters, *DP* has various Track Group features that allow you to adjust many tracks by working with only one. Track Groups can encompass selection and editing, but for mixing our needs are less extensive. Here's something to try:

1. With your Mixing Board open and all your tracks displayed, go to the mini-menu and select Create Group, or hit control-N.
2. The mouse pointer turns into a chunky cross-hair, and you can now click on any faders, pans or send knobs that you'd like to group together. Try clicking on several faders. They should start flashing green.
3. Now hit Return. The New Track Group dialogue box appears, confirming that you're about to make a Custom group consisting of volume faders, and inviting you to name the group.
4. Name it, then click OK to close the dialogue box.

You'll find that the faders you clicked are linked together, so that when you move one, they all move. If you need to adjust just one, drag it while holding down the 'G' key.

DP News

It's a pretty quiet month on the *Digital Performer* front, except for the official announcement of *DP* version 5 on www.motu.com. This gives the lowdown on all the features previewed at the NAIMM and Sounds Expo shows earlier this year, and also confirms an upgrade cost of \$195. MOTU's UK distributor Musictrack are showing an upgrade cost of £135.13 for owners of any previous version of *DP* and £199 for users of the *Audiodesk* software. This pricing brings up an

interesting comparison. Apple's *Logic Pro 7.2* is typically available for £630, but for the same money you could get *DP5* and a MOTU Ultralite Firewire audio interface, by using the MOTU *Audiodesk* to *DP5* upgrade offer! Only a little more would get you an 828MkII or Traveler and *DP5*. And what completely changes the landscape is *DP5*'s bundled instruments: *DP* can no longer be criticised as lacking in this area. Some interesting times ahead, I think...



For current owners or prospective purchasers of MOTU audio hardware with *Audiodesk* software, the upgrade pricing for *DP5* is particularly tempting.

You can create as many groups as you like in this way, and it's easy to suspend or delete them, too, if you later find you don't need them. You simply choose Track Groups from the Project menu, and in the Track Groups window (which can form part of the Consolidated Window) click the box next to the group name to deselect it. You can also click a group name and choose Delete Track Group from the mini-menu, to get rid of it for good.

MIDI Control

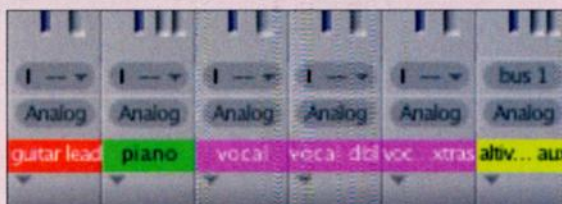
If you have any sort of MIDI control surface, or even a knob-equipped MIDI controller keyboard, you can easily use this to control *DP*'s Mixing Board and gain the advantages of hands-on mixing:

1. In the Mixing Board mini-menu, choose Attach MIDI Controller.
2. With the resulting cross-hair mouse pointer, click on the fader, pan or send knob you'd like to control via MIDI. The control becomes surrounded with a flashing red box.
3. Now wiggle the knob, wheel or slider on your MIDI controller to 'teach' *DP* the MIDI message to be associated with it.
4. If necessary, continue to click and wiggle to set up extensive MIDI control, and hit Return when you've finished.

DP can only use continuous controller messages for MIDI control of the Mixing Board, not pitch bend, note or 'switch' data. Cancelling MIDI control is even simpler than setting it up: just choose 'Clear MIDI Controller' from the mini-menu and click on the faders or knobs you no longer want to be remotely controlled, before hitting the Return key. **ES**

In Glorious Colour

Newcomers to *DP* often find the idea of track colour, most conspicuous from the 'Col' column in the Tracks Overview window, rather quaint and a bit 'System 7' (long-standing Mac users will know what I mean!). But track colour comes into its own during mixing, because the colours set in the Tracks Overview are very prominent in the Mixing Board, at the bottom of each 'channel strip'. A couple of seconds spent grouping your tracks by similar colour in the Tracks Overview can result in glorious clarity in the Mixing Board. I generally choose a common colour for each instrument or vocal group,



If you use track colour to your advantage, track grouping and routing in the Mixing Board becomes easier to understand at a glance.

separate colours for instrument tracks, and different colours again for Aux and Master Fader tracks. This, combined with sensible track naming and ordering, can in itself improve the manageability of a mix no end, and possibly even contribute to it ultimately sounding better.

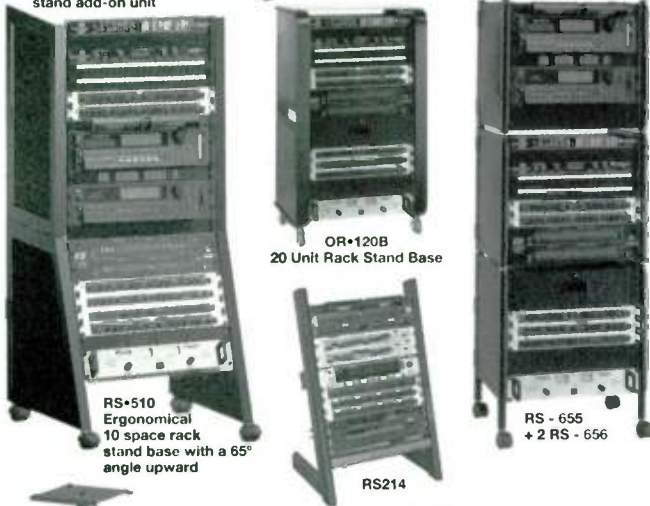
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View of Z-600 project desk system in combination with Z-612 rack stand

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View of Z-600 project desk system complete with Z-712 BK/CY optional pull-out shelf

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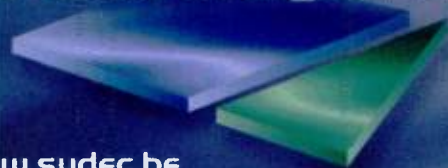
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Latency & LE

Addressing Latency Problems In Pro Tools LE

One of the best features of TDM-based Pro Tools systems is the negligible latency, or input-to-output delay, while recording. So what's the best way to deal with this problem if you have only an LE system?

Mike Thornton

When working on music projects I normally use my main Pro Tools system, which is an HD2 Accel system with a 192 I/O interface. However, I also do a lot of work on LE systems as these are what many of my clients have. Often, these are used for broadcast production, and latency issues don't usually rear their ugly heads when using Pro Tools in this way, but recently I was asked by one of my clients to fly out to Northern Ireland to track and overdub some music tracks in a studio overlooking Carlingford Lough near Newry. With us flying out, taking my HD system was not a practical solution, but I have an 002R with a Focusrite Octopre in a 3U soft case, and together with some other bits and pieces loaded into my suitcase, I just got it within the 32kg single item limit.

I knew that there were some latency issues with LE systems, and sure enough, when we came to the first overdub there were problems. The singer was having some tuning difficulties, so I put *Pro Tools* into Low Latency Monitoring mode — and hey presto, the vocalist could sing in tune again. I was feeding the performer's headphones from an aux buss and hadn't noticed that in Low Latency mode, *Pro Tools* mutes the aux sends of any track in Record; I didn't become aware of this until later on in the session, when another performer complained they couldn't hear themselves. So I looked into what was going on and workarounds to keep the session going smoothly, and I thought I would share the

results of my investigations with you this month.

Latency And Why It Happens

Pro Tools LE uses the processor in the computer for all audio processing, playback and recording, and to make it work reliably, audio data needs to be buffered on the way in and the way out, imposing a small amount of audio delay, or latency, in the system. The amount of latency is related to the H/W Buffer Size: the larger the buffer size, the longer the delay.

With the 002 and 002R interfaces, however, *Pro Tools LE* offers a Low Latency mode. This can be found at the bottom of the Options menu on *Pro Tools 7 LE*. When Low Latency mode is enabled, it will only work on tracks that have an input routed direct from an interface input, and not for tracks routed via an aux track, for example. If you do a Bounce to Disk whilst Low Latency mode is enabled then any aux and

Instrument tracks will be ignored and so won't feature in that bounce. All plug-ins on any record-enabled track are bypassed in Low Latency mode, and any record-enabled tracks will not register on the master meters. Only analogue outputs 1/2 are available in low-latency monitoring mode, which is why *Pro Tools* muted my headphone feed on the session I was describing. Also, it doesn't work via the digital outputs, so you can't monitor via the digital outputs while recording in the low-latency monitoring mode.

The M Box and M Box 2, meanwhile, enable you to monitor the input signals directly whilst recording, so you can hear them without any latency. The Mix knob on the front of the M Box or M Box 2 enables you to adjust the balance of direct input signal to playback signals from *Pro Tools*. You'll need to mute the tracks you're recording on in *Pro Tools*, otherwise you'll hear both the direct signal and the delayed signal as recorded into *Pro Tools*.

The Workarounds

Now that I've outlined the limitations of the zero and low-latency modes for *Pro Tools LE*, depending on which interface you are using, let's look at a range of workarounds you can use so you can run smooth sessions with happy artists.

- Reduce the H/W Buffer Size.

This works without having to resort to using the zero or low-latency monitoring modes and so should be the first choice for a solution. Go to Playback Engine menu item in Setups and adjust the buffer size as low as possible; 128 samples is a good compromise, but you will need a very fast computer and hard drive for this. The low limit for the options for hardware buffer size are set by which hardware interface you have. The 002 and 002R can work down to 64 samples (on my Apple Powerbook G4 1.67GHz machine with my 002R running *Pro Tools 7.0cs5* I was able to run at 64 samples on a fair-sized Session) and the M Box 2 will go down to 128 samples, but the original M Box's lower limit is only 256 samples, which for most situations won't be enough. This has to do with the performance of the USB buss, so for low buffer sizes to work well you need a fast computer and a Firewire interface. However if you don't have either or both of these don't despair, as there are other workarounds to go at.

- Use the Low Latency monitoring mode (002 and 002R only).

This is much faster than even the 64-sample buffer size, but the down sides are that you cannot use any outputs other than analogue outputs 1/2, so headphone feeds fed via an aux buss from say outputs



With the 002 and 002R, *Pro Tools LE* offers a special Low Latency Monitoring mode.

