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hen MIDI first appeared, I remember having heated debates with its proponents over whether or not MIDI, and particularly MIDI sequencing, was actually a good thing for music. I argued that working with a sequencer was likely to force people into a rather

regimented way of making music, and that time spent at the computer was time spent not actually playing an instrument. At worst, it could result in a serious erosion of musical skills, especially the ability to play in time. I also recall arguing that the best musical ideas came from two or more people playing together; while the sequencer doesn't actually preclude that, it does tend to discourage it.

In order to discover the truth, I got hold of one of the first Atari STs and a copy of Notator with a view to finding out what all the fuss was about 1 must admit that I enjoyed the creative promise of the sequencer, and to this day I'm still a keen dabbler,

but I can't help feeling that in many ways my initial misgivings were justified. My main instrument is the electric quitar but, as the guitar still doesn't translate too well to MIDI, I found myself using a conventional keyboard as a kind of musical word processor. My progress with the guitar ground almost to a halt, and, because I tended to work alone on the sequencer, I felt that my musical ideas also lacked the spark that comes when two people are bouncing ideas

> off each other. What's more, my aim of learning to play the keyboard just hasn't panned out at all - after the guitar, where chords and scales are based on shapes, the keyboard is a mystery.

I have a theory that the current dance-music scene was inevitable from the day the sequencer was invented.

because everything it embodies is what MIDI does best - repetition, rigidly quantised tempos, and the ability to layer and control lots of sounds. To progress beyond that, technology will also have to progress in a way that offers us more freedom.

Those who have transcended these limitations are usually very accomplished musicians who have recognised, and worked around, the obstacles that MIDI sequencers tend to thrust in our way. Indeed, the very best players seem to prefer to turn off the click and simply use the sequencer as a multitrack MIDI recorder, preserving the original timing of the performance.

However, I did find a positive side to sequencing, not least that frustration at my lack of musical creativity got me out gigging again, and once you can get enthusiastic about playing, that enthusiasm carries back into the studio. The other great thing for me is the inclusion of digital audio within most contemporary sequencing packages, because now I can use my guitar and combine it with the things MIDI does best. We're not out of the woods yet, because MIDI still likes to set the tempo rather than follow, but it's only a matter of time before sequencers become more interactive.

Over the past decade, music made with the aid of computers has endured a baptism by fire, but perhaps now is the time for it to come of age. MIDI has had its own way for far too long, but now we have a chance to turn the tables and make use of it as the tool it was originally designed to be. Paul White Editor

Jomox XBase 09

# SOUND ON SOUND

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# Crosstalk

### Pulse Puzzle

As a regular reader of Sound On Sound, I've come to regard the reviews as a valuable, unbiased insight into the hi-tech market. Over the years, SOS reviews have assisted me in the purchase of a Yamaha SY99, a Korg Wavestation A/D and, more recently, a Waldorf Pulse, which I bought after reading Paul Nagle's February 1996 review. I'm particularly pleased with this last purchase, and have found it to be the most innovative hi-tech box of sounds currently available. However, I was wondering whether you could provide some help.

My first problem is with the filter, which, it would appear, needs to be regularly tuned during the first hour or so after power-up. After this time, it seems to settle tolerably. Looking back at that review, I notice that Paul had cause to contact Waldorf's Wolfram Franke, who made comments that suggest otherwise; he says: "The result is a filter that, if it is tuned once, stays in pitch". He then goes on to say: "The filter is voltage controlled, as you can see from the front panel. But we made sure the

before, as I was interested to read that the Waldorf Mini-Works 4note filter has a function to select whether the parameter transition is absolute or relative to parameter changes — arquably a more satisfactory solution. Is it possible that the Pulse also possesses this much-needed function, perhaps hidden somewhere in the operating system? I ask this as I have discovered a way to step through the Mode Select by holding the Mode key and pressing the up/compare key. This actually corrects one of Paul Nagle's niggles with the Pulse.

I hope you can help, and thanks to all at SOS for producing the most informative, comprehensive and greatest value hi-tech music mag on newsagents' shelves. Paul Russell Aylesbury

Paul Nagle replies: I'm glad you like the Pulse (and SOS!). I love both of mine, and find that I can do things with them that are impossible with other synths. In my own experience, the filter is very stable over about



voltage is 100% stable in any situation". Your comments would be most welcome.

My second enquiry concerns real-time control, using the six knobs to record parameter changes into a sequencer. The difference between the value of the preset memory and the value that lurks behind the position of the knob can be very frustrating, especially when the differences are great and the inevitable jump destroys an otherwise perfect take. It would appear that this problem has been presented to Waldorf

five octaves. It is possible to retune it via the front panel, although I don't believe this was documented in the original manual. To do this, press and hold the shift key. Press Mode, then release the shift key. Use the Up scroll key to reach the display 'tun'. Press shift and Mode again to activate auto-tune — the process takes up to 30 seconds. The filter is first tuned to its fundamental frequency (440Hz) at maximum resonance oscillation, and is then tuned to an octave above the fundamental (880Hz). The Pulse also responds to MIDI Tune Request (F6).

### **Key Facts**

I wonder if you could advise me on the recording of a piano and harpsichord. What kind of mic (or mics) should I use, and where do I position it (or them)? The instruments would be in a room in a house with normal acoustics.

Reshad Suffee Canterbury

Paul White replies: There are lot of ways to mic up these instruments, but in a normal room where there isn't a lot of space, you could do a lot worse than have a pair of mics, one looking over each of the performer's shoulders, towards the instrument. This way, if it sounds good to the performer, it sounds good to the mics. Point the mics slightly outwards towards the edges of the instrument for a wider stereo spread. Capacitor or backelectret mics give the best results with acoustic instruments, and in a room with indifferent acoustics cardioids are probably best. If you have a mixer with phantom power, I'd suggest a pair of Audio Technica AT873Rs, but if not, you'll need to choose a couple of battery powered back-electrets, such as the Audio Technica ATM33a. There are lots of other mics that will do the job - it's just that these are both fairly inexpensive and I happen to be

If this doesn't solve the problem, you might try using a different power supply or switching off adjacent equipment to see if that has an effect. Check the operating system version - the number that flashes briefly on power-up - which should be at least 1.40, although I think the latest is 1.42. If none of this helps, try creating a new patch with the resonance cranked up and the oscillators turned fully down. Set the cutoff at about 10 o'clock, and modulate cutoff frequency via keytrack. Ensure there's no modulation applied elsewhere, and leave it arpeggiating for a while. If the filter tuning doesn't remain constant, it's possible you have a faulty instrument - sometimes referred to as 'genuine analogue warmth'! If you take a dump of this basic patch and try it out on another Pulse, you'll soon be able to tell if yours has a problem; I'm sure the store you got it from will let you

There's a shorter answer to your second question: I'm afraid there is

no hidden 'relative mode' on the Pulse, You probably already know that holding Mode and turning any knob displays its value. You can use this to get the knobs to the right position for recording MIDI data. My own favourite method is to have a Cubase mixer map open at all times with each object set to both send and respond to its relevant MIDI controller. This way I have a display of all parameters at once at any position in a song - I just wish Cubase were fast enough to record the Pulse's 'controller burst' patch parameter dump into the MIDI mixer.

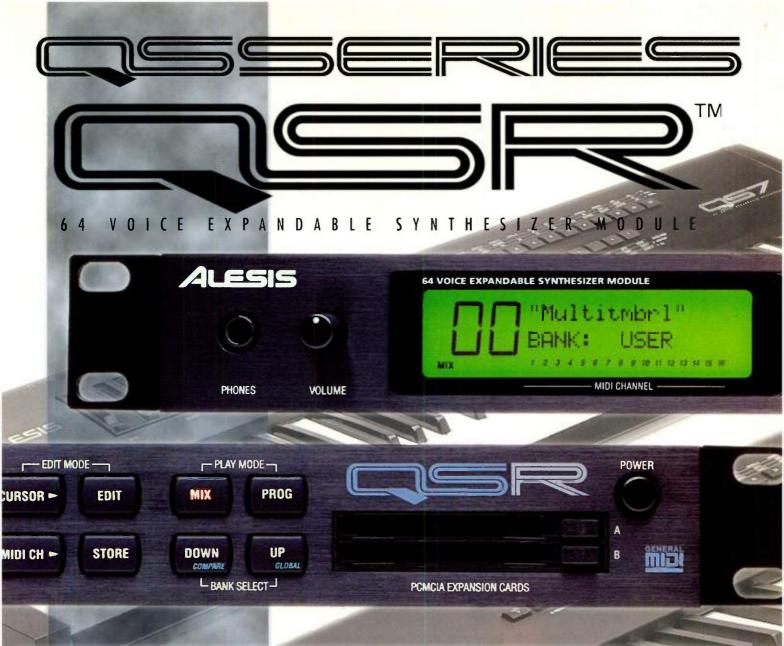
I've passed on your request to Waldorf for future consideration, so who knows? They added the method of stepping upwards you discovered after the original review, so they do listen. It's now documented in the most recent manual. Finally, if you have Internet access, check out my web page (www.softroom.demon.co.uk /resource.htm) for some free Pulse

patches and a Cubase mixer map.

Send your letters, queries, tips and comments to: Crosstalk, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 88Q.

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# Crosstalk

### The Numbers Game

As I understand it, both MiniDisc and Digital Compact Cassette use a form of digital compression during recording which causes parts of the audio to be 'masked' if they're not strictly audible. However, I sometimes bounce from my DCC or MD machine to my DAT, then back to DCC or MD in analogue mode. The question is: when the signal comes back to the MD/DCC for the second time, does the compressed signal take another bit out of the same signal? If the copy was made in the digital domain, would it again take out another chunk of the music? Or does the MD/DCC know that part of the signal is already missing?

John Roper France

Martin Russ replies: MD and DCC (and certain other audio compression methods found in digital multitrack/direct-to-disk equipment) do utilise a number of techniques to reduce the amount of data required to store digital audio, including the 'masking' that you mention. Audio compression techniques often exploit various features of the human hearing system in order to make the most of the available bits. In fact, MD and DCC use the equivalent of only three or four bits per sample instead of the 16 that a linear system like DAT uses. Being able to throw away three quarters of the bits either means that linear coding has lots of redundancy and is very inefficient, or that



something gets lost in the processing used by MD and DCC. Actually the truth lies somewhere between these two extremes. Linear 16-bit coding is sometimes not fully utilised, while sometimes MD and DCC do lose information when they run out of room.

The main processing used by MD and DCC splits the incoming audio into bands of frequencies (rather like the bands in a graphic equaliser) and then spreads the available bits over these bands. There are two main methods used to assign the bits. Firstly, the human ear is most sensitive to mid-range frequencies (a few thousand Hertz), so the bit allocation favours these bands - and also takes advantage of the fact that loud noises tend to mask or hide quieter sounds. Secondly, the number of bits assigned to each band varies according to its importance, so the mid and low bands get the majority of the bits, with the resulting noisier high frequencies masked by the louder lower frequencies. The processing is done on short time slices, so the 'chunks' of masked audio are tiny; the effect of the

assignment of bits is really to set where the finest detail is required. This means that any bits of masked audio will just be represented more coarsely, rather than disappearing.

There have been many comparisons between MD and DCC in the technical, audio and hi-fi press. In general, DCC seems to have a better frequency response, and better transient and multiple-generation performance, which reflects the fact that it uses slightly less compression than MD. But the practical advantages of a disc over a tape go the other way, strongly in favour of the durability and random access of MD. Even given that there is always a price to pay for using less bits, the actual audio performance of both methods is good, with only subtle changes being made to programme material.

So, to your question. There are four possible types of bounce: MD/DCC digital to DAT digital; DAT digital to MD/DCC digital; MD/DCC analogue to DAT analogue; and DAT analogue to MD/DCC analogue. The two digital bounces don't allow you to do anything other than make a copy, unless you have a digital mixer. The digital MD/DCC to DAT case keeps the digitised audio information at MD/DCC quality, whilst the digital DAT to MD/DCC case can lose information when the 16-bit linear digitised audio is converted to MD/DCC coding. The analogue bounces lose fidelity because of the conversion from digital to analogue and back — the digital-to-analogue and analogue-to-digital conversions can also degrade the audio as well - but again it is the DAT to MD/DCC bounce that loses the most information.

Unfortunately, MD/DCC recorders don't 'know' when the incoming signal has already been coded, and they treat it as just another digitised audio signal. The coarsely coded 'masked' chunks of audio are re-coded along with everything else, which means that any degradation to the signal is cumulative: it builds up with each bounce. When 'Digital' has been promoted as being a way of making perfect copies, it is rather galling to discover that some digital systems are less than perfect. But it should be said that DAT is the pro format, and so has outstanding performance, whilst MD and DCC were both intended (as are the similar multitrack/direct-to-disk systems) for either consumer, hobbyist or semi-pro use, with consequent limitations on their performance.

### SIMMple Solution

I own an Atari 520STE which has been upgraded to 1Mb of RAM. I'd now like to upgrade it further to 4Mb. Will my 520STE accept any 30-pin 1Mb SIMMs, or do they have to be Atarispecific? I ask because local



computer shops are offering four 1Mb SIMMs for around £50, while Atari-specific upgrades are advertised at between £80 and £100. Secondly, I want to gain some extra MIDI outputs, and I've heard that it's possible to use the STE's modem port for this purpose. What do I need? I use Steinberg's Cubase sequencer.

Matt Burton Oxford

Derek Johnson replies:

Choosing SIMMs for an ST/STE can be tricky: the units offered by your local PC supplier may not be entirely suitable. Your best bet is to go to an ST specialist, who will definitely have what you need, and also provide you with backup. A quick call revealed that Keychange Music (01925 266120) can supply four Atari-compatible

1Mb SIMMs for the lower price you quote - £50 which perhaps reflects the current general affordability of RAM. And with regard to the extra MIDI channels, you've heard correctly: the ST's modem port can be used as an extra MIDI output. You just need a little adaptor which can be supplied by several companies, including Hands On MIDI Software (01705 783100) and Westec MIDI Market (01621 788466). If you need more than one extra MIDI stream, call Cimple Solutions (0181 904 4141) about their Extraports (reviewed in SOS back in October 1994); for £70, this adds an extra three MIDI streams to your Cubase sequencer.



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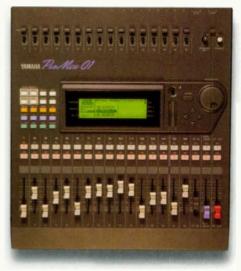
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# SSTE

### A Question of Time

Since upgrading from a Mackie CR1604 mixer to a Yamaha ProMix 01, I've encountered a problem with my SPL Vitalizer. In my old setup, I routed the Vitalizer to the spare send and return channels of the Mackie, which worked fine. Now I find it won't work in the same way with the Yamaha, even though I've routed it in exactly the same way. The signal I get back isn't enhanced in any way that could be called nice. I've tried speaking to Yamaha, but they say it's probably a mismatch of equipment. Any ideas? Richard Jungles Leicester



Paul White replies: Enhancers work best when connected via insert points, though I know that the Vitalizer is also arranged to let you add the enhanced part of the signal using the aux send returns. However, this relies on the mixing desk having no delays or phase changes, and in the case of a digital desk, the signal is always delayed by a fraction of a second as it passes through the converters. I'd guess this is what's causing the trouble, so the best bet is to use it via insert points, or for desks that don't have inserts (such as the ProMix 01), put it on the output of the mixer, before the mastering recorder. This means monitoring from the recorder rather than the mixer, otherwise you won't hear the Vitalizer working.

# Feline Groovy

Cheetah's MD16 drum machine, covered in April 1997's Retro Zone by Nicholas Rowland, must be in the love 'em or hate 'em category. Mine, bought secondhand, is my first drum machine, so there's no way for me to make comparisons. It seems of the era of menu-driven computers and tiny processor power.

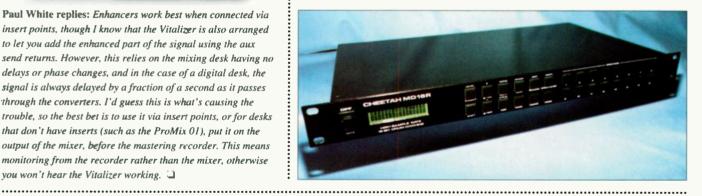
There are a daunting 165 editable parameters, divided between 12 menus. so no wonder the manual has 123 pages. Even then, features aren't explained, and you resort to trial and error. For example, to trigger extra drum sounds on a keyboard you need to increase release time, as the Note On and Note Off messages seem to be sent almost simultaneously. Worse, sounds played back over MIDI will be different to those recorded into the machine. unless the internal sample numbers have been sent in numerical order 1-41, and set to MIDI note number 0-40 (ie, offset by 1). Any controlling keyboard is set to send from MIDI note number 0-40, and possibly a drum map will be needed in the synth as well. Talk about complicated (but useful).

Voice menu item 8 changes in step

edit mode, to allow sounds in a pattern, or even individual hits, to have timing changes such as swing to be switched on and off, while the remainder of the pattern stays tightly timed. This is not even hinted at in the manual! It's a sod to learn, edits are on an event list, but it seems to do a lot. Now where can you get hold of one of the additional sound cartridges Nick Rowland mentioned? Does anyone out there have one they'd like to sell? The African and Latin Percussion cartridges sound interesting. as do the TR808/909 ones.

Terry Reed Stoke On Trent

We tried to track down some cartridges for you, Terry, but even ex-Cheetah bod Nick Owen (now head of Soundscape Digital Technology), who still has a few Cheetah bits and pieces knocking about, doesn't have any cartridges. Can anyone out there help Terry with this elusive commodity? If you can, drop us a line and we'll pass on your details. By the way, hard to find stuff can often be tracked down by placing an add in the 'wanted' section of SOS's Free Ads. 📮



#### A Site for Sore PCs

With reference to the feature Unlock Your Daughters back in SOS February 1997, I'm running Cubase Audio with a Tropez Plus soundcard. Whenever I load the soundcard's synth, it tells me that the MIDI port could not be found or is being used by something else (presumably Cubase). The feature was very good in explaining this problem and its solution - using software such as MultiMid or MIDI Cable to provide multiclient capabilities. Trouble is, I can't find Gary Gregson's home

page at http://www. cybertheque.fr/galerie, which is the web site noted as a location for this software. Are there any other sites that I could use, or Has Gary Gregson's page moved? Yusarian

Martin Walker replies: Glad you found the feature useful - I checked the web site address as printed in SOS, and it seemed identical to the one I used (http://www.cybertheque.fr/galerie

via email

/ggregson). I also revisited the site via my bookmark in Netscape Navigator, and it is still in exactly the same place. Mind you, sometimes I get messages from my browser that sites don't exist when I know very well that they do, and sometimes the net gets so busy that there is no response anyway. A bit of lateral thinking is often more helpful than a definitive alternative site. I quickly found another way of getting to Gary Gregson's site, as follows: As the main subject in question is the Yamaha DB50XG, I tried accessing

http://www.yamaha.com (most large companies have a website. and American 'com' sites are more likely than the UK version 'co.uk'). Sure enough, a web site existed with this address, and the first thing I spotted was a button marked XGsite. Clicking on this took me to another page, where a further click on XGsoftware took me to a page with XGedit and a link to Gary Gregson's site. This contains a link to MultiMid, which I presume is what you are really looking for to solve your problem. Good luck!

# We made the console,



# ...you wrote the ad.

- "I just sold my Mackie 8-bus and purchased the new Ghost console. The difference is amazing. The Ghost is the warmest sounding board I've ever used." Mike Perkin (The Lab Recording Studio, Emmaus, Pa)
- Treplaced a console that was more than 3 times the price, and got a quieter, more transparent, and sweeter sounding console! Big console feel, with an amazing price! Kurt Bevers, Brownell Sound, Oregon.
  - An incredibly musical console, ultra flexible with a real usable EQ. It is absolutely the best sounding project studio board that I've heard". Howard Givens, Spotted Peccary Studios."
- "I love the desk, the EQ is just marvellous. Chost is the best 8 bus recording desk on the market." Lee Hamblyn, Engineer.
  - "Intuitive handling, flexible routing, great Soundcraft sound."
     Welvin Fernandes, Recording Engineer, Cam Studios, India.
  - "I use the Ghost for several radio shows doing live performances. The EQ is amazing, I'm on air in 5 minutes! Doing dance stuff is one, doing live stuff is another. But I use only one board for both of them, The Soundcraft Ghost." Barney Broomer, Sonic One Rotterdam.
- "Hase of operation and the numerous in-line imputs" for my synthesizers and samplers is why I purchased the Soundarait Chost console." says President of Saban Entertainment and producer of Mighty Morphin Power Rangers Shuki Levy.
  - "I didn't know how useful mute groups could be and how good the EQ had to be until we used the Soundcraft Ghost." Stefaan Windey, La Linea Musicproductions b.v.b.a., Belgium.
- "It sounds great and the EQ is very precise which makes it very easy to pin-point the frequencies I need to work on. Ghost enables me to finish mixes on the console at home, without having to use any other studio." Phil Kelsey
  - "The console is very user-friendly and is constructed so well that it can easily withstand the rigors of even the most hectic of production schedules." Corey Dissin, Producer at Paul Turner Productions.
- "Both myself and our Production Director Jeff Thomas used the console for PowerStation and were equally very, very impressed. For the money, the console is fantastically versatile, has good headroom and a very impressive EQ." Alex Lakey (Engineer for PowerStation)



"Let us know what you think about the Soundcraft Ghost by visiting our web site at http://www.soundcraft.com or via e-mail to info@soundcraft.com"

Soundcraft

# Shape of things to come

# Environmentally ser's of Emagic's Logic software will be

manual doesn't go as far as it could in describing the power and features of the Environment. SOS published an article on using the Environment in April, but for those who want even more, get your cheque books or credit cards out for Len Sasso's Eg: A Guide to Logic's Environment. This is a homebrew, spiral-bound publication, yet it's clearly laid out and printed, with plentiful illustrations. To quote from Len's web site, the guide is about making music. Every musical event which Logic touches, MIDI or audio, passes through the

Environment and most make the trip twice. With a basic understanding of the Environment, you can use *Logic* effectively, but with advanced knowledge, the Environment becomes a powerful and creative musical tool.

The guide runs to approximately 225 pages and is divided into four sections: Basics, Solutions, Projects and Reference. There's also an introduction and four appendices, including a Frequently Asked Questions section, and the package includes a disk containing all patches described in the book. The guide is based on *Logic* v2.6.1 for the Macintosh; PC-based *Logic* users will find that some of the illustrations do not exactly match the PC's Environment window and that some of the examples must be modified for the PC.

The book costs US\$35 plus shipping (an extra

US\$5 in the States, US\$7 to Canada, US\$12 to Europe, US\$15 to Asia and Africa and US\$16 for the Pacific Rim (In Australia and New Zealand, the book is distributed by The Electric Factory, +61 03 9480 5988). Payment can be made by cheque, money order or credit card.

- A Swiftkick Productions, PO Box 4257, Carmel, CA 93921, USA.
- 001 408 624 4123.
- E Isasso@swiftkick.com
- W http://www.swiftkick.com

# M Corporation's hard attack

he M Corporation are running their biggest event to date an event which could prove extremely useful for anyone interested in hard disk recording. On May 27, the company are bringing together all the major hard disk recording manufacturers; attendance has already been confirmed by Akai, Digidesign, Soundscape, Korg, Fostex, Emu, Roland and others. Entry is free, and the event, which runs from 11am to 8pm, should provide an ideal opportunity to compare products directly and question manufacturers. Contact the M Corporation for further details.

- The M Corporation,
  The Market Place, Ringwood,
  Hants, BH24 1AP.
- 01425 470007.
- **1** 01425 480659.



**Erasure**go *Digital*?

rasure have specified a
Yamaha 02R digital mixer
for use in all their live
performances — despite the fact
that Erasure main man Vince Clarke
is well-known for his obsession with
analogue. The fully automated, 40input desk is highly rated by
Erasure's long-standing front-ofhouse engineer, Andy Whittle: "It's
amazing: the Yamaha is so
consistent. Having preset values for
the mix, plus the built-in delays and
effects, I only ever have to make

minor adjustments. I can literally set it up in minutes." The desk did duty throughout the group's UK and European tour, during October to December last year, and joined the band in the States during March; it's also been spotted taking part in the group's TV appearances on MTV and VH1 music channels.

- A Yamaha Kemble Music Ltd, Sherbourne Drive, Tilbrook, Milton Keynes MK7 8BL.
- Product Info Line 01908 369269.
- 01908 368872.
- W http://www.yamaha.co.uk

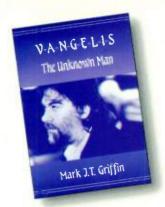
# **Rock me Amadeus**

he Amadeus range of electric stringed instruments — manufactured exclusively for.

Banks & Son Music of York — now includes an electric cello. The instrument is made of solid wood and incorporates two passive pickups; Schaller machine heads replace the more traditional tuning pegs, to assure stable tuning. A separate pitch-to-MIDI

converter allows your cello to control external synths and samplers. The cello, which comes with quality strings, fingerboard and tailpiece, is available in a range of metallic finishes — Electric Blue, Claret Red, Verdi Green, Arctic White and Midnight Black — and costs £999 for a limited introductory period.

- A Banks & Son (Music) Ltd, 18 Lendal, York YO1 2AU.
- T 01904 658836.
- F 01904 629547.
- E tad40@dial.pipex.com



# Vangelis second time

arnıınd Griffin's Vangelis biography is now in its second edition; the initial print run of Vangelis: The Unknown Man sold out within 12 months, and raised £1500 for charity. Since that time, further research into Vangelis' life and work has been undertaken, and the second edition, limited to 1000 copies, takes advantage of this; it also includes many rare pictures. Pricing, including postage, is as follows: £11 cash, cheque or postal order to the UK: £12 Sterling cash or Sterling Eurocheque to Europe; US\$20 in cash or cheque on a US bank account to the USA Cheques should be payable to Mark Griffin.

A Mark JT Griffin, Smithy Croft, Schivas, Ythanbank, Elton, Aberdeenshire AB41 7UA.

# **Tascam's double Vision**



t's a wonder that no-one else has done this before - Tascam have launched the DA302 dual DAT machine, priced at just £1499. The machine consists of two complete, professional DAT recorders in one 3U rackmounting package. Both common and individual analogue inputs are provided, along with separate S/PDIF digital ins and outs for both decks (digital output is also selectable between AES/ERI and S/PDIF formats). It's possible to digitally record on deck 1 while deck 2 is digitally transferring material to an externadevice, a simultaneous record capability is featured, and both decks can provide separate digital and analogue playback. High-speed dubbing is one feature found on domestic double cassette decker it's also included here, but in the digital domain, allowing for the digital cloning of masters, complete with sub-code data. For those using multiple DA302s to duplicate multiple copies, digital and analogue cascade options are available.

Tapes recorded at 32kHz, 44.1kHz and 48khz can be played back, while recordings can actually be made at 32kHz and 44.1kHz. Accessories include a hard-wired remote, sync cable and selectable between 44.1kHz and 48kHz.

Tascam also note that the DA98's internal digital patchbay, with digital track copy, allows any digital or analogue input to be routed to any track, and any track to be routed to any digital or analogue output. A track may also be digitally bounced to another track, and any track on one DA98 can be digitally copied to any track on another DA98. Multiple takes can be compiled onto a



optional balanced I/O convertor kit.

There's an addition to Tascam's multitrack digital range, with the introduction of the DA98. This is an 8-track digital recorder fully compatible with the established DA88 and DA38, but offering a number of improvements. On-board synchronisation is standard and includes the generation and support of all SMPTE/EBU timecode formats. MIDI Machine Control, MIDI Time Code and Sony P2 (RS422) protocols; a 37-pin D-sub connector is also featured, for parallel interfacing with an external control device. Also new are the machine's 20-bit, 64x oversampling A/D convertors; digital to analogue conversion is courtesy of 20-bit, 8x oversampling convertors. Sampling frequency is

single or stereo pair of tracks, within a single unit, remaining totally digital.

The large LCD is also a new feature, with dedicated function keys for system operation and self-illuminating transport keys. Features familiar from other Tascam digital 8-tracks — digital crossfading, shuttle wheel facilities, seamless punch out in and out, 10 programmable locate points — are, of course, implemented, and up to 16 DA98s (in combination with DA88s or DA38s).can be sync'd together for up to 128 independent tracks.

- TEAC UK Ltd, 5 Marlin House, The Croxley Centre, Watford, Herts WD1 8YA.
- 01923 225235.
- F 01923 236290.

# SPL's Red 'head

ew to SPL Electronics' digital
Red range of processors is the
Machinehead, an analogue tape
saturation simulator. The algorithm used by
the Machinehead "computes tape saturation
effects", and the sonic effect is said to be
increased loudness and penetration of the
mix at identical peak levels; according to SPL,

the sound becomes warmer, taking away the harshness sometimes associated with digital recording.

The Machinehead can be used to treat single instruments, but is also recommended for complete mixes. Four controls provide input and output gain, drive and HF damping, and comprehensive metering helps you keep

track of the how much processing is being applied. AES/EBU and S/PDIF digital connections are provided for ins and outs, and wordclock, MIDI and a separate computer interface all come as standard. Pricing is expected to be in the vicinity of £2350.

.....

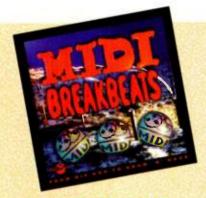
- Beyerdynamic, 17 Albert Drive, Burgess Hill, West Sussex RH15 9TN.
- T 01444 258258.
- F 01444 258444.
- E sales@beyerdynamic.co.uk

SOS can be reached on CompuServe; our email address is 100517,1113.

Our full Internet address is 100517.1113 @compuserve.com.



# shape of things to come



he latest entry into Keyfax Software's Twiddly Bits MIDI File building-block disk range is Volume 8: MIDI Breakbeats. This floppy disk contains over 400 individual drum loops, ranging from 75-90bpm grooves from Al Eaton (Queen Latifah and Ice-T) to 160bpm drum 'n' bass loops from TET (Anthill Mob and Doug Wimbish). In addition to the loops themselves, the disk contains special files for producing speeded-up drum effects (using wide pitch-bend ranges), and individual instrument reverb control; Roland GS and Yamaha XG users also get the option of using the breakbeats in "dual drum mode", where loops using different drum kits can be layered. MIDI Breakbeats contains both played (via a Roland TD7 kit) and programmed loops, and while the files mimic sampled grooves, the result is fully General MIDI-compatible. The price is £19.95.

- A Keyfax Software, PO Box 4408, Henley on Thames, Oxon RG9 1FS.
- 0118 947 1382.
- F 0118 947 1382.
- 100705.3565@compuserve.com
- W http://www.gmedia.net/keyfax

SOS can be reached on CompuServe; our email address is 100517,1113.

Our full internet address is 100517.1113@compuserve.com.

# **Mod-U-Like**

earching for something obscure in the modular analogue synthesis line? Check out New Hampshire's Eyos Research: their M4400 series offers a truly modular system, with each module built to high standards. The current list of modules includes a VCO, Voltage Controlled EG, VC multimode filter, dual VCA, dual LFO, S&H/clock, random signal generator, audio mixer, lag processors, VC gate and trigger delay, and external input processor. A range of system cabinets are also available, which include PSUs, gate, trigger and CV busses. Prices vary, with the most expensive items hovering just under the US\$300 mark, although discounts are available for large orders. Evos plan to make a range of 'preset' configurations available later this year, ready-mounted in cases, with PSU and patch leads. Forthcoming additions to the range include an envelope follower, clocked sequencer, 24dR/octave VC LPF 24dR/octave VC HPF and phase-shifter.

- Evos Research, PO Box 258, Greenville, NH 03048-0258.
- 001 603 878 0702.
- F 001 603 878 3997.

# Reaching for the Stars

▼ ound On Sound contributor Paul Nagle will be presenting a live concert of his own particular brand of electronic music on June 1. The venue is the Electric Cafe in Derby; tickets can be obtained from Midas Records (01332 349429). Later in the month, on the 28th, there's another chance to catch Paul live, this time supporting Air Sculpture at Jodrell Bank Planetarium. The tickets are £10 each and can be purchased from Synth Music Direct; contact them by post at PO Box 592, Sheffield S30 3FE, by phone on 0114 286 4889 (6pm to 8pm Monday to Thursday), by fax on 0114 2864890, or through email (david@neuharm.demon.co.uk). The doors will open at around 7pm. A date in Preston is on the cards for September: more details when we have them. Up-to-date info on Paul's activities can be found on his web page (http://www.softroom.demon.co.uk).

ALTRINCHAM Concert Systems Digital Village RARNET RARNSTAPLE Soundoad RELEAST Marcus Music RINGLEY Spectre Sound Musical Exchanges RIRMINGHAM BERMINGHAM O Music BIRMINGHAM BLACKPOOL Eddie Moor's Music Ltd BOLESEMOLTH BRIGHTON Buinhour Sound X Music BRISTOL BURNLEY Music Village CAMBRIDGE CARDIFF CARLISLE AVI CHESTER COLCHESTER Axe Music COMENTRY (REWE Music Contro DERBY Ken Mitchell Music DUBLIN DENDEE DUNFERMLINE Bonners Ltd. EDINBI RGH Sound Control EDINHI RGH The Warehouse FARFILM The Audio Connection The Warehouse GLASGOW Sound Control GIASGOW PSS Music GRIMSBY GUILDFORD Andertons Music Co. HEYWOOD Wigwam Acoustics Ltd. HIGH WYCOMBE Percy Priors INVERSES The Music Station KINGSTON Earth Music KIRKCALDY Sound Control LANCASTER Low Fold Audio HEEDS Carlshro LEK I STER Carlshro LIVERPOYN Adlib LONDON Turnkey LONDON The Synthesizer Company (TSC) LONDON Graday Theatre Services TONDON Raper and Wayman LONDON HHB Communications Ltd LONDON Studio Sources LONDON LONDON Music Lab LONDON LONDON COLNEY MANCHENTER MANCHESTER Sound Control MANSFIELD Carlshro Academy of So NEWCASTLE-UPON-TYNE Sound Control WORTHAMPTON Willes Communication STREET II Carlsbro Academy of Sound MOTTINGHAM Carlshro PETERBOROUGH **B&H Sound Services** PETERBOROUGH The Live Music Shoo PORTSMOUTH Nevada Music PRESTON Al Music Centre The M Corporation (TMC) RINGWOOD **MS Theatre & Lighting Supplies** RINGWOOD Music Village (Chadwell Heath) ROMPORD SHEFFIELD Marquee Audio SUPPLETON SOUTHEND-ON-SEA Honky Tonk STEVENAGE STHELENS ST. HELLER STOCKPORT STOKE-ON-TRENT Music Control The Music Station TI NERIDGE WELLS JB's Music Stores WAKEFIELD KGM Studio Soccialist WARRINGTON Vamps WASHINGTON WATEORD Active Sound WIGAN Dawsons Music WIGAN M.A.Amplification

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  3 Auxes allowing 2 Pre-Fader + 1 Post-Fader or 2 Post-Fader + 1 Pre-Fader
- 100mm Faders throughout

\* Bar the shouting

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By Soundcraft

Please send me full information on the Folio Range of Mixers □

I will use a Spirit Mixer for.

I already own (please state mixer name/model):

I read the following magazines:

Please send me a FREE copy of the Spirit Guide to Mixing on how to get the best from my mixer

# shape of things to come

# RDL Audio, a UK-based mixer, amp and loudspeaker system manufacturer, has introduced a 16-bit digital reverb unit. The RDL1600 offers 16 preset effects, with 10

reverbs, two delays and four gated reverbs.

Although the unit lacks memories, frontpanel controls allow the user to customise
the unit's settings.

01353 698589.

Last month's review of Yamaha's MU90R was run with an out-of-date price. Lucklly, the adjustment is downwards, since the module actually costs £549 rather than its pre-launch projected price of £599.

Yamaha Product Information Line

The recent restoration, augmentation and re-release of George Lucas's *Star Wars* trilogy made it to our screens in part as a result of audio work done using Cedar's DH2 de-hisser. LucasFilm purchased the DH2 after evaluating various denoising technologies, and used it, in conjunction with a second leased unit, for remastering the entire soundtrack of all three films, which were released with DTS — Digital Theatre Sound — soundtracks.

Cedar Aedio 01223 414117.

THMB Communications 0181 962 5000.

ElectroVoice's new ND868 mic has been produced for one purpose: miking of bass drums. The ND868 is a true large-diaphragm mic offering an extended low-frequency response. The pickup pattern is highly directional, keeping feedback to a minimum.

Shuttlesound 0181 646 7314.

Otari's Radar hard disk recorder has been chosen as the preferred recording medium for the Strongroom's studios. MD Rob Buckler comments: "We chose Radar because it is incredibly fast and efficient for mixing, and the cut and splice features bring enormous benefits. We have since found that clients love the sound of the system as well." The East London facility, which plans to add three new studios in the near future, now has a complete 48-track Radar system.

Stirling Audio 0171 624 6000.

Pure Energy Entertainment, perhaps best known for their large sample library, available in many sampler and PC formats, are branching out. They can now supply PC music software, such as Cakewalk, Resample Pro. Sound2MIDI, QuickScore Elite, Personal Composer and DART Pro. Hardware is also on offer, including soundcards, MIDI interfaces, daughterboards, MIDI cable adaptors, MIDI switchers, and sundry accessories and

- A Big Time Productons, PO Box 520, Burslem, Stoke-On-Trent, Staffs ST6 5UR.
- W http:
  - http://www.members.aol. com/pureenrg/index.htm

# Come dancing with **Heavenly**

he latest in Heavenly Music's series of MIDI File building block disks is Strictly Ballroom, apparently released in response to customer demand for just such a disk. Months in the making, this disk follows the Dr Beat tradition with its human feel and live dynamics and includes all the most popular and classic beats, such as quicksteps, foxtrots, jives, lambadas, paso dobles, tangos,

waltzes, blues, cha chas, rhumbas, boleros, ballads and many more. If ballroom is your groove, *Strictly* 

Ballroom is your disk. Costing £14.99 plus postage, the disk should be available as you read this.

- A Heavenly Music Productions PO Box 3175 Clatton, Essex CO15 2RP.
- 01255 821039.
- 01255 821039.
- f heavenly@ortiz.demon.co.uk
- W http://www.ortiz.demon.co.uk

# **VST**pays a **Visit**

he first opportunity to see the forthcoming v3.5 of Steinberg's *Cubase VST*, as well as *VST* for the PC platform, will be on a national tour, arranged by UK Steinberg distributors Harman, visiting many music stores over the next few months.

Cubase VST v3.5 for PowerMac offers a new routing system which will allow it to take full advantage of multiple-output PCI cards such as Korg's 12/12 and Event Electronics' Darla. Subgrouping of tracks will be possible, and auxiliary sends will be accessible to the outside world, allowing your own signal processors to be integrated into the VST environment. In addition, digital I/O allows users to back up to DAT with a new data-streaming feature. The program will include another two plug-ins (bringing the total to eight), namely Fuzz Box, a virtual distortion pedal, and Oscilloscope. The reverb algorithm has been improved, yet it requires less processing power than previously. The v3.5 upgrade will be free to registered v3.02 users.

The tour will also give you a

chance to check out three new optional plug-ins — Denoiser, Declicker and Loudness Maximizer (£299 each).

.....

Steinberg's Rebirth RB338 has also been exciting quite a bit of interest, and you'll be able to check this out on the tour: two virtual monosynths and a virtual drum machine that echo Roland's classic TB303 and TR808 are produced using 95% physical modelling technology. It's available for both PowerMac

22 Andertons Music, Guildford;
23 Music Connections, Bristol;
26 Guitar & Amp Centre,
Brighton; 27 The M Corporation,
Ringwood; June 2 Dawsons,
Warrington; 3 Sound Control,
Manchester; 4 Music
Connections, Leeds; 5
Millennium, Nottingham; 6
Academy of Sound, Sheffield; 10
Music Labs, London; 12 Turnkey,
London; August 30 Music
Village, Cambridge; September 6
Digital Village, Barnet; 13 Music



Steinberg's Rebirth RB338.

and Windows 95 systems, priced at £149. Steinberg's new X-Pose v1.1 visual sampler should also be worth a look.

Unfortunately, the tour will already be under way as this issue hits the streets, but here's the full list, in case you get hold of your SOS immediately it's out and are able to act quickly: May 20, The M Corporation, Nottingham; 21 Music Connections, Birmingham;

Village, Chadwell Heath; 20 Digital VIllage, Croydon.

Demos are due to take place twice a day; contact the Steinberg office at Harman Audio to confirm times and book a place.

- A Harman Audio, Borehamwood Industrial Park, Rowley Lane, Borehamwood, Herts, WD6 5PZ.
- 0181 207 5050.
- F 0181 207 4572.

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### **Main Dealers:**

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# shape of things to come

# Full-FAT Turnkey!

ertain rumours we've been hearing have beeen confirmed with the announcement from Turnkey that a vocoder has joined the Freeform Analog Technology FB383 Freebass synth module. The FAT

to the same standard as the Freebass, and has the same kind of accessible price tag — £299 including VAT.

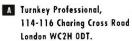
Turnkey have also just been appointed as the exclusive UK representatives for the FriendChip range

identical to the D4-2, apart from adding an SCMS copy processor.

- The SR44.1 (£149) converts any sample rate between 25kHz and 50kHz to 44.1kHz.
- The SRC/W (£249) features a sample-rate convertor with a word clock input, locking the digital audio to the word clock; internal oscillators then provide conversion to 32kHz.

44.1kHz or 48kHz. Other FriendChip products include the Super Clock Driver (£129) and

the Silent Audio Clock (£129), a choice of four different Alesis ADAT synchronisers/processors (ranging between £69 and £199), the ATB (Audio Time Base, £499), a rackmount time-base generator that provides a common time base for all digital audio equipment in audio, video or film production, and the Digi-Max and Digi-Max Pro 8x8 digital signal patchers.



1 0171 240 4036.

0171 379 0093.

turnkeypro@turnkey.demon.co.uk

W http://www.turnkey.uk.com

FriendChip Digi-Max.



#### FAT PCP330 Procoder.

PCP330 Procoder is a 1U, rackmounting vocoder with a range of useful features, including:

- An 11-band filter, with an individual control for each band.
- An onboard VCO generator, to act as the carrier if no external signal is available.
- · Mic and line-level inputs.
- An input for the external carrier signal and, unusually, an input allowing you to blend the original unvoiced signal with the filtered one.

The front of the unit is crammed with controls — 19 knobs in total — including input and carrier gain, VCO frequency, filter, modulator and carrier output level and gain controls for each filter band. The Procoder has been built

akewalk Pro Audio v6 should have

hit the streets by the time you read

this. The new package will provide

CFX — Cakewalk audio processing effects —

and offers integration with third-party audio

plug-ins will work from within Cakewalk in

plug-ins. CFX and ActiveMovie (DirectX)

real time, during playback or as off-line

Cakewalk's StudioWare, allowing users to

edits. The software will also feature

**Let them buy Cake(walk)** 

**Exclusive data** 

is a MIDI interface.

of digital devices. The FriendChip range has recently been expanded with the addition of the Digi-Tool series of <sup>1/</sup>3-rack digital processors. The range includes the following:

- The Op-Con format convertor (£69) provides conversion in both directions between optical and co-axial digital streams.
- The Pro-Con format convertor (£129) converts in both directions between AES/EBU and S/PDIF, including SCMS copy protection when in consumer mode.
- The D4-2 digital switcher (£99) provides one optical and three co-axial inputs, switched between two co-axial outputs.
- The D4-2 Copy Con (£129) is

Distribution's roadshow: the company are following up their successful demo days last year with another hi-tech mini-tour. The demo days will feature in-depth looks at Cakewalk Pro Audio v6, recording CDRs with Yamaha's

Cakewalk Pro Audio v6 is optimised for Windows 95, and won't run under Windows 3.1. A DX2 66 PC is recommended for MIDI use, with a minimum of 8Mb of RAM, 8Mb of hard disk space, and a Windows-compatible MIDI interface. Adding digital audio to the MIDI system requires a minimum of a Pentium 120 or better, 16Mb of RAM and 16Mb of hard disk space, plus 10Mb of hard disk space per minute per track of audio; a Windows-compatible soundcard is needed, as

If you want to experience Cakewalk Pro Audio v6 at first hand, check out Et Cetera Distribution's roadshow: the company are following up their successful demo days last year with another hi-tech mini-tour. The demo days will feature in-depth looks at Cakewalk Pro Audio v6, recording CDRs with Yamaha's CDR400, new Yamaha soundcards, and new Creamware TripleDAT upgrades, plus a look at the rest of Et Cetera's PC-based range of addons. You'll have to contact Et Cetera for details of venues, but the dates and locations are as follows: May 20 Manchester, June 11 London, 12 London, 17 Birmingham and 18 Nottingham.

- A Et Cetera Distribution, Valley House, 2 Bradwood Court, St Crispin Way, Haslingden, Lancs BB4 4PW.
- T 01706 228039.
- F 01706 222989.
- W http://www.etcetera.co.uk



Jyoti Mishra, aka White Town (of 'Your Women' fame), has recently upgraded his atudio. As readers of our April 1997 interview will know, the single and most of the subsequent album were recorded with a Tascam 688 cassette multitracker. However, Jyoti's success has meant a serious upgrade: he's now the owner of a DA38 digital 8-track. Says Jyoti: I could afford a 16-track, but I'm deliberately not going to get one, 'cause otherwise you start doing things like putting hi-hats on their own track."

01923 819630.

The Association of Professional Recording Services (APRS) — which out brates its 50th anniversary this year — has just published an 8-page brochure that spells out its services within the industry. The organisation has also produced a CD-ROM (for Miac or Windows platforms) which provides extensive information about the facilities of members' recording studios.

1 0118 975 6218. E info@aprs.co.uk

Antique synth specialists Music Control have been appointed as worldwide distributors for the Orgon Enigiser synth module, which we reviewed in SOS March 1997. Potential customers or stockists are welcome to make contact. Music Control report recent sales of hardware to the likes of William Orbit, Neneh Cherry, FX Rentals. Republics and Elastics.

- A Music Control, Chapel Mews, Crewe
  Road, Alsager, Stoke-on-Trent,
  Staffs ST7 2HA.
- 1 01717 294100. F 01717 297400.

Axis Audio Systems Ltd of Stockport have handed over UK distribution rights (to the newly formed Eclipse Marketing Group) to all the products previously imported by them — that is, Groove Tubes valve mics and studio equipment, and FAR (Fundamental Acoustic Research) monitors and acoustic products from Beiglum. The new arrangement has come about due to the increase in demand for both product lines, and Eclipse are far better placed to handle enquiries from dealers. Existing customers, trade and retail are reminded that product guarantees are not affected in any way.

A Eclipse Marketing Group, PO Box 28, Stockport SK1 3FD.

0161 612 8186.

0161 612 8186.

7 0181 789 8641 (South). F 0181 789 0409 (South).

# design custom interface panels for controlling a variety of studio hardware. Other new features include enhanced audio meters, integrated piano roll/controller view, monophonic audio-to-MIDI conversion, variable sampling rates up to 48kHz, enhanced MIDI and audio editing, percussion

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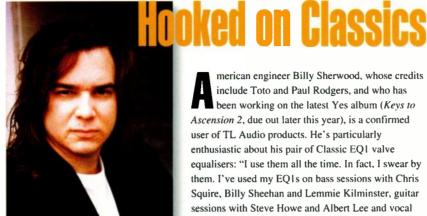
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# shape of things to come

SOS can be reached on CompuServe; our email address is 100517,1113. Our full Internet address is 100517.1113@compuserve.com.



merican engineer Billy Sherwood, whose credits include Toto and Paul Rodgers, and who has been working on the latest Yes album (Kevs to Ascension 2, due out later this year), is a confirmed user of TL Audio products. He's particularly enthusiastic about his pair of Classic EQ1 valve equalisers: "I use them all the time. In fact, I swear by them. I've used my EQ1s on bass sessions with Chris Squire, Billy Sheehan and Lemmie Kilminster, guitar sessions with Steve Howe and Albert Lee and vocal sessions with Jon Anderson. All the musicians were very pleased and I'm always happy with the end result."

If you want to get your hands on TL Audio processors, you can take advantage of the company's continuing in-store workshop schedule. This mag should be out in time for interested readers to make it to Axis Audio, Stockport on May 21, Sound Control, Newcastle on May 22 and The M Corporation on June 12. The demos of TL audio gear are given by none other than SOS's Demo Doctor, John Harris.

TL Audio have also launched their own web site: details of the entire range are easily accessible, together with reviews, a directory of distributors, and email access to technical support.

- TL Audio, Letchworth, Herts SG6 1AN.
- 01462 490600.
- 01462 490700.
- info@tlaudio.co.uk
- http://www.tlaudio.co.uk

# educationcorner

#### SAE TECHNOLOGY COLLEGE, LONDON

Billy Sherwood.

The SAE Technology College in London has recently undergone a major refurbishment. One major new studio room is equipped with an SSL 4000 desk, which, in conjunction with the established



Neve VR room, means that students can now be trained on two of the industry's leading consoles. The increased interest in multimedia — CD-ROM and Internet publishing — hasn't gone unnoticed at SAE; multimedia courses are now offered, in the new Mac-based multimedia facility. Internet

connections with other schools in the SAE group mean that students can work together on projects, no matter where they're

SAE took the opportunity presented by the grand opening of their newly enhanced London premises to announce a new working partnership with Steinberg, the German software company behind the Cubase family of MIDI and audio sequencers. This arrangement means that Steinberg's regional distributors will be working on a number of joint ventures with SAE colleges worldwide. Cubase and other Steinberg products will be used as the main sequencing and music production software on SAE courses. Steinberg are also planning to establish Steinberg Training Centres, with SAE as part of the program, aiming to offer approved training for Steinberg users.

- A SAE Technology College, Unite House, North Road, Islington, London N7 9DP.

- fuzzy@sael.demon.co.uk
- W http://www.saecollege.edu.au Harman Audio (for Steinberg) 0181 207 5050.
- 0171 609 2653. **II** 0171 609 6944.

### **HEAVENLY MUSIC**

Heavenly Music are to host a number of all-day MIDI/music seminars aimed at beginners, intermediate and advanced students. The seminars are to be presented in several parts, covering the use of MIDI sequencers, computers, sound sampling and manipulation, hard disk recording and editing, CD authoring and more. Each part will end with a Q&A discussion. Lunch and refreshments will also be included. The first seminar will be held in the quiet village surroundings of the scenic Lake View Bar, near Clacton in Essex. Contact Heavenly for dates and prices.

- Meavenly Music Productions, PO Box 3175 Clacton, Essex CO15 2RP.
- 01255 821039.
- 01255 821039.
- heavenly@ortiz.demon.co.uk
- W http://www.ortiz.demon.co.uk

#### THE MUSIC ROOM

The Music Room, based in Aberdeen, claims to be the first independent music teaching centre in Scotland. In addition to offering a wide range of tuition in traditional instruments, The Music Room plans to expand into computer-based music and

technology; at present they offer a course using Emagic's Logic on the Mac, with similar courses being offered on Atari ST and PC. The establishment stresses that all ages are catered for when it comes to education, and both beginners and experienced players can be accommodated. Instruments can be supplied for sale or lease, and a range of accessories and music books is also available.

- A The Music Room, 1st Floor, Alford House, 1 Alford Place, Aberdeen AB10 1YB.
- 01224 580058.
- 01224 595058.
- W http://www.asylumi.co.uk /mroom.html

#### **LONDON GUILDHALL** UNIVERSITY

London Guildhall University have announced a range of short courses in digital audio, at their recently established media centre. There are four courses dealing with audio for multimedia, two of which focus on SoundEdit 16 and Deck II software, while the other two feature Cubase VST. Courses are run during weekdays, costing £264.37 for the one-day course and £493.50 for the two-day course. A maximium of six

The Localizer from Zeep.com transforms Yamaha's 02R digital recording console (reviewed in SOS February 1996) into a fully

OZR completely Stere Stere Quarter Stere Completely Surrounded 4.

surround-sound capable, automated mixing system. Functioning as a plug-in for the 02R's Mac-based *Project Manager* software, the *Localizer* offers support for the most popular multichannel output formats (LCRS, 5.1

Stereo Surround, and Quad). Any of the 02R's 44 channels can be dynamically panned from a fast and intuitive user interface, using a mouse or trackball. Every surround sound pan movement generated in the Localizer can be recorded into the 02R's built-in automation

system. Not only can the Localizer

control any single channel in the 02R console, but stereo pairs of channels can also be panned, with extensive control over the behaviour of each channel. Multiple inputs can also be linked together, allowing up to four channels to be panned simultaneously.

Zeep.com are taking full advantage of the opportunities offered by the Internet in marketing the *Localizer*. Potential customers can download a full-featured demo version of the software from their web site; the demo version provides virtually every feature of the full software, although only one 02R channel can be controlled. If you like what you get, it can then be authorised instantly via the Internet, fax or telephone, to become a fully-working version at a cost of US\$295.

- 0033 1 43 57 86 11.
- F 0033 1 43 57 87 52.
- E info@zeep.com
- W http://www.zeep.com

students will be catered for at a time, and each will be given access to a Mac 8500AV computer, software and a Roland MIDI keyboard.

0171 729 9992.

http://www.lgu.ac.uk /newmedia

# ARNOLD & CARLTON

Arnold & Carlton College in Nottingham are setting up a national competition to find "Britain's top sequencer user". Judging will initially be by demo tape, before finalists are invited to Nottingham for a "keyboard to keyboard" contest, on July 25. Judges will include Caroline Teeling, head of A&R at Coalition Records, and producer and remixer William Orbit. Prizes will include Steinberg Cubase software. Entries can be in any style, but must "show off the strengths of sequencing" and be no longer than two minutes. Entrants needn't use Cubase for their entries, but an hour's training will be given to finalists on the college's Pentium PCs. Closing date for entries is June 20, and finalists will be notified by July 11. Cassettes must be clearly labelled, and an SSAE is

necessary for the return of tapes.

Cubase Competition, Arnold & Carlton College, Digby Avenue, Nottingham NG6 3DR.

......

- 1 0115 952 0052.
- F 0115 953 1210.