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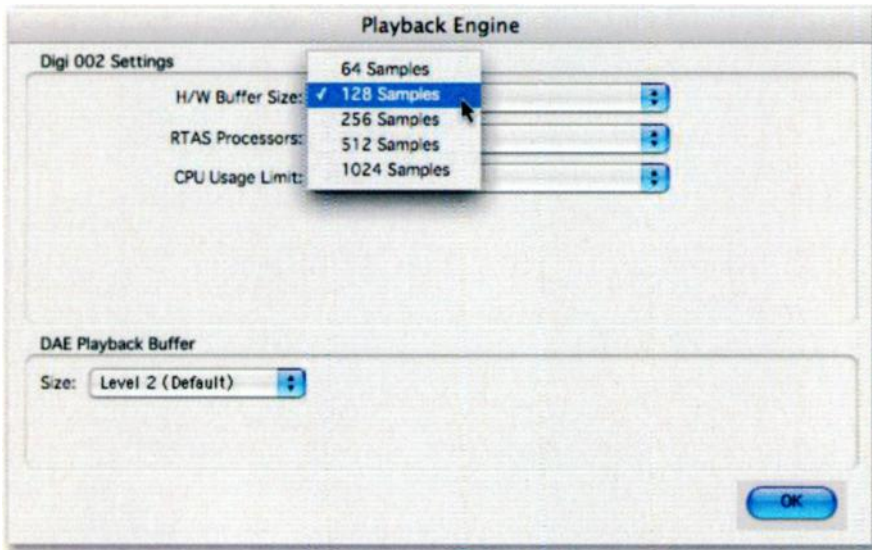
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LATENCY IN LE SYSTEMS



The 002 and 002R offer buffer sizes down to 64 samples.

► 7/8 aren't possible. Also, remember that plug-ins on tracks you're monitoring and recording will be bypassed as well. However, if you can work with the headphones having the same mix as your control-room monitors and don't mind bypassing plug-ins on the track you are recording on, the latency is seriously low in this mode.

- Use the Zero Latency monitoring mode (M Box and M Box 2 only).

This eliminates latency altogether by routing the input signals direct to the outputs in the analogue domain, so short-circuiting the path via *Pro Tools*. However, you need to note that you will hear both the input direct and the signal coming back from *Pro Tools* in this mode, unless you mute any track you are recording on to. One snag with this is that

When you're using the 002/002R Low Latency recording mode, plug-ins and aux sends on the tracks you're recording are disabled.



when you come to try to overdub sections, the artist will need to hear what they have already laid down on the track. The workaround for this is to mute the record track at the drop-in point, but you will have to do this manually, as mute automation is suspended when you record-enable a track.

- Use an analogue mixer for headphone monitoring.

Taking the M Box's zero-latency concept

somewhat further, you can use a separate mixer to handle monitoring. If you're using stand-alone mic preamps, these can be split to both the Pro Tools interface and the headphone monitor, or if you're using the mixer's mic preamps, you can put Pro Tools 'in line' like we used to do with tape-based multitrack machines. This workaround is nowhere as portable as any of the others but does give you a flexible zero-latency solution.

Conclusion

On balance, reducing the H/W Buffer Size is the best way of getting around the latency problem, as you can do proper drop-ins, and still have the plug-ins and aux sends active on your record tracks, so the musicians can hear reverbs and so on whilst tracking. You do need to keep your track counts down and keep the use of plug-ins to a minimum, but it is the best way to work providing you have a fast computer and fast drives. The other workarounds work up to a point, but the process of doing drop-ins is much harder as the artist will not be able to hear what they have already laid down unless you are very adept in the use of the mute buttons. So if latency is a recurring annoyance then it may be time to upgrade your computer to something a lot faster. **ES**

Book Review: Pro Tools Surround Sound Mixing

Rich Tozzoli's book is an excellent handbook for anyone wanting work in surround with Pro Tools, whether for music, broadcast or film, and is full of pictures, screenshots and practical examples of real projects to help you to get stuck in very quickly.

It begins with a brief overview of how we have got to today's range of surround formats, starting with Walt Disney's *Fantasia* from back in 1938! Rich goes through the requirements for a surround monitoring system, including speaker placement, the ITU standard, calibration and bass management, and then looks at the best way to record for a surround project. He gives practical outlines and examples using both traditional mics and more specialised ones like the Soundfield and Holophone mic systems.

He then shows how to prepare a *Pro Tools* Session to mix in surround, including setting up surround paths using the I/O Setup window, routing to the interface outputs, the different ways of surround panning with either Digidesign plug-ins or the Waves 360 plug-ins, and the difference between the sub and LFE channels. He also looks at how the different control surfaces available, both Digidesign and third-party, work in a surround facility, and outlines different multi-channel mixing concepts using case studies, explaining how to use the Centre and LFE channels, and how to work 'to picture'. The final case study in this section is a look at how a DVD is designed, and explains the 'data rate and bit

budget' calculations that go into the design and authoring of a DVD.

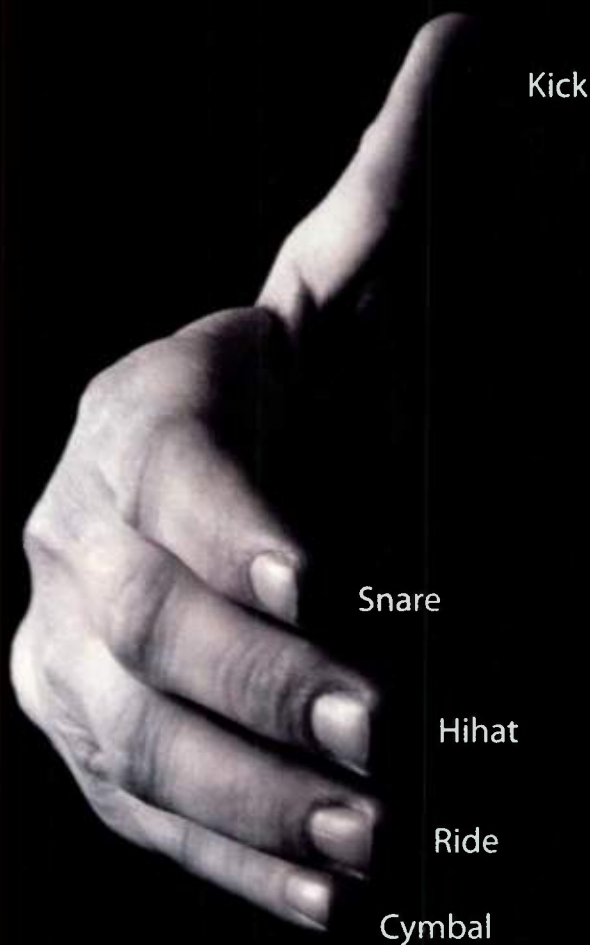
Rich covers in detail a broad range of surround-capable plug-ins including the Waves 360 Bundle, Digidesign's *Revibe* and Sony's *Oxford Dynamics*, as well as software available for surround encoding and external hardware processors like the Lexicon 960L and the TC Electronics M6000 units. He goes through the current range of surround delivery formats like DVD-Video, SACD and DVD-Audio, the Dolby range from Pro Logic to Dolby EX and the DTS system, before taking a look at an example of how our wonderful surround mixes are heard at home, albeit with a top-end consumer receiver. Chapter 11, the final chapter, looks at other applications for surround like computer games and commercials.

The DVD that comes with the book includes a number of examples, of which the first 11 are short clips showing extracts and elements of surround mixes, while the last three are complete mixes. The DVD will play on any surround receiver with a Dolby AC3 decoder, and with its accompanying written notes, is much more than an afterthought. The examples are an excellent resource, which reinforce the very practical tone that Rich takes through this entire book. I would recommend this book to everyone who works, or plans to work in surround audio projects.

Pro Tools Surround Sound Mixing by Rich Tozzoli (ISBN 087930832X) is published by Backbeat Books at £24.95.



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Reason's Redrum drum machine can be triggered via MIDI or from its built-in step sequencer.

Programming Drums

Whether you need electronic beats or realistic acoustic drums, *Reason* is one of the quickest and easiest tools around for creating varied drum tracks.

In Reason

back a single sample. By default all the channels are mixed to a stereo output, but you can take separate outputs from the back panel for individual processing of any sound. Each channel has two send controls that link up with the main mixer, to allow individual send effect levels to be set. All channels have pan, volume, velocity sensitivity, pitch and basic envelope controls, but there are some further controls that vary by channel. Channels either have a tone control, a sample-start control, or pitch envelope controls. This means you need to think about which slot to load each sample into. If you mainly use pre-programmed kit patches (which is usually a good starting point for most projects) you won't need to worry too much about this.

Redrum can be triggered either from your MIDI keyboard (as with most drum machines, the 10 samples are mapped upwards from the C1 key) or from the built-in step sequencer. Anyone familiar with hardware

Simon Price

Even when I'm working in another software package, such as *Live* or *Pro Tools*, I still tend to run *Reason* via *Rewire*, to handle the bulk of the drums. This is because I've yet to find a more friendly and versatile set of tools for programming drum sequences. *Reason* lets you work with drums in so many different ways: you can create a *Redrum* drum machine, and use its built-in step sequencer. You can play and record drums in *Redrum* from your MIDI keyboard or trigger-pads. You can edit *Redrum* tracks in the master sequencer using a standard piano-roll view, or use the drum-track editor. You can even swap between approaches, by dumping the contents of *Redrum's* step sequencer into the program's main sequencer. Alternatively, you can compose several different patterns in the step sequencer, then record or draw pattern changes into your *Redrum* track. Another option entirely is to use the *NNXT* sampler instrument for your drums. This is particularly good for acoustic kits, as it adds velocity layers and more expressive playing

possibilities. There are several kits presented in *NNXT* format in the *Factory Sound Bank* (as both straight patches and as part of *Combinator* setups), and *Propellerheads'* own acoustic drum Refill, *Reason Drum Kits 2.0*, is in this format.

This month we'll look at pattern sequencing with *Redrum* and see how quickly it's possible to arrange the drums for a whole song, complete with variations and fills. Next month, we'll cover the more traditional MIDI sequencing approach and look at how you can combine both these methods to become an expert *Reason* drum programmer.

Re: Redrum

First, it's probably worth doing a quick recap on *Reason's* drum machine, which we'll be using this month. *Redrum* has 10 channels, each of which can load, manipulate, and play



Create patterns by clicking the 16 pad buttons that run along the bottom of *Redrum*.