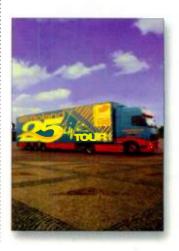
# MOVING MUSIC RESIDENTIAL COURSE

Moving Music Recording Service is putting on a residential recording course at the end of June. Taking place at the luxury Jarvis Hotel at Leyland, near Preston, over the weekend of June 21 and 22, the course is aimed at people who want to start their own studio, but are bewildered by the profusion of equipment and jargon. No prior knowledge is expected, and the weekend will start with demos, moving onto hands-on recording, mixing and effects usage sessions. Equipment used will include Alesis ADAT digital 8-track, various effects and processors, AKG mics, Spirit mixing desks and DAT mastering. The cost of the course is £192 residential or £155 non-residential

- A Simon Jones, Moving Music, 39 Homestead, Clayton Brook, Lancs PRS 8BB.
- 01772 335469.

# Rock & Roland

s part of their 25th anniversary celebrations, Roland are embarking on an extensive demo tour. Featuring products launched at the recent NAMM and Frankfurt music fairs, the tour will take a different form than previous Roland roadshows: a live five-piece band will put Roland's V-Drums, JP8000, VK7 organ, RD600 piano, GR30 guitar synth and V-Xpanded VS880 digital recorder through their paces. Attendees will also get the chance to win Roland hardware, with a nightly choice of an M-series module, Boss ME8, MC303 or



Oswestry's Systems Workshop has recently completed its move into new premises; the Old Smithy, built in 1798, has been carefully restored and turned into offices, warehouses and a commercial recording studio without losing any of the building's original features.

- Systems Workshop, The Old Smithy, Church Street, Oswestry, Shropshire SY11 2SP.
- T 01691 658550.
  F 01691 658549.

PDSL — Public Domain and
Shareware Library — has released
another CD-ROM in the Libris
Britannia series. Volume 6 is a
collection of more than 1800 varied
Public Domain and Freeware PC
software packages, priced at just
£10. The 200 categories of software
include music, printing, graphics,
word processing, ham radio. artificial
intelligence and DTP.

01892 663298.

Remixer/producer Paul Gotel -- as of writing, he's working on Michelle Gayle's next single and tracks by Eternal and Rozalla, with past efforts including Sunscreem, The Shamen and Dave Stewart - is the latest in a line of dance artists to be supplied with a Soundtracs Jade mixing desk by Larking Audio. Paul comments: "I looked at a number of desks which were similarly priced, but at the end of the day the Jade's solidity and reliability swung it for me. I find the sound much warmer than that of more expensive consoles, and this is ideal for my work, which is highlyoduced and multi-layered." Larking Audio 01234 772244.

XP10; a V-Xpanded V5880 will be the grand prize for the whole tour. Such is the scale of the roadshow that band and crew will be travelling and sleeping in a custom tour bus, with a separate truck hauling the sound, lighting and effects rigs.

The June tour runs as follows: 3, Swansea Taliesin Theatre; 5 Dublin Temple Bar Music Centre; 6 Belfast Lyric Theatre; 7 Glasgow Tramway; 8 Newcastle Eldon Leisure; 9 Manchester University Students Union; 10 Bristol University Victoria Rooms; 11 Guildford Civic Hall; 12 Sheffield Memorial Hall; and 13 Midlands Arts Centre (The Mac) Birmingham; 14 Playhouse Theatre Norwich. Each venue will feature a hands-on area, where you can try new products for yourself. Tickets for the Roland 25 and Live Tour 1997 are £2.50 each, and can be obtained from local box offices or by calling free on 0800 765263.

# shape of things to come

# The wages of **win**

ime now to catch up with some competition draws. First of all, back in April 1996, Roland were kind enough to assist us in offering a JV1080 synth module, plus expansion card; Horsham's Robert Boole was the lucky reader, who can be seen next to his rack with pointy things showing us exactly where the JV1080 lives.

Let's move forward to August



Robert Boole.

1996, when Spirit offered a Folio SX mixer (plus VM01 and IM01 mics). Dan Rayner, of Chelmsford, who had run out of input channels on his main desk, is finding that his Folio SX prize is coming in very handy. He and his brother have a soundtrack company, and were recently using the Folio SX while recording a proposal for a



Dan Rayner.



Matt Pelling of Time & Space (left) with winner John Wilson (right).

BBC film. Fingers crossed, guys. More sample CDs than most

of us will own in our lifetime were won by John Wilson of Essex in our massive Time & Space sample CD giveaway, which we ran in October 1996. T&S's Matt Pelling (on the left) can be seen presenting over £3000-worth of CDs to John in the picture. And of course, T&S also offered a pair of runner up prizes: Carl MacCallum of London scored 20 Creative Essentials CDs, plus a pair of Zero-G titles, and Mike Murphy of Sussex landed 10 Creative Essentials CDs and one Zero-G CD as a third prize.

Last of all, Yamaha supplied a brand new MD4 MiniDisc multitracker in our December



Rosaleen Donnan.

1996 competition, and the winner was Rosaleen Donnan of Middlesex — she's already done a lot of recording with her new multitrack.

Thanks to Roland, Spirit, Time & Space and Yamaha for donating the prizes, and to the many readers who entered. Keep trying!

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SOUNDLINK 168RC



# ALL DIGITAL EIGHT BUSS MIXER

Over the last few years, Korg's SoundLink digital recording and editing system has gained wide respect in the post production and broadcast areas, with it's combination of flexibility and excellent sound quality. Using the experience they have gained with this product, they have now produced the SoundLink 168RC digital mixing console, which offers unprecedented facilities in an amazingly compact format.

144444444 There are 16 digital inputs and outputs in the ADAT optical format, allowing connection not only to ADAT's themselves, but also to the vast range of other equipment now supporting the format, as well as eight analogue mic / line inputs, two of which have phantom power. The master outputs are also available as coaxial SPDIF. For those of you who would prefer more analogue connections, Korg are also producing high quality external 8 channel A/D and D/A convertors, again using the ADAT format. And if all this isn't enough, you can cascade multiple 168RC's together for as many channels as you like, also leaving plenty of room for future expansion.

Internally, the 168RC has 8 subgroups, 3 band EQ, each of which is sweepable, and with 'Q' on the mid band, two external and two internal auxiliary sends. The

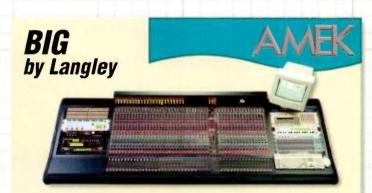
- 24 Input 8 Buss Digital Mixer
- Snapshot & Full Dynamic Automation
- 2 Built In Effects Processors
- 16 Channels of Digital Ins & Outs
- Optional Outboard A/D & D/A Convertors

internal aux sends are routed to two high quality effects processors with some of the finest algorithms around, including reverb, delay, distortion,

pitch shift, dynamics processing and even speaker simulation. For automation, up to 100 'scenes' can be stored internally, taking a snapshot of every single parameter of the desk, which can then be recalled at the touch of the button, and in addition to this all parameters can be dynamically controlled in real time via MIDI. All in all, a tour de force product with far too many features to detail here. Call now for a demo!







As Amek dealers we now have on demonstration a fortyfour input Big by Langley console.

The Big's SuperTrue Version 3.1 VCA automation compatible with all other Amek desks up to the flagship

Neve 9098 series console. With the Virtual Dynamics onscreen processing plus Rupert Neve voice recall, this is a console that is packed with facilities, over and above what it

> offers as a fully featured inline console: 4 band EQ, 8 auxiliaries, 12 bus, 24 outputs available in frame sizes from

28 to 44 with or without bantam patchbay. Call for an appointment.

- 4 band EQ. 8 Auxiliaries
- SuperTrue V3.1 VCA Automation
- Virtual Dynamics on-screen editing
- Unique Rupert Neve Voice Recall
- 12 bus, 24 output
- Frame sizes from 28 to 44 inputs



# OW

# 12 CHANNELS DA20 DAT MALE FOR UNDER A STATE OF THE PROPERTY OF **GRAND?**

The card that everyone's been waiting for! Now you can use Cubase VST (amongst others), and have multiple inputs and outputs, without spending a fortune!

But the PCI 1212I/O is far more than just a soundcard - it can become the very heart of your studio. There are stereo analogue ins and outs featuring 20 bit delta-sigma ADC's and 18 bit linear DAC's, SPDIF in and out, and 8 more digital ins and outs in standard ADAT format. The best part is that all these connections can be used independently giving you a total of 12 inputs and outputs! What's more, word clock and ADAT 9 pin connectors are provided, allowing sample accurate synchronisation with ADAT's and many other digital devices.

If you're not a MIDI user, there's not even any need to buy any software, as the 1212I/O comes bundled with the highly capable Deck II. Fully featured with multitrack recording and extensive cut and paste editing facilities, Deck can sync to almost anything, including Quick Time movies and standard MIDI files, does file format conversion and supports plug ins.

Call for more details or to arrange a demo - this card could change your whole way of working!

- 12 Ins, 12 Outs and Digital Sync on 1 Card
- ADAT Format Ins & Outs
- Compatible With Cubase VST
- Comes with Deck II Software Bundled Free

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102mkii & 202mkii Tape Decks

the 102 MkII is a single deck unit, the 202 MkII is a double deck, which records on both decks. Limited stocks only at these prices, ideal for mastering and duplication.

E269

#### PCM-R500 DAT RECORDER

Sony lead the way in the DAT market once again with the new PCM-R500. A professional machine through and through, it features a four motor direct drive transport, jog shuttle wheel for fast precise transport control, balanced ins and outs, AES/EBU digital connections and outs, AES/EBU digital connections and control to the professional designs of the Market and Connections and Co tions, and Sony's proprietry Super Bit Mapping system, to get th maximum possible quality out of the unit's ADC's. Unb

### DTC-ZE700 DAT RECORDER

We have exclusively secured a small supply of the Sony DTCZE700 to bring you the cheap-est full size DAT machine on the market, but this is not at the expense of features: SPDIF coaxial input and optical in and out, digital and

analog recording at all three sampling rates (32 kHz, 44.1 kHz, 48 kHz), as well as all the usual ID functions and a full function infra red remote control Also features Sony's exclusive Super filt Mapping technology for incredible recording quality. Another DAT exclusive from Turnkey!

MDS-JE500 MINIDISC RECORDER

Although DCC looks to have died as a format Annough D.C. I look to have need as a format now, Mimidsc is thriving, and rapidly becoming a standard in radio stations and other institu-tions around the world. With sound quality almost as good as DAT, and a range of editing features like Combine, Move, and Auto Cut. It choice for mastering on a budget. If MiniDisc is to hotter which and the myder than the MINIS IS. no better value on the market than the MDS-JE500,

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ut, jog dial and full function remote control as standard NTDR30 PORTABLE VERSION ALSO AVAILABLE only £399

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MT4X MULTI-TRACKER



turnkey

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DIGITAL

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# ICES GUARAN



THE TAHITI IS DEAD -LONG LIVE THE PINNACLE!

U.S. company Turtle Beach have long led the way in the Soundcard business, and their current range caters for the needs of everyone from the beginner to the serious PC music producer.

The Turtle Beach Multisound series has long been considered the "Rolls Royce" of sound cards, from the very first Multisound in 1993, through to the highly respected Tahiti card, and now - the Multisound Pinnacle.

At £479.00 (including VAT), the Pinnacle may not seem like good value at first, but consider that a Tahiti with a synth daughter board would have been over £400, and that the Pinnacle offers SampleStore, the technology which lets you treat your own recorded samples as MIDI instruments - the advantage is clear.

Digital Orchestrator is fast becoming the sequencer of choice around the £100 mark, since it isn't a cut-down sequencer. A CD-ROM version is included free!

Windows Plug 'n' Play means that installation problems could be a thing of the past, and the optional S/PDIF board (£99) makes digital connection to your CD or DAT possible at an unheard-of price.

- 20 BIT DAC / ADC
- Enhanced or Std Duplex
- Sample Store (up to 48 Meg)
- Kurzweil Wavetable synth











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# DD8 HD MULTI-TRACK RECORDER

# DR-16 HD MULTI-TRACK RECORDER

RRP £4199

CALL TURNKEY PROFESSIONAL ON 0171 240 4036

# 080 HD RECORDER

# 03D Digital Console Like the 02R, the 03D is a fully-auto-

mated digital mixing console set to have a large impact on the mixing market. With 26-inputs & 18-outputs the console features fast 32-bit internal digital audio processing, versatile analog and digital I/O configuration, new 32-bit onboard multieffects processors with freeze (sampling) and guitar amp simulation effects, motorised faders,

fader and mute grouping, surround sound mixing, onboard automation, MIDI remote capabilities and much more. Call now for a Turnkey Professiona brochure and a free trial!

# **02R** Digital Console

sole with total automation and moving faders. 4 band parametric eq and dynamics for every input and 2 comprehensive on-board fx processors with a range of reverbs, delays and other standard fx. Optional inter-face cards allow full digital connection of ADAT, T-DIF and AES/EBU formats for integration of MTR and hard disk systems

The fully digital 40 input 8 bus con-**EPOA** 

# PROMIX 01 Digital Mixer



DIGITAL FRIEND-CHIP **PROBLEM** 

SOLVERS

In today's increasingly digital world, many people are still using their equipment's analogue ins and outs, because of the difficulty of interconnection and synchronisation. Friend Chip's new sensibly priced dig-ital patchbays and 'black box' problem solvers end the misery and make the digital studio a reality! The DigiMax digital patchbay (£299) has 8 inputs and outputs (2 each on optical), can accept both AES/EBU and SPDIF signals, and is MIDI controllable. An XLR version (£499) is also available for greater AES/EBU reliability. The Audio Time Base (£499) is a Iu 19" rack which acts as a master slock source for your studio, outputting word clock, Digidesign Super Clock and SPDIE. The master clock can be internally generated, or a reference taken from mains, SPDIF word clock, Super Clock, video or LTC (SMPTE). Lockup from timecode is in around I second!

# Also in the reneel

Also in the range:	
OP-COM: optical to co-aixal and vice versa	269
PRO-CON: SPDIF to AES'EBU and vice versa with SCM5 stripping	£129
0 4-2 COPY CON: switcher with 1 optical & 3 co ax ins, 2 co ax outs and SCMS significant	€99
SR44.1; seems almost any incoming sample rate to 44 limits (idea, for ProMod) and own 44 li DAT	£149
SROW: rate conversion to 32, 44 I. 45.Hz. will fack to external world _fook	£249
Super Clack Driver: converts Dig Design superclack to word clack and vice ve sa. 3 outputs	£129
Silent Audio Clock; converts Super Clock to word clock and vice verse with synchronisus SPDIF se	£129
ADAT Audio Clock: ADAT 9 Pm to word clock, Super Clock and SPDIF clock consertor	£129
ADAT Word Clock Synchroniser: ADAT 9 Pri to word loci an Super Clock conversor also	MTC
(synchronise your sequencer) with MIDI merg	£199
ADAT SPOIF Synchroniser: as above but with converts only to SPOIF £199 FRO	м
ABAT MIDI Machine Control: MIDI to ADAT 9 Pin convictor with MIDI thru (add	
to all of the above for full remote ADAT control from your sequencing £69	9

DMT-8 VL GC 4 TRACK DIGITAL MULTITRACKER



# PE'S L OWES



disgruntled staff from some of the major Japanese manufacturers. Their sole aim was to produce innovative new effects processors, that represent the best value for money on the market. Have they achieved that aim? We certainly think so!

1202 TRUE STEREO FX PROCESSOR

• 16 Bit 44.1kHz True Stereo FX Units

Vocoder Effect and Mic Input on 1204

Great Quality Reverb & Multi FX

TO THE MOON!

OUAL COMPRESSOR LIMITER GATE



266 DUAL COMPRESSOR GATE

0 0 0 0 0 0 0 0 0 0 0 0 0



COMPRESSOR/LIMITER

BUY THE 163A & 263A AND GET A FREE UNIVERSAL RACK TRAY

VTP-1 DIGITAL MIC PRE

**NEW BOXED** 

VCS1 COMPRESSOR

CALL TURNKEY PROFESSIONAL ON 0171 24C 403

286A CHANNEL STRIP

1*63A* 

263A

DE-ESSER/COMPRESSOR

The 1202 is a full 19" rack unit, featuring true stereo 16 bit processing at 44.1 kHz. The quality of the reverb alone would

Over 500 Different Presets

• Free Rack Unit & Cables Only

INC FREE 10u DESKTOP RACK & 4x 3m JACK LEADS

at Turnkey!

**1204** TRUE STEREO FX PROCESSOR The 1204 builds on the success of the 1202 by adding MIDI control, 100 extra user presets for storing your own edits, and

make it worth the price, but there's lots more: two simultaneous effects are offered, including

delay, chorus, flanging, tremolo and pitch shifting, as well as various reverb types including reverse. If one of the 512 presets doesn't suit exactly then using the two parameter knobs will allow you to tweak the program until it does, and the

addition of 2 band EQ will further tailor the sound to your mix.

a two digit LED display. On top of this, there is also a rotary speaker effect, and a vocoder - a front panel mic input is even provided for quick and easy setup. RRP

Nothing else touches these units at the price - check one out today!

INC FREE 10u DESKTOP RACK & 4x 3m JACK LEADS







#### GX2 & MX2 GATE & MIC PRE

More incredible bargains fr Turnkey! LA have recently had a slight revamp of their

and outputs allow external triggering for gate effects, and ev en use of the filters as EQ.





# STUDIO QUAD 4 CH. STUDIO FX PROCESSOR

*PCP330* 

:IDigilech

# 

Freeform Analog Technologies FreeBass is already one of the most successful sound modules of the year, and now following hot on its heals comes the PCP330 Procoder. One of the most asked questions in the industry must be "Why doesn't Procoder. Une of the most asked questions in the industry must be "Why doesn't amyone make a vocoder anyoner" - well here it is, with a fantsatk feature list, great sound quality and a down to earth price. The carrier can be either an internal VCO or external line input, whilst both line and mic inputs are given for the modulator signal. Eleven filter bands each have their own level knob on the front panel giving true hands on control of your sound, and the sibilance (unvoiced) control also has an external input if required. The final output can contain any mix of modulator, carrier, vocoded signal and a special filtered version of the lightly special speci

500000

0000

# GUARAN



If you've previously used valve equipment, you'll be well aware of the magical quality that tube circuitry produces, and if you haven't used it - try it now! Many manufacturers use the word valve as an excuse to charge exhorbitant prices for their product, but not Bellari, and our factory direct exclusive makes the range unbelievable value for money!

# PREMIUM **QUALITY** *VALVE* OUTBOARD **EQUIPMENT**

The RP583 Studio Tube Compressor / Limiter has become an instant hit, Studio offering as it does two channels (stereo linkable) of some of the finest sounding compression money can buy, with a smooth and natural compression charac- NEW PRODUCT

teristic. Ratio is continuously variable from 2:1 to infinity, and there are separate controls for attack, release, threshold and make-up gain. Dual VU metering is provided, as well as jack and balanced XLR ins and outs, and sidechain access is fully catered for. Ideal for a variety of instruments, vocals and complete mixes.





### RP533 Studio Tube Multi-Processor

Whilst mixers these days are of a better quality than they used to be, to get the best possible signal to tape or disk, you can't beat a dedicated unit - and for value for money, you can't beat the Bellari RP533 Studio Tube Multi-

Processor. The all tube 2u box, features a premium quality transformer balanced mic pre amp with switchable 30dB pad, phase reverse and true 48V phantom power. The compressor has all the features of the RP583, and the NEW PRODUCT exciter section adds a wonderful sheen to virtually any sound, as well as beefing up the bottom end. Each stage has it's own bypass switch, sidechain access is provided, and the large VU meter can monitor input, output, or gain reduction. No serious recordist should be without one!

# RP520 Studio Mic Pre Amp

A true dual tube mic pre amp at a bargain price, with tubes used at all the crucial gain stages, not just strapped across the outputs. Features include phase NEW PRODUCT reverse, input and output pads, separate

gain and output level controls, true 48v phantom power, jack and XLR ouputs and dual VU meters. Bypass you desks mic amps and feel the quality!

FACTORY DIRECT

£129

RRP £199

3625W RRP £269

# RP562 Stereo Exciter

Traditional exciters usually do a good job of brightening up the extreme top end, but can often leave NEW PRODUCT

you with a rather harsh signal lower down. The incredible warmth of the Bellari Sonic Exciter ends all that, providing a sparkling top end with no harshness, and a huge bottom end to boot. The stereo unit has both lack and XLR connectors, dual VU meters, and even a separate subwoofer output with it's own cutoff and level controls. superb sound quality at a fraction of the price of similar devices.

# Other processors in the Bellari range:

362 Sonic Maximizer

MP110 Direct Drive Mic Pre Amp sound alone single channel tube mic pre amp . . . . .

E269

# PME8 PARAMETRIC EQ RRP \$399

# 4 POLE waldorf

X POLE FILTER

#### **OUTBOARD** NEW, USED & EX DEMO Behringer EX2100J . £119 Behringer EX3100 . . £189 TLA EQ1. TLA PA2 BOSS GX700 ..... £369 APHEX-106..... £339 Yamaha PRO3R

362NR Sonic Maximizer + Noise Reduction

362SW Sonic Maximizer + Sub Woofer Control

# GREEN RANGE



Focusrite have long represented the pinnacle of audio achievement, but sadly their products have always been out of reach for most of us. Now, specifically with

the high quality project studio in mind, they have designed the Green range of processors. The first 5 products are:

The Focus - 4 band parametric EQ with fil-

The Dual Mic Pre - an audiophile quality dual channel mic preamp.

The Voicebox - this combines a mic/instrument preamp, compressor, de-esser and parametric EQ in a single unit - the ultimate signal path for digital recording!

The Compressor - highly versatile compressor with hard & soft knee types, separate limiter and gate and built-in sidechain filters.

The Channel Strip - similar to the Voicebox. but also featuring line level inputs and extra EO.

All 5 are on permanent demo at Turnkey.

TL Audio

CALL TURNKEY PROFESSIONAL ON 0171 240 40:

### EQ1 Parametric EQ

TLA's range of outboard must be the best selling valve gear sound, combined with the low

performance transformerless pre amp is followed by four-stages per channel which provide a fine and gradual over ncy response wh

# PCM80 EFFECTS PROCESSOR



# ALEX EFFECTS PROCESSOR

London WC2H ODT Email sales@turnkey.demon.co.uk Web site: http://www

# teinberg

WaveLab is a native 32-bit Windows 95/NT application which makes full use of the latest developments in 32 bit technology. It is the fastest Audio Editor currently available on the market, and can utilise any Windows compatible Sound Card as well as the Digidesign Session 8 PC. An integrated Audio database for managing audio files on multiple media is included, and it is also the first program on the PC that incorporates

high-quality Time Stretching/Pitch Shifting using the same algorithms as the famous Steinberg Timebandit program on the Mac. True multitasking is supported - you can edit, process, undo/redo, load and save, all while the file is being played back!

WaveLab is the only Audio editor that provides unlimited and instantaneous Undo and Redo, and basic editing operations like copy/paste are equally fast, regardless of whether the file contains five seconds or one hour of audio! Other features include the ability to simultaneously process an unlimited number of files (batch processing) and advanced Spectrum analysis time stretching, pitch correction, harmoniser, hi-fi chorus, parametric equaliser,

**PLUG-IN** ARCHITECTURE PC WAVE FNITNR

dynamics processor, markers, advanced zooming, real time scrolling on playback, Windows 95 context help in all dialogs, and even "Tips of the day" on startup! All in all, there is no finer wave editing program available for the PC, and the plug-in architecture means the program is totally open ended, allowing enormous scope for future expansion. Get £50 off the price of any soundcard when purchased with Wavelab. Another Turnkey megadeal!

• 32 bit Windows 95 Native Application



True Multitasking Environment

RRP

# LOMEGA ZIP REMOVABLE DRIVE There was a time when hard

disks were a luxury for sampler owners, but with the lomega Zip Drive, this has become a thing of the past. For under £150 the Zip drive stores 100Mb (94Mb formatted) on each cartridge. A must for anyone with more than 2 meg of RAM!

# SIBELIUS-7 TOP-END NOTATION V3.0

#### THE ULTIMATE IN STOCK & IN MIDI ACCESSORIES

Twiddly Bits is a large range of instrument-specific sound bites - a guitar strum, a flute 'flutter,' a drum roll, a boss guitar slide etc. -saved as data that can be inserted into a MIDIIcomputer sequencer triggering any MIDI sound source.

#### MUSICTIME NOTATION ARRANGER

NEW DELUXE VERSION

#### CAKEWALKPRO v5 TRACK MIDI SEQUENCER



BAND-IN-A-BOX INTELLIGENT ARRANGER v7.0

LOGIC AUDIO "DISCOVERY

DIGITAL AUDIO SEQUENCER

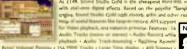


DIGITAL ORCHESTRATOR PLUS DIGITAL AUDIO SEQUENCER



# SOUND STUDIO GOLD





£149

# **MIDI INTERFACES**



# 16 BIT DUPLEX



# MIDIQUEST 6.0



Sound Quest

# FOR PC COMPATIBLES



CUBASE VST MAC

Audiowerk8

# RICES GUARANI



# Audiowerk8

• 2 Ins, 8 Outs and Digital I/O on 1 Card

Optional Multichannel Digital Interfaces

Comes with VMR Software Bundled Free

get Emagic's new Virtual Multitrack Recorder software thrown in!

Use 2 Cards in the Same Computer

Every now and again products like Tascam's first portastudio and the Alesis ADAT come along and revolutionise the recording market.

HARD DISK RECORDING BREAK-THROUGH

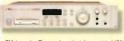
S3000XL INC FREE ZIP



Ing workhorse samplers to the studio market with this sturdy offering. The compact 2U rackmount machine features 32 note tures 32 note MEW BOXED.

ion abilities including digital do and an extra filter us and get 16 meg and a ZIP drive free!

# \$2000 ENTRY LEVEL SAMPLER



Akai's entry level studio sampler, the 52000 doesn't skimp on features: 32 note polyphony, low pass resonant fil-ters, 2 meg RAM expandable to 32 meg, optional 8 output board and quad

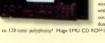
RRP £989

We endeavor to keep all AKAI expansion boards in stock at all ti for the more obscure and discontinued models. Here are som to get the maximum out of your sampler or hard disk recorder

IDEOOL	e districts at dig tild till 32000	5233
1B304F	2nd firm board for a see \$3000XL	€349
EB16	FX board - L7age L3000XL	
EXM3008	8 meg impension for \$2830 53000 53200 CD3000	€549
EXM008	8 mer expansion 5 ir \$1000 1100	€499
IBM208P	8 outputs & del lo for MPC2000	£249
1B807V	minister output board for DR8 DR16	€499
IB804AEX	8 in 16 out ADAT inverface for DR16	£399
IB803M	MIDI interface for DR8/DR16/DD8	£199
1B802T	SMPTE board for DR8 DR16 DD8	€249

# E6400

NEW BOXED



#### ESI32 + SCSI SAMPLER WITH V2.0 SOFTWARE

# Virtual Multitrack Recorder

channel computer hard disk

recording within reach of everyone.

This is just the start of the good news though - the Audiowerk 8 integrates seamlessly with Logic Audio on either platform, you can use 2 cards in the same computer to give 24 track recording with 16 outputs, and a daughter board socket will allow future options like an ADAT 8 channel optical digital i/o, or 4 extra

stereo SPDIF outs! The card is only 7" long, so it fits in virtually any machine, and uses state of the art bitstream convertors for pristine sound quality. The card is on permanent demonstration at Turnkey, and the first 50 purchasers will receive a free loom for connection to your mixing desk. Call us now!

EIGHT SPEED CO-ROM DRIVE

CLUBMAC

NEW **PRODUCT** INC FREE 8

WAY LOOM

(I) PIONEER

£189

#### MPC 2000 INC FREE & MB RAM SAMPLING DRUM MACHINE

# REMIX 16

# INC FREE HEADPHONES



The ultimate performance sampler/mixer

£62

£1199

AUDIOMEDIA II

STEREO HD RECORDING CARD

MU10

Emagic's new

Audiowerk 8 is now set to bring multi-

RRP £199

£189

digidesign

YAMAHA

For an incredible £499 including VAT, you can now buy a PCI card for Mac or PC, which

gives 2 analog inputs, 8 analog outputs, and SPDIF digi I/O as standard! You even

#### DJ-70 MkII SAMPLING WORKSTATION

Him to en ei in ... RRP £1699

#### *SU10* SAMPLING UNIT



### ALSO AVAILABLE WITH 4 OCTAVE MIDI KEYBOARD only £34

# DIGITAL ONLY CardD BIGITAL AUDIO LABS

£1199

COMPUTER NEW, USED & EX DEMO Turtle Beach Fiji ... £329 Turtle Beach TROPEZ£149

### SAMPLING NEW, USED & EX DEMO Emu ESI32 SCSI ... £859

#### SAMPLE LIBRARIES





# IROP LOW



# BLUE MEANIE **INVASION!**

# A3000 SAMPLER



Arriving any time now, Yamaha's A3000 is their first entry into the sampling market for almost ten years, but this break has allowed them to take a good look at the

market and come up with a highly competitive product. 64 note polyphony, four outputs (expandable to twelve plus digi i/o), .WAV file compatibility and memory expandable up to 128 meg, means that the A3000 must be taken seriously at this price. Call for full details or a demo.

- 64 Note Polyphony as Standard
- 4 Outputs Expandable to 10 + digi i/o
- Reads Akai and .WAV Format Files
- Memory Expandable to 128 meg

# **NEW PRODUCT**

**NEW PRODUCT** 

# BUASIMIDI

# TECHNOX SOUND MODULE

Trailing X than Quasimidi's Technox. All sounds can be edited via the LCD display and

own, and the superb arpeggiator means you'll never get bored!

Call for a free demo CD. Money back within 7 days if not

# **RAVE-O-LUTION 309** DANCE WORKSTATION

to date. Imagine the raw powerful sound quality of Roland's TR909 and TB303, give them 50 times as many sounds, add re nd step-time sequencer, 2 on board effects proces sors & EQ, optional rack ears, typical German build quality

# **OUASAR** SOUND MODULE

stormer! The simultaneous use of multiple types of synthesis including Analog Emulation and FM, give this module a huge range of sounds from standard General MIDI tones through their famous dance sounds (including 909 etc) incredible special effects. Huge LCD and dual digit LED displays in conjunction

with a plethoria of front panel knobs and buttoris make use of the ing facilities oldfids play. 2 MID Imputs, 6 audio outputs, alphagis 28 superb onboard effects and arpegitoris. Two sound expansion are also available to turn it into the ultimate dancefloor machine Hardcore and Techno, both only £169. Sorry, no demo CD avail word for it, it Money back within 7 days if not satisfied (ask for conditions)

JV1080



4124 straightforward operation combined

e same way as the \$1000 became the industry standard sampler, Roland's IV 1080 has become

But expandability of the machine is where it really comes in

but expandations of the national state whether it even correst mover 10 different expansion boards which can be fitted flup to at once), each one with as much ROM as the original machine covering sounds from Vintage to Orchestral and Dance to World. At Turnkey we have the full range in stock, as well as a

# JV2080 SYNTH MODULE



The Roland JV1080 has been become the industry standard sound source for hor studios and professionals alike. It's superb sound quality, 64 note polyphony and expandability were a winning combination

expandability were a winning combination.

Now the new JV2080 builds on that success by offering a giant editing screen, three independent effects processors as well as reverb / delay and chorus, and room for 8 of Roland's renowned expansion boards - the potential is virtually limitedsy ludging by the success of the JV1080, these will be in strong demand - call us now! Turnkey price includes free NEW PRODUCT

sound expansion board of your choice

# AN1X VIRTUAL ANALOGUE SYNTH



The analogue emulation market is hotting up with this exciting new release from Yamaha. Building on the incredible success of the CSIx, the ANIx is built on the same

design principles, but uses technology from the groundbreaking VL range to produce stunning virtual analogue sounds. With a 5 octave aftertouch sensitive keyboard, 10 note polyphony, 8 knobs and a ribbon controller, and built in effects, the ANIx is sure to be an instant hit. Demand will far outstrip supply - get your order in early!

- Amazing Low Price for Polyphonic Modelling
- 10 Note Polyphony
- Front Panel Knobs all Send MIDI Controllers
- 5 Octave Velocity & Aftertouch Keyboard



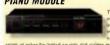
# PLANET PHATT SYNTH MODULE

RRP £869 £749

### CARNAVAL SYNTH MODULE

£749

#### MICRO PIANO PIANO MODULE



### MATRIX 1000 SYNTH MODULE



£399

£369

# MSE1 & MVE1 SOUND MODULES

RRP £469 RRP £469

SOUND MODULES NEW, USED & EX DEMO

*JP8000* 

# PRICES GUARANI



ANALOG MODELLING SYNTH

# STRIKES BACK!

So far, modelling technology has been used to recreate acoustic timbres, but Roland are the first to specifically model true analog synthesis with their new Analog Modelling technology, and believe us, the results are spectacular!



Analog Modelling not only produces superb emulations of the great synths of the 60's and 70's, but also totally unique timbres never before heard. Realtime control is excellent, and all knobs, sliders, buttons and the ribbon controller send out Continuous Controller messages. For instant creativity, a powerful arpeggiator and real time phrase synthesiser are included, which can be easily synchronised to an external MIDI clock. This is very likely to be the hottest synth of '97 - order now!

- Superb New Analog Modelling Synthesis
- Unrivalled Realtime Control
- Highest knob Count Around for Easy Programming

III HAMMOND

Built in Arpeggiator and Realtime Phrase Synth

**NEW PRODUCT** 

novation

INC FREE F.A.T. FREEBASS

# FREEBASS TB303 CLONE

If you need the unique sound of an original Bass Line™, but can't afford the inflated prices that go with it, then Freeform Analog Technologies' Freebass is the product for you!

# 200 000000

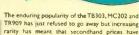
It's the only authentic sounding TB303 ™ clone on the market, and it's got MIDI! IU rack with I knob per function, all the sound controls of the 303 are duplicated, Cutoff, Resonance, Envelope Mod, Accent, Tune and Decay. Waveform is continuously variable from square wave to sawtooth, and an auto tune button is included to retune the oscil-

On top of this, there's an audio input to the filter stage, allowing you to process any external signal with the FB383's powerful synthesis The ultimate analog bass machine - this incredible price means these will fly out of the door! Another Turnkey exclusive

- Superb Sounding TB303™ Clone
- Fraction of the Price of an Original
- External Input to the Filter
- Exclusively Available at Turnkey



# MC-303 GROOVEBOX





The enduring popularity of the TB303, MC202 and TR909 has just refused to go away but increasing rarity has meant that secondhand prices have been driven up to ridiculous levels. Roland, the creators of these machines, now bring you the MC303 Groovebox which combines all their classic drain machine sounds, a tep time / real time sequencer, 303 'acid' bass sounds complete with whole here of other survey.

front panel filter controls and a whole host of other uscable sounds (it's 16 part multi-timbrall). This box is an all in one dance music solution, and believe us, it sounds the business! Initial supplies will be very limited, order now to avoid disappointment!

■ waldor!

ALSO AVAILABLE WITH MK149 MIDI KEYBOARD only \$599

#### MICROWAVE II WAVETABLE SYNTHESISER

The Microwave II

combines all the famous features of the original Microwave together with today's requirements for user

**PULSE** 

MONO SYNTH



requirements for user interface, signal to noise ratio and sonic purity, it's simplicity of use is obvious with the use of just 5 rotary dials and a 2x40 character back lit LCD. On the back the Microwave II has 2 fully modulatable stereo outputs (configurable as 4 monos with panning). Tone generation comes from a powerful DSP generating wavetables, the 10 voices each feature two oscilators, 2 wave generating wavetables, 3 mixer, two filters in series, a stereo amplifier, four NEW PRODUCT

envelopes. 2 LFOs, a modulation matrix with 16 slots and se eral 'modifiers', more than enough to keep even demanding programmer satisfied!

£499

2699

NEW LOW PRICE

🕏 waldor



RRP £459

ALESIS SR-16

RRP £299

### BASS STATION BUDGET MONO SYNTH

Drum Station DRUM MODULE

...........

## DM5 DRUM MODULE

RRP £429

MICROWAVE

PROGRAMMER

**PULSE PLUS** 



379 0083 114 Charing Cross Road London WC2H ODT E Trail: sales@tvrukey.demov.co.uk

TURNKEY EXCLUSIVES

waldorf

# Casio CTK-650 GENERAL MIDI KEYBOARD



A 61 key, touch sensitive, General MIDI keyboard at an unbelievable price. This is an ideal instrument for professionals and beginners alike as it is extremely easy to use, but don't think that means it's not powerful. The sound quality is excellent and the auto-accompaniments, which can be transmitted via MIDI, are superb. Add to all this 10 digital effects, four sound/control pads, layered or split keyboard modes, recording and four registration memories and you've got the best value for money keyboard on the market. And we've got it at an RRP 2209 unbelievable price. Another Turnkey exclusive! £149 Runs from batteries or optional PSU.

SAVE OVER 50% ON PRICE

Synthesiser Red Atthough Waldorf are not with associated Focusrite in any way We now offer a new custom range of Wave synthesisers with 76-note

keyboards in four colour options - standard blue, red (as shown), Sahara and black. Totally unique sound.

- The World's Most Powerful and Unique Synthesiser
- Unrivalled Programmability and Realtime Control
- Variety of Options for Colour, Keyboard Size and Polyphony

PRICES FROM £6299

CALL TURNIEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

K5000s ADDITIVE SYNTH

In this age of many 'soundable' sample + synth keyboards, it's not often you get something coming along with a completely fresh approach. Kawai have dared to be different though with the KS000S, and remtroduced additive synthesis. This has been tried in the past, but the limited DSP gower has severely circulated the possible results. The only method of synthesis that can theoretically produce any possible sound, additive has a pallette which rames from superh acoustic simulation, to timbres quite unlike those offered by any other synth. The inclusion of a traditional synthesis section compotes with an incred-

super to accusion, a tradicional synthesis section complete with an incredibly powerful filter means it's also a cinch to create fantastic analysis escuring and a generous complement of knobs which all send MIDI controllers add to the ease of use. Far too many features to mention here - call for more information or for a demo.

RACK VERSION ALSO AVAILABLE only

*OS6* **EXPANDABLE SYNTH** 



Expandable Synthesiser starts with a powerful 64 Voice synth engine, powered by 8MB of sound ROM which is expandable to 16MB, either through the large

The OS6 64 Voice

either through the large or blank Flash RAM cards for use with the free Alexis Sound Bridge sample transfer software. There are 640 programs and 500 'mixes', including a complete GD-ROM filled with sequencers, editors, song files, and samples which turn the OS6 into a complete must be which turn the OS6 into a complete must work station. Call now for more details, and find out about one of the most understand under on the madder. rated synths on the market.

THE RAVEN
KEYBOARD DANCE
WORKSTATION

Tribition in the last of the l again with this

**Roland** 

**層**Roland

again with this incredible new product.

Stacked full of hundreds of the finest dance sounds, from fat analog synths through retro drams and special effects. On board sequencer with special iopp motif mode makes it a cinch to create instant hits! Typically superb sound quality from this top German manufacturer NEW PRODUCT

Also available, Raven Max expansion board giving over a thousand new sounds. Call in for a demo, we guarantee you'll be impressed free demo CD available, please call to receive one. Money back within 7 days if not completely satisfied - please ask for conditions. £999

*PROPHECY* QUASIMIDI VIRTUAL MONOSYNTH

The Prophecy is already a legend in its own lifetime, and this incredible new low price makes it better value for money than ever. Virtual synthesis not only gives some great acoustic simulations, but also superb analog sounds, from Moogs though ARP's to some of the classic Rolands. The legyboard that revived the arpeggiator still has one of the best

one of the best around today, and the ribbon controller and knobs galore make for a highly expres-sive instrument. Limited stocks only at this price - buy now or forever hold your



CALL SOHO SOUNDHOUSE ON 0171 379 6766 FOR DETAILS

DTR-1

RACK-MOUNT DIGITAL TUNER

· Oversize easy to read LED meter

• Auto tuning with 3 selectable modes: Strobe, Cent, Hz.
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• Built-in microphone is perfect for tuning acoustic instruments.
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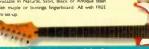
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# Lexicon Dual

PCM Algorithm Card

When it comes to cloning people, or even sheep, there's always an outcry, but where do you stand on the issue of a plug-in card that effectively turns your Lexicon PCM90 into two Lexicon PCM90s?

PAUL WHITE feels that first in the queue would be the appropriate location!

ne of the better things about high-end products is that the manufacturers generally leave room for expansion, via either software upgrades, or plug-in cards like this one. As those of you who read the Lexicon PCM90 review in SOS May '96 will know, the machine is built around a pair of Lexi Chip II dedicated reverb processors and, though some of the algorithms require them to work together, they are sufficiently powerful to work individually, making it possible to generate two entirely different reverb programs at the same time. Indeed, the reverb for the Lexicon PCM80 is handled by a single Lexi Chip II.

The Dual Reverb read-only card provides 10 new reverb algorithms comprising various

combinations of Chamber, Inverse, Room2 and Surround Chamber (Matrix), which, in isolation, will already be familiar to PCM90 owners. Six of the new algorithms are splits, where the PCM90 can be used as two separate reverbs fed from two different aux sends; the remaining four are cascades, allowing one reverb effect to be placed in series with another. The effect parameters are set out in the same way as their standard PCM90 singleeffect counterparts, and full routing and modulation support is maintained - in fact. the Inverse algorithms function has been given a few new parameters. And, of course, the input routing arrangements have been changed so as to allow the dual algorithms to be used effectively. The dual effects may be routed as Stereo Split, Mono Split or Reverse Mono Split, whereas Cascade offers the choice of Left Cascade, Right Cascade or Stereo

Few busy professionals ever seem to find the time to program new Lexicon effects from scratch, so 200 new presets come with the card. The four banks of 50 effects are broadly divided into Studio, Live, Post and Surround, Pros & COIIS

LEXICON DUAL
REVERB CARD 249

Pros

• Virtually doubles the capacity of the PCM90.
• Loads of new and useful presets.

COIS
• Ambience is excluded from dual algorithms.

Summary
A cost-effective way of making your PCM90 go twice as far in a typical mixing situation.

and these are further broken down into application groups, each extension memory bank being denoted by an X.

To use the card, you must either power up your machine with the card installed, or follow a load routine if you installed the card after power-up. The card may be removed from the machine once it's loaded, but any new algorithms will be lost when the machine is switched off. User patches based on the card will be saved, but you can't access these

"For around 10% of the cost of a PCM90, this card effectively doubles the capability of the machine in many routine (and a few less routine) mix situations, and, on top of that, it

provides 200 new presets."



unless the card algorithms have been loaded. Obviously, if another PCM90 card has already been loaded, it won't be possible to load a second card.

#### **ROUTING**

The InRouting control determines the routing, which differs depending on whether dual or cascaded algorithms are selected. Mono Split enables the PCM90 to be used as two separate mono in/stereo out processors, where two aux sends feed the two inputs. RevMono does exactly the same, but swaps the two inputs

# Reverb

over — great for those people too lazy to swap a couple of patch leads, I suppose! Stereo Split is stereo in, stereo out, so both reverb blocks are heard in parallel.

When the cascade options are selected, the effects can either have mono or stereo inputs, and the output of the first effects block feeds directly into the input of the second. Each preset has a pre-configured routing setting and symbols are provided in the preset titles to provide clues as to what routing system has been used.

#### THE EFFECTS

The effects blocks need little description, as they're very similar to those found in the unexpanded PCM90 — though the Inverse algorithm has been enhanced somewhat. Using this block, reverbs with varying attack and decay rates can be combined with variable time intervals to create gated, reverse or normally decaying reverb patterns with pre-delay and

# **ALGORITHMS**

Room2-Room2 Invrs-Invrs Chmbr-Invrs Invrs-Room2 Chmbr-Chmbr

Matrix-Chmbr

#### CASCADES:

Chmbr>Room2 Invrs>Chmbr Room2>Chmbr Invrs>Room2 discrete left and right delays. Sadly the Ambience algorithm isn't included in the dual programs, presumably because it takes up too much processing power.

The surround chamber is similar in character to the one in the PCM90, but this has a mono output designed to be added antiphase to the output of another reverb block, so as to force the result to appear in the surround channels of a surround mix. The manual warns that this algorithm must be used with a surround decoder, as it's quite possible that the entire effect will be cancelled out if it's used in mono.

As far as I can tell, none of the reverb effects suffer in any audible way from being handled by one Lexi Chip II rather than

having both at their disposal; for most routine mixing jobs, the split 'two mono ins, one mixed stereo out' option is perfectly fine. The combinations on offer provide adequate flexibility as regards which effects may be used together, and the cascade programs offer a number of creative possibilities that an unexpanded PCM90 can't quite match, not least because they double the number of delay paths that can be included in the overall patch.

#### **SUMMARY**

For around 10% of the cost of a PCM90, this card effectively doubles the capability of the machine in many routine (and a few less routine) mix situations, and, on top of that, it provides 200 new presets. The card comes with a full-size manual, which includes block diagrams of all the algorithms, and all the presets are described in reasonable detail. There's also a representation of the parameter matrix below each algorithm, so you can see exactly where to find the various adjustments. Ultimately I see this as a must-have accessory for any PCM90 owner who dreams of being able to use two units on the same mix.





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# Kenton Pro 2000

MIDI-to-CV Converter

Integrating old synths into a modern MIDI-based system can be a pain. PAUL WARD finds out if Kenton's Pro 2000 interface can kiss it better...

enton Electronics began as a company specialising in MIDI retrofits but, in 1992, the introduction of the Pro 2 interface quickly established them as respected hardware suppliers. In 1994 Kenton's second interface, the Pro 4, was launched to great acclaim. Where the Pro 4 scored was in that it was able to mix a variety of pitch-based MIDI control information and make it available at a single CV output. Not only that, but Kenton had also made the smart move of adding internal LFOs. The Pro 2000 can essentially be thought of as one half of a Pro 4, although it features several refinements of its own.

### FEATURES

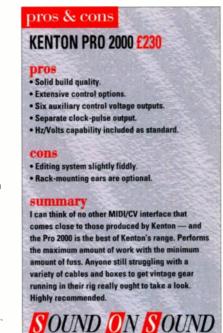
Two Gate/CV outputs
Six auxiliary outputs
Sync24 output
Clock-pulse output
Optional expansion port (KADI/Wasp or DCB)
Optional rack-mount ears
Dimensions (mm): 280 x 132 x 42
Weight: 2.5kg

#### **INSTANT APPEAL**

The Pro 2000 comes in a two-thirds rack-width box, which feels solid, reliable and well up to the rigours of regular gigging — although I'd strongly advise the purchase of the optional rack ears for such use. A quick glance inside the unit shows that its beauty is not just skindeep. Neat job, Kenton! MIDI In, Out and Thru are included. One of the nicest things about the Pro 2000 is that, despite its size, it features an internal power supply — no wall-warts or linelumps here. Power arrives from a standard IEC mains connector; the CV outputs are all of the mini-jack variety.

Programming the Pro 2000 is extremely simple. In 'Parameter' mode, the Inc/Dec buttons scroll through the available parameters. Once the parameter to be changed is displayed on the backlit LCD, pressing the 'Select' button then allows that parameter's value to be edited by the Inc/Dec buttons. This is all a bit fiddly, but it's unlikely that you'll have to do much heavy editing once the Pro 2000 is set up. I was uncomfortable with the Inc/Dec buttons being placed side by side rather than one above the other, which somehow seems more logical, to my way of thinking — others will disagree, I'm sure.

If there was anything that troubled me about my Pro 4 interface it was that, despite all its technological wizardry, I still had to resort to a screwdriver to set the tune and scale voltages. Not so on the Pro 2000 — like the Pro Solo before it, it's designed so that all the calibration is done with software. The Pro 4 also offered Hz/Volts output as an optional hardware upgrade. The Pro 2000, on the other hand,



provides this facility by the merest toggle of a parameter. Now that's what I call progress.

#### TRIGGER-HAPPY

The range of control offered by the Pro 2000 is extensive. Each of its CV/gate channels is completely independent, with parameters for MIDI channel, note priority (low, high or oldest), single or multiple trigger mode, ±24 semitones transpose, ±12 semitones pitchbend, portamento rate, and portamento controller (including a permanent 'on' setting). The Pro 2000 will work with most synth gates, including Moog's S-trig system, and it allows for 5V or 15V pull-up triggers.

Kenton have endowed the Pro 2000 with two internal LFOs, which may be freely assigned to





modulate the channel CV outputs or any of the Auxiliary outputs. The LFOs sport a selection of nine useful waveforms, including triangle, sawtooth, pulse and 'sample and hold', although I would like to see a noise modulation option to get that distinctive MiniMoog screech. Each LFO will happily sync to MIDI clock messages, with a variable divide ratio for synchrosonic sequencing between a semibreve and a demisemiquaver triplet!

Someone at Kenton Electronics was obviously in a generous mood on the day that the Auxiliary Outs were discussed, because the Pro 2000 has no fewer than six of them! The amount of control that the user has over these auxiliaries is generous too, with options for minimum and maximum controller voltages and the reset level. Either of the internal LFOs can be defined as a modulation source, with a definable controller number for LFO depth and a maximum modulation level. The only option I'd like to see added is for any auxiliary to copy one of the main channel CV outputs—

for use in filter tracking, for instance.

### AND THERE'S MORE...

In addition to the CV/gate channels, a further two channels are also implemented, to ease the connection of digital devices. The MIDI channel filter enables the connection of older MIDI synths that will only receive in Omni mode. Alternatively, this feature could be used to re-channelise a DX7 that can only transmit on MIDI channel 1. The Pro 2000's fourth channel is dedicated to the optional KADI (Kenton Auxiliary Digital Interface)/Wasp port or the optional DCB port. Kenton supplied me with the DCB port option, which was easy to fit and worked as expected.

If the above covered all that the Pro 2000 were capable of, then it would be an impressive device. Kenton have seen fit to push things further. For a start, there's the Sync24 output for clocking older Roland machines, such as the TB303, TR808 or MC202. A separate (positive or negative pulse-voltage) clock-pulse output

with clock-divide capability also allows for the synchronisation of arpeggiators, step sequencers, and some vintage drum machines. The Pro 2000 will even act as a MIDI diagnostic tool for troubleshooting duties.

### CONCLUSION

I'm impressed. Very impressed. OK, it's not perfect: I've mentioned the fiddliness of the user interface and I've touched on one or two features that I feel would enhance the overall package. But Kenton really have understood what a musician wants from a MIDI/CV interface — and have included a small bucketful of useful extras into the bargain. Once the Pro 2000 is in place it's easy to forget you have a MIDI/CV converter in your system at all — which must surely be the best accolade that any interface can hope to attain. If anyone knows of a better alternative to the Pro 2000 then I'd love to see it. Until then I'm nailing this into my rack...

£ £229.95 including VAT.

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# Aardvark Aard

## Professional A/D & D/A Converter

MIKE COLLINS investigates the versatile AardVerter a 16-bit converter packed with features.

S company Aardvark manufacture a range of useful digital audio boxes which is now available in the UK: it includes the AardScape analogue tape saturation processor, the AardDDA digital audio distribution box, the AardSync II master sync generator — and the AardVerter professional A/D and D/A converter, reviewed here.

The AardVerter has both A/D and D/A converters in one box and is a low-noise and low-distortion 16-bit device with 2-stage RF filtering. The unit has a naturally dithered output which is optimised for use with 16-bit workstations - using a very low-jitter clock - and level meters are provided on the front panel, along with a diagnostics display to check what's coming in and going out and whether it's being clocked correctly. A tone generator is also included, and this generates a full-scale 0dB tone for setting up levels, along with a silence generator for digital 'black', which you can use to stripe a DAT tape. The latest Delta-Sigma converters from Crystal (good 16-bit converters rather than poor 20-bit converters) and 64x oversampling technology are used; for compatibility with older DAT players, a de-emphasis filter is automatically applied if the emphasis flag is set in the incoming digital audio signal.

The back panel has balanced +4dBu analogue line in/out, AES/EBU digital in/out and sync — all via XLRs — with a socket to connect the external power adapter. On the front panel, you get rotary controls for the analogue left and right inputs, two rows of LEDs for peak metering, with an associated

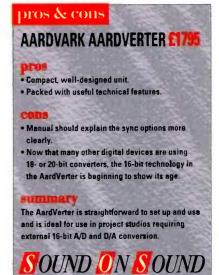
Hold button, switches for sample rate and sync source, and a mode button to switch the bottom row of LEDs to indicate the sample rate and sync settings. Conveniently located beneath each of the A/D level controls is a pair of tiny recessed trim controls for the analogue input and output levels. A front-panel On/Off switch and associated Power On indicator are also provided.

### SYNC'ING OPTIONS

The sample-rate switch lets you select the sampling rate of the internal clock between the three internal rates available (32kHz, 44.1kHz and 48kHz), while the sync switch also has three positions - Normal, Master and Digital. Normally, the A/D and D/A converters run independently of one another, so the D/A converter clocks from the incoming digital audio signal, whereas the A/D converter is clocked from the internal crystal. The internal clock offers pretty good low-jitter performance. which helps to eliminate the effects of serial link jitter when other digital devices are connected. To take advantage of this, you can use the Master sync mode, which locks both A/D and D/A converters to the internal crystal. In this case, all external equipment being fed

"The internal clock offers pretty good low-jitter performance."

from the digital audio output must be put into slave mode, so that everything is locked in turn to the AardVerter's clock. Alternatively, both the D/A and A/D can be synchronised to the external sync input or the digital audio input, if you want to use an even higher-quality external master clock source.



To lock to a sync signal coming in via the digital audio input, you switch the sync to Digital on the front panel; if a sync signal is present on the sync input on the back panel, both A/D and D/A will lock to that signal regardless of the settings on the front-panel sync switch. You can actually lock to sampling rates between 25 and 50kHz when you're using external sources — which you will need to do if you are working with video. for instance, where the sampling rates employed depend on the video frame rates in use.

### **INNER SECRETS**

Various jumpers inside the unit let you make custom configurations. You can disable the front-panel rotary controls for analogue input levels, making the recessed analogue input level trim controls on the front panel active instead — a useful way of preventing inveterate knobtwiddlers from altering your carefully adjusted levels! You can also set the channel-status format of the digital output to be either AES/EBU or S/PDIF, and you can adjust the analogue inputs to suit professional balanced or consumer unbalanced voltage levels.

But all the connectors on the back panel are professional balanced XLRs — so how can you connect unbalanced consumer devices? Well, Aardvark have got this covered too. Phono-to-XLR and XLR-to-phono adapters can be supplied with the unit, so that S/PDIF signals can be routed via the digital input and output sockets, and unbalanced analogue signals can be routed via the analogue inputs and outputs. The special digital audio adapters available from



# Verter

Aardvark will change the impedance of the connection going from S/PDIF to AES, as well as changing the level of the signal when it goes from AES to S/PDIF. Standard adapters can be used with the analogue inputs and outputs, to change between balanced three-wire and unbalanced two-wire connectors.