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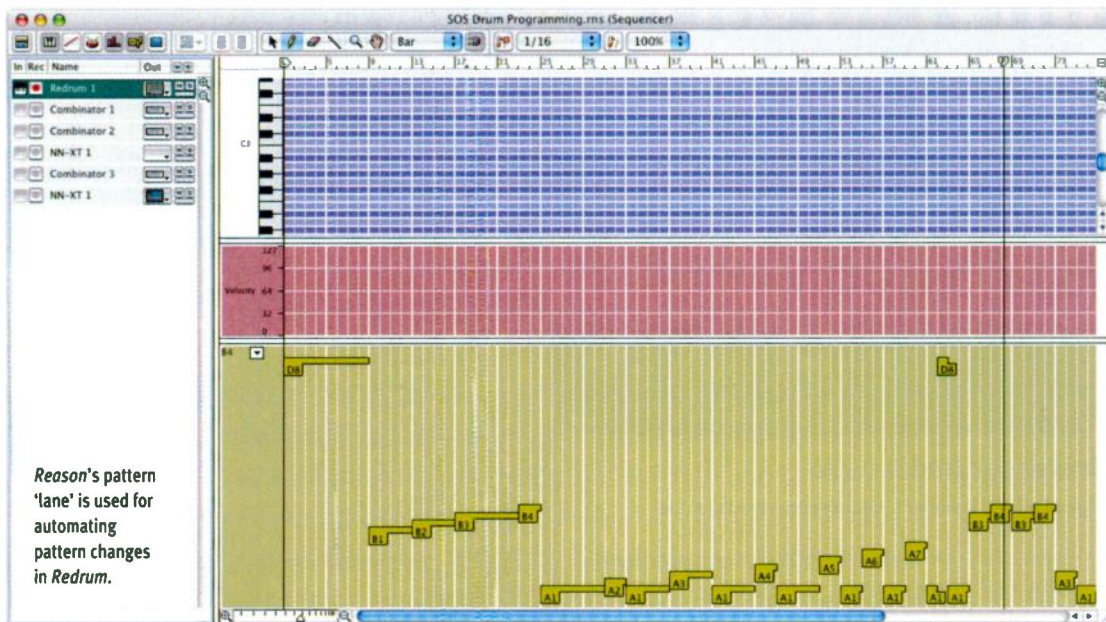
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PROGRAMMING DRUMS

▶ drum machines should be fairly comfortable with the step sequencer part of *Redrum*. Patterns are created by clicking the row of 16 buttons along the bottom of the device (see second screen on previous page). At the default 1/16 resolution, the 16 steps represent one bar (using the 4/4 time signature) in time. If smaller divisions of time are required, you can raise the resolution, making the step sequencer play back faster. Longer patterns are created by increasing the number of steps; patterns can be between one and 64 steps long. Each sample/channel has its own sequence, displayed by clicking the Select button on that *Redrum* channel. A complete *Redrum* pattern stores the step sequences for all the channels, with each individual sequence in the pattern sharing the same length and resolution.

Creating & Storing Patterns

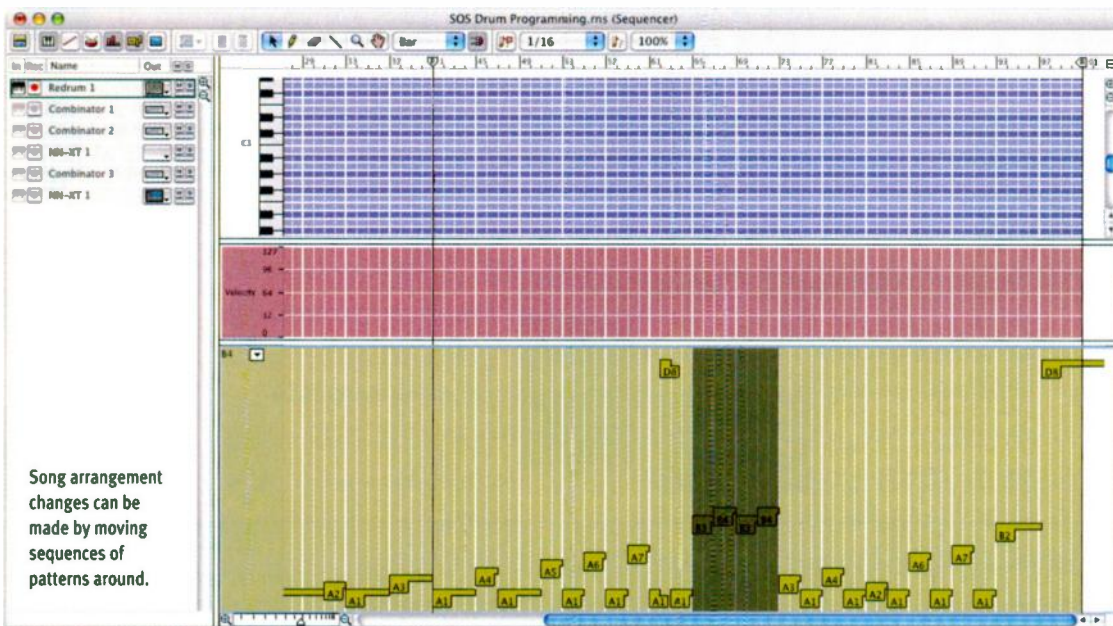
Create a new *Redrum* and you'll see that the matrix of buttons to the left of the 16-step sequencer has the '1' and 'A' buttons lit, indicating that pattern A1 is active. *Redrum* does not require you to perform any actions to store a pattern; any changes you make to the active pattern are permanent. The best way to start is to load up a kit that will be



broadly suitable to the track you are working on. You can always change some of the sounds later on. Click on the Browse Patch button on the *Redrum*, and navigate to the *Redrum* kits in a Refill. You can audition kits directly from the browser by selecting them and playing the keyboard. Once you've loaded a kit, play around with some ideas using your keyboard or pads. When you have something in mind you can start building up a pattern using the step sequencer. Click the Select button under channel 1, which is usually a kick drum. Next, click step 1 in the sequencer and hit play. As *Reason* plays back, the red LEDs above each step will light up in sequence, indicating the current position in the pattern. As the playback passes step 1 you will hear the kick drum. Add other kick drum hits by clicking more steps. Now, click channel 2's Select button,

and you can add snare hits. Continue adding hits on different channels until you have a complete drum pattern. The tips box on page 222 has more on creating drum patterns in *Redrum*, but for now we'll concentrate on storing, recalling and sequencing patterns.

You should now have a rough version of the main drum pattern for your song. It's handy to have this stored as pattern A1, so you can quickly keep coming back to it when you're arranging the song. The next step is to program some variations. These could be significantly different, such as patterns for a chorus or middle eight, or just subtle variations on the main pattern. The beauty of programming drums in *Reason* is that you can set up many slight variations and copies of the pattern with fills, to keep the song from being repetitive, all in a fraction of the time it would take if you were working in a linear MIDI track. To start a new pattern, you can simply press the '2' button in the pattern-selector matrix. You will now be looking at pattern A2, which is empty. However, it's much quicker to start from your first pattern, so the trick is to duplicate pattern A1 into A2. To do this, switch back to A1, choose Copy Pattern from the Edit menu (or right-click menu),





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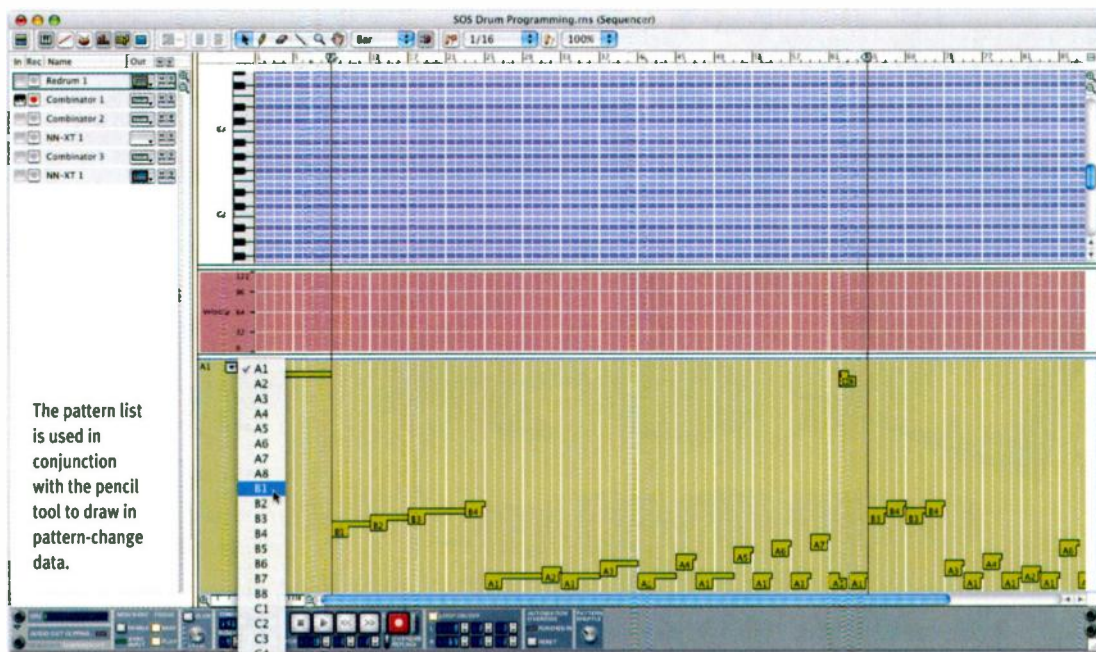
PROGRAMMING DRUMS

► then switch to A2 and choose Paste Pattern. You can also use the standard Copy and Paste shortcuts (Command-C and Command-V on the Mac, or Control-C and Control-V on Windows). Create your pattern variation, and move on to A3. This time you can choose which pattern to copy in, but in most cases you'll copy A1 again. Create another pattern variation.

Now that you have your main drum patterns and some variations, it's a good time to start thinking about the arrangement. Typically, you may need some cut-down sections for the intro and any breakdowns and builds in the song, particularly for electronic music genres. I like to create these patterns in a new bank. In the example arrangement shown in the screenshots, I've created four patterns in the B1-B4 slots. Pattern B1 is just a hi-hat and a shaker, then B2 adds a half-speed kick pattern, and finally B3 adds a snare. Pattern B4 is the same as B3, but has a snare fill at the end to build up to the start of the main pattern. These were then chained together to create the intro, and ended up also being used during a slow section later in the song. Now that you've got all the basic drum patterns you need for your song, it's time to put them all together...

Pattern Automation

Nearly everything in *Reason* can be automated, including *Redrum's* pattern sequencer. *Reason* has an extra trick in this regard, because pattern-change automation is displayed in its own custom track. You may find that you prefer to arrange your patterns by editing this track from scratch, but laying down a foundation in real time is the quickest method. First, make sure that your *Redrum* is highlighted for MIDI input and record-enabled in the main sequencer. Now switch the *Redrum* to the pattern that will start the song. Often songs will start with no drums, and there's a trick for handling this that avoids automating mutes or mixer channels. Simply switch *Redrum* to an empty pattern (for example, D8) and use this as the first pattern in the song. You can also switch back to this at any time you want the drums to drop out. Now set the main sequencer's play position back to the



The pattern list is used in conjunction with the pencil tool to draw in pattern-change data.

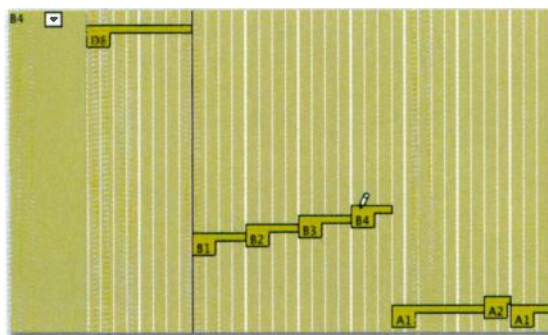
start of the track and disable looping. If the song starts with no drums, you will need to enable the metronome click so that you can hear when to bring the first pattern in. Click Record and Play, and you're off. As you play through the song, change the patterns on *Redrum* by clicking the pattern-selector buttons. The trick is to change the pattern during the bar before you need it to change. The change will not occur until the beginning of the next bar. Remember to take into account how long your patterns are. In the example, all the patterns are 32 steps long at 1/16 resolution, so I've only changed patterns every two bars at the most.

Eventually, you'll make a mistake, especially when changing between banks (which requires two button presses). Stop recording and have a look at the pattern track you've created. To do this, click the button at the top left of the sequencer pane to switch between Arrange view and Edit view. You should see something like the top screen on the previous page. If you can't see the beige pattern track, click the sixth icon in the sequencer toolbar to display it. To correct your mistake, simply rewind a bit,

and drop back into record to overwrite and continue. When you've finished, you're ready to try editing the pattern track.

The pattern track displays which pattern is active at any point during the song, using yellow 'bars'. When you've recorded pattern changes on the fly, the pattern bars will not show the exact time you changed pattern, but instead are quantised to the bar where the change actually took effect (another advantage over regular automation). Each bar has a small tab displaying the bank and number of the pattern. At first glance it might appear that you can click on these to adjust the position of the pattern changes, but unfortunately this is not the case.

The pattern change bars do not quite behave like objects or notes that can be picked up and moved. Instead there are two other ways of editing in the pattern track. The first is to make a selection across a range of time with the cursor tool (see second screen on previous page), the contents of which can then be moved, deleted, or copied and pasted. The second is to draw data in over the top of what's there, using the pencil tool. Both these methods take a little getting used to. The first thing to be aware of is that you will almost certainly want to have the edit grid active, so that your edits snap to the nearest bar. The grid value is set from the first of the three pop-up menus at the right-hand end of the sequencer toolbar. Snap-to-grid mode is enabled by ►



Making some fine adjustments with the pencil tool.

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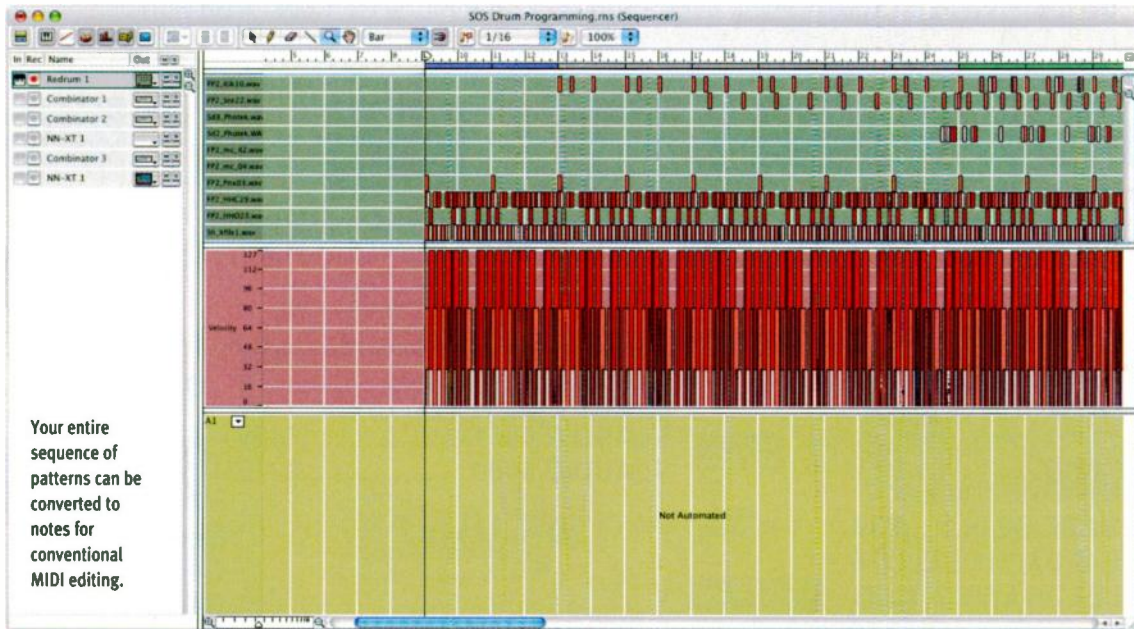
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PROGRAMMING DRUMS

▶ clicking the magnet icon to the right of this menu. Next, try experimenting with what happens when you move, cut or delete sections from the pattern track. There can be no gaps in automation tracks, so when something is moved or removed the previous pattern is extended to fill the space.

Similarly, if you insert or remove time, using 'Insert/Remove Bars Between Locators', the patterns will be extended and shuffle up or down the timeline.

Selecting and copying/moving sections of the pattern track is useful for making large-scale changes, but for most editing tasks the pencil tool is easier and more precise. To select the pencil tool, either click its icon in the toolbar or temporarily switch to it from the cursor tool by holding Command (Mac) or Alt (Windows). If you look again at the screenshots you'll see a small drop-down menu, to the left of the pattern track display, that has a pattern number next to it. This displays the pattern that will be written by the pencil tool.



Clicking on this menu lets you select from all the 32 patterns (see top screen on previous page). Drawing into the pattern track with the pencil tool will overwrite whatever is there with the selected pattern, snapping to the grid. For example, if I wanted to start pattern B4 earlier, at bar 21 instead of 23, I'd select B4 from the menu, choose the pencil tool, then click at bar 23 and drag to the left until the B4 bar was extended to bar 21 (see second screen on previous page). If you wanted to go the other way, and extend B3 later, you would need to select that pattern and draw it in. In other words, you can't simply trim the boundaries, you have to overwrite with the pencil tool.

One More Thing...

Pattern sequencing in *Reason* is a very fast way of programming drums, but there are certainly times when you will want to use note-by-note recording and editing. Next time, we'll explore the best ways of doing this in *Reason*. For now, there's one last method that shows you how to move between these two worlds. In the sequencer, right-click on the *Redrum* track (or select it and go to the Edit menu) and choose Convert Pattern Track to Notes. Your entire drum arrangement will be converted into individual notes in the Key and Drum lanes, ready for individual editing and groove quantising. **SOS**

Redrum Step Sequencing Tips

Redrum's step sequencer offers many benefits of both hardware and software drum-programming techniques. There's the immediacy of a hardware drum machine and the fun of achieving unexpected results, but you can also manipulate the patterns in more ways than you can with most hardware devices.

The Steps, Resolution and Edit Steps controls follow a traditional hardware system very similar to drum machines such as the Korg ER1. You can have patterns up to 64 steps in length, but can only view the pattern 16 steps at a time. The steps you are currently viewing (1-16, 17-32, and so on) are selected with the Edit Steps switch. Resolution sets the playback speed with respect to the main tempo. You would mainly use this control when programming intricate beats that require 32nd notes, but you can go right up to 128ths, at which point a 64-step sequence would last only half a bar! The Dynamic switch lets you add more subtlety and feel to your patterns, by allowing you to set how hard each hit is played (soft, medium or hard). The actual effect these different dynamics settings have is set individually for each sample by adjusting the velocity-sensitivity (VEL) knob next to each channel's Level control. The basic way of adding notes with

different dynamics is to flip the switch to the desired setting before clicking on each step. However, it's much quicker to use keyboard shortcuts. Leave the switch at the medium setting, then to add soft notes hold Option (Mac) or Alt (Windows) when clicking, or to add hard notes hold Shift (Mac and Windows). To change a note to a different velocity, click it again with the appropriate key modifier. Clicking an active note with the same velocity removes the note.

Another way to alter feel in a pattern is to play with the length and envelope settings. By default when the step sequencer triggers a sample, it plays the whole sample, but each channel has a Length knob that can shorten the release of each sample. Next to this is a switch which lets you choose whether this results in the sample being cut dead (the square shape) or having a smooth decay (the sawtooth shape). Additionally, at the bottom left of *Redrum* is a switch labelled Channel 8&9 Exclusive. When this button is active, channels 8 and 9 mute each other when played. This is very handy for getting the correct response from hi-hats, with closed and open hi-hat samples always excluding one another. Another performance modifier is to add the occasional flam (double hit) to a pattern. Any note can be caused

to flam by clicking the red LED above that step. The speed of flams is set with the Flam knob.

Reason provides several Edit menu commands that manipulate step-sequencer patterns. The first of these are the Shift commands. Invoking Shift Pattern (Left/Right) lets you move the entire pattern (all 10 step sequences) left or right by one step. I find this most useful when I'm experimenting with a pattern and realise that, for example, step 9 sounds as though it ought to be the downbeat instead of step 1. In this case, I'd cycle the whole pattern eight steps to the left, to make the loop work properly with the rest of the song. Shift Drum (Left/Right) works in the same way, but for individual step sequences in the pattern. This is good for trying different grooves and creating syncopated rhythms. Next are the Randomise Pattern and Randomise Drum commands, which allow you to create entirely random sequences. If you are in need of inspiration, you can choose this several times in succession until you get the starting point of an idea. Finally, Alter Pattern and Alter Drum are brilliant cheats for quickly knocking out variations to your drum patterns. These take an existing pattern and make some small randomised changes.

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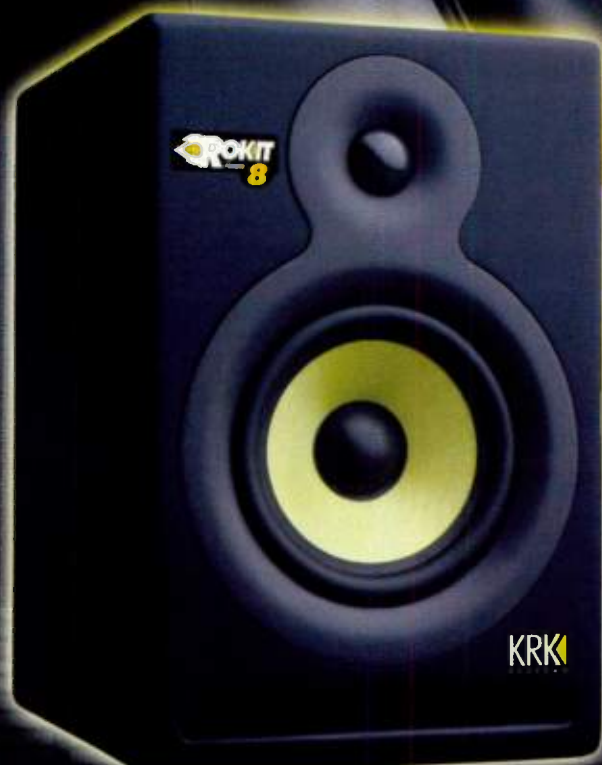


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SYSTEMS

News of Apple allowing Mac users to run Windows on their Macs might sound like an April Fool — but it turned out to be anything but a hoax. This month we investigate the possibilities of running Windows on an Intel-based Mac and discuss why you might want to.