This all adds up to a very cost-effective solution, allowing the unit to be used with either consumer or professional equipment but keeping size and cost to a minimum.

### **OPERATIONAL ASPECTS**

Simply pressing the mode button toggles the AardVerter between Conversion and Smart Diagnostics modes. In its normal Conversion mode, the LED display functions as a dual bargraph display: when an analogue audio signal is applied to the A/D, the LED bargraphs will display peak levels, which are held for half a second. If you want to keep the peaks held indefinitely so that you can check your headroom margin, you just press the Hold button. In Smart Diagnostics mode, the top row of LEDs functions as a peak meter, with left and right channels combined. The LEDs underneath act as status lights, and their functions are, conveniently, described on the front panel below the LED display: they indicate whether input signals are present, what clock sources are being used, which sampling rate is in use and so forth.

To put the unit into the Reference Tone Generation or Digital Silence Generation mode, press and hold the Mode button. If you hold this down for two seconds, the display shows two dots chasing each other clockwise to indicate that you're in the Tone Generation mode: the converter outputs a 1kHz reference tone via both analogue and digital outputs. To produce digitally generated silence at the outputs, press the Mode button again; the dots will chase round anti-clockwise to indicate that this mode is in operation. When you're finished with all this, another press on the mode button takes you back to Conversion mode.

Using these features, you can prepare your DAT tapes to be sent for mastering just as they do in professional studios, by striping the DAT tape with digital 'black' or silence so that the signal drops to silence between every track you record, and putting a few seconds of 1kHz tone at the beginning of the tape set to the 0dB level you're using in your studio. Playback levels can then be set correctly when the tape's played back in the mastering studio.

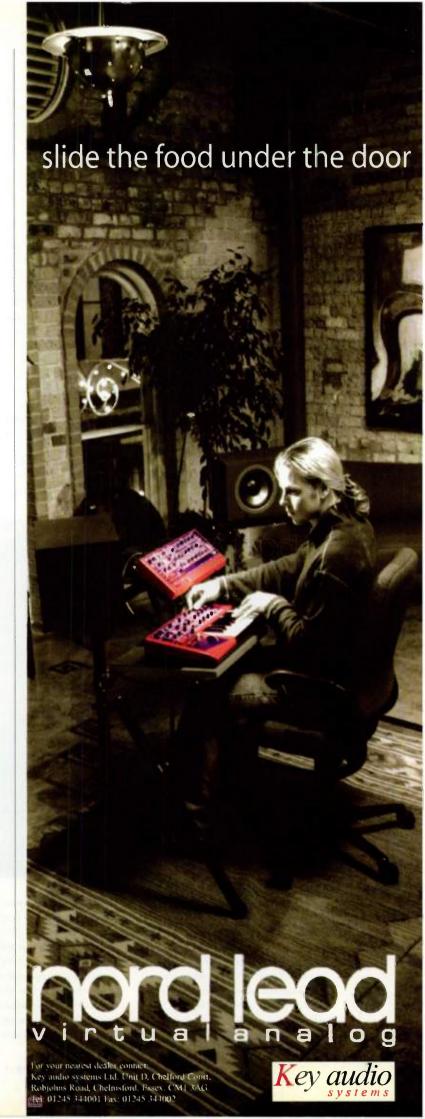
### VERDICT

If you are looking for a versatile set of 16-bit converters to use with your digital audio workstation, the AardVerter can be configured to suit just about all the scenarios you're likely to encounter.

Subjectively, its audio performance is adequate, and the technical features are extremely versatile and well thought-out. Professional engineers will particularly value the tone- and silence-generation facilities, while home-studio users will appreciate the ability to interface with consumer equipment.

- £ £1795; AES to S/PDIF adapter (changes both level and impedance) £55; S/PDIF to AES adapter (changes impedance) £55. All prices include VAT.
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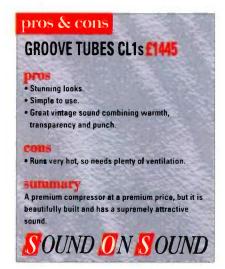
PAUL WHITE tries out a hot piece of kit with tubes that groove...

roove Tubes' main business is selecting and marketing valves for (mainly) musical applications, but they also build their own guitar amplifiers, valve microphones, power amplifiers and signal processors, and — with the exception of one forthcoming new microphone model —

variable, everything looks comfortably familiar.

To provide maximum flexibility, the inputs are on combined jack and XLR connectors; the outputs feature discrete XLRs and jacks side by side. A two-way sensitivity control on the front panel helps match the unit to any likely line-signal source, and further rear-panel jacks are provided as side-chain insert points, allowing an equaliser to be patched in for de-essing purposes. Special soft-start circuitry has been included to extend tube life, and each channel uses three dual-triodes: one 12AX7 and a pair of 12AU7s. The gain-control element, though, is based around a photo-electric circuit with a view to recreating the vintage 150s sound.

Interestingly, Groove Tubes founder Aspen Pitman has his own theory on the tube sound, and suggests that, except in guitar amplifiers, it



transformerless coupling to a  $43k\Omega$  impedance tube input stage, while the output feeds via a balanced Reichenbach transformer, to provide a fully floating output capable of feeding loads down to  $600\Omega$ . The nominal operating level is



everything they do features a valve signal path. The CL1s compressor/limiter maintains this tradition, and features the characteristic Groove Tubes mirror-chrome finish. Because of the valve circuitry and the inclusion of an on-board power supply, this particular compressor is almost as deep as it is wide, and every square inch of the surface is chromed, not just the front panel. The result is a piece of equipment that is as weighty as it is visually imposing.

Judged solely on its control functions, the CLIs is a fairly conventionally set-out dual-channel compressor/limiter, with the option of channel linking for stereo use. The illuminated moving-coil meters may be switched to read output level or gain reduction, and apart from the Ratio control, which is switched rather than continuously

has little to do with harmonic distortion. As he rightly points out, the designers of classic valve studio gear did their level best to design out distortion, yet it still sounds wonderful. Aspen puts this down to the valve's ability to handle steep transients more effectively than typical solid-state circuits can, the argument being that this leads to a more detailed, lively and generally more transparent sound.

HIGH VU ( A) G/R

The input signal makes an unbalanced

"The CL1s has the advantage of immediacy,

plus a stunningly flattering sound."

+4dBu; on the Hi setting this drops to -10dBV.

Each channel has its controls mounted on a separate sub-panel, the reason being that a mono version is also available with a blanking panel fitted to one side. Other than the

switched Ratio control (12, 8, 4, and 2:1), there's the usual complement of Threshold, Output (make-up gain), Attack and Release knobs, none of which has calibration marks. There are recessed toggle switches to set bypass on/off, Low/High sensitivity, VU or GR meter switching and Stereo Link, this last fitted only to the left channel. All the knobs are tastefully vintage without being completely over the top, and the overall impression is one of sleek simplicity.

### **SOUNDING GROOVY?**

There's something distinctive about the sound of an opto-driven compressor that makes it warm and punchy, yet obviously 'processed'-sounding in a flattering way, and the CL1s manages to combine this character with the transparent warmth of valve circuitry. Applied gently, the compressor can be used for routine gain control with the minimum of artifacts, but it's only when you start to pile on the gain reduction - ideally using a fairly short release time - that things get really

exciting. There's no attempt to disguise the pumping that occurs at high levels of compression, but the effect is wonderfully authentic and comes very close to the true vintage sound without the true vintage noise.

Used on vocals or guitar, a modest amount of gain pumping makes the sound seem more powerful and exciting, yet the valve circuitry seems to add a further dimension to the sound, which I find very appealing. It's probably fair to say that this is a compressor you'll want to use as an effect rather than as a routine gaincontrol device, but it is capable of good behaviour if you want fairly transparent compression.

After the unit had been on for a couple of hours, the lid was almost too hot to touch, so it is important to leave an empty U or two above and below the CL1s to allow ventilation. I know that valve gear runs hot, but in this case you really do have to think carefully about where you put it.

### **SUMMARY**

For me, the Groove Tubes CL1s is up there with the best of the esoteric valve compressors; while some may have more features, the CLI has the advantage of immediacy, plus a stunningly flattering sound. Operation is simple, and the lack of control graduations doesn't really cause any problems, as it's pretty obvious what's going on from the sound

coming back over the monitors. Of course, a hand-built valve unit such as this one is going to cost rather more than a hybrid design with just one or two valves in it, but top-end equipment is never cheap. On the other hand, with a little care, a unit like this one is likely to last a lifetime — all you need to do is change the valves from time to time, and not very often at that.

That's probably as much as I can tell you without your hearing a unit for yourself, because, although the CL1s compares well with other premium-priced valve compressors, that isn't the same thing as saying that they sound indistinguishable. Just as high-end large-diaphragm capacitor microphones sound different, so do valve compressors - but if you like the sound of valves, and you like to be able to hear your compressors working, this one is well worth spending some time getting

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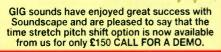
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# Alesis QSR

64-Voice Synth Module

With S+S instruments giving way to the new wave of physical modelling synths, does Alesis' new 'OS-in-a-box' still have what it takes to turn heads? PAUL WARD tunes in, turns on and finds out...

hen analogue synthesis was overtaken by the wonders of the digital age, folks could hardly give away their old analogue gear. These days we could be heading for a very similar situation with the sample-based synths of recent years and the new kids on the block, physical modelling synths. But many companies obviously still feel that S+S has something to offer - cue Alesis and their new QSR 64-voice expandable synth module.

QSR's global parameter pages. Power arrives from an external 'line-lump' 9V AC power supply - no sir, I don't like it... Two pairs of stereo audio outputs are provided, and these are especially welcome given the QSR's 64-voice polyphony.

In contrast to its rear panel, the QSR's front panel is quite spartan. Over to the left are the headphone output and volume control, and the large backlit LCD. Next along is the 'alpha'type value wheel, used for scrolling through Programs and Mixes, and for entering parameter values. There's a group of eight squidgy rubber buttons for navigation around the QSR's internals, and for stepping between MIDI channels and Program/Mix banks. To the left of the power switch are two Type-1 PCMCIA RAM/ROM card expansion slots.

The QSR has a number of operating modes. When it's in Mix or Program play mode, the value wheel scrolls through Programs or Mixes. In its unexpanded form, the QSR has access to four banks, totalling 512 Programs and 400 Mixes. A program plays on a single MIDI channel; a Mix consists of up to 16 Programs, each of which may respond on any

pros & cons

### **ALESIS QSR 7749**

- pros Clean, rich sounds.
- Extensive modulation options.
- Excellent effects processing.
- Two PCMCIA expansion slots for extra sounds/samples.
- Direct digital connection to an ADAT.
- Switchable GM mode.

- Editing fiddly and hampered by small number of buttons
- · No filter resonance
- · Line-lump power supply.

A very accomplished multitimbral module of the S+S persuasion. Editing is not as friendly as it could be, but for a source of many hundreds of instantly useable sounds the QSR is a classy act, with GM compatibility as a bonus.

SOUND ON SOUND

simple effect such as Overdrive, for example, has its parameters split across four pages, and flipping between them all soon becomes a chore.

A QSR Program consists of between one and four Sounds arranged as Layers. Each Sound is assigned a sample from the 649 available in the 16Mb internal ROM (or from an optional PCMCIA card) before being passed through the filter, the amp and the effects processing on its way to the outside world. The range of amp and filter processing is fairly restricted, so samples have to be



To all intents and purposes, the sound engine of the QSR is identical to the QS8 keyboard synth, and I'd strongly suggest that you take a look back at Martin Russ' review of the QS8 in November 1996's SOS for a more thorough view of its sound architecture.

### PLENTY ROUND THE BACK

The QSR is small and light, roughly the size of the good old Quadraverb, and is finished in a tidy, if conservative, fashion. The rear panel holds items of special interest in the form of a 48kHz sample clock input and an optical interface to provide full integration into an existing ADAT-equipped studio impressive! Also included is the QS8's serial port connector. This allows you to plug the QSR directly into a IBM- or MacOScompatible PC, removing the need for a separate MIDI interface; the baud rate and computer type are selected from one of the

"In full multitimbral flight, the QSR is a joy to the ears."

MIDI channel, for multitimbral use or Program stacking. General MIDI compatibility mode is available from the global parameter pages. The Program and Mix play modes are accessed by dedicated buttons, making the selection of program material relatively quick and easy.

### PAIN AND PLEASURE

Conversely, navigation around the QSR's editing modes can be painful at times. A

darned good in the first place. Happily, this is very much the case, with an abundance of high-quality material to keep even the most discerning programmer happy. All the usual meat-'n'-two-veg sounds are well represented, with a good smattering of more off-the-wall samples, including a range of wave and drum loops to get your groove-buds going. You can make up drum Programs with up to 40 different drum and percussion samples from the QSR's sample armoury: in fact, drum sounds are particularly well represented here, and also contain many of the best from the Roland CR/TR machines we know and love.

Lost from the QS8 are the four parameter slider controls, but the QSR implements four 'global' controllers, which are specified by the user. This provides a simple way to make use of the modulation options defined in the preset Programs with whatever physical controllers you have at your disposal. Modulation

destinations include many of the effects processors, as well as those directed at control of pitch, filter and amp.

### **TRUE GRIT?**

From a company probably best known for their range of effects processors, an impressive array of effects is to be expected. The QSR does not disappoint, with a diversity and quality of sound treatment that wouldn't be out of place on a machine in a much higher price bracket. If anything lets the side down slightly it has to be the overdrive, which I found fizzy and unconvincing. On guitar and drum loops it was possible to add some grit and dirt, but I found myself filtering the top out of the overall sound to warm things up.

In full multitimbral flight, the QSR is a joy to the ears. Most of the

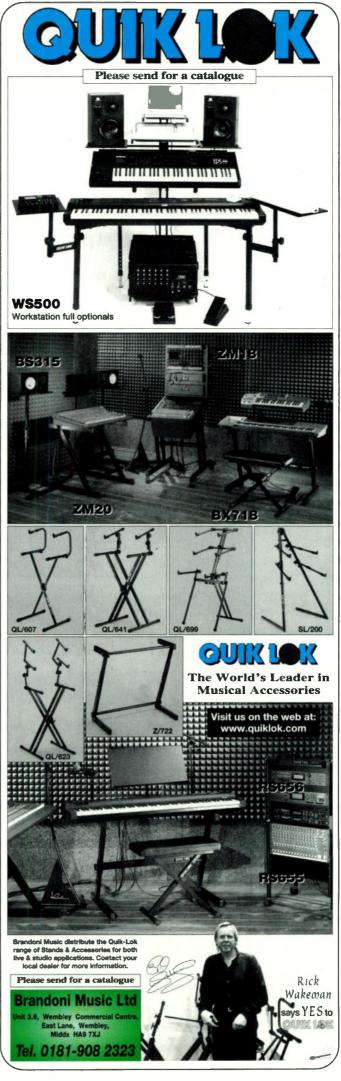
"From a company probably best known for their range of effects processors, an impressive array of effects is to be expected. The QSR does not disappoint."

Program material is solid, useable stuff, certainly well up to the standard of most other S+S synths of recent years — given the unit's QS pedigree, this should come as no surprise. The GM sound-set is equally impressive, with one or two minor exceptions, such as 'Applause'. The lack of a resonant filter is felt in one or two areas, most notably the basses, although Alesis have partly made up for this by including a selection of resonant samples.

### CONCLUSION

It's hard to get over-excited about an S+S synth these days, even one with the 64-voice polyphony of the QSR, but this machine deserves a second look from anyone wanting a reliable source of instant sounds. The quality of the results is hard to fault, and the PCMCIA card slots give the QSR access to a healthy library of extra sounds, as well as the ability to download custom samples to a PCMCIA RAM card from a computer using the bundled *Sound Bridge* software. If you're a player first and a programmer second, then the QSR could have been made for you — it's a solid workhorse of a synth.







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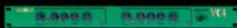
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# Law Games

SAMPLES, COPYRIGHT & THE HI-TECH MUSICIAN

his century has brought three major innovations in musical instrument technology. Firstly, the electrification of guitars (and all strung instruments); secondly, the oscillation of tones calibrated to a standard semitone keyboard (synthesizers); lastly, the sampler (incorporating all hard disk and digital recording technology).

Sampling is now a prominent tool in most composers' and producers' armouries. If you own a sampler, this article contains vital information about the current state of the sampling copyright situation. If you don't own a sampler and you make music that uses only traditional instruments and real voices, this article could be of even more interest to you. Why? Because having your work sampled can earn you colossal amounts of money, without your having to do anything for it. It doesn't even matter if your record was a complete flop.

Sampling has just started to awaken the ever sloth-like major record companies to the minefield of copyright clearance and the generation of more money with no outlay on their part. It's a fact that most money in the music industry is earned by people who don't make music. These people make money out of music by owning copyright. And it's copyright that is at stake here. Sampling and the legal wrangling that can be involved in its clearance can be a complex issue, to say the least, is every aspect of how it can affect you is included in this article in the plainest terms possible.

### UNDERSTANDING WHAT'S BEING SAID

The term 'sampling' in this article will mean taking a section from a CD, record or video, editing it to your own personally required length and adding it to one of your own tracks.

To you, sampling might seem the best way of beefing up a rhythm track with a loop, or adding a little colour to a chorus with a vocal sample from a rare groove record by an artist long since forgotten, but the way Big Brother in the corporate world sees it is different. He sees sampling as the unauthorised reproduction of a published work, and anyone who does it without prior agreement is in big trouble.

Luckily, it seems that permission to use a sample is a matter of course these days, and a licence for everyone to make money, given the appropriate deal. Of course, there are some artists and copyright holders who block the use of their work, period! The Beatles are the most well known—it's impossible to get clearance for any of their work, which is strange, as they don't seem to mind the fact that there are hundreds of lookalike bootleg pub bands on the circuit playing the sum total of their career with varying degrees of competence. (Better not say too much more; they might sue.)

Samples taken from other people's records are now big business, but if you're contemplating commercial release of a track featuring a copyright sample, you ignore the legal implications at your peril.

BIG GEORGE WEBLEY investigates.

of an out-of-cour

### **BEAT IT**

Michael Jackson was another artist who would block samples regardless of how tastefully they were used — until he allowed the leather-clad black girl trio SWV to use a substantial part of one of his truly brilliant tracks, 'Human Nature' (from the fairly successful album *Thriller*), for their track 'Right Here'. This just goes to show that there's always a chance.

But you never can tell. Gabrielle's number one single, 'Dreams', started its life as an underground 12-inch vinyl dance track released on a limited pressing by Victim Records. It became a huge club hit across the country. and it wasn't long before major labels were queuing to pick it up. Eventually Go Discs took on the record and planned to release it immediately into the mainstream record market. Apart from working on photo shoots and press releases, they looked into what samples were used



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### SAMPLES, COPYRIGHT & THE HI-TECH MUSICIAN

▶ on the track. One of them was the sweet acoustic guitar riff from the beginning of Tracy Chapman's 'Fast Car'. The clearance process began at EMI Publishing UK. who are the UK licensees of Ms Chapman. They agreed in principle but passed the request to the original copyright holders in America, Purple Rabbit Music. They point-blank refused to do any deal for the clearance of the sample, despite the fact that it would almost certainly become a big international hit. After months of negotiations Go Discs were forced to obtain the master tapes for the track, remove the sample altogether and replace it with a similarly textured instrumental hook (rather brilliantly, too).

### **HOW DO YOU GET STARTED?**

This, and all other sample issues in Great Britain, went through the MCPS (Mechanical Copyright Protection Society) Sample Clearance department. It's are the only organisation on the planet that has a dedicated team of experts to deal with every aspect of sample clearance. Although they won't negotiate a deal between you and one of the

The MCPS Sample Clearance team: (left to right) Neil, Paula, Ray and Emma.

majors, they will find out who owns the copyright of any song ever registered, what their phone number is, probably give you a name to contact, and advise you on what you're getting into. They know the going rates and type of deals being struck (we'll come to that later), how you should approach a company, or how to deal with a company that is coming after you because you went ahead and used a sample without permission. And the best bit is that this service is completely free! All you have to be is a member of the MCPS,

"Big Brother in the corporate world sees sampling as the unauthorised reproduction of a published work, and anyone who does it without prior agreement is in big trouble."

which is also free; you need to be selling your work somewhere to qualify for membership.

These days, organisations like the MCPS, the PRS (Performing Right Society) and the Musicians Union are very aware of all aspects of the business, even yours. You wouldn't be the first bedroom producer to have a number one record across the world. The MCPS Sample Clearance department has four full-time staff who work closely with the Dance Repertoire and Dance Copyright department, as well as possessing accurate information about all genres of music. This is a truly fantastic service run by totally cool people who know exactly what they're talking about on all angles of the modern ways of making music.

Obviously, you wouldn't want to waste anyone's time: so how do you decide when to get in touch with the MCPS and ask for their help on sample clearance?

When you get 200 copies of your track pressed? If a track has the potential to be released and it contains a sample, that sample should be cleared. So even if you're getting only 10 copies pressed up you must get clearance. That's the official line, anyway.

### When the track gets into the charts?

If a track of yours gets into the charts — any chart — and you haven't cleared a sample, depending on how well known it is you should expect a phone call from a music business lawyer.

When you first start getting the track together?

If you're doing tracks for your own amusement then

If you're doing tracks for your own amusement then you don't need anybody's permission. But if you're getting a track together which is destined for release and which includes a sample, the sooner you apply for clearance the quicker things can progress (and it will probably be cheaper for you too).

### Will the sample even need clearing?

Every sample you use should be cleared. Even if it's a millisecond long. Another official line.

### DO YOU COPY? THE MEANING OF COPYRIGHT

As soon as you commit an original idea to paper, tape or public performance, you own the copyright. Of course, you have to be able to prove this beyond reasonable doubt. There are a variety of ways to protect your copyright, from sending the material in question to yourself in a registered

envelope and depositing it in the bank, to having a major publishing deal with a multinational company who will archive copyright material for you in an air-tight vault. Anything will suffice, even getting it performed on local radio, just as long as you can show that material was yours

on a specific date. If, however, the material is a recorded piece of music which includes a sample taken from a record, video or any digitally captured medium, you're probably infringing somebody else's copyright. Now read the whole article for exact details of how to avoid being up shit creek.

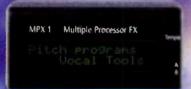




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### SAMPLES, COPYRIGHT & THE HI-TECH MUSICIAN

▶ Is it safe to not bother at all, as no-one will ever notice and if they do find out, let them sue me? There's an old saying: "Where there's a hit, there's a writ". It means that if you sample one snare beat from a dodgy old '50s record and it becomes a worldwide smash you can pretty much bank on the fact that someone, somewhere, at some time is going to notice it. The owner of the recording (who, remember, is not necessarily the artist or composer) will demand a settlement on their terms, otherwise the full weight of international law could come down on you and take every penny from what might be your one-hit wonder.

### **BARGAIN BIN RECORDS**

But what if you sample something from a record that has no information printed on it whatsoever, and you have no idea of who the artist might be or anything to go on at all? The MCPS have no alternative but to advise you not to use it. But in reality who's to know? Ignorance is no defence in law, but if the original copyright owner does come out of the woodwork, and proves the point (take nothing on trust), there's a good chance they'll be open to a reasonable offer.

"As for samples off the Internet, exercise caution: you could find samples labelled 'Copyright Free' — but they might not be."

Some of the most notorious records using samples have involved blatant, wholesale lifting of other people's works: one example of this was MC Hammer's 'You Can't Touch This', which was based around a rap vocal over the instrumental break of Rick James' 'Super Freak'. Another example was DNA's superb backbeating of the Suzanne Vega acapella 'Tom's Diner'. So taken was Vega with the concept of this unauthorised treatment of the last track from her second album that not only did she allow its use, she also got her publisher (and the owner of the copyright) to put together a whole album of versions of said tune by the top remixers of the day. Not unexpectedly, the idea wore a bit thin and the record was never seen again. A very similar fate befell the Utah Saints: they carved out quite a career for themselves in the early '80s by grabbing huge chunks of classic hit records and making something completely different out of them - rather well on the whole, even if they do sound a little dated now.

### **FREE SAMPLES**

A lot of the samples used by producers and artists come from breakbeat sample CDs (on sale in this

### HOW MUCH?

Record companies, publishers and artists are reluctant to discuss their financial dealings — as you will be, when the time comes. So exact figures of deals done are few and far between. James Brown has made more money from other people sampling his work than he ever did from playing his music live. One-off payments can go into six-figure sums or be as little as £50. Percentage deals can go from a small fraction of one percent to half of the overall publishing royalty, with a co-writing credit.

very magazine). These CDs cost around £60 for audio and £100 for CD-ROM. In theory, you don't actually buy them — you license them from the makers. For a one-off fee, the CD producers will allow you to use as many samples as you like without the need to pay any more, even if your record becomes a massive worldwide smash hit. Looked at in this way, they're not as expensive as they seem. One thing you're definitely not allowed to do when you license these CDs is use any of the sounds on another sample CD, no matter how much you manipulate the samples.

As for samples off the Internet, exercise caution: you could find samples labelled 'Copyright Free' — but they might not be. If you do use such a sample, always get the copyright situation confirmed in writing from a source that has a real postal address. People get prosecuted for material gleaned from the Internet every day.

The temptation to use samples without permission is very alluring and with no single agency policing the situation it may seem like an unstoppable urge. But beware: the law of copyright will always be on the side of the original owner.

### IT'S A FAIR COP GUV

So what can happen to you if you get caught using a sample without permission? Firstly, the the owner of the sample can, and most probably will, slap an injunction on you. This means that the manufacture of your record will be stopped immediately and all copies on sale will be withdrawn from the market. The next step an infringed party can take is to have all existing versions of the track that features their property (the sample) confiscated. This includes master tapes and demos, as well as all copies of the record which have been pressed and are still in the shops or at distribution warehouses. Once this has been done, the question of damages is the next thing on the agenda. Obviously, it's in a court's power to seize any and all monies earned to date from the record's sales, but more worrying is the question of costs. These can be enormous. So far, no one has been sent to prison for using a sample, but give it time.

On the whole, samples can be cleared without too much fuss, once you've got through to the right person. It's usually someone in the legal affairs department of a major publishing company (the MCPS's help in matters like these is invaluable). These people are renowned for not

### THE HELP FILE

Sample Clearance Department, Mechanical Copyright Protection Society Limited, Elgar House, 41 Streatham High Road, London SW16 1ER.

Tel: 0181 769 7702. Fax: 0181 664 4698.

W

The MCPS main switchboard number is 0181 664 4400, for all enquiries not to do with sample clearance.

The next sample clearance fora are being held during the DJ Culture Exhibition at the G-Mex centre in Manchester on Saturday 31 May and Sunday 1 June. A dedicated website is also currently under construction. Watch this space for details of that and other developments in the sample clearance world which could affect you!

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### SAMPLES, COPYRIGHT & THE HI-TECH MUSICIAN

returning phone calls, but be persistent and friendly — remember, these are people you intend to do business with. They won't take kindly to someone leaving dozens of offensive messages on their answerphone. If they don't return your calls within a week, send them a letter outlining which sample you wish to use and send it by recorded delivery. They will get in touch, eventually.

"On the whole, samples can be cleared without too much fuss, once you've got through to the right person."

At some point you'll need to send them a cassette copy of the track containing the sample; it's also worth including the sample you're using — which they own the copyright to — on its own. The reason for this is that in the event of a bargaining situation about how much they want for the use of the sample, they will argue that it constitutes a 'substantial part' of the track. This is a very grey area and is judged on how often the sample is used in the track, how loud it is in the mix, and whether the track would still stand up withut the sample.

Your argument would be, say, that the sample only has a duration of one second and the entire track lasts five minutes, therefore the sample constitutes only 1/300th of the track. But, out of the goodness of your heart, you'll give them more than the third of 1% of the track that the sample takes up, and offer them a royalty payment of half of one percentage point. They, in turn, will counter that the sample is integral to the track and demand a 30% royalty — and so on and so on. This is what business is all about: bartering.

The law of copyright could literally fill 20 years' worth of *Sound On Sounds*, and record company lawyers know most of it off by heart. But here are some basic principles relating to samples.

**COPYRIGHT MADE EASY** 

There are three owners of the copyright to a sample:

- The publisher of the original piece of music.
- The record company (or film company, if the sample is from a film or video) who released it and therefore own the performance of that music (or speech).
- The owner of the moral rights to the copyright.

Points one and two are obvious: permission from both is needed, and is usually given. It's the third point that can cause problems. The moral rights to a piece of music lie, ultimately, with the original composer. These days, most music-related contracts have a clause that states that the composer waives the moral rights to their work. Having said that, there are two issues that a composer, or the custodian of their copyright, can insist on. One is the right of 'Paternity', which means that they can insist on being fully credited as part of the songwriting credits. The other - and this is the sticky one — is the right of 'Integrity'. This means if they don't like the track, for whatever reason, or simply don't want to be sampled, they can block the use of their work. In fact, if any of the three owners of the copyright refuse permission for you to use their property there's nothing you can do about it. Two out of three isn't enough.

A curious and, frankly, unfair aspect of copyright is that it doesn't run to the person actually playing or singing the sample. So the drummer who played the 'Funky Drummer' beat for James Brown, or the bass player on Lou Reed's 'Walk On The Wild Side' aren't entitled to a penny of the millions of pounds paid in settlements and copyright clearance deals. But no-one said life was fair.

One of the laws of copyright that wouldn't normally apply to sampling states that a person's work is protected for a number of years after their death; the actual number varies from country to country. A recent case involving the Fun Lovin' Criminals track 'King Of New York' fell foul of this situation. The track has a sample of the Deodato version of Richard Strauss' 'Also Sprach Zarathustra', better known as the '70s funky version of the theme to the film 2001: A Space Odvssey. The band are from America, the track was recorded in New York and all the relevant clearance and royalty rate of payment were negotiated and cleared with Sony Music Entertainment (who seem to own the planet). The problem arose when the record was released in the United Kingdom. In this country, unlike America, copyright lasts for 70 years after a composer's death. Unfortunately for the Fun



Fun Lovin' Criminals.

Lovin' Criminals, Richard Strauss died in 1949, which means that his copyright is still in force in this country until 2019. This meant that, despite clearing everything they needed to in their home country, the band had unwittingly infringed the copyright of a long-dead composer. The holders of this copyright are Peters Editions, who, once they found out, went ballistic. But all's well that ends well and, thanks to the fabulous people at the MCPS Sample Clearance department, there was no need for an injunction or seizure of assets

In fact, in the world of sample clearance, most situations can be resolved fairly easily, just as long as you approach the problem in a businesslike manner. The main types of deal you can strike with companies are:

### • A BUY-OUT FEE

This is a one-off payment for the use of the sample. Breakbeat CDs work on this principle.

### • A PERCENTAGE DEAL

There are two ways in which this kind of deal works:

**a.** The owner of the sample will become co-owner of your track and be paid royalties direct.

### "So far, no-one has been sent to prison for for using a sample, but give it time."

**b.** You will pay the owner of the sample an agreed royalty rate on every copy pressed.

The difference between the two is that in the second case you will still own the copyright to your track, as opposed to owning only a percentage of it. This is known officially as 'Financial Participation'.

### • A ROLL-OVER FEE

You pay an agreed amount of money for the number of records pressed. This saves having to calculate royalty payments.

Everything is open to negotiation, including whether you need to credit the source of your sample; usually this is required. Of course, you may be able to come to some other arrangement which is agreeable to all sides — sample clearance is still in its infancy. Whatever deal you strike, get it in writing and stick to your side of the bargain!











# The first in Drawmer's new budget range of processors aims to

new budget range of processors aims to give you high-quality gain reduction at a compressed price.

PAUL WHITE comes to the conclusion that they've got the balance right.

### DRAWMER MX30 DUAL GATED COMPRESSOR/LIMITER

nyone familiar with Drawmer products will know that no matter what the piece of gear, it will be reassuringly black, with white legending, yellow knob pointer rings, and that wonderfully vintage logo that almost certainly owes its existence to Messrs Letraset. So, although it still has the vintage Drawmer logo, why does the MX30 have a champagne-coloured anodised front panel, most un-Drawmer-like graphics, and ivory knob pointer rings?

The answer is all to do with marketing, because the MX30 is the first of a new series of lowercost Drawmer signal processors targeting the more cost-conscious end of the project studio market. This section of the market might best be defined as comprising those people who are determined not to compromise on quality, but who are quite happy to compromise on price! While the circuitry is still drawn from the top-of-the-line Drawmer models (saving a little on R&D costs, presumably), the controls have been simplified, so the inexperienced user gains the benefits of Drawmer quality, combined with lower cost and simplicity of operation. With the exception of the front-panel styling, the construction is pure Drawmer, with a tough 1U steel case, mains operation, and clearly labelled controls, though the mechanical design has been streamlined to make production more economical. For example, Marketing Director Ken Giles tells me that the way the metalwork is put together has been redesigned, all the components are on a single circuit board, and there's a new power supply. The mains voltage is preset, though internal links can be moved to modify the unit for either 240V or 110V use. Attractive, cheery

graphics are designed to give the user some idea of what the various sections will do to a signal.

Most compressor/limiters are simply compressors with sufficient ratio range also to function as limiters, but the MX30 provides a separate gate, compressor and peak limiter for each channel, plus the usual linking switch for stereo operation. In linked mode, the left-hand channel controls become the masters. From what I can deduce from the schematic, all the gain control is performed by a single high-quality VCA chip to maximise signal integrity. Side-chain access isn't provided but, surprisingly, there are both balanced +4dBu connections on XLRs and unbalanced jacks operating at -10dBv.

The gate section comprises a Threshold control and a Fast/Slow release button with red and green LEDs to show when the gate is open or closed. Because the circuit is a variable ratio expander and not a hard gate, you occasionally end up in a situation where the LEDs continue to show some gating action when little or no audible gain change is evident, but most of the time they behave as you'd expect. As far as I can see, the gate section isn't based on the original Drawmer DS201 gate but rather on Drawmer's Programme Adaptive expander circuit, used in previous gated compressors such as the DL441. In effect, the ratio of the expander changes depending on the signal characteristics, resulting in a very smooth gating action that's quite forgiving of casual setting up

To handle the compression, Drawmer have opted for a soft-knee, variable-ratio control system with fully automatic attack and release times, and



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# Drawmer MX30

"Even absolute beginners will find it difficult to get to a bad sound out of the MX30."

"When you consider that you get an expander/gate, a compressor and a limiter, the deal is pretty unbeatable."

▶ I understand that the circuitry is derived from elements of both the DL441 and the DL241. Controls are provided for Threshold and Ratio (1.2:1 right up to infinite) with a dedicated ninesection LED gain-reduction meter directly below the controls. Make-up gain is located in the Output section, as is a bypass button with a status LED. Also sharing the Output section is an eight-section LED level meter, which can monitor either the input or output signal level. In bypass mode, the input signal is automatically monitored; when the unit is active, the output level is monitored.

Finally there's the peak limiter, which also shares the Output section. This is a rather sophisticated design and is effectively the same as that used in Drawmer's premium processors, with the distinction of being ruthlessly fast. If you're recording to a digital destination, this limiter can guarantee zero overshoot, the threshold being variable between 0 and +16dB. Operation is indicated by a red peak LED. When set so that it operates only briefly during transient extremes, the limiter is very transparentsounding and, in any event, its results are infinitely preferable to the effects of hard clipping, but you can also use it to produce creative gain-pumping effects if you drive it harder. Because the peak limiter comes after the output make-up gain control, forcing the limiter to operate is simply a matter of turning up the output level.

Separate bypass buttons are one casualty of cost-cutting, but the gate's Threshold control turns the gate off in its fully clockwise position, and the limiter can be disabled simply by setting its threshold to maximum.

### PERFORMANCE

The gate is surprisingly smooth and efficient. For vocals or subtle acoustic instruments, you can set the threshold so that gentle expansion cleans things up without any violent chopping; for drums and other percussive sounds, you can set the threshold a little higher for a more positive traditional gating result. The programme-adaptive system seems to avoid clicking when slow attack sounds are gated; similarly, the choice of just fast or slow release seems to work fine on just about anything.

Like the gate, the compressor is both intuitive to set up and very smooth-sounding. It works nicely on all types of materials, from drums and percussively played bass guitar right through to vocals and guitar, but it also sounds reassuringly transparent on complete mixes. At low- to medium-ratio gain settings, the gain control is unobtrusive, adding a little weight and thickness to the sound, but not changing it in any radical way. There's also no obvious loss of transient detail, as often occurs with budget compressors. At higher-ratio settings, with the threshold set to give more gain reduction, the compression becomes more obvious, but still in a largely musical way.

For those working with digital systems, the peak limiter is a real bonus; providing it's set up so that it only has to catch the occasional errant peak, it's virtually inaudible in operation. By combining

the compressor and limiter action, then making the limiter work just a little harder, you can create a stronger, more obvious pumping effect that works well on some pop material, including vocals. However, if the limiter is made to work continuously, the sound starts to become very squashed and choppy. This is quite predictable, but only occurs under conditions of extreme abuse. Even then, I'm sure somebody will find a use for it.

### OPINION

Although the MX30 is the budget baby of the Drawmer range, it doesn't have either a budget sound or a budget technical specification. Some criticism was levelled at the earlier low-cost LX20 compressor for not being up to the subjective standard of Drawmer's higher-priced models, but that certainly doesn't apply here. In fact, the MX30 works so well that I wouldn't be at all surprised to see a lot of them turning up in professional studios — as well as in PA rigs, where the simplicity of operation will be a great attraction.

Other than the sound quality and the subjective nature of the compression, both of which I really like, what makes me really warm to this unit is that it retains Drawmer's traditional predictability of operation. Turn a knob and it does what you expect, with no nasty surprises, no odd control laws, and a useful degree of forgiveness. Even absolute beginners will find it difficult to get a bad sound out of the MX30, because nearly all the hard work is done by the auto circuitry. It's a compressor that will be useful in recording or mixing just about anything, it handles complete mixes with a lot more refinement than you'd expect for the price, and the automatic functions are so good that you never really miss not having all those extra controls.

Though the MX30's not quite the cheapest budget compressor around, its price is still remarkable for the quality on offer. Even without the limiter, the MX30 would represent good value, but when you consider that you get an expander/gate, a compressor and a limiter, the deal is pretty unbeatable. You also get the benefits of the Drawmer sound, Drawmer's almost overgenerous after-sales service (they'll often fix a 10year-old product free of charge and apologise for the fact that it ever went wrong!), and a high technical specification. The MX30 is not the only good budget compressor around by any means, but everything about it seems so right — even the new styling. I can't wait to see what's next in the range. 505

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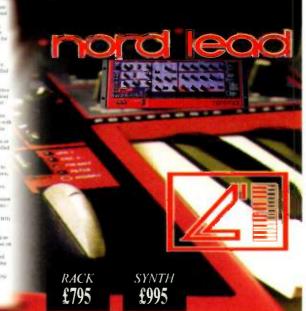
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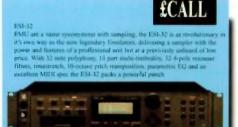
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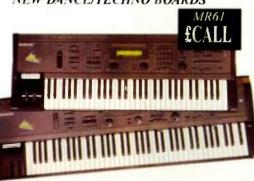


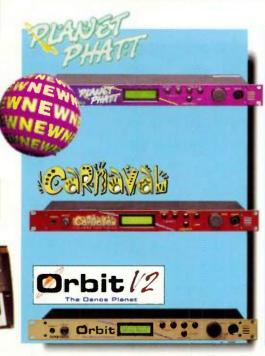


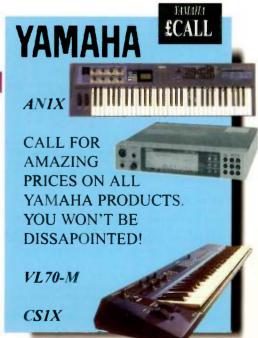




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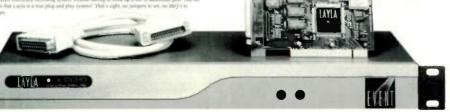
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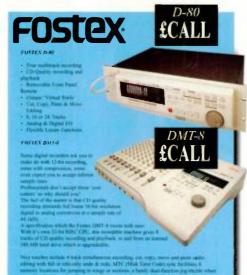


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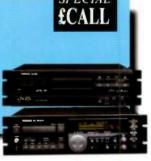
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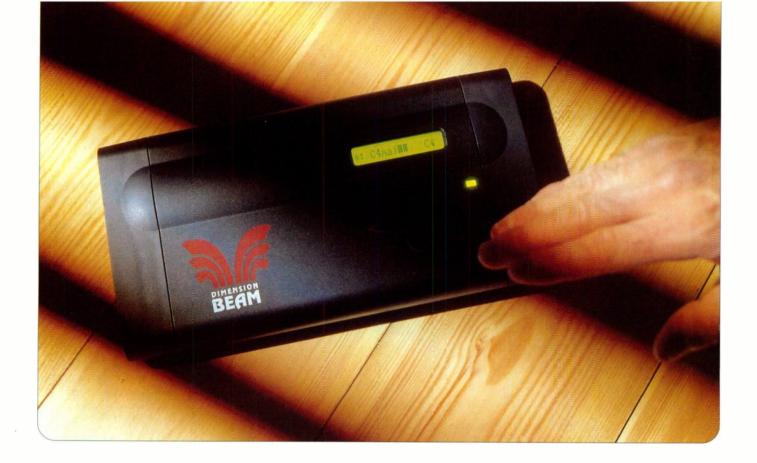
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# BEAMFIE

### INTERACTIVE LIGHT DIMENSION BEAM MIDI CONTROLLER

ince its inception, MIDI has remained a control protocol best utilised by the keyboard player. Designed as a global standard to allow music-based products from all manufacturers to interface directly with each other, the MIDI specification has subsequently been developed and expanded to include control over lighting rigs, mixing consoles and many other audio- and entertainment-based systems. Ever since Jean Michel Jarre broadcast his live concert extravaganza from the Docklands Arena in the '80s, using a multi-coloured, light-based keyboard that generated sounds according to the position of his hands, a number of manufacturers have been looking at methods of generating MIDI data based on physical movements rather than keyboard skills.

Historically, this idea of sound control has been around for a while. Invented in 1919, the theremin first really came to prominence in the '50s, well before the development of the MIDI standard, and went on to produce the ghostly lead sound on the Beach Boys' 'Good Vibrations' single. It has subsequently established its place in history, championed by modern artists such as Portishead, in the same way that older analogue keyboards have featured so prominently on many of today's dance tracks. The theremin generates two electromagnetic fields; any movement or physical presence within the fields produces a monophonic

tone from the instrument, with a pitch and volume based on the position of the presence. With careful practice, a tune can be produced by moving your hands about within the fields. Despite the limitations of the instrument, the theremin has generated a cult following (you can obtain more information from the World Wide Web at http://www.Nashville. Net/~theremin/, or see the article in November '96's SOS).

The Dimension Beam, loosely speaking, takes the theremin concept and drags it into the '90s, offering the same non-contact interface but adding a wealth of MIDI parameters; these allow the user to control volume and modulation, as well as basic note and patch data. The result is a complete MIDI controller designed for live and studio use, capable of interfacing directly with the best of today's modern musical technology.

### **DESIGN AND CONCEPT**

The Dimension Beam is a small, stand-alone unit, with a screw-in connection on the rear for mounting. An accessory pack includes a solid base-plate that lifts the unit about 30cm from the ground, and another adapter is available to mount the system directly onto a mic stand, but in practice any basic camera tripod will suffice. From the top panel, the unit generates an invisible light-field — the 'Beam' — and any movement that occurs

The Dimension Beam translates physical movement into MIDI data, offering theremin-style control over your keyboard rack. DOMINIC HAWKEN explores this new device.

### DIMENSION BEAM



"The Dimension Beam triggers individual notes a great deal faster than is possible when you're playing a keyboard or MIDI guitar, and some crazy effects can be generated as a result."

within this field triggers a MIDI output which can then be sent to a sequencer or keyboard.

A wide range of messages can be programmed, including controller information, as well as standard note data. MIDI settings are accessed via four directional buttons on the front panel, and viewed in a single-line LCD. The buttons, together with an additional foot-pedal, also determine the shape of the Beam, and switch through the range of patches and presets. A Mode LED indicates the current state of the unit; an infra-red sensor and transmitter take care of the physical interface, calculating current movement and positional data. MIDI In and Out/Thru sockets are on the side of the unit, and power is supplied via an external adapter. Usefully, the MIDI input automatically merges any incoming data and streams it to the Out/Thru socket, so it's possible to connect the device in line with your existing master keyboard, without the need for an extra MIDI sequencer input. In practice, while this is fine for moderate usage, streaming large amounts of MIDI data through the unit — doing a sample dump, for instance at the same time as generating new controller information can actually cause data to be lost, so an external unit is recommended.

The Dimension Beam is supplied with six basic preset patches, each of which may be edited and saved back to one of six further user-defined memories. Each patch can be set to produce either continuous controller information, or scales of MIDI notes, or a combination of both in which a note is triggered as soon as any initial movement occurs, and further movement produces the control change. A separate MIDI channel and program number can also be defined for each memory, with the program

sent as soon as a new patch is selected.

Scale mode streams out note data, and can be configured to default to a wide range of preset scales, ranging from simple chromatic and major through to more obscure settings such as Neapolitan minor and Mixolydian. Selecting a scale appropriate to a given song makes soloing using the Dimension Beam a great deal easier, as the output notes are limited to those that work in harmony with the current key. Controller mode works best when the unit is connected directly in line with a master keyboard, and the beam is used to modify sounds played directly from it. Chords can be played on the keyboard, and the resulting MIDI data pitch-bent or faded according to hand or body movement within the beam.

Adding a foot-pedal further enhances the live capability of the unit, with two different 'Freeze' modes available, as well as a movement-based memory restore. Clicking the pedal freezes the current MIDI note until the pedal is clicked again, or until the beam is manipulated at the same position again. Clicking the pedal from the main menu divides the beam into 12 different sections, each representing a memory preset; moving through the beam then steps through the presets until you select one by clicking the pedal again.

### IN USE

The Dimension Beam certainly offers a unique way of controlling MIDI hardware. When you first plug in a new unit, it defaults to a basic 'note to position' setting, and your initial attempts at producing music will probably result in something that sounds like a half-hearted rendition of 'The Flight Of The Bumble-Bee'. Changing the controlled MIDI instrument to other sounds, however, produces some very strange and effective noises. The Dimension Beam triggers individual notes a great deal faster than is possible when you're playing a keyboard or MIDI guitar, and some crazy effects can be generated as a result. Plug the unit into a sound source with long, resonating patches, and the cacophony of noise produced is worthy of inclusion in the next Star Wars movie: set the patch information to modulate a single analogue bass sound, and a didgeridoo-

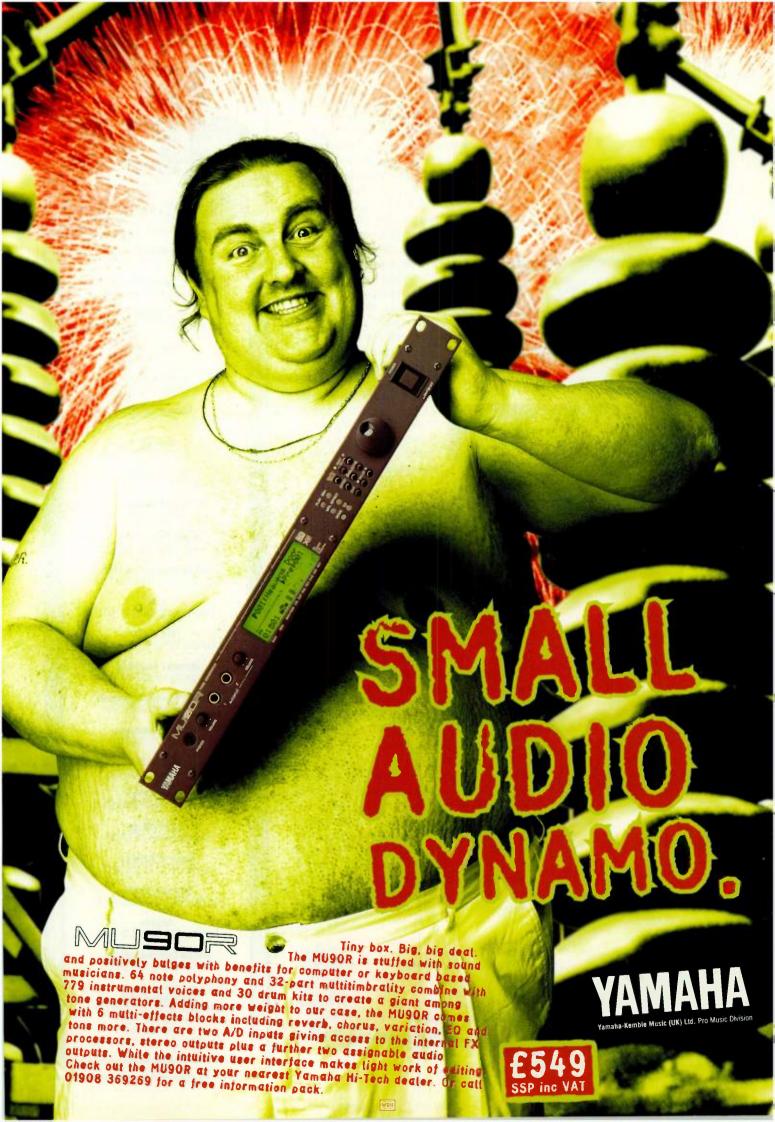
### BEAM SHAPING

In order to get the best out of the Dimension Beam, you need to carefully define the area of space that will receive your physical movements. The best way to imagine the shape of the field that the unit produces is to think of it as an apple, with skin and a core. The Dimension Beam focuses an apple-shaped field of light directly above its sensors, and you can set a parameter value for both the skin and the core; changing their shape and size adjusts the MIDI values that are generated whenever movement occurs. Moving between the two then generates MIDI values that range between the skin value and the core value. Setting the co-ordinates of the beam is done by holding your hand (or any other trigger) at the limit point and clicking an attached foot-pedal, or adjusting the values directly from the unit's arrow keys.

### pros & cons INTERACTIVE LIGHT DIMENSION BEAM £349 · Excellent alternative controller to add to an existing keyboard setup. • A wide range of continuous controller information can be sent. · Accurate and definable Beam field. • Sturdy design, capable of withstanding the knocks of touring and live use. • Cannot directly send System **Exclusive data** · Monophonic control only. summary Recommended for the musician tired of the limitations of a master keyboard, and for theatrical use or effects generation. Breathes new life into tired sounds and introduces a new and friendly way of

recording MIDI-based music.

SOUND ON SOUND



### DIMENSION BEAM

> style effect is produced as your hand moves in and out of the beam. The unit is ideal for live use, both musical and theatrical. A wave of the hand could, for example, trigger a musical effect or a change of lighting. For guitarists and other MIDI experimenters, Interactive Light supply a set of adhesive 'mirror' stickers. Sticking one around the neck of a quitar will allow the instrument to control the Dimension Beam, altering the effects settings of

a processing rack, or triggering new delay settings.

While it's not possible to generate System Exclusive information directly from the Dimension Beam, it is possible to map a controller number to a SysEx string using sequencing software, such as Notator Logic. Defining a new slider within the current environment, setting it

> to adjust the filter of a specific analogue keyboard directly from a specific controller number, allows the unit to sweep the filter using hand

movements alone.



The proliferation of computer-based soundcards, with built-in banks of patches and sampling capabilities, has introduced a

large number of people to the world of sequencing and recording. For those who lack playing skills, the Dimension Beam could be useful for developing musical ideas. Musicians who are currently developing sound effects and ambient music will find that the system offers a unique new approach to note-generation, and is capable of turning the simplest of samples into fresh and exciting sounds. Its strongest market possibilities, however, would seem to lie in live performance, as a theatrical trigger, or an effects controller for the on-stage musician. Having the capacity to alter sound settings depending on the position of your guitar or hand introduces a wealth of performance possibilities.

The Dimension Beam does have the odd limitation: for example, only one note event can be generated at the same time — chords are out of the question. There really is no substitute for the common keyboard in today's MIDI environment; however, as an alternative control source, the Dimension Beam is an invaluable tool. The ability to adjust parameter settings 'hands-free' on stage, by waving a guitar or stepping into the beam, will no doubt be of major interest to performers everywhere.

£349 including VAT. A X-Music, 20 Cotham Hill, Bristol BS6 60F. 0117 973 4734. F 0117 973 4800. CO. xmusic@cybercityuk.com

"A wave of the hand could trigger a musical effect or a change of lighting."

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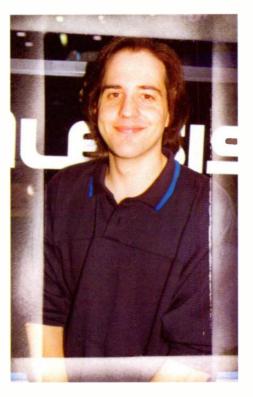
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### MARCUS RYLE • ALESIS ADAT MERIDIAN PRO DIGITAL TAPE RECORDER



Alesis' ADAT digital recorder format takes another step forward with the launch of a truly professional high-end machine, the Meridian. Fast Forward's Marcus Ryle is responsible for much of Alesis' software design, making him the ideal person to give PAUL WHITE a guided tour.



here have been rumours of a forthcoming professional ADAT for a couple of years now, but, even as recently as last month's Frankfurt music show, we didn't really know whether the new machine was fact or fiction. Then, without prior warning, the Alesis Meridian turned up at the Munich AES show, calling a halt to any further speculation.

Unlike the ADAT XT, which was a direct replacement for the original black ADAT, the Meridian is a more expensive pro machine, and doesn't supersede the XT. While it's envisioned that some serious private studio owners will buy the Meridian, the XT is expected to remain the machine of choice for the majority of private studio owners. The Meridian looks quite unlike its predecessors — in fact, to me, it has a rather dated, but solid, broadcast look to it. Perhaps this was deliberate, as the machine is designed not only for music recording, but also to appeal to high-end video and post-pro users.

Analogue connection is via a multi-way EDAC connector or balanced XLRs, and internal trim pots allow the operating level to be set up to suit the user, from -20dB full scale to -10dB full scale when used with +4dBu signals. Digital machines are normally set up to read around -12dB for a +4dBu input signal. Though no exact price for the Meridian has been announced, it's expected to be roughly twice the RRP of an XT, but what's so different between this machine and previous ADATs? Apparently, everything apart from the type of tape used!

"The Meridian uses a different tape format — ADAT Type II," Marcus Ryle explains, "which enables it to record eight tracks at up to 20-bit resolution at either 48kHz, 44.1kHz or varispeed, with no data compression. This gives a recording dynamic range of around 115dB (A-weighted) with a D-to-A dynamic range of 105dB. For applications where a 16-bit result is required, the signal can also be output as a dithered, noise-shaped 16-bit signal; because the optical interface can carry either 20 or 16-bit data, noise-shaping can be used to make the best possible digital copy to an ADAT XT."

### **COMPATIBILITY**

### Is the machine compatible with older ADATs?

"The Meridian can play back a Type I tape made on an original ADAT or XT, but you can't play back a Type II Meridian tape on either of the other machines — the compatibility in this respect is one way only. However, a Type I tape played in a Meridian machine will sound better, because the converters in this machine are better. The optical and sync connections on the back of the machine are exactly the same as on the other ADATs, so you can sync both existing and Meridian machines in the same system. As you'd expect, though, the new machine has a faster transport — around twice the speed of the XT — plus there are some new jog/shuttle facilities so, to get the fastest performance, you'd need to run an all-Meridian system."

### **QUANTUM LEAP MECHANICS**

At a full 4U, the Meridian is quite obviously larger than the original ADAT or XT but, apart from the increased number of panel controls,

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# MARCUS RYLE • ALESIS ADAT MERIDIAN

### what's new mechanically?

"The Meridian uses a professional Matsushita video transport, further modified by Alesis, with a direct-drive capstan - the same as is used in highend professional VHS VTRs. This transport has a cast, rather than a pressed, chassis - there are no idler wheels, and the capstan is solenoid-controlled for very fast operation, so the feel of the transport is much more immediate. The reel motors are also direct drive, servo-controlled, with independent tac sensors, so there are no belts and no mechanical brake adjustments to make. Tape tension is constantly monitored via the software and there's an internal head-cleaning wand to reduce the need for manual cleaning."

The transport certainly seems to slip smoothly from fast wind to play, much like a Tascam DA88 or analogue machine.

"It's good to be able to have a machine that feels like a tape recorder again, with nice ramp times - and from Fast Wind you can go right back into Play. The jog/shuttle wheel has two modes, selectable by pressing the wheel. Jogging is very fast, and is pretty much like rocking the reels on an analogue deck, while scrub lets you move backward or forward at up to 10 times play speed.

"The linear analogue Aux track has its own input and output, so you can record any external signal you like on it, or any combination of the digital tracks, via an internal mixer. You can also have Meridian automatically record onto it whatever you've most recently recorded on the digital tracks. Let's say you're recording a vocal on track 5: you can have the Meridian automatically route track 5 to the Aux track, then, whenever you record onto track 5, it's also recording onto the Aux track. It also automatically routes the Aux track out of channel 5's output when you do shuttle and jog.

"You're hearing 20-bit digital audio in play. but when you want to set up that next punch-in point, you just grab the wheel and you're hearing an analogue scrub. You can use the jog/shuttle wheel while monitoring the Aux track to locate points just like rocking the reels on an analogue machine, though you could use the Aux track for anything, including slate notes.

"Notice that the machine is very fast and responsive when it's changing direction. You can do fractional play speeds — as you could on a Panasonic pro video-editing deck, and it just so happens that the knob assembly comes from Panasonic! You can use this to set your edit points, to find your punch-in and punch-out points, and to locate downbeats for editing; and it's all synchronised exactly with where the digital information is."

### **CONTROL FEATURES**

What facilities have you included to make the Meridian more attractive to video and post users, apart from speeding up the transport and improving the tape handling?

"A lot of the facilities that you associate with the Alesis BRC are built into this machine: timecode, MIDI, word clock and video reference in/out connectors are right there on the back panel as standard. Digital routing and the setting of crossfade times are done directly from the front panel. It's also possible to record any kind of SMPTE/EBU timecode on a kind of virtual tenth track, which is important for film work where it may be necessary to work with discontinuous, asynchronous sections of timecode. This enables any section of the recording to be identified without your having to set up offsets, and you can re-sync to it at any time. The machine can also read timecode at any speed for locking, even if it's discontinuous. And when I say at any speed, I mean fast, because this transport can rewind a tape in 30 seconds! Even more importantly, because of the transport, it's possible to move the tape with complete control over tape tension at all times.

"The Meridian has a built-in timecode generator selectable for all the standard rates, including drop frame, and all the industry-standard sample rates are supported. It will chase-lock directly to external timecode; MMC can be used to control the transport where required; and there are 100 locate points, each of which can be named.

"Unlike the ADAT XT, which was a direct replacement for the original black ADAT, the Meridian doesn't supersede the XT."

Offsets between Meridian machines can be set up with single-sample accuracy, and familiar ADAT features such as track delay and auto punch-in out facilities have been retained.

"Other features include an On-Line button, which allows any ADAT Meridian in a system to be isolated (for tape formatting, copying or whatever); digital track copying, either within the machine or from machine to machine; and separate input-selector switches for each track. As you can see from the front panel, there are a lot of facilities, and you don't need a BRC-type device to sync to external timecode. The machine will also generate MTC directly and, because the operating software is held in flash ROM, it can be updated by playing a standard MIDI file, which can be downloaded from the Alesis web site."

Finally, when can we expect to be able to go into the shops and buy an ADAT Meridian?

"Alesis are planning to ship in late summer." 505

### OPTIONS

To go with the Meridian, there's a new remote controller/autolocator capable of handling up to eight machines (CADI), and a remote meter bridge, which will enable people to put their Meridians in a machine room if required. I wondered whether the Meridian would work with the existing BRC.

"It will, but the BRC becomes rather redundant, as it's acting as the master: you have to do all your synchronisation via the BRC rather than through the Meridian. That's why we came up with the new CADI remote/autolocator — which can also control other ADAT products, providing that a Meridian machine is first in the chain. CADI interfaces via a simple RJ45 connector, just like an Ethernet 10 Base T connection, and you can use a 100-metre'z cable without any problems. The meter bridge connects in the same way, with a separate cable to each ADAT Meridian. Both the jog/shuttle wheel and the Meridian front panel display are duplicated on the CADI."

Does the Meridian have Sony 9pin support?

"No: there are so many inexpensive third-party boxes capable of doing that that we didn't think including it was necessary."

How about an Internal monitoring mixer for verifying live recordings on location?

"No, we don't have that, though Studer are also producing a version of this machine which will cost around 15% extra, and that does include an integral monitor mixer. One piece that's optional is an AES/EBU interface card, which provides digital I/O as four stereo pairs on XLRs."



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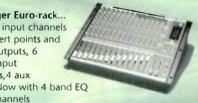
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# **USING EXTERNAL MIDI CONTROLLERS**

When you've got both hands on the keyboard and you want to add real-time expression, you need an extra limb, an abnormally long tongue, or some practical advice from MARTIN WALKER.

ver the last few months, you can't have failed to notice the amount of interest in MIDI controllers that's surfaced in SOS, with Paul Farrer's excellent two-part feature on making sampled instruments sound more real, and the contributions in the letters page and news items concerning alternative MIDI controllers. Why, then, do so few people actually ever get around to adding external controllers to their system? I suspect that this is partly because we're all a bit lazy, but also because



many people probably don't realise that they might already have a socket on one or more pieces of equipment, which would allow them to attach a cheap volume pedal — providing an immediate external source of MIDI control without their having to spend any more than a few tens of pounds.

Of course, the easiest way to add more expression to your sequences is to employ aftertouch, if this is available (polyphonic or otherwise) but, despite being invaluable for adding general expression such as vibrato or preset pitchbends, aftertouch is rarely controllable enough — at least on most of the keyboards that I've used — to add the kind of effects needed to achieve the nuances of a string section or the subtlety (hmm...) of a guitarist. At one extreme the effect is off, and at the other it's at its preset maximum level; despite the variation in between, accurately returning to intermediate settings is extremely difficult.

After the keyboard, the next-easiest step to

more expressive music is to use any in-built mechanical device — a modulation wheel, pitchbend wheel or lever, joystick, or even the ribbon controller provided on some keyboards (the PolyMoog and Roland JP8000, to name but two). However, the limitation of these is that unless you're playing a one-handed keyboard part, you simply don't have a spare hand to do the controlling in real time. And, although many people use these devices to add more expression to previously recorded sequences on subsequent passes, the result is rarely likely to be as emotionally expressive as generating it during the actual performance would be, as you do when playing an acoustic instrument.

If both your hands are occupied, the logical way to add more expression is to use one or both feet with a pedal, or use your mouth with a breath controller. No doubt if you have access to someone who is well versed in the art of the oneman band, your elbows and knees could be pressed into service as well. Of course, drummers have used all their limbs for creative purposes for many years, and top drummers are miracles of independent control (despite what other musicians may tell you). However, those of us who drive a car have already finely honed our footpedal technique, so this would seem to be the easiest

# A BLOW-BY-BLOW ACCOUNT OF BREATH CONTROLLERS

The breath controller is yet another way to add expression to a MIDI performance, and in the hands (or mouth?) of an expert can provide a great deal of subtle control as well as more extreme effects. Of course, synths specifically designed to respond to this sort of data, such as the Yamaha VL series, give excellent results, but breath controllers can be used with any synth to more accurately simulate a real-world instrument. Breath controllers can control volume, filter frequency or amount of LFO; they incorporate a device known as a stress bridge. This is a small capsule that responds to pressure, which results in

a movement of less than a millimetre; the bridge acts as a tiny potentiometer and produces a varying voltage that's converted into a MIDI data stream.

The problem lies in interfacing the breath controller. Unfortunately. the popular Yamaha VL70m has its breath controller input permanently connected to the sound-producing circuitry; the breath control data does emerge via the MIDI Out socket so that you can record it into a sequencer, but you must re-patch on playback or you'll get a MIDI loop, with the sequencer and the breath controller fighting to control the same parameters.

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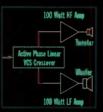
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such as

# **USING EXTERNAL MIDI CONTROLLERS**

 type of control for most people to adapt to for MIDI purposes.

#### PUTTING YOUR FOOT DOWN

Once you've decided to add an external MIDI controller, it's not always plain sailing. Although nearly all modern synths and modules (and indeed many multi-effects units) respond to external controllers, you still have to find a way of getting data from your controller into the MIDI device. If you're lucky, your master keyboard (or alternative means of inputting note data, such as a MIDI guitar interface) will have a quarter-inch jack socket on its back panel, labelled something like 'Expression' or 'Control' — if this is the case, you can just plug in one of the purpose-designed expression pedals from any of the major manufacturers such as Korg, Roland, or Yamaha (see the 'Selecting a footpedal' box) and you're in business. If your main MIDI input device is some years old, it may have an expression input that's simply attached to the audio chain to control overall volume, in the manner of most home organs. While this is still expressive, no MIDI data will be generated, and you will have to record your performance onto audio tape or hard disk for posterity. You may find that you have a second halfway scenario, in that a plug-in pedal alters MIDI parameters within the unit, so that you can achieve filter sweeps, volume swells and the like, but that this extra MIDI controller data is

again the only way to preserve your performance is to record it. You can still often use external MIDI controllers with this type of device — by mapping the appropriate internal parameter to External MIDI control, and adjusting it via controller data at the MIDI In socket — but you'll still need a way to connect the pedal to generate this data.

What you need, to add external MIDI controllers easily, is an expression input, and a device that transmits this data via the main MIDI Out. To check out your own equipment, try looking for a MIDI Implementation Chart, found towards the back of all MIDI device manuals. Look under 'controllers', and you'll see two columns of data — Transmitted and Received. If either Controller 7 or 11 is ticked under the Transmitted column, and you have some sort of expression input somewhere on the back panel, then you're in business.

#### WOT, NO SOCKET?

If your main keyboard has no expression jack socket, you'll have to look a little further for a solution. If another of your modules or effects units has one, you can use that, but then a slight complication arises — in order to achieve real-time control of a MIDI device, you'll need to simultaneously send it the MIDI data output from both the keyboard and the pedal. The obvious solution is to use a MIDI merge unit, such as the Anatek Pocket Merge (available from SOS by



Everyone has their own opinion of how effective each type of built-in controller is, but most manufacturers standardise on two thumbwheels - one with a centre detent for pitch-bend, and a second for modulation depth. Often, one or both wheels will be sprung to return to their rest positions - for pitchbend this can make life a lot easier, but many people find it useful to leave modulation wheels in non-zero positions for continuous effects. This twothumbwheel arrangement appeared on the original Minimoog, and most people find this combination comfortable, although the strength of any pitch-bend spring is often a source of contention, and many people prefer a rubber-coated thumbwheel for extra grip, particularly for live use when fingers can get hot and sweaty. On some six- and seven-octave keyboards (76 and 88

76

manufacturers have compromised by placing the wheels just above the left-hand end of the keyboard in order to avoid an over-long casing, but most people find these less easy to use. Today, most manufacturers still provide the standard two-wheel arrangement, and many keyboard players have mastered the art of controlling both wheels simultaneously when adding expression.

not re-transmitted via the MIDI Out, so that once

There are several variations on this theme. Yamaha provide a third wheel on their VL1 and VL7 (as did Technics on their WSA1 — see below left), which normally controls a second source of modulation. Korg nearly always provide their dual-axis joystick design, which is centresprung in both axes and normally patched to provide pitch-bend up and down when moved from side to side, and modulation depth (controller 1) when moved up. On my Korg M1 it generates controller 2 data when moved down. Controller 2 is now generally accepted as the Breath Controller

standard, but on my M1 it's permanently routed to filter modulation. Although using a single 'stick' to simultaneously alter two parameters should give easier control, in practice there's sometimes some mechanical slack on either side of the central position, which feels slightly sloppy when you're trying to achieve subtle changes. Roland use their familiar 'bender' — another dualaxis device, but this time the modulation (up/down) direction detects pressure in much the same way as aftertouch on a keyboard, and there's often no appreciable movement involved.



For some people, the ultimate built-in controller is the ribbon, either mounted on its own, or Incorporated Into the famous 'log' on the Korg Prophecy, which is effectively a wide mod wheel (see above). The ribbon is an item affected by fashion - it has risen and fallen in popularity several times since its introduction by Moog as a separate device (much used by Kelth Emerson during live performances back in the '70s). The new Roland JP8000 has already attracted much positive feedback about its ribbon controller, as has the Korg Trinity series, so perhaps the ribbon is making a comeback once again: certainly it's an ideal way to add real-time expression, since you can use it exactly as you would the string of a gultar or violin — by directly recording any finger movement. In addition, the ribbon controller opens up many other possibilities, such as hammer-ons and trills, that are impossible with any of the standard controllers.

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# **USING EXTERNAL MIDI CONTROLLERS**

mail order). If you have more than one MIDI input on your sequencer, you could also try routing the keyboard controller to one input, and the second device (with the pedal plugged in) to a second input. On a PC, for instance, many people will have more than one soundcard, and this immediately provides you with multiple MIDI inputs. This does mean, however, that MIDI controller and note data will be

arriving separately, and if you want them to control a single MIDI device you'll have to use a multiclient interface (see my feature on PC

The Anatek Pocket Pedal (above) could be just what you need to explore the world of pedal power!

> The Pocket Merge (right)

may be necessary if you're attempting to send controller and note data to a module at the same time.

soundcard daughterboards in February 1997's SOS for more details on these). This will allow both streams of data to be combined, so that they both appear simultaneously at the input to the sequencer. In general, a hardware-based merge unit may be more reliable than using the software approach, but there's still nothing to stop you recording note and controller data simultaneously onto separate MIDI channels if your sequencer allows you to do so.

If you find that none of your MIDI devices have expression control inputs, than you'll have to buy a device that can generate MIDI data from a pedal or other control device. One of the neatest ways of doing this is using the Anatek Pocket Pedal (again,

#### **SELECTING A FOOTPEDAL**

Nearly all keyboard manufacturers have at least one footpedal in their accessory range, but one possible problem should be mentioned at the outset. Although you may be tempted by low-cost guitar volume pedals, some of these allow the internal potentiometer only 120° of travel over the pedal range, instead of its full 270° of available rotation. This will still give a range of volume control, but for MIDI purposes the output data will be restricted to about 0-60 instead of the required 0-127 values. In addition, guitar pedals are usually wired for 'through' use, with separate mono in and out sockets, whereas for MIDI

use they

normally need to be provided with a single stereo jack socket. If you have a pedal that provides the full rotation, and are into DIY, you'll need to rewire your pedal with the slider of the pot wired to the ring connection of a stereo socket, and the 'high' end wired to the tip contact. Most pedals incorporate a means of adjusting their stiffness of movement, and for synth purposes, this will normally need to be set so that the pedal can be left in a fixed position (for overall volume, for instance), whereas for rapid effects such as the classic wah-wah, a sloppier setting will be easier to control, with the pedal flopping to 'full on' once you remove your foot.

Korg have the EXP2 Foot Controller at £69.99, and they sent me one to try out. It features both In, out, and expression sockets, and so could be used for general-purpose swell pedal use as well as MIDI control. Rotation is over the full 270°, and it worked very nicely. The Roland EV5 pedal (shown left) is another one ideal for MIDI purposes. Yamaha market the FC7 pedal as well as the FC9 in addition to the expression output. this features an in/out socket for In-line volume control.

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# **USING EXTERNAL MIDI CONTROLLERS**

available through SOS mail order). This little black box sits in line between your keyboard MIDI Out and sequencer MIDI In, allowing you to plug in one fully variable pedal, and one footswitch (on/off device). A set of DIL (Dual-In-Line) switches allows you to select the type of data output that the pedal and switch will generate. The options for the pedal are Volume, Pitch, Modulation, and Portamento Time, while for the switch you can choose Sustain, Sostenuto, Start/Stop, and Portamento On/Off. I tried one of

you wouldn't expect a 'stationary' pedal to generate additional data — only a moving one. Although this was too small a variation to give any audible glitches, the resulting continuous stream of controller data meant that I had to re-patch the pedal away from the sequencer input during playback, as otherwise it kept overriding the previously recorded controller data, giving rise to all sorts of burbling effects.

#### UNDER CONTROL

Once you have your controller in circuit and generating MIDI data correctly, it's time to patch it to control your synth parameters. The first and most basic use is to control volume levels (this is still vital for realistic strings and choirs), and virtually every synth allows this. In most cases, the external controller can be internally mapped to

Heaven Vox 0001 01 000, 0016 01 000



PC MIDI Monitor (above) is a useful way of checking just what data is emerging when wiggling your pedal.

Sometimes a little lateral thinking can help when more expression is needed — here the volume level of a choir sample has been controlled using data from a pitch-bend wheel, simply because this was the only controller available at the time. The bend data was internally patched inside an Akai sampler to control loudness.



these in line with my master keyboard, and it worked very well, effectively giving me a single MIDI Out with extra control inputs. The only slight disadvantage was that occasionally, at certain positions with the pedal left at a fixed point, the Pocket Pedal output oscillated between two adjacent values. Normally

many different functions apart from this, such as filter frequency, modulation depth, pitch-bend, or even feature multiple destinations, allowing much more expressive simultaneous control of volume, timbre, and modulation. However, if the external controller data emerges via the MIDI Out

#### **SOCKETS INCLUDED?**

Many modern MIDI devices have jack sockets for the direct connection of continuous controllers such as foot pedals. The socket may be labelled variously Pedal, Performance, Foot Controller, or Expression, but they all tend to be the same thing — a quarter-inch stereo jack socket for connecting a potentiometer-style variable control, such as that provided by a foot pedal. In general, the keyboard versions of most synthesizers will have sockets for both pedal (continuous) and switch (momentary) controllers, although on

the equivalent rackmounting module versions this is far less likely.

Korg say that most of their keyboards since the M1 have control sockets, including the current Trinity series, the Prophecy, the N264 and 364, X5 and X5D, and the Wavedrum. Roland products featuring a variable control socket include all their modern keyboards, most effects and even some modules. The JV1080 and 2080, XP50 and XP80 also store expression routing within their patch data, so that one sound might have it pre-programmed to alter filter cutoff, while another could have it set up to affect resonance. Yamaha feature

control sockets on most of their fullsize devices — the W5 and W7, QS300 and CS1X, for instance — although miniature keyboards such as the CBXK1 don't have them. Many Yamaha synths provide two sockets, one labelled Foot Controller for altering envelope, modulation or filter settings, and the other labelled Foot Volume, which can be set to generate either controller 7 or 11 data.

Most modern MIDI devices respond to both controller 7 (Volume) and controller 11 (Expression), but some earlier ones may not — those I've come across include the Yamaha EMT10 plano module (which remains totally oblivious to both), Akal samplers (which only respond to controller 7), and the Korg M1, which responds to (and transmits) only controller 7. Although the M1 has a pedal socket on the back panel that does generate controller 7 data via the standard MIDI Out socket, the values output when the pedal is swept from one end to the other only vary from 0-99 to keep in line with its internal parameter ranges, rather than the standard 0-127 range ideally needed for external use. No doubt there are other rogue devices like this lurking out there to snare the unwary - check your MIDI Implementation charts.



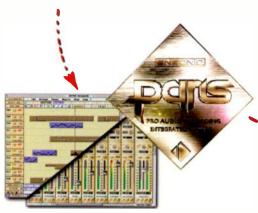


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# **IISING EXTERNAL MIDI CONTROLLERS**

socket, it is often designed to appear as Expression controller 11 information, whatever the internal mapping. The easiest way to check just what is emerging in the way of controller data is to use a MIDI Monitor — either a software type (see the screenshot on page 80) or another MIDI device such as an Akai sampler. My \$2800i has an extremely useful MIDI Receive Monitor that's ideal maximum setting provided by controller 7. I suspect that, in many cases, both controllers will act at the same point in the circuitry, so this is largely academic, but it's certainly easier to initially balance levels between different MIDI channels with one controller, leaving the full pedal range available for expression purposes using the other.

Looking at a selection of my own equipment to

see what variations there might be, I found that my Yamaha DB50XG daughterboard responded to both 7 and 11, but that the channel volume (see the screenshot left) is the same as controller 7, so that altering either setting overrode the other, which might become confusing — the solution here is always to use controller 11 with a pedal. My Akai S2800i sampler only responded to controller 7 (which its MIDI Receive Monitor shows as 'Loudness'), but in this case the controller didn't override any other internal level control but acted entirely separately. My old faithful Korg M1 also

only responds to controller 7, and, like the Akai, didn't duplicate any other internal value. Generally, since most recent devices are likely to respond to both controllers, it would seem to be easier to keep to 11 for expressive purposes if this option is available.

To optimise noise and digital resolution, try to ensure that most channels are used at peak levels somewhere near their maximum controller values. Incidentally, many modules (particularly the cheaper ones) have a default setting of 100 for the channel volume, because attempting to run all 16 channels with maximum settings of 127 could well result in distortion. If you are only running half a dozen channels or fewer, then whacking all of them up to maximum (127) value should result in a cleaner sound, since the background noise will be lower by comparison. And, unless you need to use it for purposes of balance, always set any master volume setting on your modules to maximum as well, using your mixer (rather than the module) to set final levels to achieve the cleanest signal.

Theoretically, as a pedal reduces the level, so the digital resolution will be compromised, at its worst just before the signal drops to silence. In practice, you're unlikely to notice any glaring reductions in audio quality, and many synths also incorporate some sort of noise gate at low levels. If this is the case, you may notice a tiny but sudden drop in volume at the very bottom end of pedal travel, rather than a smooth descent to silence. Judging by my own experiments, if you listen at low pedal positions, with the monitors turned up high, most synths will exhibit audible 'steps' in volume near the bottom of the range, due to the limited 128 steps allowed for 7-bit controllers (0 to 127), but you're unlikely to notice this with other instruments playing in the context of a normal mix. Finally, don't forget that MIDI controllers can put out a huge amount of data — if you occasionally notice a glitch such as a note cutting off abruptly, or a sudden burst of high-volume sound, perhaps you need to thin out your recorded data. sos



The highlighted parameter from this segment of the XGedit screen shows the channel volume. This is synonymous with controller 7 (Volume) in this case, so if you've already set up a balance between all the channels, the use of controller 11 (Expression) will leave this balance intact, and vary the level between zero and this existing setting.

for examining data received from another device.

One thing that many people find confusing is the difference between controller 7 (volume) and controller 11 (expression). Although they both control loudness, and in many cases can be used synonymously, they may operate at different points in the system. For instance, in Yamaha's W5 and W7, controller 7 governs the volume after any insertion effect, whereas controller 11 is before the insertion effect; your choice here will depend on the effect you want to achieve. Roland say that controller 7 is used in GS sequences to set the overall volume of each of the parts (a sort of master volume), while controller 11 is used for real-time changes (expression) between zero and the overall

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If you fancy some MIDI DIY, here are a few web sites that may be of interest:

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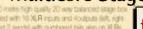
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# $Stephen_{ ext{Lironi}}$

somewhere. Either you don't have the songs or there's a problem with the musicians, but mostly it's a problem with politics..." Politics, the bane of Stephen Lironi's professional life — or at least it would be, if he allowed himself to get dragged into such situations. "As far as I'm concerned, if there's a problem, don't go into the studio," he advises. "Go to a rehearsal room, let the band play,



Steve Lironi at Music Grinder.

work on the material and figure out a direction. You can't completely impose a direction on a band, because they're going to love it when they're in the studio, but then the minute they're out of the studio and have other external forces around them - the label, their management, their friends, their fans, if they have any - they're going to say, 'Well, why did we do that?' It's just a waste of everyone's time. When you're in the studio you should be focussed and all heading towards the same goal."

A MOVE IN THE RIGHT DIRECTION

After his short writing stint in LA, Lironi dabbled in songwriting, production and playing. Then, in 1993, he moved back to London, encountered manager Shannon O'Shea and edged his way into production. O'Shea steered Lironi in an alternative rock direction, which he now asserts was "exactly right," and after a number of small projects, including an album with Annabella Lwin (former lead singer with Bow Wow Wow), he hooked up with Sean Ryder of Black Grape, co-wrote a couple of songs with him and ended up producing the band's first album alongside Danny Saber (featured in SOS's February 1996 issue). On the heels of that project, Lironi then found himself at the helm of an album by British band Space. Entitled Spiders, this has just gone double-platinum in the UK. The recording took place at Parr Street Studios in Liverpool, the mix was done at Mayfair in London, and the engineer was Jeremy Wheatley, who embellished the album with his characteristically contemporary, hard sound.

"I like to work with someone who, during the mix, I don't need to be constantly looking over his shoulder," says Lironi. "I like someone who is musical and understands the dynamics, because when I am producing I put the dynamics into the recording, and I don't want to have to sit down and

argue if someone is going to flatten that out during the mix. As far as I'm concerned, as soon as the guy mixing puts the faders up it should be obvious to him what I'm going for. I mean, if I've recorded a part all the way through a song and then I don't want it once I'm building the track up, I'll just erase it off the tape. That way we're not constantly listening to something and hearing it in a way that it shouldn't sound. There's no need to mute things, so when you put the faders up it should really sound pretty much the way it's intended. That includes guitar effects, delays and so on. If they're an integral part of the sound then I'll print it that way, because otherwise it doesn't make any sense."

As for the ingredients that are required earlier on in the whole routining and recording process in order to transform a musical idea into a workable piece of material, Lironi feels that his background as a drummer gives him just the right perspective. "At the outset I usually like to get a bit of a groove going, but for me the most important thing is a great song, and I think that being a drummer helps you to understand the dynamics of a song. You're always the one in the band to go, 'OK, here comes the chorus. Let's build it up.' Then you drop it down, and so you know what it's about, which is what Butch Vig, for instance, did so well with Nirvana. You know loud on the choruses, quiet on the verses, which is the basic sort of thing if you want to over-simplify it."

Often writing for the artists whom he produces, Lironi employs different tools when composing, sometimes starting with a guitar and at other times a drum loop. "I'm pretty much going to fall back on a certain number of chord structures that I know will work," he explains. "Not that I resort to them immediately, but I just always end up with them. That's what sounds best, but it always takes a while to simplify the material and get to the core of it. Then, when I hear the simplified version, I inevitably think, 'Why didn't I do that to start with?' It's always really obvious once you get to the end result, but you can linger in murky water for quite a long time before you arrive there."

#### TRACKING BRIAN

A case in point is a single by The Wilsons, sisters Wendy and Carnie, whose father, legendary Beach Boys writer/producer/performer Brian Wilson, appears on their new Mercury Records album. Stephen Lironi produced a couple of tracks for this project at a Hollywood facility. Music Grinder. One of these was 'Monday Without You', written by Carole King, Paul Brady and Mark Hudson. Lironi spends his time during sessions taking care of things musical rather than technological and, accordingly, on 'Monday Without You' he not only arranged the track but also played all of the instruments. The result is what Brian Wilson himself has described as "the perfect record".

"I heard the Carole King demo and it was a killer," recalls Lironi. "It just had 'hit' written all over it, and the thing about working with a great song is that it just makes everything easier. The chord structure inherently moves in a way which

"If there are mistakes, as long as they're not glaringly obvious, they're left as part of the performance. I hate things that are too perfect."



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# $Stephen_{ extsf{Lironi}}$

helps the dynamic of the song, and that means that it is going to work emotionally, because it'll excite people during the chorus and then release tension during the verse. That makes it easier to produce." So, produce it he did, along with a track called 'Good About You', over the course of a week at

Carnie Wilson's house and in Music Grinder's Neve room. Analogue 48track was the recording medium, Doug Trantow was the engineer, Francis Buckley took care of the mix and Steve Lironi was your regular Mr Do-It-All.

"When we started work [at Music Grinder] on 'Monday Without You' Carnie was moving house, and so I even had to do her guide vocal, which was laughable," he says. "I basically began building the song up with a Martin 6-string acoustic, recorded with a

Telefunken 250 and a little B&H pencil mic, and I tracked it up six times and bounced it into stereo. That way any imperfections were ironed out and it just had a nice, broad sound. I then put down a guide [Precision] bass just to make sure that the groove was what we were looking for, and I also played an amazing 12-string Jerry Jones electric guitar going straight through a Sansamp processor and a Rocktron effects unit.

"After that I had Vox Continental and Jaguar keyboard sounds coming out of an Emu Vintage Keys module. I was going for these '60s-type organs, such as Farfisas, and trying to stay away from the Hammond, which would have had too much of a rock feel for this kind of record. I wanted more of what The B52's would use... I love the sound of those real cheap-sounding things.

"For the drums, I brought in Nick Vincent, and then I cut the bass again to the drums, played a little bit of percussion - tambourine and a shaker - and that was it. We recorded the vocals along the way, making a separate slave as the girls did so many harmonies, along with their dad. So we'd just do a stereo mix and then have a full 20 tracks of vocals. Wendy was recorded with the Telefunken 250 and Carnie with a Neumann U67, often singing together with a screen in front of them and facing each other. Then, when Brian came in, everything that he did was triple-tracked. He sang some lead lines and twopart harmonies, and he was great, even though he does get nervous being in the studio with people he doesn't know. He was very open to suggestions and he also came in with his own ideas, such as a bit in the chorus where he did a high falsetto in the style of The Beach Boys. You hear it and you say, 'Oh, that's Brian Wilson!' It's his trademark and it was just great to get it on this track. When it's played on the radio people will go, 'Wow, it's summertime!'"

# MIDDLE OF NOWHERE

Another recent writing/production assignment for Lironi has been a pop/R&B album by Hanson entitled *Middle Of Nowhere*, released on the Mercury

label and featuring the talents of three brothers: 16vear-old Isaac on guitar, 13-year-old Taylor on lead vocal and keyboards, and 11-year-old Zachary on drums. Recorded at Scream Studios in Studio City, close to Los Angeles, the album was engineered by Niven Garland on an SSL G Series console with two 24-track Studer analogue machines. Lironi initially heard a demo of two songs - one of which, 'MMMBop', is now the first single off the album --and was immediately hooked. "I loved the songs and the vocals were just unbelievable," he says. "[Taylor had] really great phrasing, really soulful, and sounded like a really young Michael Jackson back in the days when he was singing things such as 'ABC'. Remarkable." Not least because these are three white kids from Tulsa, Oklahoma, "It really was a privilege to work with kids who are that talented," Lironi continues. "We did, of course, have to use other people to augment Zachary's drum parts. He played some parts, but when you're 11 you don't have the stamina to hit really precisely. I mean, I was playing at that age and he's a lot better than I was, but while maybe 50 per cent of your snare hits are going to be great you're probably going to miss the rest of them." As for the producer himself, he actually managed to miss all of the drum hits. "Drums are the one thing that I never play on anyone else's tracks," he says. "That was my first instrument and it's just impossible to produce myself playing them. It's hard enough producing myself playing acoustic guitar, because I'm out in the studio, but when it comes to playing drums it's so hard to hear what I'm actually doing, since I'm physically in a different room. With everything else, I can work in the control room.

"At the same time there can also be a tendency to be too self-critical, but that is something that I've learned to relax about. Now most things for me are done from top to bottom in one take. I just go for the feel of it, and if there are mistakes, as long as they're not glaringly obvious, they're left as part of the performance. I hate things that are too perfect. Things became way too perfect in the mid-to-late-'80s and that took the soul out of a lot of stuff. Certainly my favourite album of recent years has been the one by Beck, just because it's imperfect yet it still sounds amazing. In fact, I love the imperfections on a lot of my favourite records because they give character. I mean, listen to a singer like Billie Holliday. There's no way that she ever sang a note in tune, she was always under the pitch, but that was the soul of it as well. Being sharp is a different thing - it will kill you - but being flat often has you singing these blues notes."

#### JON BON SOLO

Not that this was ever a consideration for Stephen Lironi when he recently came to produce seven of the tracks on Jon Bon Jovi's new solo album. "He's really a great singer," he asserts. "His pitching is great, his phrasing is great, he's got a really powerful and consistent voice, and he just likes to do maybe four takes and comp out of those. There might be the odd one that he's not happy about and which we will fix, but mostly we'll take maybe a couple of hours

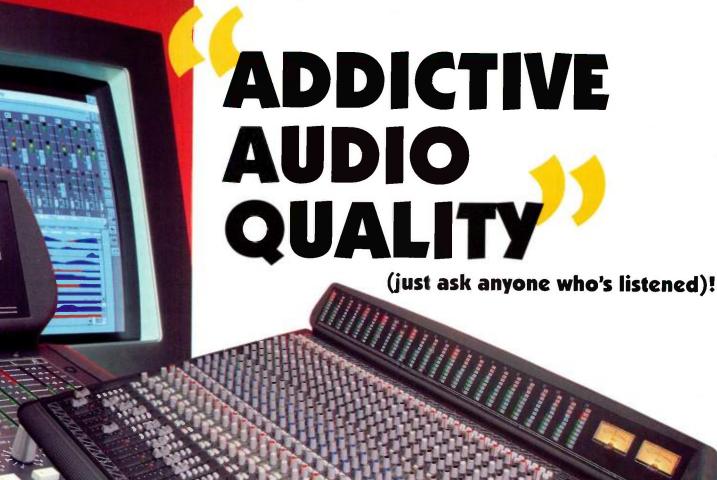


Lironi with Brian Wilson, daughters Carnie and Wendy and others at Music Grinder.

## GEAR — HOME AND AWAY

Lironi's home setup, which also accompanies him to a variety of studio locations, comprises Cubase running on an Apple Mac, a fully loaded Akai S3200 sampler, a Clavia Nord Lead, Emu Vintage Keys, Sansamp guitar processor, a Rocktron guitar effects unit and a Mutronics Mutator filter, as well as a Fender Strat, a Telecaster, a Precision bass and a 1960s Guild guitar that was given to Lironi by Jon Bon Jovi. and which the former describes as "a Gibson SG on acid. The body's all distorted out of shape and it even has a flip-out stand built into it.

"I like the Nord Lead because it sounds like a synthesizer," says Lironi. "I get sick of keyboards that just sound like samplers and Fender Rhodes. If you want a Fender Rhodes sound you should get a Fender Rhodes. Even the Vintage Keys never sounds like a Wurlitzer or a Hammond organ. It's alright, but if you want a Hammond organ sound then get a Hammond organ - if you've got the budget - because nothing sounds like it. In fact, Hammonds don't even sound like each other, which is why you need to get a good one, and that's what we used a lot of on the Hanson record."



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# StephenLironi

working on the lead vocal and then we'll move on."
While the remaining tracks on Jon Bon Jovi's album were produced by Dave Stewart and Desmond Child, Lironi produced the majority of the album, with Niven Garland, once more, seated behind the console, a DDA located in the basement studio of the

artist's home in New Jersey. The studio was designed by his mixer, Obie O'Brien, and houses two 24-track analogue tape machines. "The sound of that studio is great," says Lironi, "and that's unfortunate, because it means that you end up in a basement 14 hours a day! It has three screened-off recording areas, mostly constructed with wood, and then a smallish control room.

"Jon had demo'd the songs while he was on the road with Bon Jovi. He's a real workaholic, and so he would rent a truck and have it parked outside the hotel where they were staying. The band would play on the demos and Obie would record them, and they therefore ended up sounding like masters. When I became involved with

the album at the start of August '96 we began work on two of the tracks ['Janie, Don't Take Your Love To Town' and 'Learning How To Fall'], and first of all I had my equipment shipped over from London. [See 'Gear — Home And Away' box.] This meant that we had to rewire the studio, because it had been set up to record the band, and therefore everything had to be re-plugged through my sampler and sync'd up.

"For the first two days Jon was tapping his fingers and wondering what we were doing, because he's used to the band going 'one-two-three-four' and getting the bass, drums and rhythm guitar down for five or so songs! He works really quickly, but at the end of the third day he started to get where it was coming from and by the end of the week we had two tracks done."

Where it was 'coming from' was the approach of methodically building one layer on top of another, with guitars being added after drums and bass had already been recorded. "Using *Cubase* on the Mac we'd start with a bunch of loops just to get a basic groove going, a basic keyboard pad would outline the chord structure and then I'd analyse the song with Jon," Lironi recalls. "He might say, 'I don't think we need this bit,' or 'It would be better to get to this part sooner,' and we'd just be able to cut and paste on the computer, working with the groove, the keyboard structure and a rough program base.

"I would build up the basic structure playing the keyboard, but it wouldn't necessarily end up on the finished track. It was just there so that we could work out where to go, and while some of the songs don't have keyboards, most of them do actually have Hammond organ. We'd build up organic sounds, because I like to mix organic and electric sounds together to provide a little texture."

The achievement of a rough structure would be followed by the addition of rhythm guitar and, as soon as possible, a guide vocal, so that the participants could ascertain whether or not their efforts were working out. Still, even though Jon Bon Jovi's guides utilised the same mic (a valve Neumann U47) and compression as for the proper vocal takes, none of these guide efforts were retained for the final mix. There was no need.

"He usually performs amazingly, so you don't have to worry about any flukes," says Lironi. "He's very consistent." After completion, the first two tracks were taken to Right Track in New York for the mix. Stephen Lironi then spent the next seven months working on the Hanson album in Los Angeles, before sessions with Jon Bon Jovi resumed on January 5 back in New Jersey. These five tracks took about a month to complete, with the respective Bon Jovi members filling in on bass, keyboards and rhythm guitar, together with Lironi also playing some of the rhythm guitar parts, Bobby Bandiera on lead guitar and Kenny Aranoff on drums. In line with Lironi's own preferred work method, each of these parts was recorded separately, allowing him more control and the ability to remove whatever was deemed necessary in the name of improvement, before starting to rebuild again from the ground up.

#### **BOTH SIDES OF THE POND**

Based in London, Stephen Lironi is nevertheless planning to continue with his frantic work schedule on both sides of the pond. "I like it over in America," he says. "I think Britain is just a little bit too much pop in terms of the charts right now, although that isn't a true representation of the music there. The UK needs a radio station like a K-ROCK on which it can play alternative music, which is what Britain is great at. There are so many great guitar bands coming out, but they're not supported, apart from by the NME and a few DJs." In line with this view, Lironi has been spending the little time he has between projects to concentrate on a less-than-mainstream project of his own, entitled 'The Revolutionary Corps of Teenage Jesus', which is on his own Creeping Bent label. "Creeping Bent is a type of Scottish grass that grows in the Highlands!"

Confirming the fact that there is more to this successful writer/producer than necessarily meets the ear, the 'Revolutionary Corps' project sees him veering away from conventional song structures towards a more noise-based sound. "When I'm working with major labels and artists who are very song-orientated, I've got to be very disciplined," he says, "However, I also have this other side to me that I want to express; a kind of noise and grooveorientated thing, using samples that are running off my computer, lots of distortion, lots of dub echo. So far I've released two singles and both of them have been Single of the Week in the NME, but while this project is appreciated, it's certainly never aimed at gaining major record sales or radio airplay. It's just something that, if the A&R guys have been driving me too crazy, has enabled me to go and do something artistically fulfilling. The music is the thing, and whenever there's a danger of me being dragged away from it, I have to make sure that I drag myself back!" 505

"Listen to a singer like Billie Holliday. There's no way that she ever sang a note in tune, she was always under the pitch, but that was the soul of it as well."





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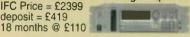
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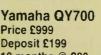
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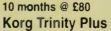
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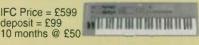
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# **CAD EQUITEK BACK-ELECTRET CONDENSER MICROPHONES**

HUGH ROBJOHNS
checks out a range of
keenly-priced condenser
mics from over there
that look set to do
rather well over here...

ith most kinds of sound recording equipment, you get what you pay for. Quality costs money, and in terms of microphones, the established front-runners are going to set you back typically a thousand pounds or more. That is not to dismiss less costly designs, of course; there are some extremely competent designs costing a fraction of the big names, and all engineers have their own preferences in microphones at any price.

The Australian company Rode re-established the cost/performance relationship recently with their NT2 studio condenser microphone (see review in SOS June '95), but the trend is continuing with the new Equitek range of studio microphones from American company Conneaut Audio Devices, better known as CAD.

#### THE EQUITEK RANGE

The CAD Equitek range currently comprises three microphones, all of which are sideaddressed studio-quality condenser mics. The basic model is the E100, a back-electret hypercardioid. The second mic, the E200, uses a pair of the same back-electret capsules arranged to provide selectable polar patterns (omni, cardioid and figureof-eight). Lastly, the top-of-the-range E300 is a large-diaphragm (1.1-inch) true condenser mic, very much along the lines of an AKG C414 or Neumann U87, with switchable patterns and other facilities in common with the E200. Both the E200 and E300 have large cylindrical bodies, while the E100 is a very slim rectangular design.

The E100 uses a single electret and a head amp based around an OPA2107 integrated amplifier. The E200's head amp is necessarily a little more elaborate (although it still uses the same basic configuration). Finally, the E300 uses a high-quality twin-condenser capsule, but retains the same head amp as the E200 (with

slight modifications to generate the necessary capsule polarising voltage).

All of the Equitek microphones are powered by a combination of standard 48V phantom power in concert with a pair of internal 9-volt PP3-style NiCd (Nickel/Cadmium) batteries. A number of condenser microphones have facilities for internal battery power, but I am not aware of any professional studio mics that actively rely on batteries in the way these do. Basically, CAD claim that by using very high-quality Operational Amplifiers (integrated circuits) in the head amplifier, they can achieve far better distortion and non-linearity performance than with conventional FET designs. However, the inherent disadvantage is that a lot more current is needed from the power source, especially under high signal level conditions. Normally, phantom power cannot supply large amounts of current, so the Equitek microphones use the NiCd batteries as a power reservoir system, and the phantom supply serves as an automatic trickle charger for the batteries whenever a phantom power source is connected. To charge the batteries from new, the mics need to be connected to a phantom power source for around 14 hours. If necessary, the microphones can be powered for a few hours from the batteries alone, although a link must be re-positioned inside the microphone to disable the automatic power-down system (this turns the microphone off when phantom power is removed, to prevent accidental flattening of the batteries if the user forgets to switch the mic off).

#### **EQUITEK E100**

This is the baby of the range, and is the odd one out in terms of its shape. The E100 is a slim rectangular unit measuring 62 x 153 x 55mm (whd), weighing about half a kilogram, and is supplied in a hard plastic carrying case with protective foam lining. The active side of the grille is a fairly garish gold colour, while the back is a more sombre black. Three miniature toggle switches just below the grille provide for Power on/off, high-pass filtering (a -10dB shelf from 80Hz) and a 20dB attenuator. The bottom section of the microphone case can be removed by releasing one cross-point screw to access the battery compartment.

The rear of the microphone houses the XLR connector, and a blind 5/8-inch threaded hole, which could be used to mount the microphone onto a boom-arm stand directly - I can think of a number of applications in small voiceover booths where this would be very useful. The mic is also fitted with an elbow bracket (also machined with a 5/8-inch hole) which affords a more conventional mounting arrangement, as well as adjustment of the microphone's angle. I was disappointed to find that 3/8-inch thread adaptors were not supplied with any of the review microphones, because it seems you can never find one on a mic stand when you want one! The microphone serial number is engraved on the rear panel below the XLR socket, and the final nice touch is the rubber bump stop below the mounting bracket.

The E100 has a quoted frequency response of



Equitek E100.

# INTRODUCING THE HR824 ACTIVE MONITOR.

f you've been trusting the quality of your creative product to passive monitors, there's an astonishing revelation waiting for you. In our opinion, the active, biamplified HR824 is the most accurate near-field monitor available—so accurate that it es-



Mackie acoustic engineer David Bie uses scanning laser vibrometry to map HR824 tweeter dome vibrations.

Rather, Mackie Designs' High Resolution Series HR824 is the first small monitor with power response so flat that it can serve as a completely neutral conductor for whatever signal you send it.

#### SCIENCE, NOT SNAKE OIL.

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But to keep the cost of such monitors
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measurement instrumentation, transducers, and electronies technology.
In developing the HR Series, Mackie
Designs sought out the most talented
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of painstaking research and money-isno-object components, not to mention
thousands of hours of listening tests and
tens of thousands of dollars in tooling.

# FLAT RESPONSE... ON OR OFF-AXIS.

One of the first things you notice about the HR824 is the gigantic "sweet spot." The detailed sound field stays with you as you move back and forth across the console — and extends far enough behind you that musicians and producers can hear the same accurate playback.

The reason is our proprietary exponential high frequency wave guide. Without it, a monitor speaker tends to project critical high frequencies in a narrow beam (Fig. A) — while creating undesirable edge diffraction as sound waves interact with the edges of the speaker.

HR824
Active
Monitors
accept
balanced
or unbalanced '\s''
and XLR
inputs. Jacks
& removable IEC
power cord face downward so
that the speaker can be
placed close to rear wall

Imaging and definition are compromised. The "sweet spot" gets very small.

Like biamped speakers, wave guides aren't a new concept. But it takes optimized internal electronics

and a systems approach to make them work in near-field applications.

The HR824's wave guide (Fig. B)
maximizes dispersion,
time aligns the acoustic center of the HF
transducer to the LF
transducer's center,
and avoids enclosure
diffraction (notice that
the monitor's face is

perfectly smooth.) The exponential guide also increases low treble sensitivity, enabling the HF transducer to handle more power and produce flat response at high SPLs.

#### CLEAN, ARTICULATED BASS.

Seasoned recording engineers can't believe the HR824's controlled low bass extension. They hear low frequency accuracy that simply can't be achieved with passive speakers using external amplifiers. Why?

First, the HR824's FR Series 150watt bass amplifier is directly coupled in a servo loop to the 8.75-inch mineral-filled polypropylene low frequency transducer.

It constantly monitors the LF unit's motional parameters and applies appropriate control and damping. An oversized magnet structure and extra-long voice coil lets the woofer achieve over 16 mm of cone excursion. Bass notes start and stop instantly, without "nubbiness."

Second, the HR824's low frequency driver is coupled to a pair of aluminum mass-loaded, acoustic-insulated 6.5-inch passive drivers. These ultra-rigid drivers eliminate problems like vent noise, power compression, and low frequency distortion — and couple much more effectively with the control room's air mass. They achieve the equivalent radiating area of a 12-inch woofer cone, allowing the HR824 to deliver FLAT response to 42Hz with a 38Hz, 3dB-down point.

Third, the woofer enclosure is airdisplaced with high-density adiabatic foam. It damps internal midrange reflections so they can't bleed back through the LF transducer cone and reach your ears. The typical problem of small-monitor midrange "boxiness" is eliminated.

# A TRUE PISTONIC HIGH-FREQUENCY RADIATOR.

We scoured the earth for the finest high frequency transducers and then subjected them to rigorous evaluation. One test. scanning laser vibrometry, gives a true picture of surface vibration patterns. Two test results are shown in



The Mackie HR824 Active Monitor. = .5dB from 42 to 20kHz.

the upper right hand corner of this ad. Figure C is a conventional fabric dome tweeter in motion. You needn't be an acoustic engineer to see that the dome is NOT behaving as a true piston.

Figure D shows our High Resolution metal alloy dome at the same frequency. It acts as a rigid piston up to 22kHz, delivering pristine, uncolored treble output that reproduces exactly what you're recording.

#### INDIVIDUALLY OPTIMIZED

We precise match each transducer's actual output via electronic adjustments. During final assembly, each HR824 is carefully hand-trimmed to ±1.5dB, 42Hz-20kHz. As proof, each monitor comes certified with its own serialized, guaranteed frequency response printout.

The HR824's front board has "radiused" edges to further eliminate diffraction; an "H" brace bisects the enclosure for extra rigidity.



Fig. D. HR824 alloy dome's uniform, accurate pistonic

Mackie is one of the few active monitor manufacturers that also has experience building stand-alone professional power amps. Our HR824 employs two smaller versions of our FR Series M·1200 power amplifier — IOO watts (with 150W bursts) for high frequencies, and 150 watts (200W peak output) for low frequencies. Both amps make use of high-speed, latch-proof Fast Recovery design using extremely low negative feedback.

#### TAILOR THEM TO YOUR SPACE.

Because control rooms come in all shapes, sizes and cubic volumes, each HR824 has a three-position Low Frequency Acoustic Space control. It maintains flat bass response whether you place your monitors away from walls (whole space), against the wall (half space) or in corners (quarter space). A low frequency Roll-Off switch at 80Hz lets you emulate small home stereo speakers or popular small studio monitors.

# Confront reality at your Mackie Designs Dealer.

We've made some pretty audacious claims in this ad. But hearing is believing. So bring your favorite demo material and put our High Resolution Series monitors through their paces.

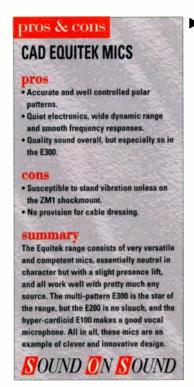
If you've never experienced active monitors before, you're going to love the unflinching accuracy of Mackie Designs' HR824s.

If you've priced other 2-way active monitors, you're going to love the HR824's price AND its accuracy.

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# CAD Equitek mics



10Hz to 18kHz, an equivalent noise level of 16dB SPL (A-weighted), and is specified as having a supercardioid polar pattern. In use, it was commendably quiet, and certainly exhibited a well defined and tightly controlled polar response which remained stable across the full frequency range. As is normal with a back-electret capsule of this type, the rear-lobe sensitivity reduced slightly with increasing frequency, and the frontal pick-up angle narrowed, but this should not cause any problems in practice. The wide dynamic range capabilities of the head amplifier allow the E100 to be used on all manner of instrumentation even drums — and it is certainly neutral enough to work well in most applications, providing a pretty faithful rendition of the source.

Each microphone is issued with its own frequency response plot (made during final checking at the factory) and this showed the mic to be flat within a dB between 10Hz and about 7kHz. It fell to -6dB by about 15kHz and was roughly -8dB by 20kHz. The ambiguity in these figures is caused by the ludicrous plus/minus 40dB range of the frequency response plot! Why do manufacturers do that?

The chart also showed a slight presence bump of a dB or two centred on 4kHz: an intended characteristic of the design. The extreme HF rolloff was apparent during listening, as was the slight presence lift, but these contribute to the microphone's character, which was well suited to voices in particular — both spoken and singing. The microphone output level is quite high, and required roughly 50dB of gain to bring a speaking voice at 300mm up to normal line levels.

The microphone has an elaborate combination of outer metal weave grille plus a fine inner mesh, together with a reasonable air gap before the capsule's own integral pop shield. This comprehensive windshield arrangement gives the microphone very good pop rejection on plosives, even when used very close up. The back-electret capsule is mounted on rubber suspension arms between a pair of metal pillars in a kind of 'H' arrangement, and this gives

some mechanical isolation, but vibration on the microphone stand is readily picked up by the microphone unless the high-pass filter is used.

#### **EQUITEK E200**

The E200 is a cylindrical microphone, designed to operate with the capsule towards the bottom. The mic (the front of which is again a rather gaudy gold colour) is 237mm long and 64mm in diameter, and weighs only 340 grammes (lighter than the E100, despite its larger size). A hard plastic carry case and swivelmount stand adaptor are supplied.

The E200 uses a pair of the same back-electret capsules as the E100, and these are mounted in a similar way, on rubber cross arms between two vertical metal pillars. The capsules are arranged back-to-back, but with a space between them and a separation between front faces of 25mm or

so. The capsules have their own integral pop shields, but these are supplemented by a fine wire mesh and the outer metal weave. The volume of the air-gap between outer mesh and the capsules again plays an important part in the mic's remarkable resistance to popping.

The front of the microphone carries four miniature toggle switches. The first turns the unit on; the second selects a polar pattern (figure-of-eight, cardioid or omni-directional); another introduces the high-pass filter, and the last switches in a 20dB pad. The top of the cylinder can be removed by releasing three screws to gain access to the batteries, and as with the E100, there is a 5/8-inch threaded mounting hole and XLR connector (on the top face of the E200) along with the engraved serial number.

The microphone is supplied with an SM1 swivelmount bracket which fits to the top of the mic and allows easy positioning from a boom stand. As with the E100, stand vibrations pass easily into the microphone through the swivelmount, although the high-pass filter removes the worst effects if bass rolloff is acceptable on the sound source.

The microphone specifications are essentially the same as for the E100 in terms of frequency response, noise and dynamic range. Perhaps not surprisingly, I found the on-axis frequency response changed slightly between the different polar patterns, but this was really in the form of a change of character rather than anything more serious.

"These microphones look and sound a lot more expensive than they really are..."

The frequency response given on the supplied plot was ruler-flat up to 2kHz, where there was a slight ripple giving two presence lifts of a dB or so at 2.5kHz and 8kHz. The top end fell off more gently than the E100, being about 5dB down at 20kHz.