Mark Wherry

In addition to being April Fool's day, this year's April 1st also marked the 30th anniversary of Steve Jobs' and Steve Wozniak's founding of Apple Computer. While there were expectations that Apple would make something of this anniversary with a product announcement, the Friday and Monday either side of Saturday 1st April 2006 passed without celebrations (or revelations) from Cupertino. However, that's not to say Apple haven't been causing a stir this month...

Re: *Boot Camp*

Hell has a habit of freezing over on a fairly regular basis for the Mac community, and while the frost had been thawing nicely after users realised that the

Intel-based Macs were still Macs after all, on April 5th Apple released a free public beta version of some new software called *Boot Camp*, which previews technology that will be released with the next major version of Mac OS X. Ever since the release of the first Intel Mac, back in January, enthusiasts have been trying to figure out how to boot Windows XP on a Mac. One web site (www.onmac.net) actually offered prize money, based on contributions to the site, for the first person to achieve this goal. In March, just over \$14,000 was won when a solution was posted on the site, although it required a little bit of 'under the bonnet' work by the user.

A few weeks after this victory, Apple released *Boot Camp*, which allows you to do the same thing — install and boot into Windows XP on your Intel Mac — but in



The public beta of *Boot Camp*, which allows an Intel Mac to run Windows XP, is now available, and its technology will be incorporated into the next major version of OS X, Leopard.

a much simpler way. The open source version from onmac.net required you to re-partition your system drive manually (which meant that you had to scrap all the data currently on your system drive) and make adjustments to a Windows XP SP2 install disc on a computer already running Windows. By contrast, *Boot Camp* features a straightforward 'Assistant' that guides you through adding a new partition to your system drive (without losing your existing data — although Apple recommend that you back up any important data as a precaution), and allows you to use a normal Windows XP SP2 install disc.

While you're setting up *Boot Camp*, the Assistant will invite you to burn a CD that contains the relevant drivers and other Apple software that will need to be installed once you boot into Windows for the first time. This means that the majority of the Mac's hardware (such as the graphics hardware, wireless networking and so on) is supported under Windows, although, currently, while the built-in iSight camera on the Mac Book and iMac shows up in Windows, it crashes the system if you attempt to use it. Otherwise, running Windows on a Mac is exactly like running Windows on any other computer. There's no



Here you can see *Wavelab* running on an Intel Mac under *Parallels Workstation* (beta version 3). Virtualisation software is going to make it much easier to run Windows-only tools like *Wavelab* alongside Mac-based audio and music production software.

emulation, and you'll achieve similar results to those you'd achieve running Windows on a comparable PC.

Using *Boot Camp* will remind long-time Mac users of the dual-boot Mac OS 9/X systems from a few years ago. In Mac OS X, you can boot into Windows by going to the Startup Disk System Preference, choosing the *Boot Camp* Windows folder and restarting. Similarly, in Windows, Apple have added a Startup Control Panel to allow you to set the System Folder back to Mac OS X again. If you're booting your system from scratch you can always hold down the Option key, which will let you choose the appropriate Startup Disk.

A Virtual Alternative

Boot Camp is good news if you want to run Mac OS X and Windows on the same computer, but for some users the constant

rebooting and the inability to run and share data between Mac and Windows applications simultaneously will ultimately be frustrating. Wouldn't it be better if you could run Windows and Mac applications side by side? For years this has been possible with emulation software, such as *Virtual PC* (which is now owned and developed by Microsoft), but with an Intel-based Mac there isn't much hardware to emulate, as the processor architecture used by both operating systems is the same.

In the Intel-based world, this fact has led to a technology known as virtualisation, where you use the same computer hardware to run multiple operating systems simultaneously. For example, a Windows user could launch a virtual machine running an earlier version of Windows or Linux on the same system, as if it

was any other application. But the reason why virtualisation is important is that the amount of emulation is minimised (if there is any), so the performance of the virtual machine is almost the same as if it was the real machine. And, in fact, virtualisation has become so important that Intel are now building hardware support for it right into the processor. The Core Duo and Solo processors in every Intel Mac even feature Intel's VMX (Virtual Machine Extensions) technology.

We may look at virtualisation in more depth in another issue of *SOS*, but for now it's worth mentioning that shortly after *Boot Camp* was released, a public beta version of the first commercial virtualisation software for Intel-based Macs, *Parallels Workstation*, also appeared (www.parallels.com). Although there are some free alternatives, even in beta form *Parallels*

Workstation runs significantly better and takes only about half an hour to install Windows XP. Some of the free alternatives take hours. *Parallels Workstation* isn't completely stable yet, and some features are still missing in the public beta, but new beta versions are appearing weekly and showing consistent signs of improvement. You can try the public beta for free with a 30-day trial key and pre-order the final version for just \$39.99 (once the final version is released, the price will be \$49.99), although, as with *Boot Camp*, you'll need to supply your own copy of Windows XP.

What It Means For Musicians

With various possibilities now existing for running Windows XP efficiently on a Mac, the big question is why a musician or audio engineer would want to run Windows on their Mac. To begin

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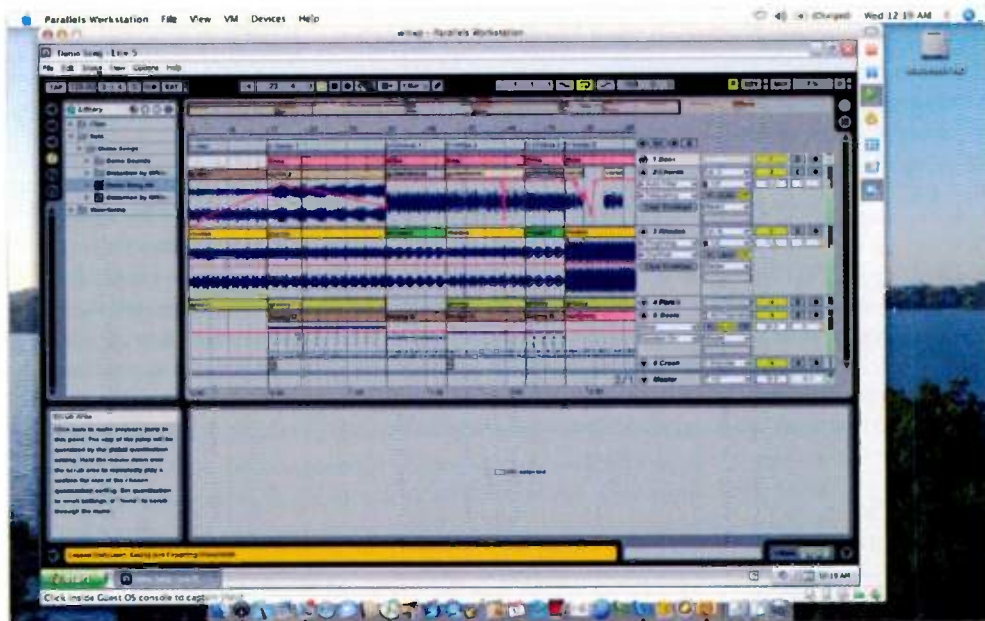
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▶ with, if you go with the dual-boot system using *Boot-Camp*, this will allow you to run many of the full-blown music-making apps that aren't available on the Mac, such as Cakewalk's *Sonar* and *Project 5*, Image-Line's *FL Studio*, and so on. While you might spend most of your time working on the Mac side, you might have a client or collaborator who works in one of these programs, and it might thus be helpful for you to run a copy without having to purchase a second computer. This is perhaps the most persuasive argument for *Boot Camp*: Mac users can dabble with Windows applications as if they were running a normal Windows computer, with full driver support for plugging in USB and Firewire audio and MIDI devices.

While *Boot Camp* is quite clear-cut in its advantage — it kind of gives you a second computer for the cost of a Windows XP license — the use of virtualisation software such as *Parallels Workstation* offers a more interesting workflow for Mac users who want to mix and match Windows and Mac apps simultaneously. Before I say anything else, I should just mention that no matter how good the virtualisation technology becomes, it's unlikely you'll ever be able to run Windows-based plug-ins in a Mac application, or Windows-based applications as



The performance of Ableton's *Live* running under *Parallels Workstation* (beta version 4) is comparable to that of a native system.

Rewire masters or slaves with a Mac application.

However, there are many stand-alone Windows applications that complement Mac music software and that personally I'd love to see available for the Mac, such as Steinberg's *Wavelab*. With *Parallels Workstation*, you could run *Wavelab* alongside your main Mac music software as if it was just another application, although there are a couple of caveats. At the moment, *Parallels Workstation* has limited hardware support, so it isn't possible to virtualise audio and MIDI

hardware so that it becomes available to the virtual machine. This means that for sound you're limited to a high-latency stereo driver that passes the sound from the virtual machine to Core Audio, which isn't ideal. It's fine if you're putting a CD together in *Wavelab*, but not really appropriate for critical or interactive listening. It also means that USB dongles aren't supported for copy protection. I'm sure this will change as the software matures.

An interesting footnote is that I ran a demo version of Ableton's *Live* in Windows on *Parallels*

Workstation and was surprised that, despite the inefficiency of the audio driver, the actual audio performance was about the same as running the Universal Binary version of *Live* under Mac OS X on the same computer. While the screen redraws are rather lagging (sadly, nobody has virtualised graphics hardware yet), this does point to the fact that once the technology comes together you'll be able to run high-performance music and audio software in a virtual machine alongside applications running in your host operating system, Mac OS X. [EOS](#)

Universal Binary Watch

News of Mac-Intel-compatible applications, drivers, and plug-ins seems to roll in a daily basis at the moment, which is good news for those who have taken the plunge already, or those considering the move.

- M-Audio (www.m-audio.com) have released Universal drivers for many of their USB and Firewire devices, such as the Projectmix I/O, Firewire 410, Ozonic, Fast Track Pro and Jamlab. A Universal Binary of the *Enigma* editing application for Trigger Finger users is also available, and this means that all of M-Audio's current USB and Firewire devices are now compatible with Intel-based Macs.
- Universal Binary drivers are available for many Edirol-branded Roland products, even though this isn't mentioned on Edirol's website. Head over to www.roland.com and check out the support section for downloads for your particular item of Edirol gear.
- Mackie (www.mackie.com) have announced that a Universal Binary version of *Tracktion* will be available by early Summer 2006, along with Universal drivers for the company's Firewire audio devices, such as the Onyx 400F, Onyx Firewire card, Onyx 1200F, d.2 DJ mixer and the Firewire interface for the Digital X Bus console.
- The latest version of the audio connectivity software *Jack OS X* (www.jackosx.com), which, like Propellerhead's Rewire technology, allows audio to be streamed between different applications, has been released as a Universal Binary, including Universal Binary versions of the supplied Audio Units and VST plug-ins. The *Netjack* component, for streaming audio across networks, has been temporarily removed, however, due to some Tiger-related incompatibilities.
- Symbolic Sound (www.symbolicsound.com) have released a Universal Binary of the sound-design environment *Kyma X*.
- IK Multimedia (www.ikmultimedia.com) have been testing Intel-compatible versions of their range of software instruments and effects and will start shipping them during this quarter.
- Waves (www.waves.com) have announced that their full range of plug-ins will be available for Intel-based Macs in the next few weeks, which may mean they're around by the time you're reading this. Waves CEO Gilad Keren commented that the transition to Universal applications using Apple tools "was easier than we had expected."
- Also on the plug-in front, Cakewalk (www.cakewalk.com) have released version 1.2 of *Dimension Pro*, with support for Intel-based Macs in the Audio Units version.
- Although MOTU (www.motu.com) have released a new major version of *Digital Performer* this month, this version isn't yet able to run natively on Intel-based Macs. An Intel-native version of *DP5* should be available later this quarter.