The polar responses were as expected considering the spacing between the two capsules. The cardioid is pretty loose around the back at low frequencies, tightening markedly with high frequencies and with the usual narrowing across the front. The figure of eight was actually much better than I expected, with very good side rejection indeed, although the off-axis sensitivity falls off quickly at extreme high frequencies. The omni-directional pattern is probably the most consistent with frequency, only showing significant sensitivity variations at the extreme top end.

On the whole, the microphone worked well



### **Talented tape sync**

You can use the *TS1* to sync your MIDI sequencer to any decent tape machine. When you start, stop or shuttle your tape back and fore, *TS1* tells your sequencer to play in time, just as if your MIDI voices were extra tracks on the tape.

The *TS1* can generate and recognise the usual four SMPTE formats. The *TS1* will convert SMPTE to MIDI Time Code (MTC). Alternatively, you can use the *TS1* by way of Song Position Pointer/SRT format.



The **TS1** merges MIDI data received with its own sync data. You won't need to swap around the MIDI wiring, as **TS1** has four MIDI ports and automatic signal routing.

The TS1 has a built-in mains power supply.

TS1 MIDI Tape Sync Unit ..... £99.00

# Amazing MIDI to CV



For an amazingly ultra-low price, the *Little MCV* lets your MIDI system control your analogue synths with their great sounds and friendly knobs.

This versatile interface unit can generate control voltages for the 'one volt per octave' (logarithmic) or the so-called 'volts per hertz' (linear) systems.

The gate output can be set to five volts positive, ten volts positive or S-trig.

High resolution sixteen-bit conversion allows accurate pitch across the full 128 note MIDI range with smooth modulation, pitchbend and portamento. The CV output also has a wide bipolar voltage swing and a tuning preset is provided.

The MIDI sustain commands are comprehensively implemented. MIDI reception can be set to any channel, using the straightforward front panel rotary control.

There are MIDI IN, CV OUT and GATE OUT sockets. The mains power supply is built-in.

Little MCV MIDI to CV Converter.. £75.95

#### **Smarter merge units**

You can't combine MIDI signals by joining wires together, so you may need a merge unit. The 2M merges two sources, the 3M merges three, the 5M merges five, while the 9M impressively merges nine! They can handle all types of MIDI data, including Time Code and SysEx. Many automatic features enhance performance and

convenience.





3M have built-in mains power supplies.
The 5M and 9M require external dc power.

2M MIDI Merge	Unit £69.95
3M MIDI Merge	Unit £99.00
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9M MIDI Merge	Unit £169.95

### MIDI to DIN Sync box

When connected up via *MDS*, slave devices equipped with Sync24 ("DIN Sync") inputs should start, play in time,

and stop automatically by remote control from your MIDI master equipment. The unit is compact and contains an integral mains power supply.



MDS MIDI to Sync24 Converter.. £69.95

# **MIDI line driver choice**

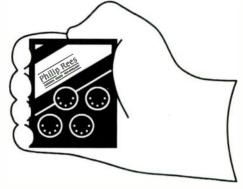
Our line drivers overcome the 15m limit of standard MIDI hardware, by converting the signal to a differential (balanced) format.





MLD is unidirectional and has a range of 1km. The bidirectional MTR system has a range of 150m. Both systems are mains-powered.

<b>MLD MIDI Line</b>	Driver	£89.95
MTR MIDI Line	Driver	299.00



# **Functional Simplicity**

#### Select a selector

These handy low cost switch-in-a-box gadgets solve many MIDI routing problems



and avoid the inconvenience of recabling.

The **3B** is a novel changeover switch, which will let you bypass your computer or sequencer without moving cables.

OC MIDLO-IA	044.05
2S MIDI Selector	£11.95
5S MIDI Selector	£29.95
3B MIDI Selector	£29.95
9S MIDI Selector	£39.95

#### Low cost thru units

Some MIDI gear may lack thru sockets. Chains of more than three MIDI devices can suffer from data corruption. You can solve these problems at low cost with *Philip Rees'* MIDI thru units.

The *V3* is a battery powered 1-into-3 thru box.
The *V4* has four outputs and is powered via its MIDI input. The

V8, which has two inputs and eight outputs, requires an external power source. The V10 is a mains-powered 1-into-10 unit. The mains-powered W5 has independent source selection for each of its 5 outputs.

V3 MIDI Thru Unit	011 05
V4 MIDI Thru Unit	£19.95
V8 MIDI Thru Unit	£27.95
V10 MIDI Thru Unit	£39.95
W5 Dual Input Thru Unit	£55.95

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# CAD Equitek mics

E300 (with

shockmount,

which comes

free with the

E300).

your system without increasing peaks. Individual

tracks or an entire mix will 'jump' from the speakers.

 using each of the polar patterns in appropriate applications. Once again, this is a very neutralsounding mic which produced quality results with every source I tried. It can cope well with transientrich material, and the provision of selectable polar patterns makes it truly versatile.

#### **EQUITEK E300**

This is the undoubted star of the range, and I'm sure this accolade is entirely due to the classic condenser capsule design. Physically, the E300 is slightly shorter than its sibling at 227mm, and

weighs significantly more at 845 grammes, but retains the same diameter. The microphone is supplied with a hard plastic carrying case, the SM1 swivelmount stand adaptor, and

the ZM1 suspension shockmount.

The control switches are identical to those on the E200, as is the construction of the head amplifier and other mechanical arrangements, but the capsule is mounted rather differently. The 1.1-inch double-sided condenser capsule is supported on a rubber cone within a wire mesh and metal weave pop shield. This time, the front of the microphone is a much more tasteful silver colour, and the grille has been flattened on the front and back in a manner vaguely reminiscent of a Neumann U87

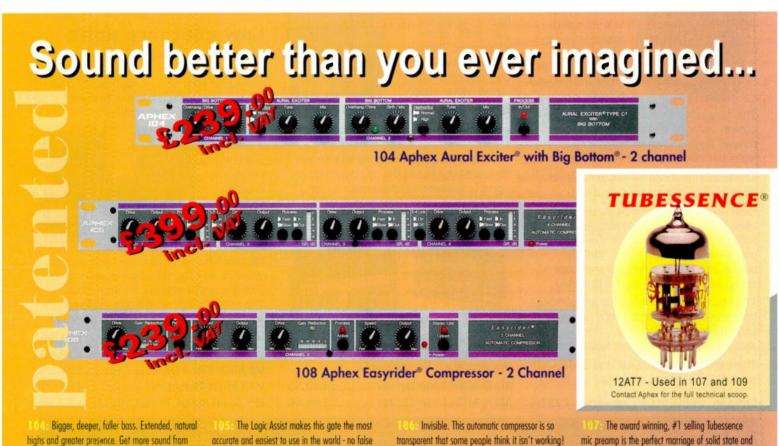
"As soon as I heard the E300, I knew it was going to produce classy results"

(the E200 grille is perfectly cylindrical).

The E300 capsule clearly performs rather better than the back-electrets used in the other Equitek microphones, because the noise performance is a full 5dB better (the equivalent noise level is 11dB SPL A-weighted) and the frequency response extends beyond 20kHz. Indeed, the plot is a flat line up to 2kHz, with that characteristic 1dB lift at 2.5kHz, and then a rather more pronounced 4dB peak at 10kHz, falling back to the nominal zero at 20kHz. The flattest response seems to be in the figure-ofeight mode, and the most pronounced HF peak appears in the omni-directional mode (where it actually works very well to counteract the natural tendency for omni-directional mics to sound a little flat in diffuse soundfields). The polar responses are good in all three modes, although they all show more severe high-frequency narrowing than the E200, particularly in the case of the omni pattern.

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Despite (or perhaps because of) the comments above, as soon as I heard this microphone I knew it was going to produce classy results — which it most certainly did. It was quite superb on spoken voice, particularly when used very close, and once again, it was very hard to make the thing pop or bump! On dynamic acoustic guitar recordings, it came up trumps, being very accurate and detailed, and coping extremely well with the complexities of 12-string harmonics.

I used the E300 exclusively in the supplied ZM1 shockmount, and I found this to be excellent, completely isolating the microphone from even quite severe vibrations deliberately introduced into the mic stand. I would recommend buying the ZM1 for use with the E200 too; it really did make a big difference. The only frustration with the shockmount, and one I also had with the simple swivelmount, is the complete absence of any cable management to dress the XLR cable away from the mic body and reduce the strain on the connector. This would be fairly easy to put right, and would make an enormous difference to the operational elegance of the microphone.

#### **CONCLUSION**

I recommend the Equitek range; the three mics share some innovative technology to produce

inventional valve designs.

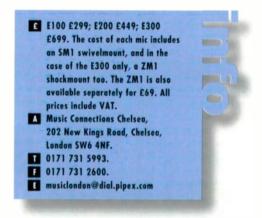
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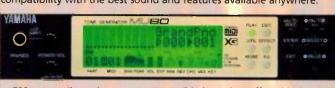
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# Mark of the Unicorn

MOTU software specialist and UK distributor SIMON STOCK passes on some useful info for users of Performer, Digital Performer, Composer's MOSAIC and Freestyle.

efore we get started with some hints and tips for MOTU software users, here's something Mac users can do fairly easily to maximise the performance of any Mac application, including Performer: increase the amount of RAM that's allocated to the program. The default amount of RAM that a program will take is set to be a compromise between what the program is really happy with, and what it might have to put up with in some systems. Unlike with the Atari ST, simply installing more RAM in a Mac does not automatically make it available to the programs you run. If a program crashes by 'freezing', as opposed to giving an error message, it's more than likely that the cause is the application running out of RAM. To check how much RAM you have available for Performer, boot the computer, then, without running any other programs, go to the About this Macintosh option, from the Apple Menu (see Figure 1, below). You will see a figure for Free System Blocks.

This is the RAM you have left to run any programs, including *Performer*. Make a note of this number, but deduct 300k to allow the System a bit of breathing room. Now, select the *Performer* application file and choose Get Info from the file menu (or Command-I). In the window that appears the bottom figure, for Preferred, is the one you can change: put in your new figure here. Increasing the default amount by 2-3000k should be more than adequate for most people, but I had to allocate 21Mb to *Performer v5.5* to open

someone else's file on one occasion! To check whether what you have allocated to Performer is adequate for your own needs, when you've loaded one of your own files into Performer you can open up the Memory gauge from the Windows menu. As long as you have at least 1000k free (2000k in Digital Performer) you're well within the safety zone. RAM is much cheaper than it used to be, so if you're struggling with what you have currently, it really is a worthwhile investment to get some more. One final word on the subject: although virtual memory, and particularly RAM Doubler, is an excellent way of increasing available memory for standard office applications, you cannot use this method for programs that depend on realtime performance, such as Performer.

# EDIT WINDOW TRACK SWITCHING

Here's a little feature that snuck in on *Performer v5* that many users still do not know about (and I have to keep remembering to use). When you're in an

# GRAPHIC EDITING & CONTROLLER INFORMATION

There are a few neat tricks you can do in the Graphic Editing window, once you know the function of a couple of items in the window, and one or two ways in which the Option (or Alt) key comes into effect.

The first thing I would recommend you do when you open up the Graphic Editing window for a track is to maximise its size, by clicking on the Maximise button in the title bar. When editing controllers (these techniques also apply to Velocity data and Pitch Bend), you can drag the divider bar between the controller and note display upwards, to give more space for viewing the controllers. You can also select between three different scales, as appropriate (a 0 to 127 scale, good for volume, a -80 to +80 scale, good for Pitch Bend, and a combination -80 to 127 scale), by clicking in the scale on the left.

Let's say you want to draw in a continuous MIDI volume change over a couple of bars. Firstly, look at the resolution selector towards the top right of the window. This tells you the density

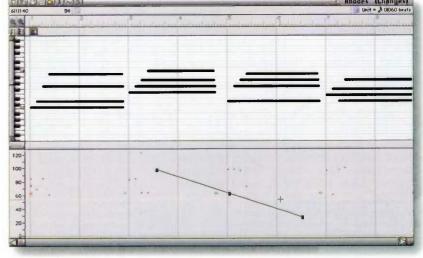


Figure 2

Event List, Graphic or Notation (not QuickScribe) editing window, and you want to switch to looking at another track in the same way, you no longer need to close the

window, select the other track, then open again. Instead, simply hold down the Command key whilst click-holding on the Track name at the upper right of the window: a pop-up list of all the other tracks will appear, and you can just go straight to the other track you want to edit.

of the data that's going to be created when you drag the pointer. The default is quarter-note (crotchet) resolution, which is too crude for a smooth change, so you should probably change this to 32nd-note resolution. Next, click on the 'I' Insert Tool in the title bar, and select Volume as the type of data you want to draw in. Move the cursor (which should now be a cross-hair) down to the controller area, and simply drag horizontally over two bars to create the volume change (see Figure 2, above).

The Option (Alt) key allows another way of creating the data. This time, hold the Option key down before you select

Figure 1.



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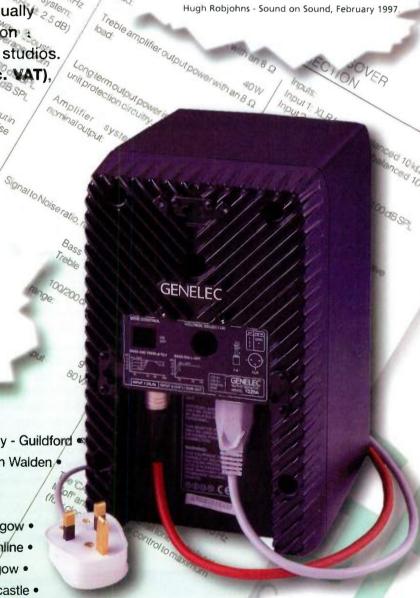
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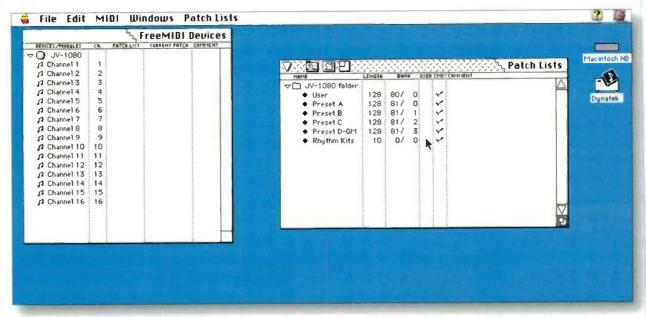


Figure 3.

▶ Volume, and keep holding it while you drag across two bars in the controller area. Now a line appears, with drag handles at each end and in the middle. Once the line is created, you can let go of the Option key and use the drag-handles to precisely position the line, or even turn it into a curve with the middle drag-handle. To finally create the data, click anywhere in the controller window.

Velocities and controllers already present can be altered using the Reshape tool that's the little squiggly sine-wave icon. To select the data you want to reshape, Option double-click on one of the controller events of the type you want to edit, and all controllers of that type will be selected. Now click on the Reshape tool, and you can drag across the selected data at the height you want to impose on it. Just as when creating controllers in the previous example, you can bring in a line with drag-handles to help you edit the data, just by holding down the Option key before you select the Reshape tool, then keeping hold of it while you create the line. The edit is finally made when you click away from the line.

There's another neat trick you can perform in this window: if you have a drum track that contains several different drums, but you want to alter the velocity of only one of them, double-click on that drum's note in the piano keyboard: all notes of that pitch are now selected, along with their velocities, and you can drag the velocity level up or down in the controller area (no Hyper-Edit required!).

# WHAT IS PATCHLIST

This tip refers to *Performer, Digital Performer, Composer's MOSAIC*, and *FreeStyle* for the Mac.

The FreeMIDI system, introduced with *Performer v5.0*, provides MIDI resources and functionality for all current MOTU programs. Setting up FreeMIDI is done from two small applications, *FreeMIDI Setup* and *PatchList Manager*. *FreeMIDI Setup* you have to come across straight away, as it's here that you create the FreeMIDI configuration file that tells your MOTU software what devices you have connected to what MIDI interfaces, how

many MIDI channels each device has, and what properties they have. *PatchList Manager*, on the other hand, deals purely with patch lists; if the patch lists that you get automatically from FreeMIDI accurately reflect the patch names in your gear, it's possible that you do not actually need to use it at all in order to get the most out of FreeMIDI patch lists.

When you add devices to your configuration in FreeMIDI Setup, many of the synths will automatically be allocated a patch list, made up of the original factory sounds for that synth. The information for these patch lists comes from files in the FreeMIDI Folder, which is tucked away in the System Folder. If you have a unit that isn't allocated a factory patch list (instead, you may see Patch 1, Patch 2, and so on), you can use PatchList Manager to manually create your own. Or, if you do have a factory patch list from FreeMIDI, but you have altered and renamed some of the patches in your unit, you can edit the patch list that FreeMIDI provides to reflect the real state of your unit.

When you first run PatchList Manager, you're presented with a list of the devices in your FreeMIDI Configuration (see Figure 3, above). From this you can choose which devices you would like to create or edit a patch list for. There's also an option here to use one of several patch list templates — for instance, the General MIDI set (this is useful for assigning the GM patch list to QuickTime musical instruments). Once you've selected the devices you want to create patch lists for, you can create new patch lists from scratch in the Patch Lists window. You can specify how many patches the list should have, and the numbering system used. To make the task

#### TO CHUNK OR NOT TO CHUNK?

The addition of the new Mixing Board in Performer v5.5 (already in Digital Performer since v1.6), and the way in which Digidesign's DAE places a limit on the number of virtual tracks available at one time, means that the usefulness of using Chunks to arrange multiple sequences should be considered against the benefits of a wholly linear approach to sequencing. The Mixing Board is derived directly from the tracks of a

sequence so if you have multiple sequences (ie. Chunks), you have multiple Mixing Boards — not impossible to work with, but not as straightforward as having one overall desk, as in the real world. The limited number of virtual tracks available from the DAE means that by duplicating audio tracks in multiple Chunks, you're likely to run into this limit sooner rather than later. The good news is, now that Markers are

fully integrated into the Tracks
Window, many of the advantages of
using Chunks are available directly in
that window: for example, you can
select a whole section, one Marker
to the next, simply by clicking on the
Marker above the tracks; the
selected section can now be
removed (Snip command), copled,
cut. or whatever, while you get the
benefit of one Mixing Board, and
better use of virtual audio tracks —
plus it'll be much easier to export
any of your works as a MIDI File.

of manually entering names a bit easier, each time you 'arrow down' the patch list, the next program change is sent out, so if the display of your synth is in visual range, you just need to glance over at it before entering the next name, rather than having to keep switching between computer and synth.

If you wish to edit one of the existing default factory lists, select the relevant devices in the FreeMIDI Devices window, then choose 'Load FreeMIDI PatchLists' from the mini menu. The current list assigned to the device by FreeMIDI will appear in the Patch List window, ready for you to edit with a double click.

To create a hierarchical display of multiple banks for a device, simply make a Folder in the PatchLists window and drag individual patch lists into it. The bank numbers needed to switch between the multiple banks can be set from 'Set Bank Select' in the Patch Lists window minimenu, for devices that use the fairly standard Controller 0 and/or 32 to switch banks (make sure this corresponds with the Properties that are defined for the device in FreeMIDI Setup). You should be

"Although virtual memory, and particularly *RAM Doubler*, is an excellent way of increasing available memory, you cannot use this method for programs that depend on real-time performance, such as *Performer*."

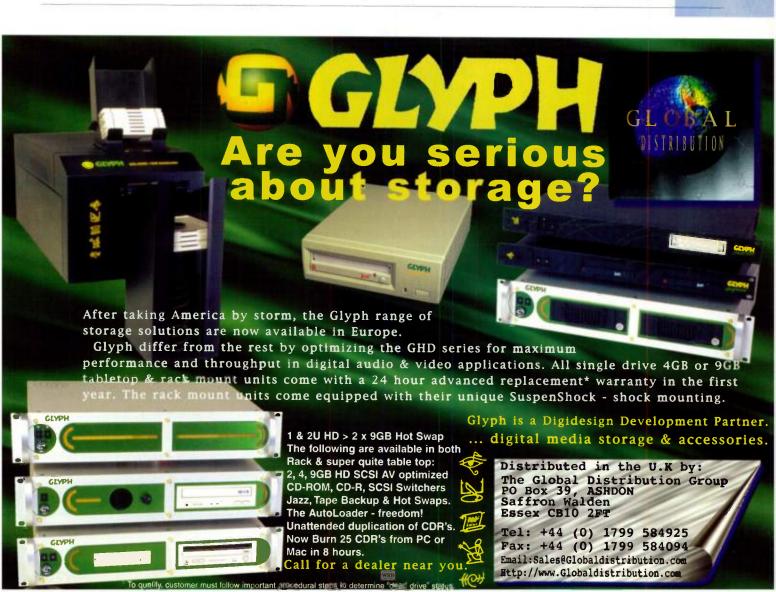
able to get this information from your device's manual.

Some devices use very non-standard ways of switching between banks — for example, older Ensoniq synths like the VFX-SD use high-numbered Program Change messages to select banks. Fear not: by clicking in the MIDI Message column you can specify any MIDI message to be sent when a particular bank is selected; basically, if it's possible to switch a bank via MIDI, then PatchList Manager can do it.

There are, however, some devices that simply do not allow you to select all of their patches via MIDI. Emu's Proteus

series and the Alesis Quadraverb are both examples of devices that have more patches than are selectable by their MIDI implementation, and no amount of clever programming can change that.

Finally, when you're happy with the patch lists that you've created, make sure that you've assigned the new lists, or folders contining multiple lists, to the devices and modules (ie. multitimbral parts of a device) in the FreeMIDI Devices window. By now, you should see that PatchList Manager gives you the power to create any patch list for any device, looking just the way you want it to.





Fixing

The band on stage in the Banqueting Hall, Tamworth Castle.

and money setting up a one-off gig in a historic castle, for a select audience, with the aim of recording and videoing the performance for future release. Then disaster strikes: catastrophic equipment failure leaves you with half a gig on multitrack tape, and major rebuilding work is needed later in the studio. PHIL BATES mixes some cement, rolls up his shirt sleeves and tucks his pencil behind his ear...

# reconstructing a live recording in the studio

he date was the 5th of May 1996. The venue was the Banqueting Hall, Tamworth Castle, Staffordshire. The event was an acoustic gig featuring members of ELO Pt2, Gordon Giltrap, and vocalist Jo Bates. The idea was to record and video the gig for CD and video release later in '96.

Everything started well enough. There was a bit of a time difficulty, because the curators of Tamworth Castle would not allow us access to the banqueting hall of their lovely castle until 4.30pm, as before this time there would still be members of the public roaming about. You might think that, as this was just an acoustic gig, there wouldn't be much to set up — but you'd be wrong. Firstly, we had to set up a stage big enough to handle six people, three bass guitars, five or six acoustic guitars, two lighting trees, a small bass rig, a multitude of monitors and a pair of congas — and we were losing about six feet of room space because of an antique and very valuable table that was on

loan to Tamworth Castle from the Victoria & Albert museum, couldn't be moved, and couldn't have anything put on it. Six feet doesn't sound very much, but the banqueting hall in question was small to start with, and it was going to be a struggle to seat the 90 punters we'd sold tickets to.

Another complication was that the stage had to be carried manually across Tamworth from another venue, and then assembled, section by section, before the PA, lights, video equipment, and so on, could be put into place. However, we managed, by dint of some very hard work, to have everything in place by 7.30 when the doors opened. We even managed a soundcheck, although not a very comprehensive one. Positioning the recording engineer and gear was something of a problem, but we solved it by putting the engineer on a landing halfway up one of the staircases that ran off the banqueting hall. This meant that there was no visual contact between stage and engineer, which was not ideal, but our engineers, Dennis and his wife Jude, seemed happy enough. It's unfortunate that the problem I'm about to recount fell fairly and squarely into the lap of this obliging chap...

#### **MULTITRACK MISHAP**

The problem had its roots in my choice of recording medium. I decided to hire an analogue 16-track to record onto, and as we were on a fairly restricted budget I had to go for a Fostex E16. I myself have an ADAT digital 8-track at home, but eight tracks wouldn't be enough, and I felt uneasy when I visualised the potential sync problems we might encounter if I hired another to go with it. I've never personally experienced sync problems using ADATs — but I definitely didn't want to take the risk of this particular night being a first. My logic was simple. With our limited setup time, it would be one less worry for Dennis if we could just record straight onto a 16-track machine.

To be fair, things went swimmingly for the first hour or so — the music was good, and the audience were incredibly appreciative. We were on the home stretch, with four or five songs to go, when Jude appeared at the side of the stage looking worried and asking us to tell a few jokes or something, because there was some sort of problem. We duly obliged, but time was getting on, and anxious looks were thrown in the direction of Jude, especially when Gordon Giltrap threatened to launch into a George Formby medley. Things were looking bleak, but they became even bleaker when Dennis appeared, shaking his head. That was it, there would be no more recording tonight. The multitrack was defunct, it had shuffled off its mortal coil. Up to this point the audience had been rocking away, and we had no choice but to carry on. I put on a cheery face, but my insides were churning while I tried to conceive of a rescue package for my treasured project.

#### **VIDEO GAMES**

I gradually became aware of a dim light at the end of this very dark tunnel. The situation might be redeemable, thanks to the fact that we had three video cameras in the room. If there was some usable audio on the video tape, we could rebuild the missing tracks from scratch in a studio situation. I must admit that when this solution popped into my fevered brain I felt a lot better. Now all I had to worry about was, firstly, whether there was any audio at all, and secondly, if there was, would it be clear enough for the musicians to hear what they played on the night, and to recreate their performances? (Don't forget that we still had to sync sound to pictures).

Post-gig discussions with Dennis revealed that our Fostex E16 had spontaneously developed some sort of motor problem. It would operate in Fast Forward and Rewind, but did not want anything to do with Play mode. One spindle was turning, but the other was stubbornly stationary,

"The multitrack was defunct, it had shuffled off its mortal coil."



Phil Bates in his home studio.

and without stripping the damned thing down there and then, there wasn't much we could do.

Anyway, at the first opportunity I got VHS copies of the footage that each of the three video cameras had taken and listened to the quality of the audio tracks. After playing a few minutes of the first tape, I found my head in my hands. Yes, there was audio, but it sounded as if the whole thing had been fed through a Boss Heavy Metal pedal on full overdrive setting. Things started to look brighter with the playback of the second tape, because it was taken from the fixed camera that had been positioned in the minstrel's gallery at the back of the room. The audio wasn't even what you would call lo-fi, but it wasn't too distorted, and it was possible to hear almost everything. There was certainly enough clarity for the musicians to identify much of what they had played on the night.

#### REMAKE, REMODEL

We were now faced with the painful process of recreating events that had occurred in a great atmosphere and with a certain amount of spontaneity a week earlier, in a cold, clinical recording situation. After the breakdown of the multitrack, some of the performers, thinking that the pressure was off, had started to relax a little — a little too much, in fact, resulting in some fairly strange musical moments. We would have to recreate them all, in the sober and sterile atmosphere of a recording studio.

Our home setup, The Panic Station, is nicely, if a little modestly, stocked with digital recording equipment, synths, samplers, guitars, preamps, and so on — though the room itself looks as though it's been spring-cleaned by an irate poltergeist. Having been lucky enough to find usable audio, I set about transferring it to track 16 of yet another hired E16. The first task was to establish a guide track something down on tape that was actually playing in time with our track. The job fell to me and my trusty Takamine EN10 guitar, ably assisted by a Fishman Pro EQ going through a Peavey ProFex II preamp. By now, the relief I had felt when discovering that we had something useable was giving way to increasing irritation at having to listen to a middly, semidistorted soundtrack to a nightmare, that sounded as though it had been recorded through an old Reslo ribbon microphone from the other end of an extremely long tunnel. My disposition didn't improve with repeated attempts to follow the ever-changing tempo of the track, though I eventually got my head around it. I did try to approach this first guitar track as if it were the real thing rather than a guide, because

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# Reconstructing a Live Recording



Phil Bates (centre) with Mark Knight (left) and Gordon Giltrap (right).

"On the night

everyone was

turned up loud

and for some

things fairly hard,

reason it doesn't

sound the same

when you try to

recreate those

dynamics in a

studio situation."

and hitting

▶ I wanted to maintain some edge and some feeling of spontaneity, which I think I managed to achieve: you certainly couldn't mistake this piece of playing for one of my usual studio takes

Next up was the percussion. The decision to put on the congas at this early stage was based around the fact that it was fairly difficult to hear exactly what they were doing on the soundtrack from hell, and by the time we'd replaced more instruments there would be a temptation to listen to the new stuff we'd recorded and just go with the flow, rather than recreating the original conga track. Again, I was aware of our need to sync our soundtrack with the video footage. I used conga samples, rather than going through the potentially torturous process of getting percussionist Bev Bevan into the studio to match up his original performance, and though replicating the foibles of a live performance proved difficult, the tracks in question were, fortunately, medium-paced, so there wasn't too much showing off.

I brought ace guitarist Gordon Giltrap in next. He had come up with some wonderfully intricate parts for two of the tracks, and had also provided the intros to both songs. This was going to be another tricky job. In the end, we did what everyone does when they have to sync with something when there's no count: we found an identifying noise — a cough, or a stray note, or something similar - and made a mental count between that noise and the start of the track. This process can be a bit hit or miss, because the interval usually ends up being five and threequarter beats, or something similar, but for a musician of Gordon's calibre it didn't present any problems. He sailed through his parts virtually first take, getting beautiful sounds from his Taylor 912C acoustic guitar, fitted with the Mimesis Blend System which combines a magnetic pick-up with an internally fitted microphone. He then feeds his signal through his own GG10 Signature preamp, made for him by Award/Session.

Things were going swimmingly. We had some decent-sounding bed tracks, and things would become progressively easier from now on. Next in the hot seat was bass player Mark Knight. Mark's job was easier, in some ways, because he was not

seen too much in the video footage, partly because he has a tendency to hide in the shadows at the back of the stage. This meant that he didn't have to finger-sync like the more visible of us.

Violin was next, and this was potentially the biggest problem because Mik Kaminski is a pretty spontaneous player, so it's virtually impossible for him to duplicate any two performances. We were saved to a certain extent by the fact that fiddlers don't pluck, and so to musical plebs like me it never actually looks as if they're playing what they are actually playing anyway (only another fiddler would know). Mik is another good pro, so he and his Zeta electric violin were soon putting their feet up and drinking a can of Caffreys together.

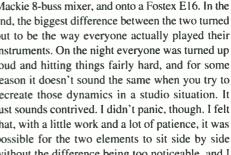
Vocals came last. I was putting this off because I suspected that it could be the most difficult part of the whole process. And I wasn't wrong. I went in looking like a sprightly 43-year old, and came out two hours later looking like Freddie Kruger. All those ad libs had to be reproduced because of the lip sync: my ugly mug was going to be there taking up the whole of the screen at several points, and I didn't want people to think I was miming. Another problem, and one I hadn't really anticipated, was the between-song chat. How was I going to lip-sync that? The problem solved itself, because it soon became obvious that we couldn't actually feature any chat. It was going to be far too complicated. Regrettably, this was one of the reasons why the video took the form of a series of single songs, rather than a concert that flowed straight through. But I really couldn't see another way around it.

Harmonies were pretty easy. We resisted the temptation to subtly double-track and did them straight off, as if on a gig. I didn't have a Shure SM58 to hand to try and reproduce the stage vocal sound, so I thought I'd try my excellent Rode NT2. I was aware that the difference in sound was a potential problem, but I was pretty sure I could fix it with EQ on the mix. I was fairly happy with the results.

#### **FIX IT IN THE MIX**

The next (and last) problem was mixing. I wasn't sure how much of a difference there would be between the material recorded on the night, and the material recorded a week later. In theory there shouldn't be too much difference, because everything had been recorded flat through our Mackie 8-buss mixer, and onto a Fostex E16. In the end, the biggest difference between the two turned out to be the way everyone actually played their instruments. On the night everyone was turned up loud and hitting things fairly hard, and for some reason it doesn't sound the same when you try to recreate those dynamics in a studio situation. It just sounds contrived. I didn't panic, though. I felt that, with a little work and a lot of patience, it was possible for the two elements to sit side by side without the difference being too noticeable, and I was right. No-one seems to have noticed yet, or if they have they've been incredibly polite!

Would I do it all again? Of course I would! (0)







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# FONTASTIC

### **CREATING PERSONALISED AWE32/64 SOUNDFONTS**

Using SoundFonts with your AWE32 or AWE64 soundcard makes them totally open-ended — if you want a new sound for MIDI use you just sample one.

MARTIN WALKER guides you through the wonders of personalised SoundFont creation.

f you want to add some personality to your music, creating unique sounds will ensure that you stand out

from the crowd. There's no substitute for the hand-crafted approach, and sampling your own sources can give your track that certain something that makes it different. You don't need a high-end sampler to be able to do this, as there are various PC soundcards on the market already that allow you to download personal samples, and then play them back, just like any other MIDI sound source. The most popular of these is undoubtedly Creative Labs' AWE32, and their downloadable sample format, known as a SoundFont, has become one of the market standards. The name arises because of the similarity with graphic fonts — each SoundFont contains a selection of sounds that are grouped together into an audio 'alphabet'.

Because so many people have bought the AWE32 card (and its new rich cousin, the AWE64), many companies are now providing ready-to-use SoundFonts, giving end users a wide variety of sound sources in addition to the built-in ROM set already

generators and two triangle-wave LFOs. This enables you to add much more personality to the basic sound, as well as making it much more expressive to play. However, it's a sad fact of life that when you start talking about creative sampling, or the programming of any sort of synth sounds, many people's eyes glaze over. Most still rely on third-party products to fulfil their needs, and rarely, if at all, get their programming hands dirty. But, despite what you might think, creating your own SoundFonts does not require a white coat, a library of manuals and copious supplies of black coffee. Once you know the principles, you could have a basic SoundFont completed using existing WAV files in an hour or less, and this should spur you on to discover more.

#### **GETTING YOUR FEET WET**

There are various ways of using SoundFonts. Some people prefer to load a batch of instruments into their soundcard RAM, each occupying a modest

amount of memory. In this way you can create a whole ensemble for a particular track (sample CDs of ethnic instruments lend themselves very well to this sort of technique). Or you can blow your entire RAM allocation on one memory-hogging instrument that really lifts a track, which otherwise uses only the basic ROM sounds. Remember that many professional musicians working with orchestral sounds and big budgets find that they can achieve more realistic and natural sounds by layering one real recorded instrument against a batch of synthesized ones. At the lower level of PC soundcards, this technique can still work. When the bulk of the available sounds are made up from very short loops, having a larger sampled lead instrument or evolving pad will give a track much more lasting interest.

However, you don't have to start amassing expensive studio mics to capture sounds from the real world. Audio sample CDs provide a huge pool of sounds, but these don't necessarily need to be plonked into place just as they are. Once a sound is in WAV format in your PC, you can subject it to all sorts of

treatments using one of the many editors available. By adding straightforward multi-effects to individual samples directly, you can achieve mixes otherwise only achievable with multitrack. More bizarre techniques, such as reversing or using extreme distortion or quantisation effects, can also create new and original sounds, and these can then be saved as new WAV sounds before being incorporated into the SoundFont.

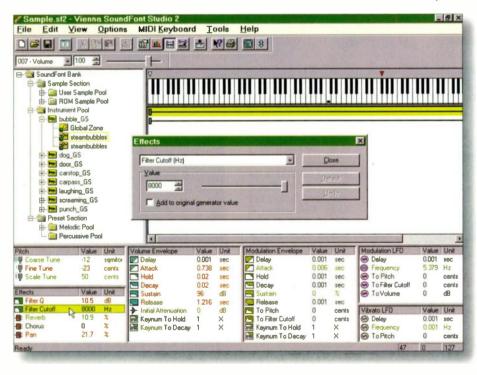


Figure 1: The new Vienna version 2.1 shows a lot more simultaneous parameters. Clicking on any of these parameter windows brings up a new window which allows new values to be entered by dragging a slider.

supplied on the soundcard. The beauty of SoundFonts is that the basic samples can also be modified by the AWE's comprehensive synth engine (provided by the EMU8000 soundcard chip). This gives you access to the traditional oscillator-filter-amplifier chain so beloved of analogue synth owners. In this case the VCO (voltage-controlled oscillator) is replaced by the sample, but the VCF (filter) and VCA (amplifier) remain, along with two envelope



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### CREATING SOUNDFONTS

Many bands work almost entirely with samplers nowadays, treating their sounds in so many ways that few would recognise their original origins. You can often find musical inspiration from the resulting sounds as they spark off some fresh train of thought. A completely different approach is to create the original sound from scratch, and there's a wide variety of software manipulators and generators available (very well covered in the recent

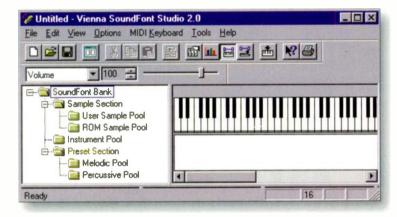


Figure 2: Version 2.0 of Vienna is currently available free of charge for downloading from the Creative Labs UK site (see the 'Oh Vienna!' box for more details).

two-part SOS feature 'Making Waves', in the April and May issues), ranging from shareware to full-blown commercial applications supplied on CD-ROM. These are another ideal way of providing unique sounds and textures.

#### **BACK TO BASICS**

Supplied with the AWE32 and 64 soundcards is the *Vienna* SoundFont Studio, which Creative Labs term a 'Professional Preset Editor'. This has evolved over the years, and the latest version 2.1 (which is shown in most of these screenshots) is supplied with AWE64. Details on how to upgrade are given in the 'Oh Vienna!' box. To create your own SoundFonts, the first step is to select 'Import User Samples', to load in some of your chosen sounds in WAV format.

#### SOUNDFONTS UNDER THE MICROSCOPE

SoundFont banks have a threelevel structure. At the Sample Level, the WAV samples themselves are the basic elements, and information stored includes anything directly related only to the sample, such as its name and any loop points. User samples can be included in the sample pool, as well as any from those already burnt into the ROM on the soundcard. Once the individual samples are mapped across a keyboard, as either each with an individual key range (multisampling) or overlapping each other (layering), they can also be given a velocity range, and this is known as the Instrument Level, Looping can also be enabled for samples on an

individual basis. Each
instrument zone includes one or
more samples spread across a
key range, as well as any
individual synth settings, such
as vibrato, chorus or reverb. To
save time adding these same
settings to each instrument
zone, a global zone can be
created whose settings are used
globally by all instrument zones.

The topmost level of a SoundFont is a Preset, and this determines how the Instrument relates to MIDI, by giving it a Bank number and Preset number (analogous to MIDI Bank Change and MIDI Program Change). The preset zone allows you to specify the note range used from the instrument. Multiple instruments can be mapped across the

keyboard, so that, for instance, a bass line could be played by the bottom two octaves while a pad sound occupied the rest of the keyboard range. Percussive presets tend to use only a single note range to trigger each different sample, giving access to many different sounds from a single preset. Most multitimbral synths can work in this way with melodic sounds as well as drum kits, but SoundFonts do allow a lot of versatility, and Creative Labs use the different term 'Preset' to indicate that, unlike a standard General MIDI program. they allow their presets to each contain a collection of musical instruments, drum kits, and sound effects. A SoundFont bank contains a collection of presets, each of which can have a variety of subject matter. Clear now?

#### DIGITAL GRABBING FROM AUDIO CD

If you're capturing sounds from a CD, you'll have a much greater variety of sources if you opt for audio CD, although the quality of WAV file collections has greatly increased of late. Ideally, a digital grab from the audio CD will preserve all the nuances of the original data. but this is not always as easy as it ought to be. There are many pieces of audio grab software available both commercial offerings, and from shareware sources - but it seems to be the case that you won't know. until you try them, whether they'll work with your particular CD-ROM drive. Even if your drive is on the list of supported models, changes in firmware (the operating system inside the drive) may still mean that an earlier version of the same model may not work, even if the model appears on the list. If you are going to buy an audio CD grab program, try at least to get hold of a list of supported drives before you take the plunge.

Figure 3 (overleaf) shows a stereo percussion loop being imported from the excellent *Spices Of India* sample CD (part of Time & Space's Creative Essentials series). Once imported, this stereo source will appear as two separate samples. In Figure 4 (overleaf) you can see that the User Sample Pool now has two entries — the stereo percussion sample has automatically been split internally into left- and right-channel samples after being imported, and its Pan values have been set to hard left and right respectively.

Once you have samples in your Pool to choose from, create a New Instrument by right-clicking on the Instrument Pool (Figure 4). The Instrument uses the synth engine mentioned earlier, passing the sample through a filter and amplifier, and allowing various modifications and treatments to be carried out en route. Once you've chosen a name for the new instrument, you can decide to go to the New Instrument Zone, where you select which samples will be included. In this case, it's a stereo sample, so both the left and right channels need to be chosen (you hold down the Shift key while clicking on them to select both simultaneously). Each zone consists of a sample with an associated note range. To adjust the note range for a particular zone, first select it, by clicking either your left mouse button on the appropriate horizontal line beneath the keyboard, or directly on the sample name in the Instrument Pool. Once it's selected, you can change the note range for the sound by left-clicking and dragging either end of the current zone symbol, or by right-clicking and selecting 'MIDI set range', and playing a low and high MIDI note on your external MIDI keyboard (see Figure 5, page 124).

If you want your samples to loop, you'll have to select this for each item in the Instrument Pool, using the right-click and 'Loop...' option, which brings up a waveform plot and a looping adjustment and audition section. This allows you to set loop points, but it is pretty basic. While you're in the instrument section, you can have a lot of fun altering all the synth settings — it really is a case of 'click, drag and experiment'. With the new instrument basically defined, you will finally need to create a New Preset, in order to give it a MIDI bank and Program number so that it can be easily accessed by a sequencer from the outside world. Once this has been done, you can save your completed SoundFont bank using the



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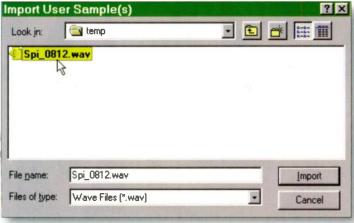
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SOS 6/97

## CREATING SOUNDFONTS



Files of type:
The first
step in
making
your own SoundFonts is to
import some samples into
the sample pool.

 'Save As' option from the File menu. Now you're ready to use the new SoundFont in MIDI sequences.

To download your new SoundFont into the soundcard's RAM, load up the AWE control utility (see Figure 6, page 124) and then select the User page. Here you can point to your new font (using Browse is the quickest way to find the newly saved font), and, once the path has been set up, click on Apply to actually download the new sounds into the User bank. They can now be accessed as easily as any other MIDI sound, and used as part of your music compositions.

#### MULTISAMPLING

Many people are put off creating their own SoundFonts by their apparent complexity, but just because you're presented with a designer kitchen doesn't mean that you can't make beans on toast. The easiest way to start is by mapping a single sample across the keyboard range, as above although many real instruments can only be played over a comparatively small span of notes, so there's no point in trying to create perfect results over seven octaves! Even if the instrument has a massive range, it is unlikely that most music tracks will need to use it all. Having said that, one of the benefits in only using a single sample is that you can often find unexpected but interesting results if you use it way out of the normal pitch range, which may spark off more musical ideas.

Multisampling involves using a set of samples,

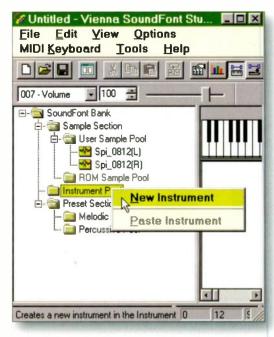


Figure 4: The second stage of SoundFont creation is to create New Instruments, which can use any samples currently in the pool.

each optimised for a particular pitch range. By splitting up the sound in this way you get a more realistic result, as most real instruments change in timbre over their range. The easiest way to try the multisampled approach is to grab some of the many sounds provided on CD audio sample disks (and in WAV file collections). These are often provided as a set of three samples, at C3, C4, and C5 MIDI note values, ensuring a reasonable note range without too many bizarre changes in timbre. Simply allocate each one a range of one octave, and then stand back and admire your handiwork. For many instruments, the transitions may still sound quite odd, and the next step up is a half-octave multisample set, which has, for instance, C3, F3, C4, F4 and so on. Many ROM sample sets go one further than this, if there's space, by providing 1/2 octave multisamples, with changes in sample every three or four notes. You can examine the contents of your ROM set in the Vienna editor, as individual ROM samples can be imported, and multisamples include their designated pitch in the name. The number of multisamples used varies from one (for sounds such as ocarina) to eight (for the piano, as you might expect).

#### **CRAMMING IT IN**

The AWE32 comes with 512k of sample RAM already on board, but if you are using GS mode this is already used to store the sound effects, and the MT32 mode also uses a small amount of this memory. GM mode leaves the entire 512k free for your own use. Although some people have AWE32 cards with only the fixed 512k, this can be expanded by up to 32Mb of SIMM memory (although 4Mb is always mapped by the card as ROM space, so only 28Mb of this will be available for your own samples). A fully expanded 32Mb soundcard contains as much memory as you'll find on many rackmounted industry standard samplers, so you're unlikely to have to use any tricks to fit in a good range of sounds. However, it's surprising how many people

# WEB FREEBIES To Join Creative Connection, see: Whttp://www.ctlsg.creaf. com/members/invited.html For free SoundFonts on the Internet, go to: W SoundFont Collection 1 (8 banks available) at http://www.ctlsg.creaf.com /members/connect/goodies /sf1.html You'll find MIDI and SoundFont bank goodles at: W http://netra.cle.creaf.com /wwwnew/music/album /mba02.html

# HERE ARE SOME I PREPARED EARLIER

There are various sources of ready-to-use WAV files, as ingredients for your own SoundFonts. They tend nowadays to be of pretty uniformly high quality (but watch out for some of the very early WAV collections, which sometimes contain only gritty-sounding 8-bit samples rather than 16-bit sounds). Sound Cube, a 10-CD set from Best Service, contains a huge collection of high-quality sounds. Creative Essentials, from Time &

Space, is an ever-expanding series which currently stands at 30 CDs, ranging from Jungle Frenzy to Vintage Keyboards.

Most recently, Paul White reviewed a batch of ten of these in the March '97 issue, and there are reviews of earlier releases in the November '96 and May '96 issues.

There are also collections of SoundFonts, for those who bottle out of producing their own. Et Cetera market a range of these, mostly from Emu,

whose 8000 chip is the nerve centre of the wave-synthesis portion of the AWE soundcards. Time & Space have MicroWavelt (not yet reviewed) at £24.95. Finally, for all of us who are financially challenged. you can find sources of free SoundFonts on the Internet (a couple are mentioned above), as well as associated MIDI files. so that you can hear the sounds in context. Don't forget that you can extract particular WAV sounds directly from the SoundFont, so that they can be used in other applications.

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## CREATING SOUNDFONTS

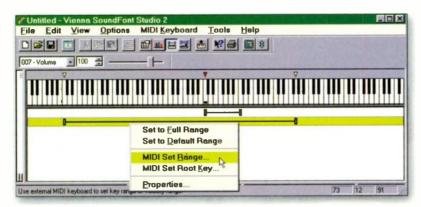


Figure 5: Setting up note ranges can even be done using a MIDI keyboard.

▶ neglect to remove unwanted sections from their samples. If you're looping a sound, and there is still data after the loop end point, this can normally be cropped. If you have loads of memory, it's easy to be lazy about this, but sooner or later you will fill up the memory and be looking to gain more space. Removing the excess now can save you a boring job later, and instantly regain you some sample space.

If you have only a few megabytes or less, or are interested in creating much longer, evolving sounds that wouldn't normally fit in existing memory, various tips and techniques can be called into play. A favourite way of fattening up short sounds is to layer them. Vienna allows many different samples to be triggered by the same note, and this can be used with dissimilar sounds to create interesting composites. One of the beauties of layering is that if each sound has a different loop length, they will not remain synchronised, but slowly move apart, resulting in . a loop length that's effectively a lot longer. Incidentally, one of the limitations of the previous Vienna, version 1, was that stereo samples were not supported --- you could load each channel of the stereo sample separately, but unless you were very careful with loop lengths, the two channels would drift apart. Although versions 2.0 and 2.1 allow stereo samples to be directly imported (see the Vienna box), looping must be set up for each channel separately, so you will still have to be careful. Often the solution is to apply a little lateral



Figure 6: AWE control allows you to download your user banks to the RAM sample memory on the soundcard.

thinking. If you want a stereo drum or percussion track, it's easier to use a mono drum loop, and then add extra percussion, panned left and right to give a good rhythmic spread.

Although running two completely different sounds simultaneously is one approach, another classic technique is to use the same sample twice, but detune each version, one slightly up in pitch, and the other slightly down. This will create natural 'chorusing'; if you want a stereo spread, simply panning the two sounds hard left and right will give you a good wide image that still remains reasonably mono compatible. Bear in mind, though, that if the two sounds are not sufficiently separated in pitch, they well sound 'flangy' when run in mono.

You don't have to restrict yourself to single notes when creating new samples. Complete ambient backdrops also work well, even using sounds transposed down by several octaves (and therefore lasting much longer), and this is another way to make the most of limited sample memory. If you think that 512k is too little memory to work with, you've only got to load up some of the demos provided with the AWE series cards to change your mind.

#### LOOPING THE LOOP

The time-honoured way of creating a much longer sound is to loop the sample, but unless the loop itself is quite long, the sound will lack interest. Short loops are a common flaw of the onboard ROM sounds fitted on many soundcards, but often these do sound rather better when heard in context, with a variety of other instruments. Trying to achieve smooth and glitch-free loops is one of the things that dissuade many people from producing their own samples. One way to avoid it altogether is by using shorter single-shot sounds and bringing in other MIDI sources for those longer evolving pad sounds. If you want to blow all your memory on one big sample, on the other hand, you can probably get by without having to loop it. However, looping can save a lot of memory, and it's really not that difficult once you get started.

Most modern audio editors will allow you to look for zero crossings (where the waveform has a value

#### CONTACTS

#### SOUNDFONT COLLECTIONS:

- A Et Cetera Distribution, Valley House, 2 Bradwood Court, St Crispin Way, Haslingdon, Lancashire BB4 4PW.
- T 01706 228039.
- F 01706 222989.
- W http://www.etcetera.co.uk

#### TIME & SPACE:

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- F 01734 828270.
- W http://www.creativelabs.com

#### OH VIENNA!

Many of the screenshots in this feature show the new Vienna v2.1 for Windows 95, which is included in the software bundle with the AWE64, but also works with the AWE32. This new version of Vienna initially looks daunting. until you realise that showing loads of parameters actually makes it far easier to see the complete picture (previous versions presented data in a selection of different windows). Vlenna v1 had several 'decks' for editing Samples, Envelopes, Modulators, Miscellaneous and Loops. Version 2.1 shows all of

the parameters simultaneously, giving a much better overview at a glance, as well as allowing many more tweaks (Figure 1). Other than Interface improvements, the main change is the introduction of SoundFont 2.0 format (which is saved as SF2 files). Older banks in 1.0 format (SBK files) can be converted to the newer version as they are loaded.

Creative are hoping that this latest version of Vienna will appear on their web site for downloading in due course. In the meantime, an interim version 2.0 is already available free to members of Creative Connection,

versions for Windows 3.1 and Windows 95, both supporting the new SF2 font format and stereo file loading. The new graphic Interface is basically the same as in v2.1. but without the extensive parameter boxes at the bottom of the screen (see Figure 2). It's easy to join Creative Connection at the web site - after filling out a short questionnaire, you receive an ID number and password: the whole process takes a couple of minutes, and once logged in you can find more free SoundFonts and Vienna 2.0 straightaway. Go

their web site 'club'. There are

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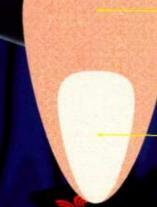


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## CREATING SOUNDFONTS

▶ of nought). Making sure that any sound starts and ends with a zero value will help you avoid stray clicks, but for the same reason, this is also the best way to choose loop points. It can take a long time to find the perfect loop point, and patience is definitely required, but you'll soon get a feel for which sounds are more suitable for successful looping. Sadly, very little software does more than jump between adjacent zero crossings, even on commercial rackmounting samplers, and this is why it can still take a long time to find a suitable loop point — although each end of the loop has the same sampled value, they may have totally different timbres, giving an audible jump in tonal quality every time the loop point is passed. On many sounds this means that the only successful loop will be found right at the end of the sample, with a fairly short length. With percussive sounds, most of the evolving part has finished by this stage, but you still get the effect of a much longer sound by continuing to loop round the very last bit. On some occasions, even a single cycle of the waveform may be sufficient to provide a stable (albeit boring) loop. Vienna specifies a minimum loop length of 32 bytes if you want to try this.

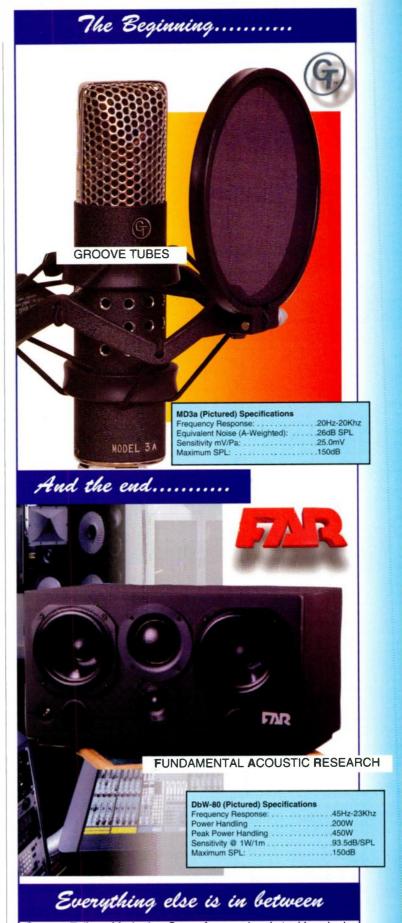
To achieve longer loops that are still smooth, a popular technique is crossfade looping. Although this is possible to do by hand, it's a hell of a fiddle, and is far better achieved by a dedicated software function. One of the best editors with this function is *Sound Forge*, but this is, unfortunately, quite expensive. Crossfading only works effectively if you already have a reasonably smooth

"It really is a case of 'click, drag and experiment'." loop. Once you have this, a portion of the waveform to either side of the loop is copied, reversed, and added back into the same place. The results, in the before and after portion around the loop point, fade smoothly into each other, rather than just butting up as they did previously. Crossfade looping can solve a lot of tricky loop problems, and many people swear by it, but it does have the disadvantage of permanently altering your sample data,

and the crossfade will still give a cyclic change in tone each time it loops. For this reason, it's best to use longer loop lengths, sufficient to make this cyclic variation sound more like vibrato, rather than a rapid 'wobble'. It will also mean that if you try to transpose the sample significantly upward, the speed of the loop will increase, and again reach a point where it becomes unuseable.

In the case of our looping rhythm section example, although we could trigger the sound once and leave it looping continuously during a long section of music, given the amount of other things a PC is normally asked to do it's safer to set up a single shot of the loop in the sequencer, by adjusting the note length to play the whole loop length exactly once and then copying this as many times as you need it during the track. This way, the sample gets re-triggered in sync with the rest of the music every time, and no cumulative timing drift can occur.

Don't be put off by some of this apparent complexity — most people start off by producing SoundFonts containing just a single instrument, and build up from there. Something about little acorns and mighty oaks springs to mind. Happy sampling!



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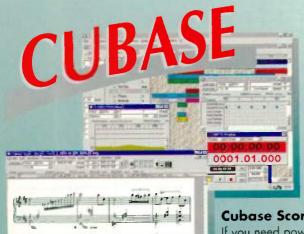
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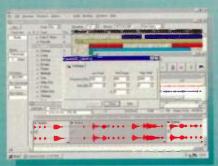
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#### Beware of imitations.

## STOP PRESS

Steinberg have announced that Cubase VST for PC will be released at the end of August. The program will be identical to the Mac version and include realtime EQ and effects. The upgrade will be

free if you purchase a Cubase program after 1st of March 1997





This program makes the task of matching the tempo of one audio file with that of another EASY. Recycle isolates an audio file's rhythmic components, allocates the sample to different keys on your sampler and saves them as notes in a midi-file. When the midi-file is played, the audio-file will sync perfectly, whatever the tempo. Once you have tried it, you won't be able to live without it. Version 1.6 is compatible with Akai, E-mu, Kurzweil, Ensonia, Roland and Digidesign samplers. ReCycle! 1.6 - £199.00 inc vat

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# LIGHT FANTASTIC?

#### LATRONIC NOTRON STEP SEQUENCER

Is it a hi-tech bathroom scale? Is it a 21st-century computer game? Is it Darth Vader's toilet seat? No, it's an innovative LED-laden MIDI step sequencer, with the power to wring new life from your old synths. PAUL NAGLE pulses and flashes with excitement.

ack in the early 1970s, bands such as Tangerine Dream performed on darkened stages, their massive modular synthesizers and rows of flashing sequencer lights pulsing with electronic life. Each performance was different, each sequenced note tweaked with care.

MIDI effectively killed off the step sequencer overnight, taking the simple mechanical looping rhythm-maker and replacing it with a completely tapeless studio, which ultimately evolved into sophisticated recording programs such as *Cubase* and *Logic*.

In the explosion of new technology, many of the physical controls we'd taken for granted were quietly dropped. But, just when it seemed that the synthesizer was to become a synonym for 'piano and banjo impersonator', instruments such as the Nord Lead and Korg Prophecy emerged, leading the way for a crop of keyboards laden with knobs, ribbons and sliders.

Into this climate, apparently timed to perfection, comes the Latronics Notron, a sequencer with all the hands-on interaction and flashing lights absent from hardware sequencers for years.

#### A FLASH IN THE PAN?

Looking like a weird blend of an upturned frying pan, the mother ship from *Close Encounters*, and a turtle, the Notron is refreshingly and genuinely different. Its moulded plastic case has no fewer than 87 tri-colour LEDs, 10 stylish knobs, four equally stylish control wheels and 103 switches that rattle like marbles on a solitaire board. The Notron is a step-time MIDI sequencer with four rows of up to 16 steps. Each of these is capable of sending note information, MIDI controllers, chords and arpeggios on separate (or, indeed, the same) MIDI channels. Unlike older analogue sequencers, it doesn't have a separate pitch knob for each step; instead a switch toggles notes on or off.

Designed for lap-top operation, the Notron feels comfortable and is light enough (at 2.2kg) to leave propped against a convenient wall when not in use. Or to wear as an impressive codpiece, come to think of it. (Dimensions are approximately 14 inches by 18 inches by 2.5 inches high.) Let's complete the obligatory tour quickly so we can get to the interesting stuff: the Notron has a MIDI In and Out, two auxiliary inputs (for future developments such as controller devices) and an input for the external

power supply. Construction is to a high standard, so there's no doubt that you're dealing with a serious piece of kit.

#### TRIP THE LIGHT FANTASTIC

Each row of steps is referred to as an Element: when the sequencer is running, a chaser light loops round repeatedly between the first step and the loop point. The end point can be altered independently for each row, so you can loop patterns of unequal lengths against each other if you like. To create a sequence from an empty pattern, simply hit the Run button, then push the switch next to each step you want to play. Each LED turns red and is set to output note C2 on MIDI channel 1. As the chaser light reaches a red step, its note sounds. Hitting any switch again causes its LED to turn green, and a third press mutes the note. Being able to colour notes in this way gives you a useful function — velocity grouping. At the top of each Element are knobs for Velocity and Note Length. Directly underneath these is an LED which, when red, indicates control over the velocity of red notes. Flick the LED to green and the knob sets the velocity of green notes. This means that you can accent (or even remove) ranges of notes at will - providing that your sound module responds to velocity, of course. Toggling the LED to orange lets you raise or lower both groups of notes in parallel, maintaining their relative velocities until the maximum is reached. Winding the knob back will then restore the difference.

The Note Length knob is a handy way of making quick and dirty adjustments and, like pretty much everything else on the Notron, also lets you set note length and velocity individually for every step. Setting note pitch requires that you hit the Run button a second time, select a note, then either rotate the run knob or hit the relevant transpose interval selector, via six dedicated switches on the right. These switches transpose all non-muted Elements by intervals of 1, 2, 5, 7 and 12 semitones, either up or down. If their status LED glows green, transposition is up; if red, it's down. In an ideal world there would have been more intervals, although you can get to anywhere you need with the options available. Using just these simple techniques, within about 10 minutes of experimentation, I was Future Sound Of London.

At the base of each Element is a control wheel. and five switches. These switches control Element muting, MIDI channel selection, patch number (1-128 — bank select is not supported), echo, controller settings, timing ratio and a whole bunch of other goodies we've not discussed yet. Because only one switch can be active at once, there's no way to suddenly mute or unmute several sequences simultaneously. The wheels can send pitch-bend, aftertouch or any MIDI controller, with a resolution variable from fine to coarse. For example, a small movement of the wheel can be set to pan a sound instantly from far left to far right or raise the volume level from 0 to maximum.

Sequence data, plus settings for mute, tempo and so on, may be stored in any of 16 memory locations. Settings data (MIDI channels, patch number, controller assignments, and so on) is stored in a further 16 locations. Settings and

patterns may be recalled at any time during playback so that if, in the midst of a performance, you get utterly lost, you can recall your base pattern and start tweaking it into looped mayhem once again.

#### **MAIN EVENT**

What we've heard so far is cool but hardly earthshattering. Playing back multiple sequences of notes may have been impressive 25 years ago, but today's musician expects more. Fear not! The Notron has some special tricks to take you where no man (or woman) has gone before, boldly doing things that older sequencers couldn't even imagine.

Events, one of the special tricks I mentioned above, are automated actions for injecting wheel movements into a sequence. Strange things start to happen when you program differing amounts of controller, moving in different directions, on different steps of a sequence (are you following?). For example, if you programmed a value of +10 for pitch-bend on a certain step of a sequence, then on a later step set a value of -5 for pitch-bend, the sequence would loop around until it encountered the +10, which would take effect, then, when it encountered the -5 value on the later step, the pitch would drop by 5, relative to the original +10 amount. The same thing would continue to happen, with

the pitch gradually increasing by +5 on each pass (the difference between the +10 value and the -5 value). If you'd programmed a -10 and a +5 value, the pitch of the sequence would drop instead, taking its cue from the larger pitch-bend amount programmed. A menu setting determines whether the pitch change should scroll around the entire MIDI spectrum, be contained within certain octaves, or simply bend up or down each time the Event is encountered. Any other MIDI controller can be sent in the same way, so if you set other Elements to the same channel, some powerful

interactions are possible. Global transpose events are programmed this way too. Presumably to maintain some order in a chaotic whirlpool of generated pitches, a menu option can activate pitch fixing, whereupon a third note colour - yellow becomes available. Once coloured yellow, steps are not transposed. This can be great for fixing the kick

pros & cons

- · A truly interactive sequencer. · Looks amazing
- Gets new mileage from your existing synths
- · Simplifies sample loop transposition.

LATRONIC NOTRON F699

- · External power supply.
- · Review model lost its memory occasionally.
- . Currently no SysEx backup facility.
- · Price will put some people off.

The Notron dares to be different, allowing you to manipulate MIDI in ways that would be almost impossible with anything else. Die-hard synthesists will love it, as will anyone who doesn't regard a five-octave plastic keyboard as the only suitable controller for a synthesizer.





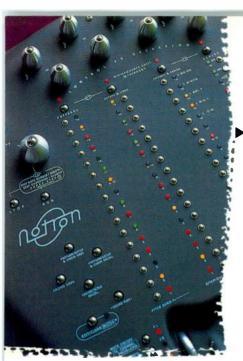
#### BEATWRAP

Ever started working with the perfect sample loop only to find you want to alter the tempo of the song? The Notron has a nifty little feature, called Beatwrap, for those working with sampled loops. Once primed, this uses a combination of transposition and pitch-bend to ensure that, as you change tempo, the loop always stays in time. It works like a charm if you obey a few simple rules, such as setting bend range to ±2 semitones and mapping the loop over the entire useable range. Some people will buy the Notron for this feature

Subtle timing variations aren't normally associated with step-time sequencers, but with the so-called Beatcreep it's possible to shift individual steps or a whole Element by increments of four milliseconds. One use for this might be to give a 'pushed ahead' feel to hi-hats or a delay to a tom roll. But all this complexity doesn't come without a price. With no display other than coloured LEDs, it can be quite difficult to

tell which type of information lurks behind each step, and sometimes tracing that elusive transposition event recalls something involving needles and haystacks. Because so much is possible, I initially had to make frequent references to the manual (a pretty good read, but it needs an index) since some of the more obscure functions aren't totally intuitive.

Other odds and sods include a PIN system which, when enabled, will make sure that your Notron cannot be activated by anyone except yourself.



#### LATRONIC NOTRON STEP SEQUENCER

 and snare parts of a drum pattern, for example, while other instruments cascade madly around them.

Further fun can be had by setting Elements to 'rebound'. This is a forward and backward motion between step 1 and the loop point. Pauses and skips can also be programmed so that the sequencer jumps forward or waits by the number of steps you specify. An enhancement I'd like is a random option, to really muddy things up!

Each Element starts with a default timing ratio of six ticks per step. This can be changed on the fly - a setting of three ticks making the row run exactly twice as fast - and, naturally, all sorts of odd in-between amounts are available for experimentation. Sequences can be shifted forwards or backwards by complete steps during playback (relative to the others) to turn up some quirky rhythmic stuff. If you do this while a sequence is stopped, the new offsets are set permanently. MIDI echo can be applied to individual steps, with both the rate and amount of echoes tweakable. Echoes get progressively lower in velocity, unless you specify a repeat value greater than eight, in which case they get higher. Similarly, overdrive is a snappy way of repeatedly triggering selected notes for that Chris Franke trill effect.

At this point it's worth saying that Elements or individual steps can be solo'd at any time if things start to get too chaotic. If they haven't started getting chaotic already, there's always Supersteps to explore...

Supersteps are the Notron's way of mapping virtual modulation waveforms to notes. Far more than a simple up or down movement of a wheel, these LFO-like soundshapes are pictured on the Notron's panel alongside Element 4's steps and can modulate pitch-bend, aftertouch or the controller of your choice. The length of the modulation source depends on note length, and the many weird and wobbly shapes available can add subtle (or decidedly unsubtle) variations to the notes occurring at the same time. When you understand them, Supersteps can do some amazing acrobatics, providing you plan ahead and program your synth to respond to the control information being sent.

#### **CHAIN GANG**

Sixteen steps is the maximum for any Element, but if you need something longer, a chaining process is possible, with a maximum of 16 steps and up to 16 repeats of any pattern. The chained 'song' loops around seamlessly once it reaches the final step. Chain mode operates slightly differently to pattern mode: any changes made are non-destructive, so that the pattern can be varied but will always revert to the saved version when it loops. You can switch between chained and nonchained locations during playback.

Perhaps surprisingly, chords too can be programmed, either across Elements or into individual step locations. Sixteen chord memories (five preset) are available for recall, and programming new ones is a doddle. Chords can also be strummed or arpeggiated, although you'll need to adjust the timing of the strumming by ear during playback. The maximum polyphony that the Notron will output is 24 notes.

#### CONCLUSION

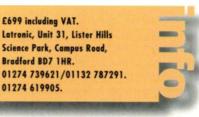
This is the gadget I've been awaiting for years: a MIDI sequencer with rows of flashing lights to create looping textures unlike anything you'd play from a keyboard. Whether you make techno, new age, or weird 'bubble and squeak' music, plug a Notron into your system, push a couple of buttons and move easily between tinkly arpeggiated patterns and driving drum and bass lines. Triggering drum loops whilst altering tempos and running bass and chord sequences at the same time is all remarkably easy and transparent.

For live performance, most other hardwarebased devices permit such revolutionary controls as Play and Stop — you might as well use a DAT for backing! Even sequencers like the Alesis MMT8 only allow you to mute or unmute existing material, but the Notron makes everything tweakable during playback. In the studio, the Notron took me on a voyage of discovery which has caused me to reassess something I once firmly believed — namely, that no machine can inspire. In fact, during the time I worked with the Notron new ideas flowed as they used to back in the days of ancient knobbiness.

There were some areas of concern, though: it was distressingly easy to lose the patch memory of the review model, which suffered from amnesia if I as much as looked at it in the wrong way. I fear that a voltage blip during a live performance could leave me embarassingly silent (or thankfully silent, depending on your point of view). Latronic are aware of this and will provide some form of builtin protection for the production models, as well as a much-needed SysEx dump and reload facility. My other gripe concerns the external power supply. If the Notron had been housed in a standard 19-inch rackmount, at least the dreaded PSU could be taped down inside a flightcase. Latronic's whole philosophy presents the Notron as a performance musical controller, which is great, but surely trailing the flimsy leads from an external adapter conflicts with this noble idea?

These niggles aside, the Notron is wonderful. In contrast to most so-called 'retro' gear, it actually moves forward to new things, rather than desperately trying to recapture something that existed years ago. I was pleasantly surprised at the sounds coaxed from some of my existing gear — which shows that there's unexplored territory in even the most tired synthesizer. Controlled by you and the Notron, there's life in those old synths yet!

- £ £699 including VAT. A Latronic, Unit 31, Lister Hills Science Park, Campus Road,
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#### CLOCK WATCHER

The Notron features a dedicated tempo control, but no conventional readout. Instead, tempo is shown by the position of coloured LFDs on the Element grid. A single movement of the tempo knob displays the current value without altering it. This isn't as bad as it might sound, and you soon discover the joys of setting tempo by ear rather than looking at a number. While the grid display is active, you can jump directly to a new tempo by hitting any of the 64 Element switches. The Notron transmits and receives MIDI clock information. It also sends Start. Stop and Continue messages, although the review model didn't seem to recognise Continue messages sent externally. I'm told that production models will respond to

During my time with the Notron, I synced up to Cubase, switching to record whenever anything interesting started to happen. That way I got the best of both worlds, being able to chop stuff out of lengthy improvisations and keep just the good bits. A feature familiar to Cubase users is transposition into alternate scales, but it's rare to see this implemented into a hardware sequencer. Of course, you've probably gathered by now that the Notron is no ordinary sequencer, so I'll just tell you that 30 scales are available to process notes in each row. If you like. you can set each Element to a different scale - although you shouldn't expect any instant number one singles with this technique. The available scales include melodic minor, Lydian, Balinese, Persian and Arabian.

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# Dedicated Follower

#### JOMOX XBASE 09 DRUM MACHINE

CHRIS CARTER looks at a new dedicated drum machine which could be the best 909 alternative yet.

he Jomox XBase 09 is a brand-new drum machine. Yep, a drum machine. Now there's a phrase you don't hear much these days. Of course there are units that perform part of the same function, such as the Novation DrumStation (which, sadly, has no rhythm programming), the Roland MC303 (which has no dedicated drum controls), or the Akai MPC series of percussion sampler/sequencers (which are probably over specified for anyone just looking for a drum machine). But there hasn't been a new, self-contained dedicated drum machine in ages — and I think it's about time there was.

The XBase 09 took a year to design and build, by a small independent company called Jomox, a team of Berlin technicians who started out by building custom filters and CV-to-MIDI units, and modifying drum machines and synths. It has been designed with a very specific market in mind — the dance scene — and the title and panel layout give a pretty good clue to its origins. This machine is the mutant progeny of the dance icon of the '80s and '90s, the Roland TR909 drum machine. A shameless homage, if ever there was one — and why not?

#### X-RAY SPECS

So what do you get when you cross '80s retro with '90s know-how? Well, let's look at the specs.

This is a hybrid analogue/digital drum machine, with MIDI, using TR808/909-style pattern programming. It's 3-voice polyphonic, with analogue circuitry for the bass drum and snare drum but with 8-bit digital samples providing various cymbal, rim-shot and handclap sounds. Each of the drum voices can be extensively modified with on-board real-time control knobs and, in addition to the mono mixed output, each voice has an individual output. There are the usual MIDI In, Out and Thru sockets and a Roland-style DIN sync output socket. A large, 3-digit LED shows tempo or various editing parameters. Programming is via 26 small illuminated push buttons and five large Tap buttons. The unit is quite sturdy, with a steel body, and pretty compact at 13" x 9" x 2", and although the TR909 was considerably larger, they're actually about the same weight. Power is supplied by a separate 12V wall wart PSU which, as seems to be more frequent these days, is a non-standard AC type; these are, unfortunately, a lot more difficult to find replacements for if lost or damaged.

The XBase 09 can function in one of three modes of operation:

- Pattern mode is for playing or programming rhythm patterns, with space for 64 patterns stored in four banks.
- Performance mode is for saving and selecting drum kits, selecting rhythm patterns and adjusting the real-time drum controls, with space

to store 100 Performances/kits in memory.

STOP/CONT

Bass Drum

BANK

**BASS DRUM** 

 Song mode is for assembling finished rhythm patterns and kits into songs. There are 10 song memories available, with space for compiling up to 100 rhythm patterns in each memory slot. In addition, each rhythm can be programmed to repeat, up to a maximum of 255 times, before moving on to the next rhythm pattern.

#### **TWIDDLE DE DEE**

It's only recently that manufacturers have begun adding more controls to electronic instruments, instead of using multi-function buttons to endlessly navigate through menus; I know it takes some very clever programming to emulate mixers, effects units, and even drum machines in software, but it can't be denied that there really is no substitute for

## pros & cons

#### JOMOX XBASE 09 £699

#### pros

- Superb sounds, capable of some amazing variations.
- Real hands-on control.
- · Well built and sturdy.
- Well specified and excellently implemented MIDI.
- Great improvisational tool.
- Suitable for live or studio use.
- As close to the original as you're likely to get without spending silly money.

#### cons

- Quirky operating system.
- Clunky Tap buttons.
   No stereo output.
- No gate trigger output.
- One of those dreaded AC/AC external power supplies.
- Not cheap (but cheaper than a 909!).

#### summary

A highly specified, superb-sounding, dedicated drum machine with analogue snare and bass drum, plus digital 'bells and whistles'. It's modelled along the same lines as the original Roland TR909 but without the same number of instruments, though this is compensated for by its full programmability and an excellent MIDI implementation. The only slight drawback is the price.

SOUND ON SOUND

# Snare Drum Hi Hat ase O LENGTH PER STEP (SCALE) ENTER SHIFT/FUNC

the feel of real knobs to twist and turn. In this respect the XBase 09 is a knob-twiddler's paradise.

There are so many controls for the bass drum (nine!) that it almost verges on overkill. In common with the 909, the unit has Tune, Decay, Attack and Level controls, although these don't affect the sound in quite the same way as on the 909. On the XBase 09, the Tune control introduces an envelope signal (that follows the Decay output) to the bass drum VCO. The Decay now has more than double the decay time of the 909, the Attack controls the intensity of the output from the Noise and Pulse controls, and the Level knob controls the bass drum VCA. In addition, there's a Harmonics control for changing the bass tone from sine wave through to soft distortion, and an EQ control for smoothing out the sound for a softer, 808-type

bass drum. There is also a Pitch control which can take the bass down to 25Hz for those gut-wrenching sub-basses, or up into conga range.

The snare drum has two oscillators, a noise generator and six control knobs. The 'XSnapp' knob is a combination of the 909 Snappy and Tone controls and acts as a balance between the oscillators and noise generator. The Tune control has a much wider range than the original, while the Level knob controls the Snare VCA. In addition, there's a Noise Tune control that varies both the filter and level of the noise generator and, when turned fully anti-clockwise, completely mutes the noise signal. Lastly, there's a Detune control which offsets the oscillator tunings and is useful for producing cowbell, tom tom and bongo sounds.

The dual hi-hat sample section has only five

### JOMOX XBASE 09

#### SPEC CHECK

- 3-voice polyphony (two analogue, one digital).
- 64 Patterns
- 100 Performances.
- 10 Songs.
- . MIDI In, Out and Thru.
- . DIN sync output.
- Mono mixed output and three individual outputs.

control knobs and a single monophonic output, but is capable of producing some of the most extreme sounds in the machine. There are 909-type Decay controls for both the open and closed hi-hat sections, plus an open/closed hi-hat balance control and a single VCA Level control. There is also a very wide-ranging Tune knob (which should really be called Pitch) for adjusting the playback speed of the selected samples in this section. There are six 909derived samples to choose from: open and closed hi-hats, crash and ride cymbals, rim shot, and hand-clap, with a seventh source, analogue noise. Any two samples can be selected for playback, and all except the ride cymbal can be played in reverse, but only a single sample can play back at any one time. With the extreme range of the Tune control, and the fact that the samples only have an 8-bit resolution, it's possible to get some pretty strange but very useable sounds by playing back the samples at very high or low settings, or both.

The degree of sonic manipulation available allows for an extremely wide range of percussion sounds to be programmed. Of course, what the XBase 09 really excels at is recreating workhorse TR909-sounding rhythms. But it is equally adept at coming up with sounds ranging from smoothly minimalist bass and

drums, TR808 and CR78 sounds, right though to acid, industrial, techno, jungle, and electronic. The 100 performance memories give the user plenty of scope for trying favourite kits with different styles of rhythm patterns. Couple this with the ability to switch back and forth between kits as you play back rhythm patterns, and the option of twiddling knobs and tweaking the sound even further in real time, and you've got a powerful improvisational tool. This makes it ideal for both songwriting in the studio and playing on stage. The XBase 09 ships with some very useable pre-programmed dance rhythms and performance kits, with enough variety to please most people and more than enough to get you started.

# OPERATING THEATRE

09's various modes of operation isn't always as intuitive as it could be, particularly Song Write, Track Record and **Individual Step Mode** (the modes where you can store the control knob settings for each pattern). I spent the first few days tapping out rhythms and wondering if this was as good as it gets. It wasn't until a copy of the English manual arrived that I uncovered the deeper and more interesting

levels of operation. The software version on the review model was only 1.03 and still had a few bugs that needed ironing out. One strange quirk is that the incremental Up/Down buttons are reversed This caused some confused head-scratching at first, and I thought it was just my being dense, but checking the gear in our studio proved me right, as every piece of gear had 'Down' to the left and 'Up' to the right. In addition, the unit wasn't responding to

MIDI volume changes as it should, and it wouldn't record MIDI note messages in Pattern Write mode. The 3-digit display usually shows BPM but if you alter a control knob it changes to show the current controller value: occasionally the knob would change the BPM, when it should have been scrolling through patterns or drum kits. It would also be nice if you could select patterns, drum kits or songs via MIDI program changes.

An imminent software update will fix most of these problems and add some new features. I would like to have seen a little more polyphony - at least four or five voices would be terrific - but I suppose that would push the price up even further. Another feature that I missed was dedicated Bank select original TR909 had. Instead you have to use four or five button pushes just to change to another pattern bank.

#### **16 STEPS TO HEAVEN**

Ultimately, users will want to program their own rhythm patterns, and if you have used any of the Roland 707/808/909 machines the procedure is almost identical for both step-time and real-time writing. You first choose a pattern location (either empty or previously recorded) with one of the 16 red buttons on the front panel, then select which bank the pattern is in, from one of the four available. You need to decide how many steps the pattern will have, using the Last Step function, and what the Pre-Scale is (time signature); the XBase 09 default is 16 steps in 4/4 time. In theory your pattern can contain a maximum of 64 steps, but exceeding

16 steps reduces the number of rhythm patterns available, as any patterns containing more than 16 spill over into the next pattern memory location. To record, press the Write button while a pattern is playing or looping; a drum voice is selected by pressing one of the large Tap buttons, and a flashing LED indicates which voice is ready to write. Then it's just a case of entering the beats by pressing any of the 16 illuminated step buttons, which stay lit on any beats that have been selected. Notes are deleted by pressing the relevant step button a second time — you get instant audio and visual feedback. You can switch back and forth between different drum voices by selecting one of the four Tap buttons, and enter and delete notes at will to build up a complete

# "...the XBase 09 can sound so much like the original that it's scary!"

rhythm pattem. Accents can be entered in the same way as notes, though accents are applied for each drum voice, rather than globally as on the 909.

You may prefer to enter notes in real time, which is almost as easy — it's just a couple of extra button pushes to get into Real Time Write mode. It's even possible to switch between step-time and real-time modes while writing drum beats. In Real Time Write a metronome is available to help keep you in time, and you use the four Tap buttons to tap out the rhythm beats, instead of selecting drum voices as above. In Pattern mode there's also a Shuffle feature: this allows individual drum beats to be pushed or pulled against the rhythm by as little as 192nd of a step or as much as half a step, and is invaluable for putting swing or groove into a song.

This is pattern programming at its most basic level, and is an intuitive, tried and tested procedure that, once learnt, is rarely forgotten. However, there's a deeper level within the XBase 09 that may not be as easy to master but has some very sophisticated and creative uses. The XBase 09 has the ability to sound as though it's playing a whole range of tuned percussion at the same time, rather than just three voices. This is because it can record the settings of all the MIDI-controllable knobs (and that's most of the knobs on the machine) either at each and every step in a rhythm pattern, or as continuously varying controller sweeps. With practice, it's possible to program melodic bass drums, tight or flappy snares, swooping bongos and congas, reversed samples, industrial clangs, bangs and crashes, walking bass lines, and lots more, in a single rhythm pattern. Multiply this by 64 patterns and you begin to scratch the surface of what is possible, given some creative programming, even with only 3-voice polyphony. This feature alone takes the XBase 09 into realms that TR909 users can only dream of and makes what could otherwise be a humdrum

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drum machine a different animal altogether. Even a sampler/sequencer setup can't compete with the sheer speed and versatility that this drum machine offers when it comes to manipulating percussion sounds in real time and as kits, particularly when you consider that it also includes full MIDI control.

#### **AMAZING MIDI**

The XBase 09 certainly tries to make up for its lack of polyphony by offering MIDI control of almost every function, and has one of the best implementations of MIDI I've seen in a drum machine. In Performance mode every knob, except the Accent and Tempo/Data controls, transmits and receives MIDI controller information, while note information from the rhythm patterns is also transmitted and received. An external MIDI keyboard can be used to trigger the drum sounds and the Tap buttons can trigger external MIDI sources. It can send and receive MIDI clock sync and perform SysEx dumps of all the rhythm patterns, drum kits and songs in memory. XBase 09 rhythm patterns can be recorded into an external MIDI sequencer in real time, by manually changing patterns or by playing completed songs, with the XBase 09 start/stop controls able to send or receive MIDI start/stop signals. A nice feature is that the 3-digit display shows the incoming controller values when the unit is receiving MIDI data — handy for troubleshooting.

Adding this amount of control may also seem like overkill - but, believe me, once you start experimenting you realise the amount of scope available. Although a lot of knob-twiddling and sound manipulation can be recorded from within the unit, connecting a MIDI sequencer and recording the output of the XBase 09 allows even more editing possibilities, with some amazing results. For example, you can record any knob changes — such as pitch sweeps on the bass or snare drum, changing attack/decay and EQ settings or volume changes — and then cut, paste, mix or overlay this controller information in your sequencer for even more complex and extreme effects. Rhythm patterns could also be recorded alongside the controller information and further edited, copied or changed, using the XBase 09 as a drum-voice module.

#### 09 OR 909?

If you're looking for an original TR909 and are horrified at the silly prices (the 909 is a very rare and very expensive beast these days), the XBase 09 seems like a reasonable alternative, at about half the price. And while it may not be everything a 909 is,

it comes closer, by a long way, than any other dedicated drum machine in capturing the sound and the essence of the original Roland TR909 — and the 808, for that matter. The XBase 09 also has the added bonus of a vastly superior MIDI specification that leaves the old 909 standing, and the inclusion of a Roland DIN sync output makes it a piece of cake to hook up to an 808, 909 or TB303 Bassline. The audio quality is outstanding, particularly the analogue voices, and even the 8-bit digital samples are noise-free (they are just a little grainy, but then they are meant to sound retro). I know the limited 3-voice polyphony could be a major turn-off for some but, as I've mentioned elsewhere, the programmability of the drum sounds makes up for this, to a degree. If you want it to, the XBase 09 can sound so much like the original that it's scary! And, while I admire the fact that it does sound so authentic, this does bring me to another reason for recommending this beatbox. In the 10 days or so that I used the XBase 09. I unearthed all kinds of new sounds and rhythms. Speaking personally (and, of course, this whole review is personal opinion), if I had the XBase 09 for any length of time I don't think I would be using it to sound like an '80s drum machine, because it has enormous potential and can sound like so much more. Taking a wider view for a moment, to my mind the XBase 09 and instruments such as the recent Roland MC303 and the Novation and Quasimidi range of instruments show us how designers can acknowledge the past but also move forward. The behemoth that is the electronic musical instrument industry seems to go through pools of stagnation now and again, with glimmers of light such as those above shining through. I know there will be people saying that nothing could ever replace the sound of the TR909, but everything changes. It's called innovation and progress: musicians move on and chart new territories (pun intended).

#### **END GAME**

The biggest hurdle the XBase 09 faces, for all but professionals, is going to be its price, particularly with units such as the Roland MC303 at £565 and the highly specified Quasimidi Rave-O-Lution, at £649, entering the market at ramming speed. However, if you're a pro DJ, producer, or remixer, or just serious about making dance music, you really should get a hands-on demo of this amazing little machine with the big sound. I won't be at all surprised if the Jomox XBase 09 goes straight to the top of a lot of shopping lists.

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#### YUK AT FIRST SIGHT?

First reactions are a funny thing, and that old cliché, 'you can't judge a book by its cover', must surely apply to the XBase 09. The colour scheme is pretty awful, to my eyes - lots of red buttons, plus a body finished in cream, highlighted by thick orange strips and with pine-coloured, real wood end cheeks. Very retro. Come on, guys! if you're going to pay homage to a classic drum machine (even down to using the same sized 3-digit display), why not go for the original, classy, two-tone grey, with subtle highlights of orange? But at least the current package is eve-catching!

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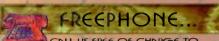
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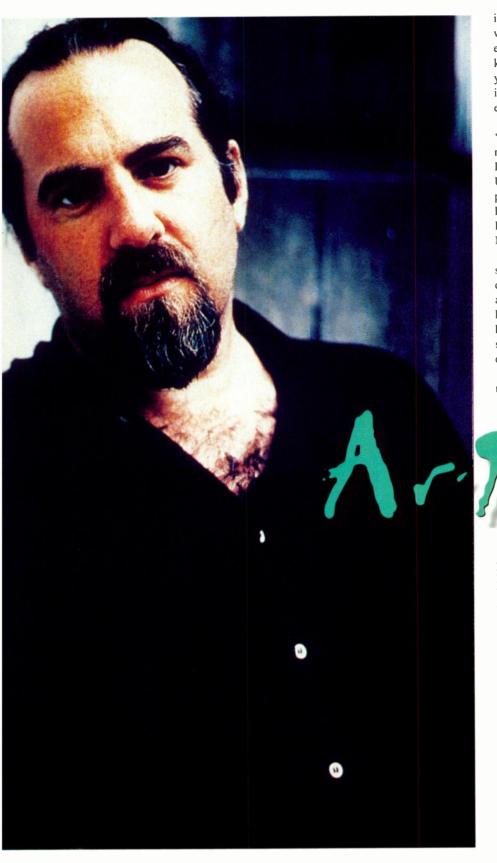
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he fact that you can do editing in Pro Tools and filter sweeps in the samplers is pretty cool, but I'm still more into finding a good song and a good groove," says Arthur Baker, a remixer and producer from the 'old school' of the early '80s, when technology was still only used as a means of enhancing a song rather than as its raison d'être. "All technology does is give you more control. At the same time, it cuts down on

innovation: everyone has the same tools now, whereas years ago, if someone had a new piece of equipment it was novel and people didn't necessarily know about it. Everything was more secretive and you had to discover things for yourself, but now it's just a case of 'Here are your sample CDs, here's everything handed on a platter'."

From Afrika Bambaataa and Soulsonic Force's 'Planet Rock' to Freez's 'IOU', from mainstream remixes of Cyndi Lauper's 'Girls Just Want To Have Fun' to Bruce Springsteen's 'Born In The USA' and 'Dancing In The Dark', and from projects with artists such as Hall & Oates and Bob Dylan to the *Sun City* anti-apartheid album, Arthur Baker certainly made a name for himself on the New York music scene of the early-to-mid-'80s.

In its day, 'Planet Rock' made waves with its sampling, its innovative use of the Roland TR808 drum machine, the Fairlight orchestral hit sample and Lexicon's PCM41 delay on the vocal. This was heady techno stuff back then, yet Baker now finds himself looking at modern dance remixes from the standpoint that there's often complete over-use of the equipment now that it's so easily to hand.

"I'm not saying that there aren't people who are making cool, innovative music," he stresses, "but

I don't know if technology really helps the whole process. It just makes it simpler. Electronic records have always been enriched by real instruments, because a purely electronic record is, for the most part, boring. There are definitely exceptions to that rule, but in my case, I would always have live piano, live bass and live percussion, even if we were using drum machines."

When I ask Arthur Baker if the available technology can truly replace the sound of, say, live brass or strings, he responds with an emphatic "No". Yet when I ask him the same question with regard to real drummers, I get a different answer: "They are completely replaceable. You can put feel into drum programming," he explains; "but, while some drummers are great players, they can be difficult people to work with. I don't know what it is about drummers. I know I'm making a generalisation, but especially now, they're all so insecure about what they have to offer — and I spend more time working with them than with anyone else!"

#### **CHANGING GEAR**

Still, aside from this little matter of touchy artistic attitude, Baker acknowledges that another benefit of certain modern technology is its cost-effectiveness: people without the means that was once necessary to make a record can now take their chances. Conversely, on the strength of his own early successes, Baker has, for the past 12 years, been the owner of a 48-track SSL home studio in New York named Shakedown. A blessed man indeed. So, what

does he do? Well, he records and remixes in a variety of locations on either side of the Atlantic, and the result is that his wonderful SSL room now sits in the dark for months on end while he makes use of somebody else's Pro Tools and *Performer*.

"About half of the stuff that I do now isn't on tape," says Baker. "I think tape will become obsolete very shortly. I myself don't own any digital gear, but I have two different programmers and one of them has a full Pro Tools setup. I've really been getting into Pro Tools, and so I'm now thinking of going out and buying a system. It just makes things so much easier, it's ridiculous!

"I've never been a major equipment person, and so I always have someone with me who keeps up on the stuff. Merv De Peyer is my main programmer, and we've been doing lots of jazzy, house-type tracks together. That stuff isn't even like work, it's like having fun. Doing an album with a band is work, but going into the studio and doing tracks isn't work at all."

Fair enough, but even though studio gear isn't exactly Baker's main topic of discussion, there must be some items that take his fancy right now...

"Well, I have a Roland JV1080 which I really like; the JV2080 is really cool and I just got one of

agenda, yet he emphasises that the label is in no way being limited to dance music or hip-hop. "I've signed a rock group named Kreed," he points out. "For me, discovering a new act and taking it all the way is what it's really all about — and that's probably what's kept me poor. I've always chased new acts and, unfortunately, the percentages haven't been great, but it's still the most exciting thing. In any event, whenever people now see a Minimal record they know that it's worth checking out.

"Personally, I love the idea of doing A&R, even though, when it's your own label, it's also your own money that you're dealing with. The main thing that I'm looking for when I'm considering an artist is the material. Kreed, for example, are not doing anything revolutionary, but they just have really great commercial songs. You see, I've passed on working with bands because I didn't like the material — I passed on doing the first Happy Mondays record because I just thought the songs were crap. Sitting in the studio listening to something for three months and not liking the song... it's not worth the effort."

Born and raised in Boston, Massachusetts, Baker actually started out as a DJ during his years as a college student during the mid-'70s, yet the



those, and I've also been getting back into old synths..."

Such as?

"Um... a Minimoog... I know that's sort of passé and everyone's doing it, but it's kind of nice to be able to go back to old analogue gear. It's good to have it available right there.

"You know, things go in cycles. Something that was totally naff five years ago may now be in, and when people get bored and look for something new the things that can seem new are sometimes old. At the moment there's the resurgence of electronic music — 'electronica' — and I just love it. It's the genre of the day! Nothing ever went away, but it's just a name for white people making electronic dance music. Electronica — white home boys doing their thing!"

#### LABEL, WITH LOVE

Shakedown is currently located inside a home that, since he separated from his wife, Baker no longer lives in. He is now, therefore, in the process of moving the studio elsewhere and transforming it into a programming suite. "As things stand, it's a waste of money," he says, "but if it's installed elsewhere, then my label's acts can have access to it."

The label that he's referring to is Minimal Records, an old underground venture of his which he re-launched in 1996; it's now enjoying a string of big club hits in the UK. Grand Master Flash is among the recent signings and next on Baker's production

kinds of disco records he was playing weren't really in line with his own musical roots. These lay among rock bands such as the Allman Brothers and Jefferson Airplane, as well as folk artists Tom Rush and James Taylor; gradually, though, Baker became more interested in 'Philly Sound'-style black dance music, and developed an ambition to become a record producer.

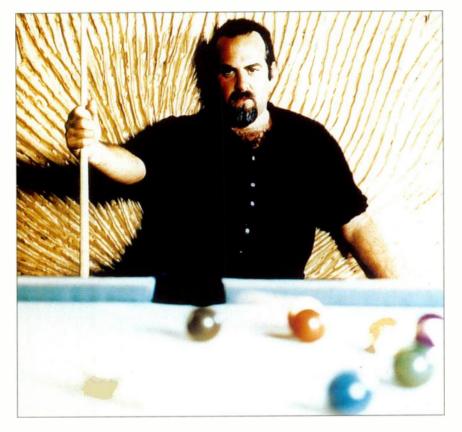
In 1978 Baker undertook an engineering course at the 24-track Intermedia Studios facility in Boston, and the following year he relocated to New York. There he took jobs at a record wholesaler, as a salesman, and as a music reviewer, before becoming involved in the flourishing local rap scene and graduating to work behind the console on a number of classic electro tracks. The next few years would see Baker's studio career really take off, only to be grounded during the mid-'80s by virtue of his steady relationship with cocaine.

Thereafter, having kicked the habit, Baker returned to what he did best with house remixes of non-house acts such as Fleetwood Mac, Fine Young Cannibals and Living In A Box, not to mention the Gypsy Kings, Roberta Flack and Deborah Harry. Then, towards the end of the decade, he even gave vent to his talents as a songwriter and performer in the form of an album by Arthur Baker and the Backbeat Disciples, on which he collaborated with artists such as Al Green and Jimmy Sommerville.

Which almost brings us up to date. During the past few years this talented composer, producer

Artist, producer and remixer Arthur Baker must surely be one of the seminal figures in electronic music history, with a career that initially took off with the production of Afrika Bambaata's hugely influential 'Planet Rock'. Now he's taking a new direction, as boss and A&R executive of his own record label. RICHARD BUSKIN goes all starry-eyed...

# Arthur Baker



and remixer has been involved with various projects, among them an Al Green album entitled Don't Look Back, a touring band named the Brooklyn Funk Essentials which he himself assembled, a record by the Punk Essentials, work on The Flintstones movie soundtrack with Big Audio Dynamite, Stereo MCs and Us Three, and the musical supervision of the film Fried Green Tomatoes At The Whistle-Stop Café, as well as a big-screen venture for Quincy Jones.

#### ATLANTIC CROSSING

The Flintstones venture took place in England about three years ago, since when Baker has been making regular trips across the pond while re-immersing himself in the dance music scene; he's recently added remix clients Babylon Zoo and New Order to his list.

"Record industry people in England have a little bit of a longer memory and it's definitely more of a club culture over there," he asserts. "The way things are now, I spend about half of my time in England, and the rest in New York or Miami. It's pretty comfortable that way. I really like England; it's a much mellower lifestyle than New York, but there's also a buzz about being in New York, and I have friends here who I like to work with. So I can't ever see myself living in one place or the other. I will always be going back and forth.

"Studios in England are a little more accommodating: they just seem more serviceoriented in terms of the way they're run. You'll have a restaurant in the studio, and you'll have people making you tea and coffee constantly—but as far as work habits go, I don't really see a difference: it's more down to the amenities. LA, on the other hand, is more relaxed than anywhere. It's actually a better way to work, really, compared with New York or London, because there are no late sessions there, and so it's definitely a more civilised approach to recording."

Meanwhile, Baker still abides by his philosophy that it's generally the material that counts, and in line with this he is now producing an album with a band named Sensor.

"There are five or six songs of theirs that I love, while the rest also get to me," he confirms. "It's sort of punk techno metal, it's very cool, and I've enjoyed making an album with a band as opposed to just programming. It's a whole other thing when you have to be responsible for — and to — six people. It's been an enjoyable experience for me, after spending the last few years working with a programmer and having to create things from scratch."

While Arthur Baker's current musical tastes run to acts such as A Tribe Called Quest, his dislikes manifest themselves largely in the area of gangsta rap, where he not only disapproves of much of the sentiment expressed, but also rues the promotion of violence, which has resulted in the recent murders of certain notable or notorious figureheads.

"Biggie Small dies and we hear, 'Oh, he was this, he was that', and everyone's giving him accolades, but the guy was a crack dealer and a gangster who beat up people with baseball bats. Now it's supposed to be society's fault, but the fact is that the guy made all of this money and he wasn't smart enough to just remove himself from that whole scene.

"For me, discovering a new act and taking it all the way is what it's really all about — and that's probably what's kept me poor."

"Still, on the positive side I'm definitely influenced by drum and bass stuff. I like this guy Adam F — his stuff is really cool — and I've been checking out a French DJ producer named Laurent Garnier who had a record, 'Crispy Bacon', that I really liked. Then there's the Chemical Brothers, who always do good stuff; but for the most part I go to clubs and hear sounds and hear grooves that I like, and if I can find out what the record is, I'll go out and buy it. I also buy records to just try to stay in touch with what's going on, but nothing's really blown me away."

At the same time, if Baker happens to

"Drummers are completely replaceable."

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# Arthur Baker

particularly like a sound that he hears on a record, then he may well also check out the engineer, with a view to making contact with a future behindthe-desk colleague.

"When we're mixing, I'm pretty involved with the technical side of things," he says. "I'll do the arranging and the mutes and all that. I mean, with

the Sensor album they have it so well pre-produced that it's more a case of just making sure that their live performances were right. Then, when we go into mix, we'll probably change some sounds and do some more programming."

"Sitting in the studio listening to something for three months and not liking the song... it's not

worth the effort."

#### **SAMPLE TILL YOU DROP**

As a pioneer in the creative use of samples as a means of embellishing an artist's ideas, Baker doesn't feel that he's necessarily in a position to criticise the current trend of utilising loops as the basis for a lot of compositions. Nevertheless, when gently prodded for an opinion, he is — characteristically

- not all that reluctant to oblige.

"Black music has always had a history of cover versions and answer records," he says. "A jazz musician would take an old melody, incorporate it into a new song and do quotes. Well, when sampling started it was more like that — but now it's pretty much a case of stealing.

"I mean, I've had so many people sample my stuff — anything out of Miami has usually sampled the Soulsonic Force record — and the thing that I find bad about it is that a lot of people are just sampling and not learning their craft as musicians. That's the problem with hip-hop... hip-hop's killed the black band. Before hip-hop there were hundreds of black bands, signed and having hit records, whereas now, in terms of funk bands, there are none. I can go to my collection and pull out a hundred records by bands that had hits and were well known, but now that whole scene is dead, really. It's been replaced by people sampling records, and that means the roots are going to be lost.

"It's absolutely killing music. Maybe in five years someone will say, 'Hey, let's get a really great black band together, use the hip-hop element and we'll clean up,' but right now it's just so easy for someone to go in with a turntable, a sampler and rapper, and make a ton of money."

Well, isn't that always the way? Somebody innovates and other — perhaps lesser — talents then take that ball and run with it all the way in what usually turns out to be a downhill direction.

"Yeah, but in this case the whole thing is that it's not killing white bands. It's not killing rock bands. There are more rock bands than ever. In the '60s there were all of those vocal groups, and then the black bands came along in the '70s and killed them off. Now, with the rappers, we're back to the vocal groups again and no bands.

"I'm not going to say that there's no talent in

some of the people who use samples to create it's obviously a different type of talent. But it's a talent for making money, that's for damned sure! It's a talent for knowing what people want. The guys who make rap records are really in touch with what's going on. They know what people are going to like, what samples they're still into, and if you really know your market, then it's not brain surgery to do that. Like when I made 'Planet Rock', I knew my market back then. I knew that people were playing [Kraftwerk's] 'Trans-Europe Express' in the park and I knew that 'Numbers' was a big record, so we decided to combine the two of them and come up with something new. Combining different elements to come up with something new is great, but if you just do the same old shit then it's just the same old shit and you don't get any innovation. Most of the stuff now is just pretty safe and standard."

#### **DUB DOWNER**

As for remixes that discard all of the original track and are just built around a vocal snippet, Baker has gone on record in the past stating that he himself prefers to retain a track's integrity, and this is a view that he still adheres to.

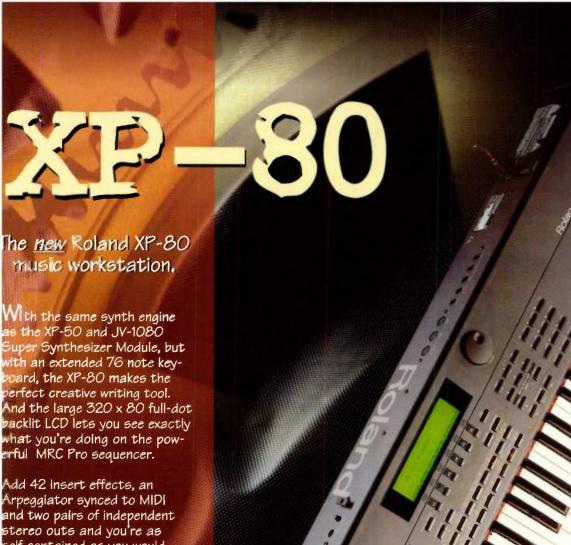
"I've never done a remix where I haven't at least attempted to maintain the actual song," he says. "Back when I started remixing, that's what the job was, but now record companies don't care if there's just one little yelp remaining, as long as it's a hit.

"It's funny, because right now I'm A&R-ing an album for my label which is remixes of early Philly group stuff, and so I'm going after big-name mixers. People have such reverence for these songs that they really want to maintain their integrity, but then you go to your promotions guy who's going to work it to the clubs and he's saying, 'Oh,

"A purely electronic record is, for the most part, boring."

there's too much of the song there. Give me a dub without any of that,' and I end up thinking, 'Then why do it?' So, in the case of this album, I'm trying to make sure that there's at least a bunch of the mixes where they maintain the integrity.

"Unfortunately, the DJs are more apt to play the dubs nowadays and so you don't hear the songs any more, which is totally different from when I started. When people like Larry Levine and Francois were DJing, the song was of major importance, and there really weren't that many dubs. People would relate to the lyrics and get off on them, whereas now you can go to a club and never hear a song. It's an endless beat and it's really boring. With this album, it's a case of really trying to strike a balance between keeping the integrity and also having some mixes that the knuckle-heads will play in the clubs."



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Y

amaha appear to be well into their stride now, with their range of low and mid-priced digital desks. The original

ProMix 01, launched at the end of 1994, offered all the advantages of digital mixing, assignable control and total automation, and stunned the audio industry with its affordability (see the review in *SOS* January 1995). The 02R built on the technology and introduced true digital interconnectivity, making it a popular choice for those in professional and home studios, post-pro and video editing suites (check out the *SOS* review in the January '96 issue). The latest addition to the family line is the sequentially numbered 03D, although this designation belies its

the fact that most functions are accessed with a single button press — or, at worst, a couple of presses — to cycle to the appropriate menu page within each section. The inclusion of a socket which connects to a standard PC serial mouse (or other pointing device, such as a trackball) allows even easier selection and control of the functions displayed on each graphical menu, and is an extremely useful facility. The 03D is also well specified in terms of its number of available signal paths; it has a total of 16 mono analogue inputs, one stereo analogue input, and 10 analogue outputs. All analogue inputs and outputs (except the two insert points) are electronically balanced.

The desk is equipped with a stereo digital input and output (derived from the main stereo mix buss) and

# THETHIRD DIMENSION

# YAMAHA 03D DIGITAL MIXING CONSOLE

Yamaha brought the price of an automated digital mixer crashing to below £2000 with the release of the ProMix 01. They then followed up with the fully-featured 02R, but at over £7000, it wasn't cheap. Now there's the 03D, which seeks to combine the features of the 02R with the amazing value of the 01. HUGH ROBJOHNS checks out the 03D's zeroes and ones...

true position in the hierarchy, as this desk actually fits in between the ProMix 01 and the 02R in terms of its functionality and pricing [I suppose 01.5D just didn't cut it, though — Assistant Ed].

If you felt the 02R was impressive and desirable, but a little bit too big and expensive, the 03D could well be the perfect solution to your needs. It's compact, versatile, highly specified, and easy to use, with flexible interfacing — in fact, it's all the things which have become associated with Yamaha products.

The 03D has been superbly targeted to fill the gap between the ProMix 01 and the all-conquering 02R. The 03D seems to be a natural evolution from its predecessor, incorporating many of its operational practices and concepts, as well as some of the hardware, such as the use of plug-in YGDAI (Yamaha General Digital Audio Interface) cards with customised digital interfaces, although some of the more budget-conscious aspects of the ProMix 01 have also been incorporated, such as the short faders.

# **OUTLINE**

The 03D is a solid wedge-shaped unit, measuring 204 x 460 x 516mm (hwd), and weighing a surprisingly heavy 16kg. The rear panel carries all the analogue connections and digital interfacing (a single YGDAI card can be installed to provide a multichannel digital interface — see the 'Rear Panel' box elsewhere in this issue) while the top surface features a clear, backlit, 320 x 240 pixel LCD panel in the centre. Parameter adjustment controls are grouped to the right of the LCD, with mode selection buttons to the left, input level controls above, and the operational faders and assignment selectors below.

The visual effect is of a simple, uncluttered layout which can be assimilated in seconds and used confidently from the off. The user-friendly feel is largely thanks to the display screens, combined with

both are provided in AES/EBU and S/PDIF formats. Eight further digital inputs and outputs are available via the optional use of a YGDAI card (formats currently supported include ADAT, TDIF, AES/EBU, and Yamaha Y2, although a number of third-party manufacturers have compatible cards, including a board with built-in sample rate conversion on each channel). For applications involving multiple desks, there is also a YGDAI card which allows two 03Ds (or an 03D and 02R) to be linked together with cascaded functions, the CD8CSKIT.

Configurable dynamics processors are provided on all inputs, outputs and internal effects chains, as are 4-band parametric equalisers. For mixing purposes, there are four auxiliary busses, four mix busses (in addition to the main stereo output), and eight selectable signal sources configured through a matrix system to feed the eight YGDAI digital outputs. Furthermore, every input channel can be independently delayed by up to 200ms to allow accurate time-compensation for microphone placement, or to create simple effects (feedback and mix controls are included).

# **CONTROL SURFACE**

The control surface is remarkably uncluttered, with sensibly grouped controls; all in all, it succeeds in making such a technologically advanced mixer approachable and relatively easy to operate. The very top of the unit carries a long row of rotary gain controls for the 16 analogue inputs. The first eight of these are accompanied by push switches which engage a 26dB pad, allowing these inputs to accept line inputs as well as microphone signals. Two white knobs on the right-hand side of this row set the level of the monitor and headphone outputs, the former with an associated push button to select the two-track return input in place of the normal stereo/solo buss output.

To the left of the LCD, four groups of buttons are neatly arranged and enclosed in screen-printed



boxes, with all the related operations gathered together. At the top, eight white push buttons are grouped under the heading of 'Setup'. These are used to configure the basic operation of the desk, giving access to the Scene Memory stores, various utilities (a line-up oscillator, user preferences, and so on), MIDI functions, digital I/O facilities (including dithering options), channel and fader grouping or pairing, solo monitoring modes, and Automix setup and editing operations (see below).

The eighth button in this group is placed in a box of its own, as it activates the MIDI remote mode, where the faders and ON buttons (see below) can be used to control other MIDI equipment using standard pre-assigned MIDI commands.

The next set of buttons (which are grey and blue) are labelled Channel Control, and provide direct

access to the signal processing facilities for the currently selected channel (any channel can be assigned by pressing the SEL button above the appropriate fader). Buttons are available to access the delay and polarity-reverse facilities, dynamics, pan and routing (including the surround panning modes — see the 'You are Surrounded' box elsewhere in this article), and channel overview. The last button recalls a very useful graphical display which shows all of a selected channel's parameters at a glance, and can be quickly navigated if a mouse is attached to the desk. I found I made use of this display mode more than any other.

The four light-blue buttons in the lower half of this section are concerned with EQ functions. Each accesses a separate band of the equaliser (low, lomid, hi-mid, and high), but if the two on the left are

# YAMAHA 03D

# pros & cons

# YAMAHA 03D £2559

### pros

- Builds on the established technology of the ProMix 01 and 02R.
- Compact and manageable, but still very versatile and capable.
- Good sound quality through analogue I/Os, and faultless digital signal processing.
- Clear, uncluttered and informative user interface makes the 'assignable control surface' design approach acceptable.