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Joe Mox X Base 09	£399

Martin Walker

Like it or lump it, musicians must now be almost resigned to having dongle protection for one or more of their music applications. In last month's PC Notes, I offered advice about possible technical and driver issues, but some musicians suffer from a much more fundamental problem with dongles: losing them, or having them damaged or stolen.

I've heard stories about schools and colleges losing dozens of dongles through pilfering and then finding, to their horror, that they have to fork out for the cost of the entire software application all over again: while the dongle itself is cheap to buy, the license it holds is unique to each owner, and irreplaceable.

Dongle Safety

Plugged into a USB port on the front panel of your PC, dongles are prone to being accidentally broken off and are easy targets for thieves (this may be a particular issue for schools and commercial studios). Plugging them into a rear-panel port is slightly safer, but can be fiddly when your PC is mounted under a desk, and again the dongles may get pushed up against a wall and damaged.

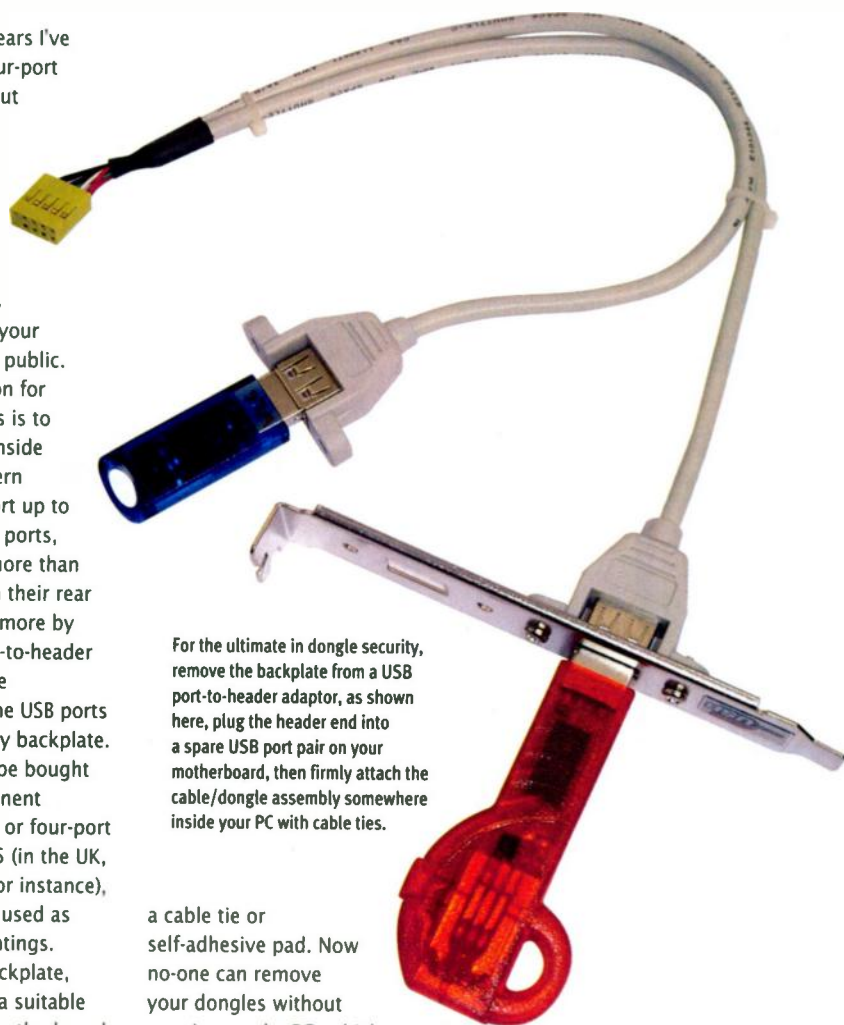
One cheap solution to this problem is to buy a 'dongle extender' cable, so that your dongle can dangle safely. For instance, iLok sell one on their web site (www.iLok.com) for

This month's action-packed PC Notes gives advice on preserving your lovingly crafted presets when you upgrade audio software, offers ideas on keeping your dongles safe and brings you the usual haul of handy hints and tips.

\$5.95. For several years I've been using a tiny four-port USB hub costing about £10, plugged into a rear-panel USB port, to house all my dongles, so that they sit in relative safety on top of my PC, but this provides even less security if your PC is exposed to the public.

The safest solution for PC desktop machines is to mount the dongles inside the case. Many modern motherboards support up to four pairs of USB 2.0 ports, but you rarely find more than two pairs of ports on their rear panels. You can add more by plugging a short USB-to-header cable directly into the motherboard, with the USB ports mounted on a dummy backplate. Such expanders can be bought from most PC component suppliers in two-port or four-port varieties for under £5 (in the UK, Maplin stock them, for instance), and they can also be used as internal dongle mountings.

Just unbolt the backplate, plug the header into a suitable USB socket on your motherboard and the dongles at the other end of the cable (see photograph), and then make the assembly secure inside the case with



For the ultimate in dongle security, remove the backplate from a USB port-to-header adaptor, as shown here, plug the header end into a spare USB port pair on your motherboard, then firmly attach the cable/dongle assembly somewhere inside your PC with cable ties.

a cable tie or self-adhesive pad. Now no-one can remove your dongles without opening up the PC, which can in turn be protected by a couple of security lockable case screws. Kustom PCs, for example, have a security-lock kit

(www.kustompcs.co.uk/acatalog/info_5499.html) for £8.50 that includes eight security-lock screws and two keys for removing them.

Those who prefer a ready-made equivalent to the DIY method above may be interested in the forthcoming Donglesafe range from Design Notes (www.designnotes.co.uk). Donglesafe will be available in Solo and Quad configurations, for securing one or four dongles inside your PC (or Mac), but I suspect that studios and educational establishments will be particularly interested in the 'King Quad' version. This is an

The Rime Of The Ancient Floppy

Many thanks to SOS reader François Rossi for alerting me to an extremely useful PC utility hiding amongst the BBC and Master Computer Public Domain Library hosted by Sherlock Consulting Ltd. *Omniflop* runs on Windows NT, 2000 and XP. It was created to read ancient floppy disks in a variety of formats, so that you can access the data on them and copy it elsewhere.

The reason for his enthusiasm is that amongst *Omniflop*'s list of 89 features are floppy read/write/format options for five Akai sampler formats, two for Roland, three for Emu and 10 for Ensoniq, making it ideal for rescuing ancient samples from oblivion. Other useful formats for musicians include Peavey SP and

Prophet 2002, plus several for Korg keyboards. *Omniflop* can write the captured data to another floppy or save it on your PC as an image file, although you'll need another utility to access the individual files, as these tend to use exotic filing systems. A list of suitable utilities is given on the web site.

François also points out that *Omniflop* is particularly useful for those running Atari ST applications on their PCs courtesy of *Steem* (the Atari ST emulator) that you can download from <http://steem.atari.st/>, because its floppy-reader utility isn't compatible with Windows XP. Find *Omniflop* at www.shlock.co.uk/Utils/OmniFlop/OmniFlop.htm

external and secure steel box that can be bolted to desks and provides four dedicated dongle ports for each of four workstations, plus three assignable ones that you can switch between the four computers. Up to seven dongles could thus be simultaneously connected to a single workstation (most developers are happy for users to install their applications on several machines, since the dongle only allows them to use one at a time). Such measures should prevent all but the most determined thieves making off with your dongle collection!

Preset Preservative

This month, I upgraded my copy of Steinberg's *Wavelab* audio-editing software to the latest version (v6), and I took great care to preserve all the presets I'd created over the last couple of years, so that I wouldn't have to start all over again. Things like floating toolbar positions don't take long to re-jig, but I do a lot of work with *Wavelab* and have organised my Master Section plug-ins into folders devoted to Tools, Dynamics, Enhancers, EQ, Reverb, Spatial, Special FX, Spectral Shift and Time Shift, so that I can quickly load the exact plug-in I need at any time. I have also created master-section preset chains for mastering and other tasks, a collection of presets for the spectrum analyser, and so on.

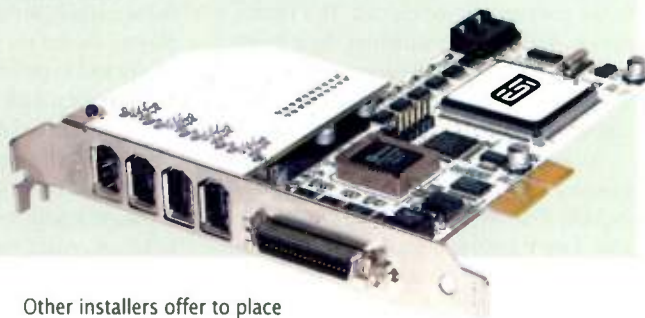
I'm sure you get the idea, and I'm sure many of you have similar collections of presets that you'd rather not lose. So what's the easiest way to do this? Well, the procedure varies to some extent from application to application, but here's what I do in nearly every case. Before updating, I open up the application's folder in the program files and view the contents ordered by date (select the Details view, and then click on the 'Date Modified' column). Now you can generally see which files were installed with the application (they all tend to

PC Snippets

ESI PCI Express Support: ESI have announced that their PC-only Maxio series interfaces (reviewed in SOS December 2005) can now be upgraded from PCI to PCI Express. The XD Xpress card provides exactly the same specification (four ESI Digital Interface ports plus one Multiple Digital Interface port) as the previous XD PCI Host card. New alternatives to the reviewed EX8000 interface, with its comprehensive I/O options, are the AX8000, for those who want to add eight more analogue line inputs and outputs, and the LX8000, offering a versatile selection of two mic, two phono and six line inputs, eight analogue outputs, S/PDIF, word clock and ADAT I/O. **W** www.maxioxd.com

MOTU PCI Express Support: MOTU have started shipping their PCIe-424 card for both Macs and PCs, available for purchase as part of a 2408 Mk3, HD192 or 24 I/O core system. The PCIe-424 card can apparently be installed in any PCI Express slot, regardless of the number of 'lanes'. Existing owners of PCI-324 or PCI-424 cards can upgrade to the PCIe model, either on-line or by telephone from their UK distributors Musictrack. The price is £199 including VAT. **W** www.motu.com

ESI Pro have announced the first PCI Express interface in their Maxio series. Like its PCI forebear, the XD Xpress card supports up to 32 simultaneous inputs and outputs at up to 192kHz.



have the same elderly date, or are at least some months old), and the often smaller files that you've subsequently altered, which therefore have more recent dates. Many applications also make life easier for you by creating separate Presets folders, and if you find any of these, the easiest approach is to copy them in their entirety to another hard drive partition, another drive, or a CD-R disk. Now you'll have them safe even if you install a new hard drive or upgrade to a new PC.