### cons

- Assignability with just one parameter adjust wheel makes live operation a bit tricky, unless snapshot or dynamic automation can be used.
- 60mm faders make accurate balancing awkward.
- No insert points on main stereo and buss outputs.
- No longitudinal timecode input or output.
- · Headphone socket on rear.

### summary

The 03D is a highly integrated digital mixing desk with total automation capabilities, flexible I/O configuration, effective signal processing and an intuitive user interface. It offers decent audio performance, thanks to its quality AD/DA converters, and it has an exemplary digital signal processing path. The 03D's design is very well targeted, and the desk is keenly priced to appeal to a wide range of potential users. It's probably Yamaha's best-looking digital desk, too!

SOUND ON SOUND

pressed together, the EQ library is accessed, and if the two on the right are pressed together, the whole equaliser is reset to a flat response. In fact, like many digital desks, the 'bands' are pretty nominal, as they can all cover the range 20Hz-20kHz, although only the top and bottom bands can be switched to proper shelf responses, as opposed to the permanent bell responses of the other bands.

The third section of buttons determines the functions of the motorised faders. These can be paged en masse to control either the channel levels, the aux send levels, or the internal effects sends. Whenever a Setup or Channel control button is pressed, the faders are automatically reset to control the normal channel signals (ie. fader mode). The fourth and final section to the left of the screen contains just one red button, and determines which layer the faders are displaying: either the 16 channel faders are controlling inputs 1-16, or the eight digital YGDAI inputs (17-24) plus the four auxiliary master sends and four buss outputs. The stereo input, effects returns and master output fader always remain accessible.

Over on the right of the 03D, the various controls are concerned with recalling scene memories and navigating the menus to adjust specific parameters. At the bottom of this right-hand section are four cursor keys for moving around the screen. Most items on the display are simple yes/no or on/off choices, and can be toggled by pressing the Enter key directly above the cursor keys. Parameters which have more than two states (such as the pan-pot position) are adjusted by the parameter wheel — the familiar Yamaha data-entry system.

Just above the wheel are four white user-definable buttons which can be assigned to whatever function you like. Typically, these might be used to send out MIDI Machine Control commands to drive an external transport, or to send MIDI instructions to keyboards or sequencers. Alternatively, they could be used to recall specific setup conditions for the entire desk, or control the Automix functions (of which more later).

At the top of this panel, five buttons look after the Scene Memory system, with facilities to store, scroll up and down through the list, recall and undo or redo the instructions. Finally, a single isolated button activates the Solo function, which may be set up in the software to provide after-fade listen, pre-fade listen, solo in place, single source or mixing solo modes, the appropriate channels being selected with the ON buttons above the faders. I found this system frustrating, as the Solo mode has to be engaged before a channel can be auditioned. A dedicated solo button above each channel fader would have made life a lot easier, especially for live work, and I'm surprised that Yamaha have not made this important facility more accessible.

The fader section of the desk contains 19 60mm motorised faders. I'm not a huge fan of this size of fader, as I find its travel too small for accurate work, and the motor system is noisy when active. However, plenty of people seem to find it acceptable, especially at this price level. Below the faders, a legend details the sources available to each fader for the two available layers. A scribble strip is provided above the faders.

Probably the most heavily-used buttons on the entire desk will be the ON and SEL buttons directly above the faders. The SEL buttons call up the selected channel's settings on the menu screen for parameter editing, but they also perform a number of other functions, depending on which menu screen is active. For example, in Automix mode, SEL selects channels for recording, and in Pairing mode, it selects the channels to be paired. In a similar way, the ON buttons perform a number of different functions depending on the status of other sections of the desk. Normally, these buttons mute the input channels or output busses, but, as mentioned earlier, in Solo mode they select channels for solo monitoring.

The last control is a contrast adjuster next to the LCD panel in the centre of the desk, with a three-colour stereo LED bargraph display above it. The meter covers a 48dB range, with everything below -18dBFS in green and above it in yellow. The top LEDs are red and indicate OdBFS or clipping.

## THE DISPLAY

The LCD panel conveys a great deal of information, and is consequently pretty congested. The fact that it is monochrome does not help — a colour screen would have made the graphics a lot clearer, but would presumably have added greatly to the cost.

# TALKIN' 'BOUT MY RESOLUTION — BIT REDUCTION & DITHERING

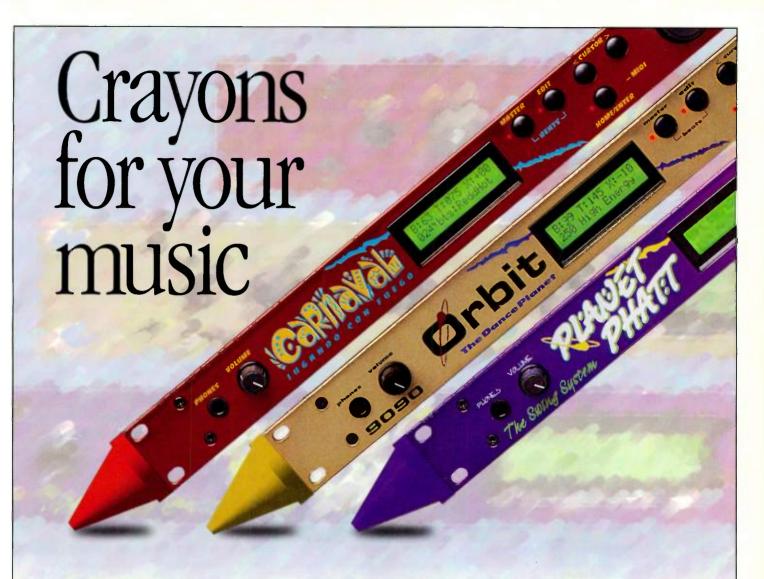
Although many digital devices operate with 16-bit resolution, signal processing of the type inherent in a mixing desk really needs considerably greater resolution than that to avoid unacceptable degradation of the signal within the console. Most Yamaha equipment, the O3D included, operates with a 32-bit internal signal processing accuracy, giving an Internal dynamic range of 192dB. This is sufficient to ensure that an audible build-up of mlx noise is very unlikely, and that internal signals will not be degraded by normal level attenuation and mixing operations. Complex and critical digital signal processing such as equalisation

actually requires much more accurate numbers than even 32 bits can provide, so the 03D has been designed to perform all of its equalisation calculations with 44-bit numbers.

Internal processing at this resolution can present a few problems for the unwary when attempting to record the desk's output digitally. (Note that the analogue outputs are not a problem in this respect, since their resolution and quality are determined by the converters, which in this case are 20-bit, or 18-bit in the case of the auxiliary and buss outputs.) AES/EBU digital output can potentially accommodate up to 24 bits of audio data, so the bottom eight bits of

data have to be removed from the mixer. at the very least. However, typical digital recording formats are only capable of 16 or occasionally 20-bit resolution, so in practice up to half of the bit resolution achieved by the desk will have to be removed! The maximum peak level at OdBFS is consistent across all digital recording formats, and so is the low-level Information which is affected by the limited resolution of the recording format. To simply lop off the bottom few bits would result in very unpleasant and granular distortion, but this is avoided by a process called dithering, which linearises and optimises the process of bit-length reduction.

The O3D provides very versatile facilities for setting the truncation and dithering values on its digital outputs through the Digital 1/0 menu page. The main stereo digital output and each of the stereo pairs from the YGDAI output can be independently set to any resolution between 16 and 24 bits, with or without dithering. Note that the resolution selected for the main stereo output is common to both the AES/EBU and S/PDIF connectors, so if you have a 20-bit recorder hanging off the pro connectors and a DAT on the domestic ones, the best ploy would be to set the resolution and dithering to 16 bits. If set to 20 bits, the DAT recording would sound pretty horrid on reverb tails and other low-level signals.



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# YAMAHA 03D

Once you are accustomed to the screen, it is possible to find specific information quite quickly, although during the review period I never really became completely comfortable with it.

The bottom of the display always shows the current function of the faders, indicating when they are allocated to the auxiliary sends, effects sends, channels 17-24 and so on. The top of the screen always carries



The detailed LCD screen.

information boxes detailing the selected function (Utility, Delay, Low-EQ and so on), the assigned channel, the current Scene Memory, and a reminder of the currently-assigned functions of the four user-definable buttons. There is also a tally which indicates when data is received over the MIDI or PC links, or when the Solo monitoring mode is active. Below these information boxes is a miniature meter bridge showing signal levels for the selected fader layer.

The display is taken up with tabbed graphical menu pages, each one providing the controls and

displays associated with the selected function. Most functions have two or three pages, each accessed by clicking on the appropriate tab with a mouse, or by pressing the original button again. For example, if the Effect 1 button is pressed, the graphical display shows three tab sections: Effect Edit; Library; and Pre/Post selection. Controls with variable settings are represented as rotary knobs with clear pointers and numerical readouts of the current value, whilst toggled settings are shown by empty or filled boxes enclosing a suitable label (a filled box indicates the 'on' state).

## OTHER DESK FACILITIES

Controlling complex balances is actually quite straightforward on the 03D, and I suspect the requirements of theatre use have had a great influence on some of the facilities, such as fader grouping and mute groups.

Since all but one of the 03D's channels are mono, handling stereo sources might have been a bit tricky, had Yamaha not included a stereo pairing function. This is very easy to use, and simply links adjacent odd/even pairs of faders (1&2, 3&4, and so on). The same system can be used to link the buss outputs and auxiliary sends too. On paired channels, not only the faders are linked, but also the delay, EQ, input attenuators, dynamics, solo, pre/post settings, auxiliary and effects sends, and routing and panning. Either channel of the pair can be adjusted, and the other will follow suit automatically, behaving as a true stereo channel.

There are four fader groups, and any input channel can be allocated to any (or no) fader group (paired channels are automatically allocated to the same fader group when either one of the pair is selected). The auxiliary masters, effects returns, buss outputs and main stereo output cannot be controlled by the fader groups, which is probably a sensible restriction for the majority of applications. Moving any fader within a group will move all the others, maintaining any level offsets that might be involved.

The four mute groups work in exactly the same way as the fader groups, and are set up on the same display page. When grouped, hitting the ON button for any channel in the group affects all other channels. I got caught out here, because the mute group system doesn't actually mute things — it toggles the state of the mute function. If a particular mute group is set up with some channels already switched on and others switched off, pressing the ON button for one member of the group will reverse the mute state of all other channels, thereby killing those channels which were previously on and activating those that were off! Initially confusing, perhaps, but remarkably useful in practice for switching between alternative channels with a single button.

## **EQ & PROCESSING**

The channel and output equalisers are very versatile, and can be used for both subtle and creative tweaking, as well as heavy effects. It is a little restrictive to have to use the bottom band as a highpass filter and I would have preferred a separate (possibly fixed) filter, since this is such a common necessity with microphone sources. However, the

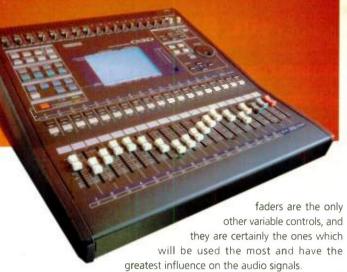
# YOU ARE SURROUNDED

The 03D has been designed with future presentation formats very much in mind, and is equipped with a full set of panning and routing systems. The panning mode for each channel can be selected from normal stereo (two front outputs), quad (two front and two rear), Matrix-style LCRS (three front and one rear), and Discrete (three front, two rear, and sub-bass). In the surround modes, the additional routing outputs are obtained by using one or more of the buss outputs and these, together with the main stereo output, would be sent to a recorder and the monitoring system. In the

surround modes monitoring would have to be controlled externally, as the 03D's monitor system can only handle a stereo signal. This is not going to be a major problem, although you will need an additional speaker system if you want to retain the solo monitoring facilities.

In surround modes, the pan position is represented by a two-dimensional graph, the available pan positions being shown as a circle. The panning control normally moves the sound source to any position around the circumference of this circle, but it is also possible to manually set the horizontal and vertical pan values to find any

other valid position inside the circle. This works a lot better when a mouse is connected to the desk, as the mouse can be used like a joystick to 'fly' the sound source around in real time. The panning menu page also has a number of preprogrammed 'trajectories' which determine how a sound will move across the available sound space. The surround modes are very well thought-out and proved to be very powerful and flexible in practice. I particularly liked the facility for blending the centre channel signal into the side channels (in the surround modes that support three front channels) this produced smoother panning effects In some conditions.



The analogue inputs and outputs all seem to be of a high standard in terms of their distortion, bandwidth, crosstalk and noise performance, particularly at healthy line levels. I have some slight reservations over the noise performance of the mic amps, particularly at high gains, but they are quite acceptable given the 03D's price. It is probable that some users would prefer to use an outboard mic preamp for high-end applications, and others may not find the mic amp noise to be an issue within the confines of a home studio setup anyway.

As a straight digital signal path I could not fault the 03D at all. Clocking and interfacing is very simple, and as foolproof as it is possible to be. Although it is possible to run out of headroom if you do silly things with the equaliser (eg. stack up all four bands on the same frequency with maximum boost!), in normal operation the desk is hard to 'break' and the noise floor is effectively non-existent. One trap to watch out for is that the channel signal metering can be derived from a number of places in the signal path — and most come from after the digital input attenuator. If the attenuator is set to a healthy figure, it is remarkably easy to overload the analogue input and AD stage without the signal meters getting anywhere near peak level!

## CONCLUSION

At its sub-£3000 price point, the 03D is a superb piece of kit, and although I've made a few niggly points, this really is a very well designed, powerful and, above all, high-performance machine. I had little trouble finding my way around from the start because the whole desk is so intuitive, and on the occasions when I did get stuck, the excellent 285-page handbook quickly got me back on track.

The 03D is ideal for the home studio or small project room, small post-production rooms (especially track-laying and pre-production rooms), video editing suites, theatres and potentially live sound work — although I have a few reservations about the suitability of a desk with such a high level of assignability in this role.

If you are in the market for a new mixing desk, this is definitely one to take a close look at. It is extremely keenly priced, and must be considered something of a bargain, being almost as powerful as the 02R, but with the operational simplicity of the ProMix 01 — and that's before you take into account the high-quality effects, comprehensive MIDI facilities (especially that useful direct PC link), total recall and automation, and its range of digital interfacing options. Yamaha will have an enormous hit with the 03D — I guarantee it!

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# PART 1: ANALOGUE OSCILLATORS, FILTERS & LFOS

After all the political talk in recent years about a return to traditional values, PAUL WIFFEN kicks off a major new series on synth programming by arguing the Analogue Fundamentalist Party case—that an understanding of the basic elements of traditional analogue synths is essential to fully exploit the various types of synthesis available today.

ack when I wrote my first series on the basics of synthesis (longer ago than I care to remember), there was really no need to mention the word analogue, as it was the only type of synthesis commercially available (except for the odd bit of harmonic addition on prohibitively expensive computer systems like the Fairlight). As a result, anyone who knew anything at all about synthesis would be familiar with the basic building blocks of waveforms, filters and envelopes. This meant that when a new synthesis technique came along, some of the elements in it would be familiar, even if it didn't use all the same components to build up a sound. So FM synthesis (or Frequency Modulation, which will be covered in a future part of this series), for example, might not have filters, but it used sine waves and envelopes. Sampling might not use regular waveforms, but most samplers had filters and envelopes on them — and so on.

While I may sound like a right-wing politician attempting to claim the moral high ground, I still maintain that anyone who has a good grounding in the principles of analogue synthesis will not take long to get their heads around any new system that comes along, simply because several of its elements will probably be familiar to them, so all they need to do is spot how the unfamiliar elements are used to do the job of the missing analogue stages.

Five years ago, such an insistence on starting with analogue might have been greeted with scorn, as few people were using analogue synths for music making. Now, though, whether through the use of original analogue instruments bought on the second-hand market, authentic recreations of the way the sound was made (like the Novation Bass Station), hurriedly adapted PCM-based systems like the Yamaha CS1x and MC303, or even the

computational muscle of DSP-based physical models of analogue such as the Korg Prophecy and recently released Roland JP8000 and Yamaha AN1x, the analogue sound and programming style are back in a big way. Perhaps it's the pre-millenium retro vein in all forms of music, from techno to straight rock. But it does mean that starting this series with analogue makes me hipper now than I've ever been accused of being in my life. Even if analogue synthesis hadn't made a huge comeback, I'd still be starting with it. I just wouldn't look so cool!

Another side benefit is that those of you buying brand new physical models of analogue synthesis (three of which will ship this year to swell the growing numbers already out there) need not worry about how the sound is achieved internally (any more than those of you using the genuine article or PCM-based copies). The controls still use the same terminology, the very terminology we will be exploring in these first few articles.

# SUBTRACTION — THAT'S THE NAME OF THE GAME

Most other forms of synthesis are additive in nature — they take simple elements and add them together to build up the more complex sounds which our ears find interesting. The most obvious example of this is additive synthesis, which takes sine waves (possibly the most uninteresting sound of all) and sums them to imitate the harmonic series found in nature. Even FM synthesis, which multiplies sine waves together in an attempt to generate complex waveforms more quickly, tends to add several of these products together to get to its more effective results (which is why 6-operator FM sounds better than 4-operator FM, because you can add more products together).

Analogue, or subtractive, synthesis (as it is sometimes called in academic circles) does the opposite. It starts with more than you need, and you take away bits until you're left with the sound you want. This makes it more analogous to sculpture (where the sculptor knocks lumps off a big block until the shape he wants is revealed) than painting (where the image is built up from individual brush strokes).

To continue the sculpture analogy, where do we get our sonic block of stone and what form does the audio chisel take? Let's take the block first. If we're to remove frequencies from sound, presumably we need to start with a sound that has more frequencies than we need. There are two possibilities here. Firstly, we could take a sound with all the audible frequencies contained in it, and many analogue synths do have the ability to generate this sound, the technical term for which is... noise. It should be reassuring to any absolute beginners that



# LIFO-WAVEFORM SINUS

# SYNTH PROGRAMMING

was also a common preset when technology became available to recall synth settings instantly.

The other common waveform on analogue synths is the pulse wave and this is a bit of a chameleon. You can't describe its timbre, nor even list the waveform's harmonic content, as this varies with the width of the pulse. Yes folks, unlike the staid old sawtooth waveform, which is unvarying in its harmonic content, you can change the harmonics and their proportion in the dynamic go-ahead pulse waveform by changing the width of the pulse. Indeed, the aforementioned square wave is actually a special case pulse wave, where the negative and positive sections of the cycle are of equal length.

It is the variable nature of the pulse wave which makes it my favourite as a starting point for analogue synth sounds. This enduring love affair started on the day when I twisted the width control on a Wasp for the first time with a pulse waveform selected on the oscillators (before that I had assumed that the width control must be broken, because it didn't seem to do anything). The moving harmonic spectrum which greeted my ears really transformed my interest in synthesis from a cerebral one to an emotional one. In that brief sweep many different harmonic spectra came and went, and I realised that analogue synthesis could hold as much sonic interest as any naturally produced sound. While the human ear cannot always pick out the static presence of particular harmonics. it's extremely sensitive to changes in their levels (as we'll see when we come to additive synthesis in a later article). The fantastic thing about the pulse wave is that not only are there thousands of variations of harmonic spectra available as starting points for sounds, at the tweak of the width knob, but also, most analogue synths will let you automate the moving of the pulse width. This technique is referred to, unsurprisingly, as Pulse Width Modulation, or PWM for short.

The width parameter actually refers to the duration of the positive component in proportion to that of the complete cycle. So a 10% pulse wave means that the positive segment only lasts one tenth of the cycle length before dropping to the negative segment. A 50% pulse wave (aka square wave) means that the positive and negative segments are of the same duration.

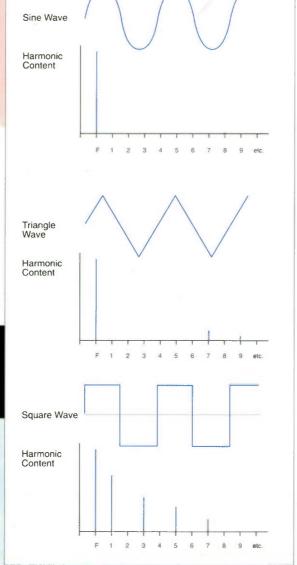
We've already looked at the harmonic content of the square wave (all the odd harmonics decrease in volume as they go up, in case you weren't paying attention earlier) and whilst it's not feasible to describe the spectra at every possible width setting, the fundamental and lower harmonics become weaker the further from the central setting you venture. This leads to a bright but thin sound which, at the extremes, starts to sound as if it is moving up several octaves before disappearing altogether. Some analogue synths prevent this from happening, by restricting the width control to between 5% and 95% or even 10% and 90%, providing a sort of set of 'training wheels' for fledgling synthesists, but on other machines you can completely silence the oscillator by turning the width control too far.

Later analogue synths (usually those with presets) feature width knobs which only vary between 0 or 5% at one end of their range and 50% (square) at the other, as their designers started listening to the result and noticed that a 30% pulse wave sounds the same as a 70%. So if the analogue synth you have access to doesn't have graphics or numbers next to the width knob to indicate the width at that position, try the following procedure to find out which range you have. Move the width knob (with pulse wave selected on at least one oscillator, unless you want to repeat my error of all those years ago) until you hear the signature 'hollow' sound of the square wave (you may even have a preset square

"It is the variable nature of the pulse wave which makes it my favourite as

a starting point for analogue synth sounds."

Figure 1.



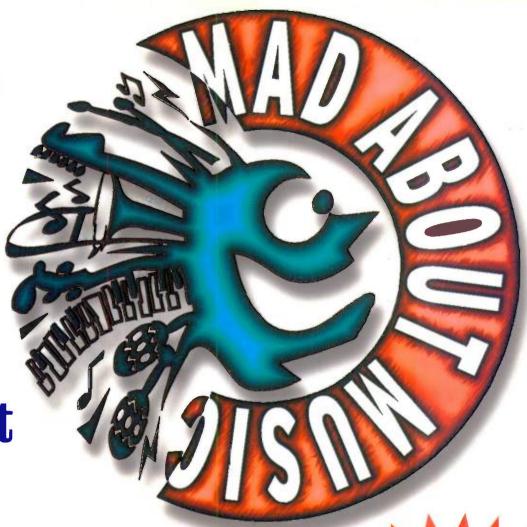
ANALOGUE WAVEFORMS: A PICTORIAL REPRESENTATION

- SINE WAVE (see Figure 1 right): contains fundamental pitch only; main use in analogue synthesis is for LFO modulation.
- TRIANGLE WAVE: contains the fundamental and a few high harmonics. Normally only found in analogue as variant on sine wave for LEGs.
- SQUARE WAVE: contains
   all the odd-numbered harmonics in inverse proportion to their number in the harmonic series.
- PULSE WAVE (see Figure 2, page 168): contains differing harmonic levels depending on the exact width of the pulse.
- PULSE WIDTH MODULATION(see Figure 2):

moves through all the harmonic profiles of the various pulse widths.

- SAWTOOTH (see Figure 2): contains all the harmonics in inverse proportion to their number in the harmonic series.
- . RISING (see Figure 2): only differentiated on LFOs.
- FALLING: only differentiated on LFOs.

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# SYNTH PROGRAMMING Pulse (Harmonic content varies with width) Pulse Width Mod Sawtooth Wave Falling Harmonic Content

wave to compare it to). This will probably be either the central position or the maximum.

## OSCILLATORS: THE OTHER USE

Pulse width modulation, the automatic movement of pulse width by the synth in a repeated cycle, is as good a way as any of being introduced to the other type of oscillator used in analogue synthesis: the Low Frequency Oscillator. The LFO is one of the many tools first invented for analogue synthesis which have found their way into other synthesis styles, just because they're so useful. The low frequency at which this type of oscillator cycles is below the range of human hearing, so it's no use routing an LFO through the audio pathway of the synth. Instead we use an LFO to control the regular, repeated change of settings on the synth (the jargon term for this is modulation. because 'change' would just be too easy to understand!). The LFO can be routed to control, amongst other things, the pitch of the audio oscillators (for vibrato), or as here, the width of the pulse wave. Hardy souls may prefer to move the width control for their pulse wave themselves, but for the busy player (using all 10 fingers on the keyboard) and the lazy (more my style), LFO control of PWM (aren't all these three-letter abbreviations great?) is the best thing since sliced bread (no, actually, it's more satisfying than that!).

Figure 2 (see the 'Analogue

Waveforms

box, page 166).

On the Minimoog and Memorymoog, the third audio oscillator (a luxury few analogue synths boast, whatever their price point) can be set to operate as an LFO, but this example of switching between audio device and modulation device is fairly rare. Normally audio oscillators are audio oscillators and LFOs are LFOs and ne'er the twain shall meet. Audio oscillators are usually labelled as OSC 1, OSC 2, and so on, and LFOs as LFO 1, LFO 2, and so on. The waveforms these lowfrequency oscillators can adopt vary slightly from those used by their audio cousins. The sine wave, for example, often eschewed by analogue audio oscillators because of its rather thin, singlefrequency sound, really comes into its own on an LFO because of its gentle undulating nature.

Most of the time you want LFO changes to be gradual and without sudden jumps. Sudden or instant movement of parameters tends to introduce an 'event' into a sound which the ear often perceives as a new note. Gradual changes, such as those brought about by the smooth cycle of a sine wave. maintain an interest in the sound without demanding the full attention of the listener, as abrupt changes do. Thus it is that the classic pulse width modulation effect uses a sine wave on a slow LFO to vary the width setting. Particularly on low bass notes or string



ensemble sounds, this makes for the most sensual sound an analogue synth can produce, with the slow ebb and flow of the harmonic content making for a subtle but intoxicating effect. The best-known example of this is the original Moog Taurus pedals, which featured a special preset with this effect hardwired in. Beloved of many a prog-rock band, this sound has yet to re-surface in the analogue vocabulary of dance music, probably because there is more interest in the real sub-bass end, which is somewhat concealed by the PWM movement higher up the harmonic series. However, anyone who has heard Taurus pedals through a big arena PA cannot doubt for a second that the real low end is definitely present. If you want to try out this effect for yourself at home, it's fairly simple to set up.

• Route a slow LFO (no more than one cycle per second) to the pulse width of your oscillator.

"Why should we limit ourselves on electronic instruments to things that occur in the real world?"



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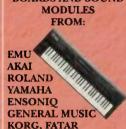
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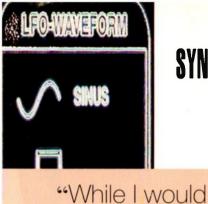
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# SYNTH PROGRAMMING

- and crank the depth of the modulation up.
  - Play a low note and you should hear a continuous movement in the sound as the harmonics come and go.
  - If you want to use the sound higher up, you may find the effect a little lost, as many of the harmonics will have moved out of the audio range, but you can compensate for this by speeding up the LFO a little (not too fast.

though, or it can end up sounding out of tune). One word of caution when setting up your own

PWM effect: just as you can set the static width of a pulse wave to be so narrow that the sound disappears altogether, so an LFO set to too great a modulation depth can take the pulse width in and out of the same territory, so that the sound temporarily disappears. If you hear this happening, just back off the LFO depth a little. Sometimes this can happen just once every few minutes, but in that case, you can be sure it will happen right in the middle of your best take or the highlight of your solo. Here's one solution I've found which avoids the need to decrease the amount of PWM in your sound.

If both slightly detuned oscillators of an analogue synth are set to pulse wave and their widths are modulated by different LFOs, set to slightly different speeds, then not only does the richness of the PWM effect increase as the two shifting harmonic patterns interact, but the chances of your sound going AWOL at the critical moment are less than you winning the lottery jackpot. Of course, there are some who might describe this technique as over-egging the pudding (usually insensitive producers trying to get some other instrument to fight its way past my overblown synth sound), but I've never subscribed to the 'less is more' philosophy (being more of a 'too much is never enough' kind of guy!).

Other uses for the LFO, such as vibrato (modulating the pitch) and tremolo (modulating the volume) are also best used with the sine wave settings (indeed some synths don't offer a choice, their LFO waveform being fixed to sine wave). Its near-relative, the triangle wave, sometimes available as an alternative, is subtly different, making the variations linear instead of exponential (straight up and down instead of slowing towards the extremes before going back to the centre). If you've got both on your synth, see if you can hear the difference. Even with a slow LFO speed, it's a subtlety easily lost in a mix. If you don't have it, don't feel too hard done by. It's a bit like New Labour and the Conservatives: 9 out of 10 voters can't tell the difference.

# **FILTER TIPS**

Once you've selected the waveforms that give you the mix of harmonic content you want to represent your virgin sculptor's block, you need the sonic equivalent of a hammer and chisel to 'chip away' the unwanted bits. This is the filter which, as its name implies, removes unwanted



Mooa's Taurus Bass pedals.

frequencies and also allows you to boost certain frequencies if required (a capability not implied in its name, admittedly). Which frequencies are removed and which are left depends on the type of filter used. Most analogue synths only have one filter per voice (except modular designs, of course) and a good many of those are limited to the low-pass type. Others may have a switchable type, but even then it will be the low-pass setting which gets most use.

The low-pass filter attenuates (lowers the volume) of the frequencies above its cutoff point (the frequency at which it is set to work either manually or automatically). It lets frequencies lower than this cutoff pass through to the audio output (hence its name). The reason why this is the most commonly used type of filter is that for most musical purposes we need to hear the fundamental frequency of the oscillator, and a low-pass filter will not remove this until it is closed down nearly all the way (ie. until the cutoff frequency is moved to the bottom of its range). So even when some pretty drastic filtering is going on, we can still hear the fundamental pitch. That's why many manufacturers decided it was the only filter type needed. While I would always rather have other types available, if your analogue synth only has low-pass filtering, you will still be able to get the majority of 'standard' analogue sounds. It may limit your ability to venture into the weird and wonderful, but it shouldn't restrict your mainstream analogue palette too much.

The cutoff frequency of the filter is perhaps a slightly misleading term, as it actually refers to the frequency at which the filter starts to do its job of attenuation. However, analogue filters can only gradually reduce frequencies in proportion to the distance from the cutoff. Slope-off might actually be a more accurate term, if it didn't imply someone leaving work early. Indeed the measurement of how quickly a filter attenuates is known as the slope or gradient of the filter. On conventional analogue synths (and many modern ones) this is either 12 or 24dB per octave — so each time the frequency doubles, anything at that frequency is reduced by another 12 or 24dB.

The characteristics of a filter change subtly, depending on the degree of attenuation it offers. Aficionados of the more drastic slopes (those on the Minimoog or ARP Odyssey, for example) praise the punchiness of the resulting sound, whilst those who favour the gentler gradient filters (on Roland instruments, for example) speak of a smoother, rounder sound. It's all a matter of taste, and you'll



Rising and/or falling sawtooth waves often appear on LFOs and, while there would be no change in harmonic content between these two on an audio oscillator, on an LFO there is a world of difference. One gives you events in the sound with a sharp attack and slow decay (the falling sawtooth), whereas the other gives events with a slow attack and fast decay (rising). The falling sawtooth is probably more useful, as it can create rhythmic elements with volume, tone or pitch which can sound like a repeated note. These days, however, you are probably better off doing this using a repeated envelope, arpeggiator or sequencer, unless you have the fairly rare facility of sync'ing the LFO to your track. The rising sawtooth usually tends to sound like something recorded onto tape backwards and is included on exhaustive analogue synths more for completeness than for practical musical applications.

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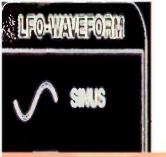
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# SYNTH PROGRAMMING

have to compare analogue synths to see which suits yours, if these vague descriptions don't immediately strike a chord with you.

You may come across another way of referring to a filter's attenuation capabilities: the terms 2-pole and 4-pole. These refer to the number of circuits the filters originally used to do the job—each pole represented 6dB of attenuation. Don't worry too much about this, though (if you're buying second-hand the information may not even be available); just listen to the sound as you move the filter about and see if you like it. Those who need scientific accuracy in the description of their filters may do better to look at some more modern DSP models of filters, which are very precisely documented.

By this point the more perceptive of the uninitiated will be saying to themselves "Never mind all this dB/oct stuff; why use waveforms full of harmonics if all you're going to do is take half of them out again?" Why indeed? The answer lies in the fact that the filter's cutoff frequency can be controlled in real time, either manually or via devices like the LFO (which we have already looked at) or the envelopes (which we will cover next

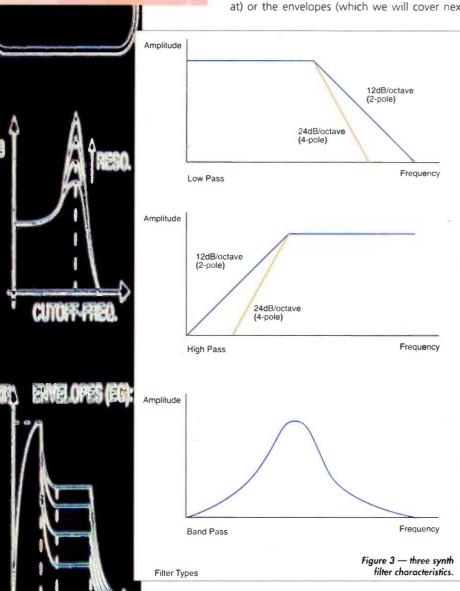
month, as they're used in all types of synthesis). So you can start with all the frequencies present but close down the filter quickly, taking out progressively more frequencies as you go, so that the tail end of the sound is much duller, lacking the top end. This is a fair approximation of how plucked strings act in the real world. As the string is struck, much of the harmonic series is generated, giving a very bright attack. But as the energy present in the system dissipates, it's the higher frequencies which die away fastest, leaving the lower harmonics to ring on until only the fundamental is left.

Again, while the imitative role of analogue synthesis is much reduced, the ear still gravitates to sounds which although not exactly the same as naturally-occuring sounds, nevertheless have some of the same characteristics. So a previously unheard bright sound dying away is more easily assimilated by the ear, as it shares the same overall timbral characteristics as more familiar sounds. In a similar way, sounds whose harmonic content stays roughly the same, or rise and fall more slowly as a means of expression, are also familiar, as the ear recognises these characteristics from bowed strings and wind instruments. Here, too, the player can make a note last as long as (s)he wants (provided they have the stamina) and bow/blow harder or softer for expression. The sound which starts dull and gets brighter/louder is a much rarer phenomenon in nature, and as a result synth sounds like this have that 'backwards tape' character.

We'll look in detail at how envelopes shape these timbral (and other) variations in the sound next month, but to conclude this article, I'd just like to acquaint you with the rarer types of filter, as some of them are in danger of extinction (notwithstanding some brave preservation work being done by the DSP engineers at Emu Systems on the Emulator Operating System). Whilst they will never help you in your search for piano, strings and brass, they are creative tools which should appeal to those interested in less run-of-the-mill sound design (see Figure 3, which illustrates the three types of filter you're likely to encounter).

- The high-pass filter does the opposite of its more common brother and removes the frequencies below the cutoff point. So a sweep of the filter in the upwards direction will remove the fundamental first and then the lower harmonics, leaving the upper harmonics sounding till last. Again this is a fairly unnatural situation, and may sound strange to the ears, but why should we limit ourselves on electronic instruments to things that occur in the real world? Why not do things which are unusual or impossible in nature, and if we like them, use them? Let's face it: most of the current uses of sampling are hardly naturalistic!
- The band-pass filter is a combination of the operation of low-pass and high-pass, in that it attenuates frequencies both above and below the cutoff (leaving only those around the actual cutoff

"If you're interested in making new sounds, you'd do well to look for analogue synths with high-pass and band-pass filters."



frequency). In some analogue synths band-pass operation was actually achieved by running low-pass and high-pass filters in parallel (usually splitting the available poles of filtering between them). Some of the more interesting and unique filter configurations were based on this principle. Several ancient Korg solo synths had a great device, called a Traveller, which consisted of two sliders, one of which controlled the low-pass cutoff and the other the high-pass cutoff. Although they could be moved apart to widen the frequencies allowed through, they had a physical restraint to prevent the high-pass going lower than the low-pass, which would have filtered out all frequencies, leaving no sound.

The OSCar had a similar system, but in band-pass mode the two cutoff frequencies were swept in tandem from one knob (with two poles of filtering on each, instead of the 4-pole filtering on high and low pass), with a second knob, labelled Separation, which governed the distance between them. This allowed some interesting vocal effects, as this is a fairly crude model of the way the human vocal system works (those interested in this type of thing should look at Emu's formant filtering on Morpheus, UltraProteus and their samplers, as it is a much more sophisticated version of the same principle!).

However, most band-pass filters, when available at all, did not offer this degree of control. The single cutoff parameter applied to both high-pass and

low-pass elements, and frequencies either side were attenuated equally and immediately. Its principal effect was to make the waveform sound as if it were coming down a telephone line (as an analogue phone cannot reproduce lows or highs, it can be considered a

primitive band-pass filter). But clever use of even simple band-pass filters still produces interesting, if more esoteric, timbral changes. These kind of facilities are what fascinate me most about analogue synthesis, and if you're interested in making new sounds rather than just imitating acoustic ones, you'd do well to look for analogue synths with high-pass and band-pass filtering on them.

Next month I'll look at how resonance accentuates a filter's action, and I'll cover the way in which an envelope works and how it can be used to shape a sound's pitch, volume and harmonic content in real time. This is a staple analogue technique, but its application is universal to programming, as it's a standard tool in any type of synthesis. Until then, if you have an analogue synth, experiment with manual tweaking of filtering (especially quick movements of cutoff) as you'll understand the need for automatic control via envelopes better when you've tried to do things manually.



The OSCar — though diminutive, it was one of the synths fortunate enough to feature a band-pass filter.

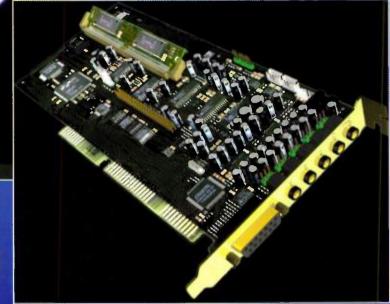


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# Take DAT!

This mid-priced DAT
shares some rather
higher-class innards
with its more expensive
siblings, and is also
equipped with Sony's
Super Bit Mapping
technology for improved
noise performance.
HUGH ROBJOHNS
checks it out.

# SONY DTCA9 DAT RECORDER

he DAT machine has become the default stereo recording format for most home musicians and semi-pro studios. Sony created the format for domestic use but, for one reason or another, it never made it — instead, it's been adopted by broadcasters and music studios. While some of the top recording studios remain sceptical about the format in terms of the interchangeability between machines, and its general reliability, it's safe to bet that you would find at least one DAT machine in every control room.

The Sony DTCA9 DAT recorder reviewed here is positioned halfway between the domestic and professional machines in Sony's catalogue and is really a minor development from the DTCA8. However, it shares a lot of its internals with the upmarket PCM2600 and 2800 machines, including a four-motor direct-drive transport and the ability to record at 48, 44.1 or 32kHz (the last in a 12-bit non-linear long-play mode).

# THE BOX

The DTCA9 is modelled to match the all-black domestic hi-fi styling that Sony have been using for a few years now. The machine conforms to standard hi-fi sizing, 17 inches wide and 5 inches high, so it will look at home among other stereo equipment or will fit into a standard 19-inch rack. The good news is that it's supplied with a set of substantial rackmount ears and a 'decorative panel' to conceal the feet. At 14 inches, the A9 is quite deep: you'll need to leave additional space at the back for the mains and audio connectors. The machine weighs a touch under 14lb.

All inputs and outputs (except the headphone socket, of course) are on the rear panel and you have the choice of balanced or unbalanced interfaces; the balanced connections use XLRs and

the unbalanced are on phono sockets. A small slide switch selects which type of input connection is in use, but all outputs are active simultaneously. A very useful feature on the A9 is provided by screwdriver trimmers adjacent to the XLR connectors, allowing you to align the record sensitivity and output level to a house standard. As supplied, the machine is set with a very generous headroom where OdBu equates to -24dBFS (the EBU standard is -18dBFS), but this can be adjusted anywhere up to -8dBFS.

The rear panel also carries a set of digital interfaces in the form of co-axial and optical S/PDIF connections. The recording input is selected on the front panel by a three-position rotary switch, allowing a choice of analogue, optical digital or co-axial digital inputs. It would be nice if the analogue position was replaced by separate selections for unbalanced and balanced analogue inputs, but you can't have everything, I suppose!

The machine is SCMS-equipped, so you can record a copy-prohibited master (commercial CD, for example) over the digital interface to make a true clone, but you cannot copy the clone to another digital recorder digitally. True professional machines don't have to incorporate the SCMS system (the A9's big brothers, the PCM2600 and 2800, don't use SCMS, for example), but because this machine falls into the domestic category, SCMS is a legal requirement.

A footswitch can be connected to one of two standard jack sockets on the rear of the machine to perform a number of useful functions. The first socket is labelled Rec/Pause and each press of the footswitch simply toggles the machine between the record-pause mode and actual recording. The second socket is labelled Mode, and the function of the footswitch is determined by a three-position slide switch on the left of the front panel. The first mode is a simple play-stop-play function, each press of the footswitch activating the next operation in the cycle. The second mode includes a review facility when the machine is playing: when you press the footswitch, the tape is wound back about 15 seconds and played again. The last mode replaces the review function with an AMS search, so that the tape winds back to the previous Start ID and stops. All of these functions are very useful, giving hands-free operation when you're trying to learn a piece of music or rehearsing against a backing tape.

The mains power connection is via a standard IEC socket rather than a captive lead, but I was

surprised to find that the review machine was equipped with an IEC mains lead with bare wire ends rather than a moulded 3-pin mains plug. Also supplied was an infra-red remote control handset complete with a pair of AA batteries, and a set of phono-to-phono leads.

# BLACK BUTTONS ON A BLACK BACKGROUND

Whenever I look at black hi-fi equipment I always recall a line from the *Hitchhiker's Guide to the Galaxy* where Zaphod Beeblebrox tries to steal a spaceship but is confused by the ship's control panel — black buttons on a black background, which light up black when you push them. Sony's A9 could have been designed to the same philosophy. Fashionable it may be, but it's also very awkward to use in a dimly lit control room — thank heavens for the remote control!

The left-hand side of the machine carries the cassette door, with the mains power button, infrared sensor, and a couple of slide switches to its left. The two slide switches control the operating mode of the footswitch and engage the SBM (Super Bit Mapping) circuitry for analogue recording (see box below).

The main transport controls are arranged in a strip below the meter display, together with the usual Start and Skip ID facilities. The machine performs an automatic End search if the Fast Forward button is pressed in Stop mode. Also in this section are a couple of buttons to cycle through the time display modes and reset the tape counter, as well as a button that resets the recorded level margin display (a numerical readout of remaining headroom).

The meter section is a blue fluorescent display providing numerous information labels, a horizontal bargraph level meter, and a time display (showing either A-time, track time, remaining time, tape time, recorded date and time, or current date and time).

To the right of the meter display is a keypad for direct track access and some programming keys to set the internal clock and organise the Skip-play functions. To the right of the keypad are two rotary

switches selecting the input source and sampling rate, and on the extreme right is the record level control. Below this knob is a headphone socket and a separate listening level control.

## **IN USE**

I find it hard to get excited about DAT machines these days but, as DAT machines go, the DTCA9 is an extremely competent one, with well thought-out facilities which would integrate well into any semi-pro studio. The transport is well built and I experienced no problems at all with its tape handling, which was fast, quiet and easy to control. The inclusion of balanced analogue connections is useful, especially alongside the DTCA9's ability to align input and output levels to your own house standard. It would have been nice if the balanced/unbalanced input selection was available on the front panel, because this would have made system integration that little bit more flexible, but this is really a very minor complaint.

Sound quality is to a high standard and the A/D and D/A converters are very good indeed. The SBM process works well, although its benefits seemed to vary slightly with the type of material being recorded. If you can live without balanced I/Os, you could check out the otherwise identical A8 (or junior A6) machine, and if you need AES-EBU digital interfaces and freedom from SCMS, look at the PCM2600; the top-of-the-range PCM2800 extends the family's capabilities with a four-head design giving off-tape confidence replay. In fact, this whole family of DAT machines can be recommended, not just the DTCA9 — which is, on the whole, a good machine and one that should prove ideal in its intended market sector.



# SONY DTCA9£1169

### pros

- · Easy and intuitive to operate.
- Reliable mechanics
- Flexible analogue/digital interfacing and remote control options.
- Good sound quality.

### cons

- Front panel can be tricky in low-light conditions.
- Rear-panel selection for analogue input mode.

# summary

A solid and dependable DAT machine with excellent transport and a good range of facilities. Balanced analogue interfaces with adjustable levels are appropriate on a machine in this sector and the rackmount kit that's included is very welcome. A/D and D/A converters are of a high standard, further improved by the inclusion of the SBM analogue recording process.

SOUND ON SOUND

# SUPER BIT MAPPING

The idea of the SBM system is to reduce the apparent level of quantising noise from the A/D converter, during recording, by some clever technology (generically called 'noise-shaped re-dithering'). It may seem rather odd to want to improve the noise performance of a system that's already pushing -96dB, but the proponents claim a more 'expansive' sound — SBM certainly does work and its side effects are very benign, so why not?

Basically, the analogue signal is converted into digits by a high-speed A/D converter which works a little bit like a backwards oversampling system. The analogue audio is sampled at a high rate (many times higher than 44.1 or 48kHz) but with limited quantising

resolution (typically, just a few bits).
This data is then passed to a
'Decimation Filter' which converts the
excessive sampling rate into much
greater quantisation resolution.

In the case of the DTCA9, each 44.1 or 48kHz sample falls out of the A/D stage as a 24-bit word, but the DAT format can only record 16-bit words. Obviously, the bottom eight bits of the A/D output must be removed—a process which must result in an increase in quantising noise (a 24-bit signal is a lot quieter than a 16-bit one). However, by re-integrating the unwanted data bits with the original signal (in much the same way as the remainder is added back in when performing long-division), the process

retains much of the extra resolution of the 24-bit signal.

The discarded data bits pass through a digital filter before reintegration. This filter shapes the frequency response of the quantising noise to reduce its level in the 3-4kHz region, where human hearing is most sensitive. If the noise is reduced in one area, it must be increased in another (no free lunches here!), and the SBM system boosts the quantising noise in the extreme high-frequency end of the audio spectrum, where human hearing is less perceptive.

The theoretical noise improvement afforded by SBM is of the order of 10dB below 3kHz, reducing to 4dB below 12kHz. Above 15kHz the noise performance is actually worse (rising to almost 20dB at 20kHz), but it's claimed

that this is inaudible.

Super Bit Mapping is a one-off process and requires no decoding. From a technical viewpoint, it doesn't improve the basic performance of a 16-bit system — if you were to measure the broadband noise of an SBM recording it wouldn't be any better than a straight 16-bit recording. However, it sounds better to the average human listener, which is really what counts, isn't it?

There are other systems in commercial use that use similar strategies to reduce the apparent noise performance of 16-bit systems. For example, Deutsche Grammophon use a system they call 4D to convert 21-bit master recordings to 16-bit CD releases, and I believe that Decca have a similar un-named system, which they've been using for some time.



RETROSPEC SQUEEZE BOX VALVE COMPRESSOR

Paul White revs up his valves and zooms off to see the big Squeeze.

hen it comes to vintage compression, the two main elements required for an authentic sound seem to be opto gain controls and valve circuitry, both of which are combined in the Squeeze Box. Designed to look like a guitar player's stomp box, complete with foot bypass switch, the mainspowered Squeeze Box is actually a combination of a tube DI box and an opto-compressor, with a little EQ thrown in for good measure. Sadly, the budget didn't stretch to vintage knobs, so, instead, four distinctly modern plastic knobs perch on a rather plain white box that wouldn't look out of place in an operating theatre.

The tube-amp section provides up to 20dB of gain, and the  $2M\Omega$  input impedance means that passive guitars and basses can be plugged directly into the unit. Outputs are available on both unbalanced jack and balanced XLR; the XLR is recommended for low-impedance or otherwise difficult loads. The jack will interface happily with guitar amps or most console insert returns.

Virtually no details of the compressor circuit are provided with the unit, other than that it's based around an optical gain-control circuit, presumably utilising a photocell and lamp arrangement. Controls are kept to a minimum, and the compressor attack and release characteristics are preset. Other than the power switch, there are just four knobs plus an EQ in/out switch: the Out knob acts as the output make-up gain control, EQ offers top cut in one direction and a slight brightening in the other, Comp-Lim appears to set the compression ratio and Threshold sets the level at which compression starts. There's no metering, but an LED above the Threshold control shows when compression is taking place. A traditional footswitch puts the unit into

active mode, and a further LED above the Comp-Lim knob illuminates when the processor is engaged.

## HAIL SQUEEZER!

The Squeeze Box is obviously designed to be used both as a guitar/bass DI processor and as a studio compressor via console inserts, so I tried both. What becomes apparent almost from the moment you switch on is that this box wasn't bred for subtlety! Its lack of a gain-reduction meter makes studio use a little hit and miss but, being fair, this is a compressor you'd use as an effect, and in that context you'd probably want to set it up by ear. Used with electric guitar, the unit can give both chorus and single-note work that obviously compressed 'ping and sustain'. The further the compression knob is advanced towards limiting, the more heavy-handed the processing becomes, and if you combine limiting with a low threshold setting, the sound gets really slapped about. In fact, on high settings, the gain moves about so much that it almost sounds as though you're playing through an amp with a mutinying tremolo.

Used on previously recorded material, the box works very well on bass guitar, especially if you like a very 'slammy' sound; again, though, you must take care not to go too far, because the degree of pumping can be disturbing. Even vocals take on a nice lift, but here the threshold setting is very critical—there's only a very small angular movement between having no compression and having too much. There are hard-knee compressors and softknee compressors, but I think that this one qualifies as 'knee in the groin'! Admittedly, heavy-handedness is a characteristic of early opto compressors, but I'd have liked a slightly more forgiving control system.

# **SQUEEZY LOVER?**

If you like your compression so that you can hear it, this is a box you have to check out. For those Kate Bush or Phil Collins vocal sounds, where the level almost flinches, this is the box for you, and the same is true if you want to really tread on your bass and guitar sounds — but if you're just after a subtle means of keeping your levels under control, this isn't the one. The EQ seems mainly to offer treble cut; for guitar and bass purposes, though, that can be very useful.

Personally, I wouldn't want to use this as my only compressor: it simply isn't flexible enough, and it's rather too easy to make it pump (especially on mixed material). But if you already have one or two more conventional compressors, this might be the one that you bring out of the cupboard when the client just wants to hear 'more'. It's probably most useful as a guitar/bass DI box, and in that capacity it's quiet and smooth-sounding, with the advantage of compression when you need it.

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pros & cons RETROSPEC **SOUEEZE BOX £495** • Useful combined tube DI and compressor. especially suited to guitar and bass work. · Also works in console insert points. . Pumping is very hard to control. • No gain-reduction metering. summary This is a useful and distinctive product for a particular type of sound, but is insufficiently flexible for general-purpose work. Its main weakness is the difficulty of controlling the gain pumping, though I recognise that this is the type of sound the unit is designed to produce. I found it to sound best on guitars, basses and drums, though some vocals work well with it too SOUND ON SOUND



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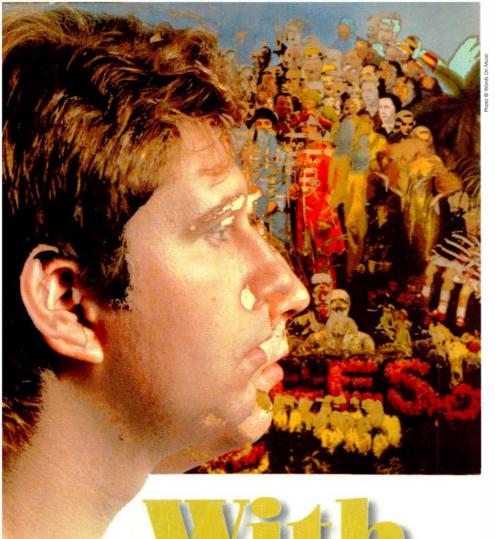
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"Give me the budget to go into the studio and re-record the album as faithfully as possible, and I'll get a bunch of guys together to mime to playback on the road," I said. "How much will this cost?" inquired the man with the wallet, nervously assuming that several months at Abbey Road would surely be what it would take. Anticipating a huge challenge ahead of me, but not wanting to price myself out of the inevitable excitement that would follow, I foolishly answered: "No more than £2000... I'll do it locally to keep the costs low." The Station Manager smiled a wide smile. I started to sweat. The pressure was on as I began planning the most bizarre project of my entire musician career.

The studio at which I did most of my production work at the time was Diploma Studios near Chelmsford in rural Essex, a compact and bijou 24-track analogue facility owned by Jim Woodford, whose step-son Darren was chief engineer (and would later become the lead guitarist with Sunscreem). I had been a Beatles fanatic from my childhood, and *Sgt. Pepper* and the period from which it originated had always held a strange fascination for me, even though I had never performed any of its songs, not even in

In the spring of 1987,
MARK CUNNINGHAM
took on the most bizarre
project of his musical
career: a re-recording of
The Beatles' Sgt. Pepper's
Lonely Hearts Club Band.
Ten years later, as we
celebrate the 30th
anniversary of the
original album, Mark
revisits his curious
sessions.

everal years before I gravitated to the business of music journalism, I was a full-time producer and session musician, operating my own production company from offices which overlooked Essex FM in Southend-on-Sea. A number of my commissions were jingles and 'idents' for this ILR station, and as a result I often found myself being a sounding board for various promotional ideas. At the beginning of 1987, I was casually asked by the Station Manager if I had any brainwaves for Essex's Summer Roadshow season, to which I replied: "Well, there's going to be an awful lot of hype surrounding the 20th anniversary of Sgt. Pepper and its CD release this June. Why not theme the roadshow around it?" I did not dream for one moment the consequences of this suggestion.

"Great!" he replied. "What you should do, Mark, is put a band together and play Sgt. Pepper live around the county." He obviously did not appreciate the technical problems involved in attempting to recreate this complex recording live with a four-piece. Even The Beatles themselves avoided it, and that was a good enough reason for me not to even consider it. But there was another option.

private. Familiar with the album's every nuance, I decided that the best way to reproduce the original's highly distinctive sounds and atmosphere would be to play as much of the instrumentation that I could cope with myself. And by removing the need for a room full of session musicians (who might not be quite so pedantic about authenticity) I would at least preserve a large slice of the budget. The control freak in me had just been born.