Once you have your presets safely stored for posterity, you can upgrade your application. Some installers suggest you choose a new application folder name, so that the previous application version remains intact and can still be launched, but apart from the unlikely possibility of you not being able to load older songs/files into the new version, I generally don't see much point in keeping the old application version — it wastes space and is rarely, if ever, going to be used again.

Other installers offer to place the new version 'over the top' of the previous one, and may also offer to create a backup folder of all updated files, so that you can 'roll back' to the previous version if any problems arise. This can work well, and with intelligent installers the presets from your previous version may remain intact during the process and be immediately available for use with the new version. It still makes sense to have safety copies elsewhere, though, as previously described, just in case something goes wrong.

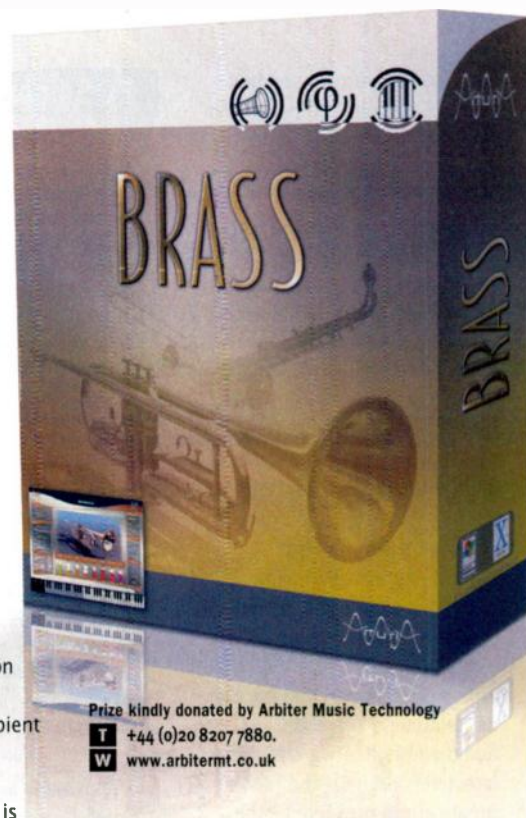
The third alternative is to uninstall the previous version before installing the newer one, and this is generally what I do for the cleanest and safest results. You can then paste your previous settings and presets into the appropriate folders afterwards. For the ultimate safety net, image your Windows partition first, using a utility such as *Drive Image* or Norton's *Ghost*, so that you can backtrack in the (hopefully unlikely) event that you ever need the previous

Late Vista: Microsoft have announced that their long-awaited 64-bit Vista operating system will be ready for some businesses, as previously promised, by the end of 2006, but consumers and those wanting a new PC with Vista pre-installed will have to wait until early 2007. **W** www.microsoft.com

Digital Musician Net: The *DMN VST* plug-in first demonstrated at last year's Frankfurt Musikmesse is now up to version 1.5, which now makes it even easier for musicians to collaborate live via a broadband Internet connection with both audio and video communication. New features include an integral chat function for those who prefer simple text to a mic and video-camera link, a User Profile button that lets you find out more about your session partners by linking directly to their 'Artists & Studios' home page, and a Live Input function that automatically compensates for the input latency of live instruments, so that you hear everything in sync during the recording process. **W** www.digitalmusician.net

version again. You might think that installing the new version in a different folder, checking that it works and then uninstalling the previous version afterwards would be the safest approach, but if there are any shared system files or common Registry entries used by both applications, uninstalling one of them may result in problems for the other, unless you're really careful. Overall, I find the 'save presets/uninstall the old/clean install of the new' approach is best for me. It may require a little care, but need take no more than five or 10 extra minutes of your time, compared to the hours that would be needed to recreate all your favourite settings. I think it's well worth the effort, but here's a plea to software developers: why not provide an install option that prompts: 'Previous version found — back up all user settings before installing new version?'. You'd be very popular if you did! **SCS**

Win Arturia Brass



Arturia's latest addition to their virtual instrument line-up is *Brass*, a software instrument for the modelling of — you've guessed it — brass. The plug-in is the combination of serious research into brass instruments at IRCAM, France's unique music and acoustics research facility, and Arturia's quest to bring the wonders of brass to the computer-based masses. This month, Arbitr, Arturia's UK distributor, have kindly agreed to give away full copies of *Brass*, worth £200 each, to five lucky *Sound On Sound* readers.

Arturia have had great success with their existing virtual instrument range, which includes *Prophet V*, *ARP2600V*, *CS80V*, *Minimoog V* and *Moog Modular V*, but their latest addition represents a new way of thinking in terms of physical modelling for brass. It can be used either as a stand-alone application or as a sequencer plug-in, using VST, RTAS, Audio Units (Mac only) or DXi (PC only) and can generate anything from a single instrument in 'Live' mode to a full-on brass section, with up to 16 virtual players in 'Riff' mode.

Brass models the trumpet, trombone and saxophone, and allows ample control over the sound, with many user-definable parameters. These include five types of mute, a choice of reeds for the saxophone,

timbre, noise, pitch, pressure, vibrato, attack, 'Humanization' — which alters note consistency from the variable 'Beginner' setting to the uncannily accurate 'Computer' — and material, allowing you to make seriously 'virtual' instruments using glass and wood as extremes. What's more, the Specialisation feature allows the user to spread virtual players around the stereo field, add ambient reverb and experiment with cold/warm room characteristics.

At the heart of *Brass*'s user interface is a piano-roll-style sequencer, similar to that found in most dedicated sequencing software. It permits the user to edit the 500 or so pre-programmed riffs and create new

ones from scratch. The sound of the models can easily be altered by external MIDI controllers with the help of *Brass*'s Detect mode, which enables the simple mapping of parameters to controllers. To learn more about *Brass*, check out Nicholas Rowland's article in last month's *Sound On Sound*.

If you would like a chance to win a copy of *Brass*, fill out the entry form at the bottom of this page and post it to the address on the coupon. Alternatively, you can enter via the electronic form on the *Sound On Sound* web site. Please make sure you answer all the questions and complete the tie-breaker. We also require your full address, including your postcode and your daytime telephone number. The closing date for entries is 31st July, 2006. **SOS**



questions

Which of these instruments does Arturia *Brass* not model?

- a. Trumpet
- b. Saxophone
- c. Trombone
- d. Sackbut

Which of these isn't an Arturia plug-in?

- a. *Prophet V*
- b. *CS80V*
- c. *Jupiter 8V*
- d. *Moog Modular V*

What does IRCAM stand for?

- a. Institut de Recherche et Coordination Amplifier Modelling
- b. Infra-red Camera
- c. Institut de Recherche et Coordination Aunt Mabel
- d. Institut de Recherche et Coordination Acoustique/Musique

Arturia tie-breaker

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the small print

1. Only one entry per person is permitted.
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3. No cash alternative is available in lieu of the stated prize.
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5. The judges' decision is final and legally binding, and no correspondence will be entered into.
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7. Please ensure that you give your DAYTIME telephone number on your entry form.
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M Corporation	0845 025 5555	167			
Mackie UK	01268 571212	9			

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TL AUDIO FATMAN 1 Stereo valve compressor, 15 pre-sets and manual mode. Suitable for use on any instrument or mix. Sounds great. £125. ☎ Tony 07989 293478 (Farningham).

TL AUDIO M4 16-channel all valve console. About nine months old, with light use only for a specific mixing project. Used in a non-smoking studio and supplied with a custom dust cover. £3750 ono. ☎ 07800 919065 (Bristol)

YAMAHA EMP700 classic multi-effects rack with reverb, delay, flanger, phaser, pitchshift, compression, wah, etc. MIDI control, great condition, studio use only, manual. £90. ☎ Martin 07977 627457 (Coventry, West Midlands).

YAMAHA O2R Version 2 with meterbridge, but no additional I/O cards installed. One sticky fader which doesn't affect operation of the board. Quick sale needed, £800 ono. ☎ Clint 07723 323130 (London).

drum machines

ELEKTRON MACHINEDRUM SP51, the best drum machine in the world? Quite possibly... Oh, and it's in perfect condition. £647. ☎ 020 8723 9548 (London).

KORG ELECTRIBE ESX1 valve-equipped sampling drum machine, hardly used. Includes box, manual and a pair of headphones, £300. ☎ 07718 518963 (Witney, Oxon).

ROLAND TR808, classic drum machine with MIDI. Good working order, £550. ☎ Russell Baldwin 07939 143555 (Beckenham, Kent).

samplers

AKAI MPC1000, fully loaded and in mint condition. Includes box and manual, 128MB memory, new OS installed. Comes with 1GB Compact Flash card. Price includes delivery, £550. ☎ Amar 07903 317413 (Feltham, Middlesex).

AKAI MPC2000 classic sampler. Includes digital and analogue boards — 10 in and out, Linn sounds, flash ROM, SCSI, 32MB RAM, wood cheeks, manual and Zip drive. Mint condition but LCD fading out, hence £290. ☎ 07981 394002 (London).

EMU E4 XT ULTRA top spec with hard drive and upgrades. Includes the RFX-32 card. Loads of samples on board. Best sounding sampler ever, a bargain at £400. ☎ 07958 087839 (London).

sequencers

ALESIS MMT8 classic hardware sequencer, great for live use (as used by Orbital). As new condition, manual included, £100. ☎ 020 7937 4776 (London).

SEQUENTIX P3 Sequencer rack. The ultimate step sequencer. This one is in mint condition. Both manuals. Would swap for Elektron Machine Drum or Mono Machine keyboard, £399. ☎ 01257 462609 (Wigan, Lancashire).

computers/software

APPLE POWER MAC G5, with Logic 7.2, interfaces, Korg Karma, Behringer mixer, monitor, speakers. Phone for full specs, £2500 ono. ☎ 07886 251378 or email carnell171@hotmail.com (West Bromwich, West Midlands).

APPLE LOGIC PRO V7.1 new, unopened box with dongle. Unwanted present, half price, a genuine bargain. £330. ☎ 020 8211 7654 (London).

INTA-AUDIO PENTIUM IV 3.2GHZ 17-inch widescreen laptop with 1GB RAM, 60GB hard disk, DVD-RW, Windows XP Pro, USB 2.0 and Firewire. Immaculate audio-optimised desktop replacement, £800. ☎ 07973 530125 (Liverpool).

personnel

AMBIENT SYNTH (or other) players required to expand existing (one man) band. Think Brian Eno painted black. ☎ Andy 07756 987265 (Swindon).

SOUL/HIP-HOP GUITARIST Very talented guitarist/musician available to inject authentic blues, soul and jazz into your tracks. Price per hour, £20. ☎ 07974 461635 (Slough, Berkshire).

miscellaneous

6U RACK DRAWER, black steel, not lockable, immaculate and damn useful. It's heavy, so buyer collects or pays £10 postage. Offers welcome, £59. ☎ Steve 07970 704335 (Wolverhampton, West Midlands).

FOSTEX D58 Eight-way digital S/PDIF patchbay. Excellent condition, includes cables (various sizes). A bargain at £90. ☎ Steve 01507 463182 (Alford, Lincs).

GENELEC 1031, pair of active monitors. Studio use only, £900. ☎ 0208 460 0048 (Bromley, Kent).

HAMLIN AMERICAN REED ORGAN Classic harmonium dating from 1890. £50. ☎ 01223 861463 (Chittering, Cambridgeshire).

OMNIRAX MIXSTATION O2R, workstation for all Yamaha O2R desks. 42U rackspace, ergonomic design, excellent condition. £250. ☎ 07966 412706 (Bishop Auckland, Co. Durham).

wanted

REVOX B77 or similar. B77, A77, Tascam 32B, or any other decent two-track mastering unit. Must be 100% operational and take 10-inch spools. Cash waiting. ☎ 07790 680411 (Chester-le-Street, County Durham).

YAMAHA VL70M MIDI wind synth module in good condition. ☎ 01726 851571 (St Austell, Cornwall).

HAMMOND ORGAN Model C3 or A100 with Leslie speaker. Must be in good condition. ☎ 07808 917475 (Swadlincote).

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This month, we present a sobering tale of two synthesizers...

Gordon Reid

THE ENGINEER'S STORY

"While I was still suffering from acne and the scars of my first break-up, I built an analogue synthesizer. I had to buy the components when I could afford them but, as the weeks passed, the thing took shape. A mass of veroboard, trailing wires, and bits of cardboard proclaiming 'Mains. Danger!' in large letters, the underlying concept was quite good, so I set about designing what would become the prototype for the XXX-Synth.

"This was a labour of love. I honed my metalworking skills by filing off cases with bits that protruded too far to be able to mount the boards, and by repositioning mounting posts that weren't in the right places. I even made a wiring loom, although the ends of the wires didn't reach everything they were supposed to. But eventually I was able to put the thing together and make it work. It hadn't a snowflake's chance in hell of passing the CE tests necessary to make it legal, it was almost impossible to calibrate, and it drifted out of tune at the drop of a snowflake but, surprisingly, it sounded quite good.

"The XXX-Synth proper appeared the following year. In essence, this was the same instrument, but with everything built the way that I had originally intended. It received some good reviews, but proved to be unreliable and was a pig to keep in tune. So I set about designing the Mk2.

"This was *much* better. I was able to afford better parts, eliminate a lot of point-to-point wiring, and my new Chief Engineer was able to reduce the board size by more than 30 percent by replacing discrete components with better-specified ICs. The resulting instrument was more stable, sounded better, and worked much better.

"Of course, your XXX-Synth is almost certainly a Mk4. After we improved the noise performance and added the balanced outputs on the Mk3, we felt that we had taken the specification as far as we could, and poured five years of acquired knowledge and experience into making the final XXX-Synths the best instruments they could possibly be. To be honest, I'm really proud of the Mk4s. They work almost faultlessly, and sound great."

THE ENTHUSIAST'S STORY

"In my first year at college, I joined a band. I couldn't afford much gear, but I met a guy who was selling an XXX-Synth quite cheaply, so I snapped it up. At first, I loved it. It had a great sound and did everything I wanted. But, after a while,

I fancied getting something with a bit more grunt. A mate of mine who knows about these things pointed out that my XXX-Synth was a Mk4, and told me that these were soulless compared with the earlier versions. So I sold mine, and managed to pick up a Mk3 for only a couple of hundred quid more.

"This seemed a bit better, and despite a few minor problems, I gigged with it throughout my second year until, by a stroke of luck, I saw a Mk2 advertised in the free ads. The resulting overdraft was crippling until I sold the Mk3, but who cares? The Mk2 sounded fantastic! Well, to be precise, it sounded fantastic when I could keep it in tune, and my guitarist was always complaining that he couldn't tell whether he need to tune up or kick the synth. To be honest, things weren't going well, and when they announced that they had recruited a new keyboard player who used some piece of modern crap, I didn't really care any more.

"When I graduated and started work, I decided to treat myself to a new synth. Guess what...? As luck would have it, I was flicking through the adverts when I saw a Mk1 XXX-Synth for sale. Of course, it was ridiculously expensive, but I thought 'hey... you only live once', and bought it. I even found a buyer for my Mk2 shortly afterwards, a student from my old college, would you believe?

"Nowadays, I'm not in a band



About The Author

Gordon Reid has been playing synthesizers and poking around inside them for more than three decades. He reckons that most instruments have at least a 50/50 chance of survival if he approaches them with a soldering iron.

any more. My mates are touring the Far East with some girl-band, but they don't stay in touch any more. Truth is, they sound rubbish, and I wouldn't want to be involved in any of that pre-packaged digital rubbish anyway. I'm much happier tinkering with my XXX-Synth in my bedroom studio. Or, at least, I would be, but it's been in the repair shop for the past six months, and they don't know when it'll be fixed.

"You know... I've heard that the original prototype sounded absolutely fantastic! I wonder who has it, and how much they want for it?" **SOS**

If you would like to air your views in this column, please send your submissions to soundingoff@soundonsound.com or to the postal address listed in the front of the magazine.

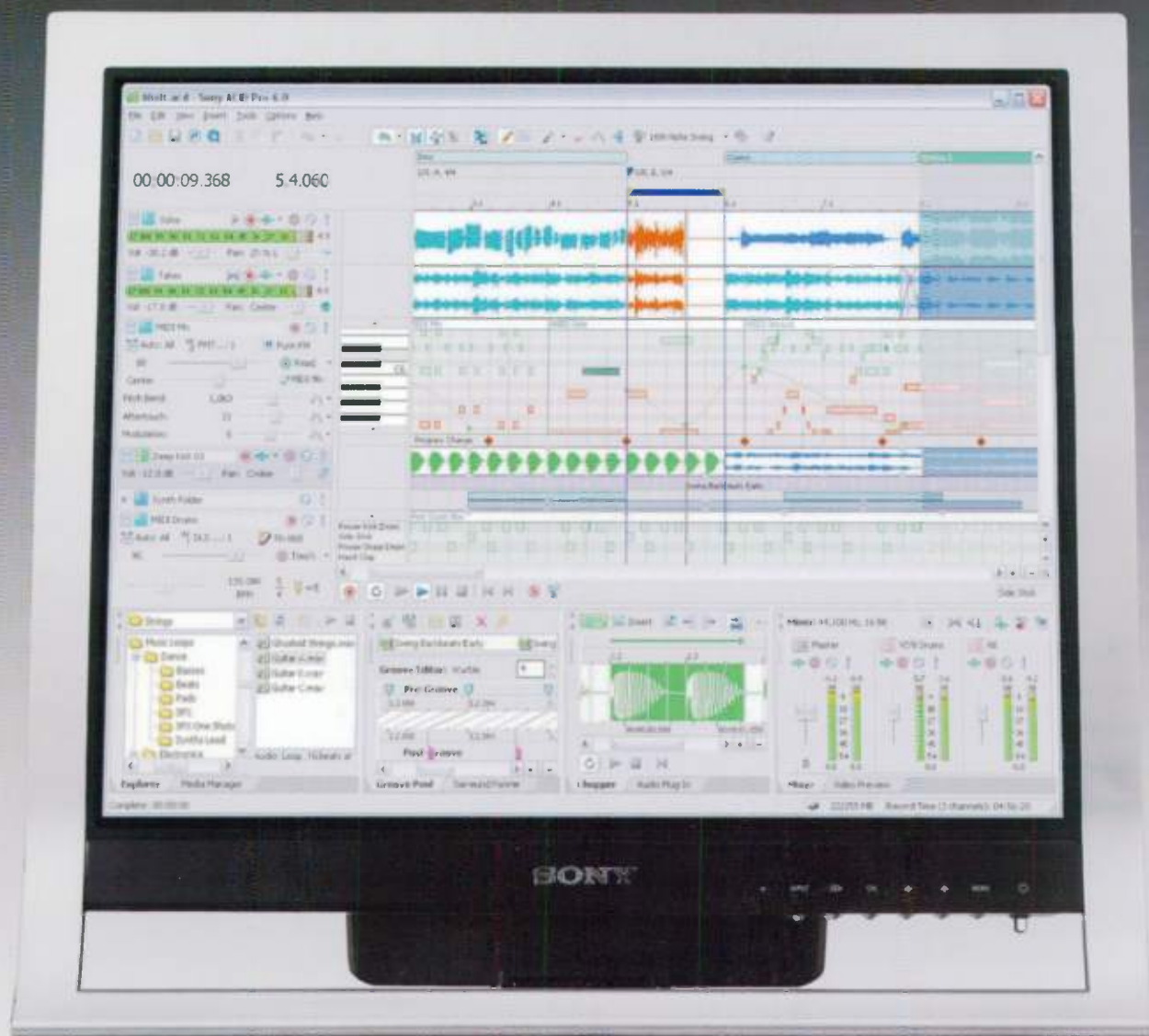
Next Month in Sound On Sound...

On *An Island*, Dave Gilmour's first solo album for more than 20 years, entered the UK charts at number one earlier this year. Engineer Andy Jackson, Gilmour's right-hand man for the last two decades, reveals the secrets of Gilmour's guitar sound and his unique houseboat studio in next month's *SOS*.

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"WOW"



OASYS

Open Architecture Synthesis Studio

The OASYS is blowing away musicians and critics alike, with stunning sounds, inspiring musicality, and its exclusive forward-thinking open architecture. Dream Theater's Jordan Rudess explains, "Sure it has lots of power, but OASYS brings it all together into a real musical instrument. Nothing else does that for me." Proud OASYS owner Herbie Hancock

is also a believer. "The feel and touch of an instrument is first and foremost for me. The feel of the OASYS is just right. And I find that the onboard sounds are just SO playable!" Find more info, complete interviews, reviews and your local OASYS dealer at www.korg.com/OASYS. Experience OASYS for yourself. Prepare to be wowed.

EXi EXPANSION INSTRUMENTS

Making good on the promise of open architecture, the new STR-1's plucked-string physical models deliver realistic guitars, clavs, ethnic sounds and unheard-of textures and timbres. And this latest EXi is being offered free to current and future OASYS owners! Go online to check out STR-1 sound clips.

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The Keyboard Magazine review by Ken Hughes appears in the October 2005 issue. www.herbiehancock.com • www.jordanrudess.com