# STARRY-EYED DRUMMER

For three weeks leading up to the first session, I walked around obsessively listening to The Beatles' masterpiece on my Walkman (the CD wasn't out yet) and making copious notes about even the most subtle ad lib which, according to my own ground rules, had to be performed accurately on my re-recording. By the time I arrived at Diploma in April for the first day's work, every one of my friends was convinced I had gone totally Upminster — several stops past Barking (mad). I

was equally convinced that the moustache I had sprouted (and the fact that I was the same age as George Harrison — 24 — when he made the original) was going to influence the outcome. God knows how the project might have turned out if I'd gone the whole hog and taken LSD!

The first couple of hours at Diploma were spent EQing and copying the whole of Sgt. Pepper on to two 2-inch 24-track tapes, running at 15ips on the Lyrec 532 machine. For good measure, I also added 'Strawberry Fields Forever', 'All You Need Is Love' and 'Magical Mystery Tour' to boost the psychedelic period theme of the programme, but we eventually decided not to include the album's Indian number, 'Within You Without You', the reason for which will soon become apparent. The idea behind the tape transfers was not to 'steal' from the original but to give me something to play drums to as I built the backing tracks from the ground up. In cases where 'straight in' intros occurred. Darren would turn the multitrack tape over and I would listen to the Beatles' songs in reverse, clicking my drumsticks over the twistedsounding intros to provide a two-bar timing and cue reference when the tape was returned to forward mode.

From the start of the sessions, eerie coincidences emerged, as if we were being guided by an spiritual force. The four-piece house drum kit, like Ringo's, just happened to be a Ludwig, and an old, dusty one to boot. Rather than mic the kit as I would for a regular session, we purposely kept the mics to a maximum of six: top snare, hi-hat, inside the bass

87-1 JOS

version, which is best heard on the Anthology 2 out-take. This ad hoc overdub had been recorded one night with all four Beatles and their roadies, Mal Evans and Neil Aspinall, on timpani, bongos, tambourine, shakers and various hammered objects. Apart from this number, the remainder of my drum tracks were fairly standard, but to obtain just the right flavour, compression was used in abundance.

Ah yes, compression. The sound of Sgi. Pepper, but also the previous album, Revolver, which initially put into place many of the techniques employed on the 1967 classic, as explained in the December 1995 issue of SOS. When engineer Geoff Emerick became George Martin's balance engineer for the Revolver sessions in April 1966, it was his marriage of previously unheard-of miking techniques with over-compression and heavy limiting which took The Beatles' sound into new territories. On

Diploma Studios at around the time of Mark's recording.



drum, two high above the toms, and a wall-mounted PZM which picked up the room ambience of the kit. Not that there was much of a reverberant quality about the room, what with its carpeted walls and foam-lined corners.

For most of two eight-hour days, I sat behind those drums willing my nose to grow in the hope that I might summon that unique 'Ringo feel'. Although I started my musical career as a drummer, it had been years since I played a kit in anger and it took some time to loosen up and replicate all the classic fills in the right places. On 'Strawberry Fields' I recorded two kit overdubs on top of the main drum track — floor tom quarter beats and the main drum pattern double-tracked — from the point when the orchestra entered. I tried desperately to recreate the feel of the manic percussion of The Beatles'

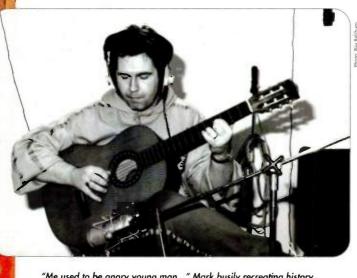
Ringo's drums he positioned the mics much closer than ever before and, for the first time, he put a mic inside the bass drum (he had to obtain a letter of permission from the Abbey Road management to proceed with this, as the rules prevented the mic being any nearer than 18 inches from the bass drum, for fear that the air pressure would damage the mic diaphragm). The kit was then put through incredibly expensive Fairchild limiters — hence the big dynamic sound of both *Revolver* and *Pepper*. Down at Diploma 20 years later, however, we relied simply on Drawmer's more affordable technology.

# **BASS 'N' GUITARS**

Every now and then I would escape from the drum booth to check my performances in the control room, and whenever I was happy I would break

SOUND ON SOUND . June 1997

# Recreating Sgt Pepper



"Me used to be angry young man..." Mark busily recreating history.

▶ up the session by overdubbing my bass parts. I chose to play my old faithful 1975 Fender Precision and EQ'd it in such a way that it resembled the sound of McCartney's Rickenbacker 4001S. The bass was DI'd to the 32-input M Jay broadcast desk (which always seemed to have at least one channel down) and a line was taken out to my tall 200 watt Vox Super Foundation bass stack. This was miked from a distance (about six feet) with a valve AKG C12, to capture the amp warmth and dynamic 'boom' of the high-register notes present in 'With A Little Help From My Friends', 'Good Morning Good Morning' and 'Getting Better', among others. Aspects of this miking method were close to the original, I later discovered. Geoff Emerick told me in 1995: "We would always reserve one track of the 4-track tape for Paul's bass overdubs. He used to

stay behind some nights with me just for that purpose. We would put his bass amp in the middle of Studio Two and mic it from about eight feet away with an old valve C12, and sometimes use a second mic even further away and mix the two signals together. The quality of the bass on those numbers was outstanding."

Being a long-time scholar of Macca's lines and a bass player by trade, I was pleased to be able to 'knock off' most of the bass tracks in one or two takes. leaving myself the lion's share of the first two days to almost, but not quite, perfect the drums. I was delighted to find that I completed this part of the project with two hours to spare, and wisely spent this time recording the backwards hi-hat for 'Strawberry Fields', in exactly the same way as I'd done for the intro cues, and most of the percussion, such as bongos, tambourine, wind chimes, hand claps and cowbell, all with an SM57.

Much of the guitar work was accomplished over the next two days. firstly using my Epiphone jumbo acoustic with a heavily limited Neumann U87, and then a Stratocaster and Gibson 335 for all of the electric rhythm and lead parts. I managed to lay my hands on a beaten-up Marshall 4x12 cabinet, driven by a 1960s Selmer amp that also looked like it had seen better days but sounded kosher. The only guitar pedal effect used was an antiquated Fuzz Face for the title track and the Hendrix-flavoured 'Good Morning Good Morning' solo, whereas for 'Lucy' we sent the main guitar riff through a fast-rotating Leslie speaker, miked with a pair of SM57s. This remained the guitar rig for all the songs, with the exception of 'Fixing A Hole', for which we put the double-tracked guitar licks and solo through a small Tandy speaker, and gave it plenty of middle EQ on the desk to achieve the slightly nasal sound of the original. That Strat solo was probably one of the most authentic reproductions of the project. It was in no small degree helped by the use of a Roland Chorus Echo box, on which we dialled up an approximation of the ADT (Artificial Double Tracking) effect originally conceived, at John Lennon's request, by Abbey Road's general manager Ken Townsend during the Revolver sessions. The effect was created when, during mixing, information was taken from the sync head of the multitrack machine and advanced before the replay head onto a quarter-inch machine, after which varispeed was used to create a ghost image on top of the original sound.

At this point I made the decision to include all of the vocals, even though for live playback purposes there would be an optional mix with the lead vocals reduced in level. But before the first note was sung there was much work to be done

"The sampled saxophones for 'Good Morning Good Morning' sounded too polite, so to dirty them up we literally overloaded the desk."

with keyboards, an area which was far from being my speciality. On the resident Schumann baby grand (miked with two Sennheiser condensers) I could handle the basic piano parts, such as those for 'Strawberry Fields' (a one-chord vamp!), 'A Day In The Life' and 'With A Little Help...'. but it was still clear that I would have to bring in an expert, namely Nick Page, a local session player who frequented Diploma.

The author wishes to point out that he was paid to dress up like this ...

SOUND ON SOUND . June 1997

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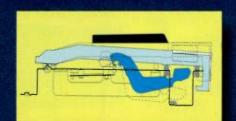
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# Recreating Sgt Pepper

siploma Studios Ltd.

sheet for the

re-recording

of 'A Day In

The Life'.

I fuelled Nick with numerous cups of tea and sarnies while he sat in the lounge with a cassette of 'When I'm Sixty-Four' and the barrelhouse solo from 'Lovely Rita', busily writing out all the dots to read later. He did a marvellous job of recreating

George Martin's 'Rita' solo, and was very quick too. I later got Nick to play the piano flourishes on the tailpiece of 'Magical Mystery Tour' and after he left the session we fed the piano track through the Leslie, recording its sound and gradually increasing the reverb and ADT level as the speaker began to rotate. The effect was just a tad too heavy-handed when compared to the Fabs' version, although, funnily enough, it sounds like an exact replica of McCartney's later 1993 reworking on the album *Paul Is Live*.

# DON'T MENTION THE 'S' WORD

A genuine Hammond B3 was hired in for me to play on the organ tracks, and also on the hire list was a '70s Wurlitzer electric piano for 'Getting Better'. Apart from these 'real' instruments, the keyboard sounds now relied on what was still relatively new technology in 1987: sampling. I had wanted to avoid sampling as much as possible in favour of using the real McCoys,

but I could see from an early stage that the budget would not allow this. So out went the 'Strawberry Fields' Mellotron flute sound and swarmandel (Indian table harp), and in came useful hybrid approximations from the Akai S900, played on the master keyboard: a state-of-the-art Yamaha DX7. Similarly, the 'Lucy In The Sky' celeste and droning tampura, 'Fixing A Hole' harpsichord and 'She's Leaving Home' harp were created with this setup, often involving the merging of a number of Akai and Yamaha factory sounds to get close to the exotic instrumentation.

How to orchestrate without an orchestra was the next obstacle, and it was at this juncture that the project could have fallen on its knees if not for the patience and skills of one Dave Brock, the keyboard maestro from top cabaret band Triple

"By the time I arrived at Diploma in April for the first day's work, every one of my friends was convinced I had gone totally Upminster — several stops past Barking (mad)."

# **BUILDING UP STEAM**

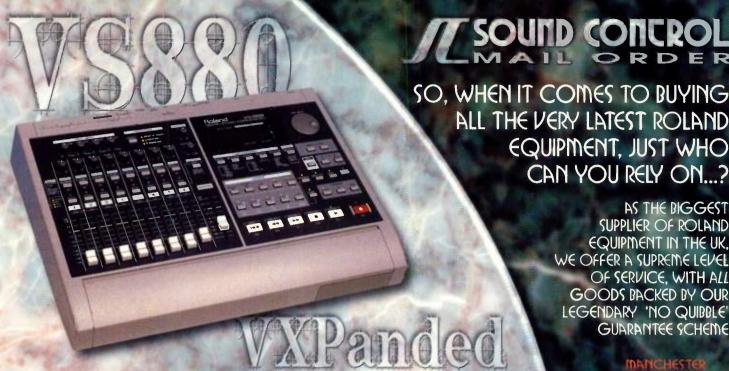
One of the strangest coincidences to befall us happened during the recording of 'Being For The Benefit Of Mr. Kite!' which relied on the Akai \$900 sampler rig for the essential calliope and bell sounds. We pondered long and hard about how we were going to achieve the sawdust feel of the strange middle section - the one which George Martin and Geoff Emerick fashioned from randomly edited pieces of steam organ tapes. Jim Woodford informed us that only a few weeks before our project started an elderly man had been in the studio to have some 30-year-old recordings of fairground music transferred to a VHS tape and, lo and behold, the original was in the studio's safe. To us, it was like the Holy Grail and we copied everything down to quarter-inch in readiness for the inevitable. It had to be done, didn't it? Yes, I grabbed hold of the quarter-inch and started snipping away, turning the reel into a pile of four and six-Inch strips, and then (just as Martin had instructed Emerick) Darren spent the next half an hour on the editing block, assembling an incoherent loop from the mess at his feet. Martin and Emerick had, as legend would have it, thrown their pieces of tape up in the air and dipped them in Coca-Cola before splicing them together, so we were not too far off. In fact, we were amazed at how incredibly close it sounded to the Fabs.

Cream. Dave realised how obsessive I was about giving this project 100% in all areas, and he very kindly spent several evenings scoring every subtle string and horn line until his manuscript pad looked a complete mess. Only he would understand it! He came in one Thursday morning looking very pleased with himself, played around with various disks and dials on his \$900, ordered Darren to cue the multitrack for 'A Day In The Life' and grinned at me as he sat behind his Korg DW8000.

At the point where the 'I love to turn you on' line would later appear, Dave cued a violin bank sample and started making his way up the keyboard towards E major, spectacularly emulating the random upward movements of the original's orchestral rush. It blew me away! He then paused for the 'Woke up, fell out of bed' section, then played the more melodic bridge before delivering the dramatic climax. Once the violin section was on tape, Dave repeated the formula for each one of the '41-piece orchestra' as we occasionally bounced these tracks together to give him sufficient room.

This was all in complete contrast to what actually went down at Abbey Road in January '67, of course. The original backing track for 'A Day In The Life' was recorded in a standard manner on one 4-track machine, then bounced down with additional Beatle overdubs. In the middle of the song, between Lennon's verse and McCartney's section, a long 24-bar void was marked out by McCartney's four-to-the-bar piano prodding, while Mal Evans counted out the bars for reference (as heard on Anthology 2) and aptly set off an alarm clock to indicate the end of the passage (I even added the clock to my rendition). Something would fill that space later, though quite what they had in mind would not become concrete until 40 seasoned orchestra professionals arrived

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# Recreating Sgt Pepper

at Studio One, the large orchestral room.

McCartney, with guidance from Martin, had decided to plug the gap by writing a score which would have each member of the orchestra play the lowest note possible on their instrument and, over the course of the 24 bars, rise in pitch before ending on an E major chord. Violin leader Erich Gruenberg was among the confused musicians that evening. A few years ago, he told me: "Paul wanted the orchestra to generate some excitement, but there was no score. After experimenting with different approaches it was decided we would all start on our lowest note and finish on top E on the 21st bar. The 'A Day In The Life' session was quite a party. The Beatles were wandering around with cine cameras, pointing them at people. Everyone entered into the spirit."

To simulate an even larger orchestral sound, Abbey Road's ambiophonics system was used. This employed 100 loudspeakers around Studio One to feed delayed signals from the orchestra

into the studio and back into the control room console. For some peculiar reason, I could not find any such facility at Diploma.

Despite such shortcomings, my versions were now really coming together, and Dave's skills inspired me to try my hand at 'playing' the thunderous string and trumpet parts for 'Strawberry Fields'. Unhappy with the sampled cellos, I performed these 'analogue stylee' on a real cello — my debut on the instrument — with a dynamic mic thrust as near to the bridge as was comfortable. Knowing that the original had a laconic feel, owing

"I had wanted to avoid sampling as much as possible in favour of using the real McCoys, but I could see from an early stage that the budget would not allow this."

to the variations in recording speed. I asked Darren to speed up the tape for all the overdubs (including the soon-to-be-recorded vocals) so that the slurred flavour would be reproduced on the final mix. With hindsight this was the best track of the bunch, even though it did not share the same edited technique as the original. As Beatles trainspotters will know, 'Strawberry Fields' was actually formed from two separate takes, each one of them in a different tempo and key, but by the grace of God (and Ken Townsend) each take was seamlessly aligned.

The sampled saxophones for 'Good Morning Good Morning' sounded too polite, so to dirty them up we literally overloaded the desk. I quickly discovered that, although groups of sampled instruments sounded passable, solo orchestral instruments suffered from the limitations of mid-'80s technology. The Akai was no match for the real thing and compromise became the name of the game, especially on 'She's Leaving Home' which is totally orchestral. I now wince whenever I hear the sound of the looping sampled violins. Sometimes we were able to disguise the short sample times by overlaying sounds at different points so that the loops were covered over. Inevitably, though, it was the one area of my project which could justifiably be labelled 'Mickey Mouse', and it was this experience which made me shy away from re-recording 'Within You Without You', as the Akai's representation of sitars and dilrubas was, quite frankly, crap! With the benefit of today's hardware, of course, one can achieve an

# DAVID MASON: PENNY LANE'S UNSUNG HERO

While The Beatles worked throughout the early months of 1967 on what was to become Sgt. Pepper's Lonely Hearts Club Band, EMI became impatient for a single. Reluctantly, 'Strawberry Fields Forever' was released on February 17 as a double A-side with McCartney's 'Penny Lane', to provide what many still regard as the greatest coupling ever, despite being the group's first single since early 1963 to fall to reach Number One...thanks to Engelbert Humperdinck!

'Penny Lane' featured session musician David Mason's now world-famous piccolo trumpet obbligato, its inspired use coming after McCartney caught Mason's televised performance with the English Chamber Orchestra of Bach's Brandenburg Concerto No. 2 in F Major, and became intrigued by the clear, high tones of the instrument.

Mason, a regular face at Abbey Road during that peak psychedelic year, recalls the January

17 session: "When I arrived at EMI, there was no one in the studio, and it was almost in darkness, so I just sat down and waited... and waited. When they finally arrived, I thought they must have come off a film set or something, because they were wearing some quite outrageous clothes, like candy-striped trousers and loud ties. They also had moustaches, which they'd never had before. So I asked them about this, and John said, 'We always dress like this. mate!'

"There was no part written for me to play at that point, which I thought was unusual, though not for The Beatles, I understood, Paul sang some notes and George Martin sat at the piano writing them down for me. This took quite some time to do. I had brought with me quite a selection of trumpets and after trying out some ideas on a few of them, we eventually chose my piccolo A trumpet, and the highest note of the solo was the top G on that instrument. It was difficult because I am not a screecher. I am a symphonic player. Once all this was out of the way, I recorded my parts in two takes, but I must admit that I wasn't very impressed with their first backing track. It was quite bad, but they knew that. The final one was so much better.

"After I had done my bit, I went and had a listen, and told Paul that it was probably the catchiest tune I'd heard them come up with, and asked if it was going to be a single. He replied, 'Weil, it's actually going to be the B-side of a new song called 'Strawberry Fields Forever'.' And they played that song for me. I thought it was interesting but I told Paul that 'Penny Lane' was much better. John overheard this and said, 'Thanks very much!' Then I suggested that they issue it as a double A-side, but no more was said about the idea that evening. So I don't know if I was the catalyst, but the single did come out a month later as a double A-side."

David Mason at around the time of the legendary 'Penny Lane' trumpet overdub.



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# Recreating Sgt Pepper

incredibly close reproduction of these instruments (but I am not about to repeat this exercise!).

# **VOCALS & EFFECTS**

About 10 days into the sessions, still with odd musical inserts to be recorded, we started work on the lead vocals. The plan was that I would sing McCartney's and Starr's parts, while my erstwhile band colleague, ex-Pinkee Paul Egholm, was to take care of Lennon. However, we ended up swapping roles on 'Strawberry Fields', 'Lovely Rita' and the 'Sgt. Pepper' title track, much to the confusion of

"Unhappy with the these 'analogue stylee' on a real cello — my debut on the instrument."

> everyone. All the vocals — including the harmonies, which were done in one dedicated session - were recorded with a Neumann U87. A little varispeed was applied to the recording of my vocal on 'When I'm Sixty-Four' to capture the childlike quality of Macca's version, and the Lennon section of 'A Day In The Life' was recorded with tape delay on the multitrack, as he would have liked it himself. There are two schools of thought about McCartney's 'Sixty-Four' vocal. While Sir George has said that it was recorded at slow speed in order for it to sound like a wispy old gent on normal playback, it could equally be conceived that McCartney wanted his



"So let me introduce to you..." Mark Cunningham Billy Shears.

voice to appear more like it sounded at the age of 16, when he originally penned the song.

Paul Egholm did brilliantly at the mic, even though at first he seemed a little intimidated by the thought of 'impersonating' his hero. Nevertheless, it had always been his forte, and this was the ultimate showcase. At the close of the last vocal session, Paul and I fumbled around with the last remaining duties, such as the comb and paper blasts on 'Lovely Rita', the 'When I'm Sixty-Four' tubular bell and the dubbing of BBC sound effects discs (audience noise and various animal and hunting sounds — the latter to be featured at the end of 'Good Morning'). We were set for the mix.

# **ALL HANDS ON DESK**

I took a week off and tried to distance myself from Sgt. Pepper for a while, although it proved impossible to think of anything else. I felt like an athlete who had been undergoing intense training for the Olympics, and the big day was just ahead! And so on a sunny Monday morning in May, I arrived with a large bag of Pot Noodles and alcoholic refreshments to begin a mammoth mixing session that would take me through to the Wednesday afternoon. Yes, I was that mad! We chose to mix in mono, as The Beatles themselves preferred, and I was constantly spurred on by my physical aching to hear through those Tannoy monitors a sound that may well have emanated from Abbey Road's Studio 2, 20 years before.

We ignored the Lexicons and Rolands in the outboard rack, and kept the effects simply to tape delay and a spring reverb which had the annoying habit of always going 'Boing!' at critical moments. The mix mostly went like clockwork, although there were a few moments when the kind of automation I had been used to on sessions at Eden and AIR would have come in very handy. The segue from 'Sgt. Pepper' into 'With A Little Help...' was a real bitch, but even worse was 'A Day In The Life' which called for six people to push faders up and down, re-EQ and turn aux knobs between the ambient and dry sections. The last item on the agenda was the mix for 'Strawberry Fields', at which time I painfully noticed a single timing glitch on the drums after the first vocal line. It was too late to repair it now, so it remains, sticking out like a giant sore thumb every time I hear it. Another rule I set myself was that there would be no fade endings, and so on 'Strawberry Fields', for example, I chose an appropriate point near the end to insert into the mix a loop of a delayed piano. This replaced the fade-out/fade-in arrangement of the original.

# A SPLENDID TIME

After a total of 120 hours at Diploma, the project came in £150 under budget and I emerged, greyskinned but on top of the world, satisfied that I had probably come as close as anyone would get to recreating this landmark album. Certainly, when I premiered the recordings to the folks at Essex FM on June 1, the actual 20th anniversary, they were amazed to the point that some believed they were



Sgt Pepper's Lonely Hearts Club Band on tour! (I-r) Paul Egholm, Mark Cunningham, Gary Strohmer, and Stuart Viney.

listening to the 'real' album and that I had conned them out of a couple of grand. A back-handed compliment if ever I'd heard one! While I allowed a limited edition of cassettes to be distributed amongst the press and selected VIPs, I refused to release the work commercially — a decision I still stand by. Later on in the year, to my delight, I received unexpected acknowledgements from two of those VIPs, George Martin and Paul McCartney, and *The Beatles' Monthly* gave the project a

# "How to orchestrate without an orchestra was the next obstacle."

major thumbs-up. It also attracted the attention of the now-defunct *Sound Engineer & Producer* magazine, which saw fit to send a mad American journalist to my flat to interview me for a feature.

Strangest of all was an hour-long interview I gave on BBC Radio with Trevor Dann, who was obviously a Beatles aficionado and appeared quite over-awed by what I had done, insisting on playing extracts from each of my recordings. Interesting then, that when he took charge of Radio One's programming he controversially decided to ban The Beatles' reunion single 'Real Love' from the playlist, on the grounds that it was not suitable for his listeners.

This project taught me huge lessons about the recording of music. the first one being that I had taken so much for granted. One can learn to play, sing and record a sequence of musical notes, parrot fashion. but it's impossible to recreate an atmosphere - especially when one is playing out the roles of four people (five, if you count George Martin). It made me realise that so much of what went onto tape on the original Sgt. Pepper was not so much down to the way the music was performed, but more about the interaction of human beings. It also gave me a deeper appreciation of the limited resources available to The Beatles in 1967. They were still using the 1-inch 4-track method (actually bouncing between more than one machine), whereas I had 24 tracks at my disposal and occasionally mouned about not having 32 for the 'orchestra'. And if it was not for their demolition of perceived technical boundaries in the 1960s, it is highly likely that 48-track recording would still be a mere twinkle in some eccentric designer's eye. Spoilt rotten, we are.

For further reading about the making of The Beatles' Sgt. Pepper, pick up a copy of Summer Of Love by Sir George Martin (Macmillan) and also Good Vibrations — A History Of Record Production by Mark Cunningham (Sanctuary Music Library).



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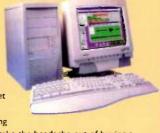








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# PHYSICAL MODELLING SYNTHESIS EXPLAINED

Modelling is the current Big Thing in digital synthesis, and it's being used to recreate the sounds not only of traditional acoustic instruments, but also the analogue synth timbres electronic musicians know and love. So just how are the manufacturers making numbers behave like nose-flutes and maths sound like Moogs? Super modeller MARTIN RUSS provides the beginners' guide.

e live in a world that is increasingly described by numbers. Most bartering of goods was long ago replaced by metal and paper tokens. Since the Ordnance Survey started mapping Great Britain in 1791, even the shape of the country itself has been represented by heights and positions on a grid. From the early 1980s onwards, audio has been held as numbers on digital Compact Discs. In the 1990s, the most important part of your passport is arguably the machine-readable strip of numbers on the back page — which looks increasingly like an identity card (or will the ubiquitous credit card take over that role if it ever gains a photograph of the holder?).

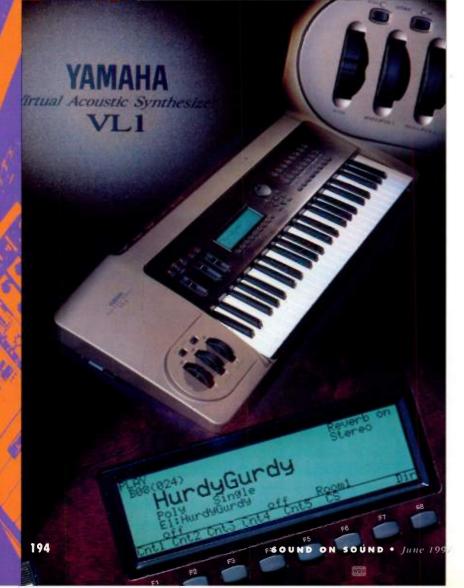
To deal with all the numbers that are used in today's world, we are becoming dependent on computers. Digital processing of numbers calculates our wages; deducts our taxes; enables us to register a National Lottery number; controls the manufacturing of hi-fi equipment; reduces the distortion in loudspeakers; produces music, and much more. With the right knowledge and programming, computers can be used to simulate how a nuclear reactor works, how the economy should be developing, and even how a musical instrument makes sounds. They do this by using a model of the item being simulated. The model is usually a series of mathematical rules which describe how the individual parts interact - so it's often called a 'mathematical model'.

#### STARTING SIMPLE

Let's take a very simple example — a model of a balloon. There are three basic categories of balloon: empty; blown-up (full of air); and burst. So how about some rules for the behaviour of a balloon?

- You can turn an empty balloon into a blownup one by putting air inside.
- You can turn a blown-up balloon into a burst one by pricking it with a pin or by trying to put too much air into it.
- You can't turn a burst balloon into either of the other categories — once burst, it's burst forever.

We also need to know something about the properties of the things we are using, so we need to know that the balloon has a limit to the amount of air that it can hold before it bursts. We might also need to know that if you add air to a balloon and then release it, all the air will rush out of the balloon and restore it to almost its original emptiness.



#### REAL WORLD RULES

We can't look at how to make imaginary instruments without knowing something about how real instruments work, so let's start with a very general view of how to make sound.

Sound is produced when something vibrates in the air (or water, or something else!). It's the very fact that there's something to carry the vibration that allows us to hear sounds. Normally, it's the air that vibrates, and this is how the sound is conveyed from the vibrating object to our ears. Sound does not travel through a vacuum, so space is absolutely silent.

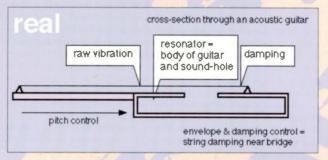
So how do you make something vibrate in the first place? If you think about plucking a string, it's obvious: you pull the string away from its resting position, and let go. The string goes back to the resting position, but carries on past it. It then reaches a limit, and bounces back through the resting position, and nearly back to where you let go of the string. This continues, with the string gradually moving less and less, until it is back in the resting position. A physicist would describe this behaviour by saying something along the lines of: "when you pull the string, you stretch it, and this requires effort. When you release the string, the energy you have stored in it, because of the effort of pulling it away from its resting position, is converted into movement as it tries to return to the resting position." In other words, you put energy into the string, and it then vibrates as the energy is converted into vibration, with the final result being a string without the extra

energy that you added. In the process of vibrating, the string moves the air, and this is why you can hear the sound made by the string.

where it's the air that flows over the mouthpiece that vibrates).

Often, the coupling between the driver and the air

has a complicated frequency response. For example, the body of a violin does not resonate at just one frequency, but at several. A hollow tube also has several different resonant frequencies — depending on the tube, the material it's made of, the holes in it, the temperature, the humidity... These all serve to shape the timbre of the resulting sound from



Although it's not always as obvious as this example, you make something vibrate in a musical instrument by adding energy into it. Blowing, pushing and bowing are all methods of putting extra energy into a string or column of air; the way in which you add the energy, and the way in which the instrument then releases that energy into the air as it vibrates, determine the type of musical sound the instrument produces. The word used for the part of the musical instrument where the energy is added is the 'driver', because this is where the added energy drives something into vibration. The driver can be connected to the air by either the body of the instrument itself (as in a violin), by a tube (as in a trombone), or directly from the part that vibrates (as in a flute,

the musical instrument.

From a modelling point of view, we now have the essential parts that we need to describe some of the major aspects of how a musical instrument makes a sound. We merely need to be able to describe:

- . How the driver changes energy into vibration.
- . How that vibration is connected to the air.
- How the vibration starts when we first start adding energy to the driver.
- Any resonances in the coupling of the driver to the air, or the instrument itself.
- How the energy decays when we stop adding more energy to the driver.

Believe it or not, this simple example illustrates many of the important things about mathematical models.

- Firstly, you need to be able to describe what is happening — in this case, whether the balloon is empty, blown-up or burst.
- Secondly, you need to be able to describe what changes can be made. For example, adding air to the balloon changes it from empty to blown-up.
- Thirdly, some of the changes can be irreversible — the pin can permanently burst the balloon.

- Fourthly, you need to know something about the properties of the things which are used in the model.
- Finally, some changes can be unexpected: for example, if you add too much air to the balloon, it can burst, because its capacity for holding air has been reached.

Once armed with a model, we can then use it to make predictions, and to answer questions. For example, what happens if we add water to an empty balloon? Does it become blown-up? Will a pin still have the same disastrous effect? In order to know, we need to know something about the

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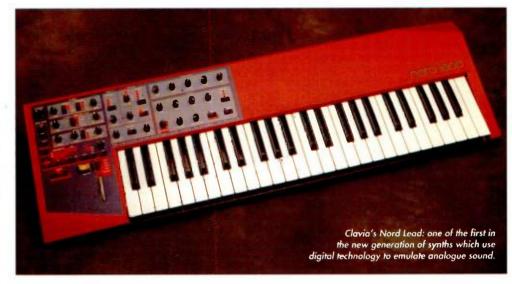




ADVANCED MEDIA PRODUCTS

#### Physical Modelling Explained

"What was once an obscure topic of interest to a few music/physics researchers is now a valuable commodity."



properties of water, and if we decide that it behaves like thick air, then we can make predictions based on this — if you add water, then the balloon will be blown-up, and a pin will still burst it. But if you fill a balloon with sand, does a pin still burst it? The simple model we have for the balloon may not work in some situations, especially those outside the scope of our description of how a balloon works. The model might need additional information on the substance used to fill it, for example.

Models of musical instruments allow us to make sounds which have many of the characteristics of real instruments, but only when we understand enough about the instrument to be able to normally expressed as equations connecting all the individual parts. So an equation that describes a string driver needs to know things such as the tension in the string, how far it's pulled from its rest position, and whereabouts, along the length of the string, it's being pulled. A resonator equation is more concerned with the frequency response of the body or tube part of the instrument, where the resonances are. There may also be equations which describe how the driver and resonator are connected together, or how the energy decays away or is coupled to the air. The basic model runs something like this:

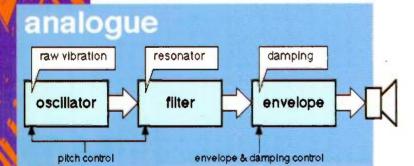
- Energy is added to the instrument.
- · Something vibrates because of the extra energy.
- Something resonates with the vibration.
- The vibration is coupled to the air by some means.
- The energy is gradually transferred to the air.

That's about it for modelling. We now have a mathematical model of how a physical musical instrument works — and this is the basis for all of the modelling-based synthesis techniques. The rest of this article examines the different types of models.

#### PRE-DIGITAL MODELLING

At the risk of being sectioned for madness, I'll let you into a secret. Analogue synthesizers are nothing more than pre-digital versions of the latest digital 'virtual' synthesizers — and they use modelling. You don't actually need to have a digital synthesizer for it to be called a 'modelling' instrument, although many manufacturers would have you believe that. In fact, the earliest analogue synthesizers were arguably things called analogue computers, which used voltages and currents to represent numbers, and processed them using circuits like amplifiers and filters.

The important thing is that the way in which an analogue synthesizer is put together is nothing more than a convenient representation of how to make sounds. The Oscillator is the source of the raw vibration; the driver. The Filter is the resonator. The



describe how it works in sufficient detail. Balloons are relatively easy to describe, while musical instruments are usually more complex. Of course, if we understand how something works, we can often extend, enhance or even just alter the way in which the parts interact, and this allows the creation of imaginary instruments: ones which might be impossible to actually make! These 'impossible' instruments are often rather like filling a balloon with sand, because they go beyond the normally expected boundaries of the model.

#### **PUTTING IT TOGETHER**

A mathematical model is just a way of plugging together all of the things we've learned about how a musical instrument works. These are Envelope Generator and Amplifier effectively control damping and volume, and the loudspeaker converts the electrical signal into sound by vibrating the air. You may never have thought of an analogue synthesizer as a model of how sounds are produced (or as an analogue computer!), but that's all it is.

One difference between real-world musical instruments and synthesizers is the way in which energy is added to the driver. Whereas a synthesizer's Oscillator produces sound all the time, a conventional musical instrument normally has energy added in bursts: plucks, hits, and blowing — with the exception of the digeridoo, of course. In an analogue synthesizer, the envelope generator and amplifier perform this function instead, and this is arguably one area where the modelling is rather unrealistic. In fact, the whole of an analogue synthesizer is an idealised, simplified view of how a musical instrument makes sounds.

#### **VIRTUALITY**

Once you've worked out how to convert an understanding of how something works into a physical model, the same principles can be applied in many ways, and all you need is a suitable means of turning the model into reality. Analogue synthesizers

do it using currents and voltages which represent the vibrations directly, but today's technology tends to replace most signals with digitised numerical versions instead. If you take an analogue synthesizer and convert it into a digital form, you have what can be called a 'Virtual' synthesizer.

The Clavia Nord Lead is one example of the technique of using digital technology to represent an analogue synthesizer, and manipulating numbers to make sounds. But FM synthesizers and more recent Sample & Synthesis (S&S) instruments, such as the Emu Morpheus, also use numbers and equations to represent how frequency modulation and complicated filters work. But the underlying model they use, of sound source, filter and envelope is a crude one, which is not very representative of the real workings of a musical instrument.

Digital technology, however, allows a model to be implemented with as much depth as is required. In the case of virtual analogue synthesizers, this includes detail such as the imperfections of oscillators, filters and amplifiers. Some possible areas where it is possible to describe (and thus model) this non-ideal behaviour include:

- Oscillators which vary in pitch slightly to simulate the effects of power supply loading, temperature, humidity, and even just time.
- Oscillators whose modulation inputs are nonlinear, or non-exponential.
- Waveforms whose shapes are merely rough approximations of the names used to describe them (Square, Triangle, Sawtooth, Sine, etc).

 Waveforms whose shape changes with frequency to simulate the effects of bandwidthlimited/non-linear/distorting amplifiers. "If we understand exactly what gives analogue instruments their character, it's then possible to model them."



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- Filters that distort audio signals.
  - Filters whose characteristics change as they approach self-oscillation.
  - Filters that add noise to audio signals passing through them.
  - Amplifiers that distort/compress/add noise to audio signals passing through them.
  - Envelope Generators which have linear/exponential or other curves

perfect imperfections

raw vibration resonator damping

oscillator filter envelope

pitch control envelope & damping control

Just as it is often the detail of a real instrument that provides the uniqueness and interest in the timbre it produces, so these analogue 'imperfections' can be built into the model to provide the distinctive sound of individual 'retro' analogue instruments. If we understand exactly what gives analogue instruments their character, it's then possible to model them.

#### **INTERACTIONS**

One way of producing a better model of a real instrument is by trying to take account of the interactions between the sound source and the resonator. In an analogue or virtual synthesizer, the two are normally kept entirely separate, whereas in a real musical instrument, the driver and the resonator are part of the same instrument, and changing one affects the other. If you remove the

tubing from a brass instrument and play just the mouthpiece, you realise just how important all that metal tubing is! Or imagine a guitar where the body and the strings are not connected. In fact, separating these two parts is so alien to how a real instrument works that it is often difficult to imagine a driver without the associated resonator, and the interaction between the two can be crucial in determining the sound of the instrument. Think about the difference between an acoustic guitar and an electric guitar when played without amplification — and then compare the sustain performance of the two...

One method for representing these interactions between the driver and resonator is to change the driver in some way. The S&S approach would be to provide different samples, although producing a smooth change between them would be difficult. Technics use a different method in their SX-WSA1 Acoustic Modelling synthesizer: here the driver is connected to the resonator by a delay line, which is used as a simple model of a string or tube (see the 'What's the Delay?' box, below left). The driver waveform is used to drive the delay line, and the output of the line is then fed to the resonator. The 'positions' of the input and output can be changed dynamically. The delay line thus provides a rough analogy to the real-world connection between the driver part of an instrument and the resonator.

Rather than just using an audio sample as the driver waveform, Technics have attempted to 'reverse engineer' the output of real instruments by removing the effect of the resonator, so that the raw, unfiltered driver waveform can be used rather than a sample of the complete instrument. The actual driver waveforms that this process produces sound like thumps and bangs with extreme treble boost applied, but the final result once they have been 'connected' to a resonator is impressive — filtering removes the high-frequency emphasis, and the result sounds like a sampled

instrument. Of course, since the actual connection and filter settings may be completely different from the usual ones associated with the instrument, the final timbre produced can be very different from the driver sample itself.

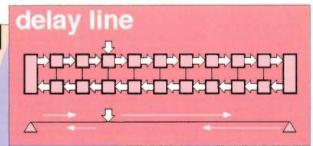
The resonances which are found in most musical instruments do not translate to simple low-pass or band-pass

filters: one method for experimentally discovering the sort of resonances that an acoustic guitar body might produce is merely to sing into the soundhole of a guitar. Technics have, presumably, determined the major resonances of a number of different instruments, and then used this information to work out what the raw driver sound was like before the resonator modified it. The results take the form of band-pass filters whose bandwidth, Q and centre frequency can be altered — rather like a parametric equaliser. But in order to simulate the multiple resonances that are

#### WHAT'S THE DELAY?

In the main body of this article, I've referred to the use of a delay line as a simple model of a string or tube. But exactly how can a delay line simulate a tube, a string, or a resonator? Here's a rough guide to the basic concept, using a violin string analogy.

When you bow a violin string, energy is added to the string at that point because of the jerky movements of the bow as it tugs and releases the string. This mechanical energy travels along the string in both directions until it reaches the ends of the string, when it bounces back and returns towards the point where the bow is touching the string. The time taken to do this is related to the length of the string, so specific frequencies will exactly fit into this time and will be reinforced, whereas other frequencies will tend to be cancelled out. This process is called resonance, and it's a common feature of many mechanical systems. It's rather like pushing a person in a swing:



unless your timing is right (synchronised with when they come closest to you!), your pushes don't actually achieve much.

A delay line can simulate this sort of behaviour with two sets of blocks of time delay, arranged rather like a string. The incoming waveform travels along the delay line, 'bounces' back from the 'ends', and eventually returns to the start position, from where the whole process repeats. The delay line thus emulates the length of a string or tube by providing the same time-delays and behaviour, but in a form which is electronic rather than mechanical.

present in a real instrument, several of these filters can be combined in parallel.

Since this technique emulates the interaction between the driver and the resonator, I've called it 'Interaction Emulation' (see diagram, below right). It's important to differentiate between this and S&S synthesis, because although both appear to use a sample followed by filtering,

the Interaction Emulation technique does not use a straightforward sample, nor is the filtering as simple as that typically found in S&S synthesis. It thus represents a halfway stage between S&S and Physical Modelling.

#### **PHYSICAL MODELS**

Physical Modelling takes the ideas behind Interaction Emulation to their logical conclusion. Instead of using just a simple model for the connection between the driver and the resonator, it attempts to produce models for the driver, the resonator, and their interactions. This provides a feedback path which is not present in simpler models. One of the best current examples of this technique can be found in Yamaha's VL1 and VL1m physical modelling synthesizers.

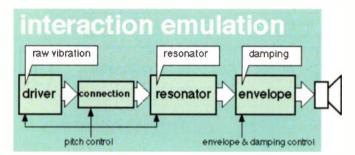
The connection and resonator models are similar to those already described: the connection can be modelled using a simple delay line, and if you use a more complex delay line, this can even produce part of the resonator as well. It's the complexity of the mathematical models required for the driver that pose the major technical hurdle for physical modelling, since here the task is to describe complex moving systems of air, strings, bows, lips and mouthpieces.

Let's look at the resonator first. Possibly the simplest resonator is a string or a tube. You pluck a string and it produces a sound whose frequency is related to the length of the string. If you blow across



the end of a tube, the note that is produced is, again, related to the length of the tube. In both cases, the plucking or blowing adds energy into the string or tube, and the resulting vibration is emphasised at those frequencies whose wavelengths are related to the length of the tube or string. If the length of the tube or string changes, so do the

Technics SX-WSA1 uses a synthesis technique which falls somewhere between S+S and Physical Modelling.



frequencies which are emphasised, and the resonant frequency changes. If there are holes in the tube, or the width of the tube changes along its length, extra resonances can occur, while for a string the rigidity of the end-points of the string can have similar effects. In digital circuitry, a delay line can be thought of as a model of a tube, so multiple resonances can be produced merely by adding in feedback paths at different points along the delay line. Some tape echo units produce multiple echoes in exactly this way, but they're behaving like tubes tens or hundreds of metres long!

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#### Physical Modelling Explained

Drivers are more of a challenge. There are many types, each with its own special characteristics. Plucking a string requires a sudden stretching of the string, followed by a release, whereas bowing a string involves lots of smaller stretches and releases as the rough bow catches on the string. With a flute mouthpiece, a stream of blown air hits the far side of the mouthpiece hole, whilst a recorder mouthpiece has a sharp edge that the air is directed against. Oboes and accordions use moving air to vibrate reeds, whilst in a trumpet or trombone it is the player's lips which vibrate inside a tiny mouthpiece enclosure. In a piano, the hammer hits the string at a fixed position, but

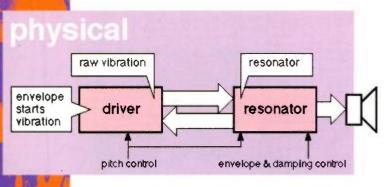
#### WHAT NEXT?

Despite appearances to the contrary, we don't actually understand how all musical instruments work. There are good models for plucked or hit strings, and these can be relatively easily implemented on affordable hardware, but any model that involves jets of air is considerably more complicated, and requires huge processing resources to calculate. Which is where simplification and compromise come in. Any resemblance between an affordable real-time physically-modelled flute and the real thing is a consequence of the fact that the model is a very simple digital representation of a tube, rather than a completely detailed model of how a flute really works. A simple analogy might be to consider a ventriloguist trying to produce the sound 'p': he can't move his lips, and yet by providing a similarly 'plosive' sound using his teeth and tongue, he can make the end result sound like a 'p', even though it isn't.

For some instruments, there just don't seem to be any models at all yet. In these cases, the ventriloquist analogy can be used again to show how it is possible to make sounds which appear to come from a specific instrument, even though we're not using the right model. I'll avoid taking this line of argument to its logical conclusion, where all models are declared to be so crude that they aren't at all usable, and that a serendipitous process of sound-making is all there is to physical modelling. The process of 'misusing' sound synthesis techniques has worked very well for analogue synthesizers, and I see no reason why modelling-based instruments should be any different. If it sounds like the timbre you want, the method used to produce the timbre may well be irrelevant to you.

The explosion of interest in physical modelling has changed the perceptions of many people. What was once an obscure topic of interest to a few physics/music researchers is now a valuable commodity, with electronic musical instrument manufacturers all investigating how they can incorporate this technology into their own products. The current range of instruments represent only the initial phase of development, since the synthesis possibilities opened up by physical modelling are far from being fully explored. More sophisticated drivers, better resonators, and understandable user interfaces should all contribute to improving the useability of modelling-based instruments.

Perhaps the biggest casualty of the launch of modelled instruments will be the simple S&S synthesizer, where the static sound generation offered by a sample replay oscillator is coupled with a crude low-pass/band-pass filter: 'painting by numbers' is one possible description. But selling instruments with few points of similarity to the analogue or S&S metaphors which have been built up over many years, could prove to be very difficult. Yamaha's success with FM was tempered by its failure to persuade all but a few die-hard enthusiasts to learn how to actually program it!



the dynamics of the acceleration and deceleration are very complex. The mathematical descriptions of each of these is necessarily detailed, and well beyond the scope of this article.

What is significant about this level of physical modelling is that because lots of real-world behaviour is built into the model, the results it produces have many of the restrictions that you find in real instruments. So, whereas the analogue synthesizer makes a sound all the time, and artificially imposes an envelope on it, a physical model produces sounds only when you add energy into it by 'blowing', 'bowing', or 'plucking' - just like a real instrument. Trying to persuade a real or virtual reed to vibrate with a gradually increasing volume isn't easy either — at some point it suddenly jumps in and starts making a sound. The unrealistic freedom that you have with an analogue synthesizer is replaced by the natural-sounding limitations of physics! In practice, though, you can usually explore modifications to drivers and resonators that would be difficult or impossible to achieve in reality, as well as mixing them — using a bow driver to drive a tube resonator, for example.

In case you were thinking that this sort of physical modelling is exclusively digital, remember that it is possible to connect an echo unit with a non-linear amplifier (a compressor will do) to act as feedback, and then produce some very unusual sounds by tweaking the delay time and feedback level. All it needs is something to set things going — the inherent noise will do at a pinch, but a trigger sound into the delay line acts much more like the transient energy bursts that you might associate with plucking or blowing. Digital technology just improves the control, the repeatability and the depth of implementation of synthesis techniques.

"The unrealistic freedom that you have with an analogue synthesizer is replaced by the natural-sounding limitations of physics."

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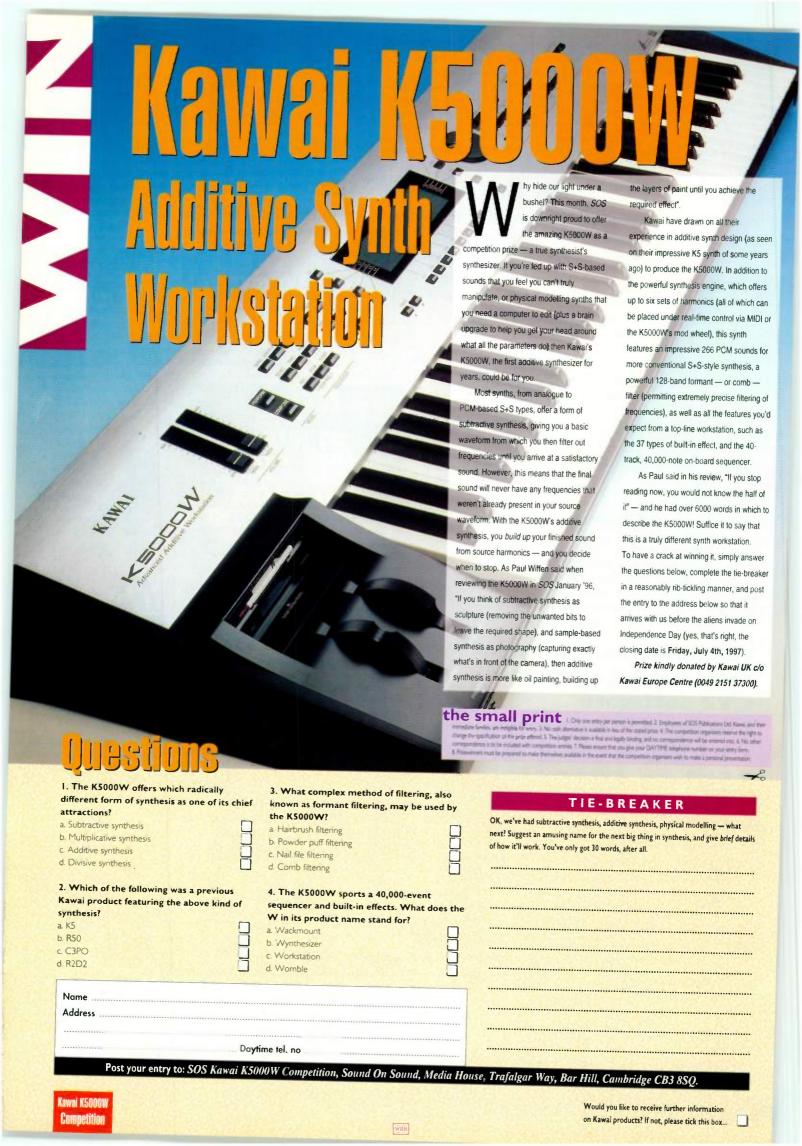
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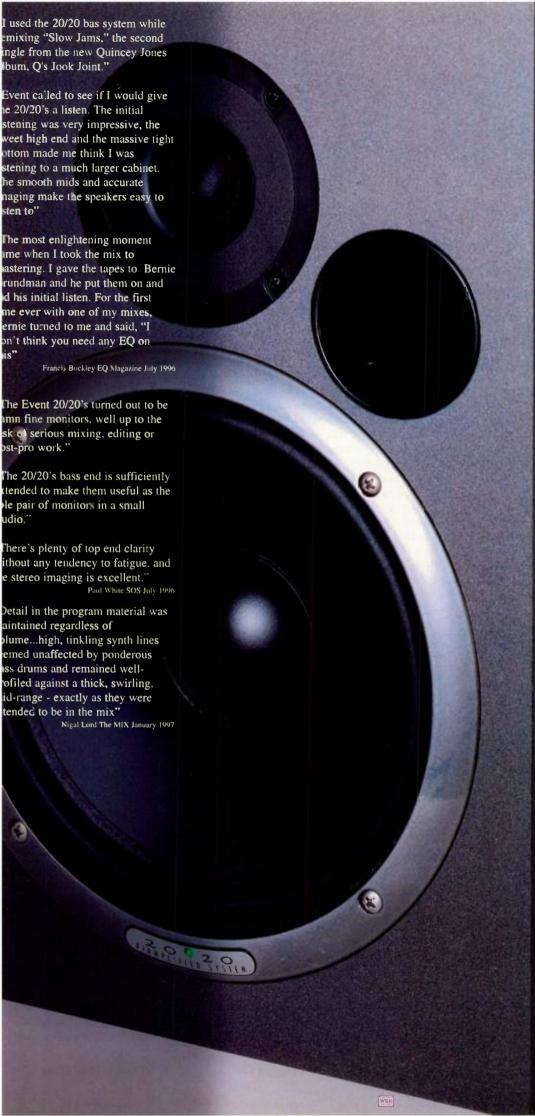
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WAVES NATIVE POWER PACK DSP PROCESSING PLUG-INS FOR WINDOWS 95 PC/MAC

The Native Power Pack from DSP software specialists
Waves gathers together several plug-ins previously
only available for Mac-based TDM systems, and
makes them availble at a knock-down price,
instantly widening the appeal of software-based
processing. JANET HARNIMAN-COOK plugs in...

The exceptional clarity and configurability of the TrueVerb make it eminently suitable for

have been a fan of the Waves L1 Ultramaximizer mastering plug-in since I first heard it running as a Sound Forge plug-in on the PC in early 1996. Since then, I have been amazed at the way it has transformed my recordings, seemingly restoring much important detail that had become lost during the recording process. Subsequently, I have used the L1 on nearly every track I have mastered, and so I was very interested when I first heard about Waves' Native Power Pack, which bundles several plug-ins, including the L1 Ultramaximizer, the TrueVerb reverb, the C1 compressor/gate, the Q10 equaliser, the S1 Stereo Imager, the IDR (Increased Digital Resolution) dithering/noise shaping module and WaveConvert,

mastering. Waves TrueVerb - Celtic04a.way Name: 02 Cathedral - P • Cancel 177 Undo Setup.A Copy To B ◆ Help RVar: 0 | EVar: 0 | Tail Auto tail | Mono->Stereo Save At Delete ☐ Bypass 160 140 180 20 40 60 00-819 100 120 ₩ Beal-time PreDelay Dimension RoomSize Distance Balance RevTime Density 1.00 5.0 136.6 3.00 20000 25.10 8.8 InGain Shelf RoomAbsrb Freq 1600 -5.0 0.0 -5.4 \_3 1459 1.20x 0.30x 2957 - Damo Direct -12 1K 16K

a very capable stand-alone multimedia audio batch processor application. These Waves processors were originally developed as TDM plug-ins for Mac-based Digidesign Pro Tools HDR systems, and are worldwide industry standards in daily use by top audio recording facilities. In an extremely bold marketing move, Waves have released the *Native Power Pack* in Mac and PC versions, at the affordably low price of £499.

#### **TOTALLY PLUGGED-IN**

Although they do not run as stand-alone programs, plug-ins may be used with a variety of different host applications, thus enhancing the editing capabilities of the host software. The Native Power Pack operates with a wide range of host software on both the Mac and PC (see the 'Meet Thine Host' box elsewhere in this article). The Mac version of Native Power Pack can be used on non-DSP systems, and without additional audio hardware on Power Mac computers. For this review, I ran the PC version of the Native Power Pack with Sound Forge 4.0a, but both PC and Mac versions are generally functionally identical and such slight differences as exist merely affect window appearance, installation and so on.

The PC version of Native Power Pack is the first of the new generation of PC audio applications to support the recently introduced Microsoft ActiveMovie audio plug-in standard for Windows 95. This enables software audio effects and processor modules to run in different host applications, irrespective of the original manufacturer (so even Cakewalk's proprietary plug-ins for their own Cakewalk Pro Audio software will be useable with Sonic Foundry's Sound Forge, for example). ActiveMovie plug-ins also have the advantage of real-time preview, which significantly speeds up the audio editing process, as you can hear the results of changes as you make them. This also permits you to perform live mixdown directly from your PC to DAT, depending on processing demands and the power of your computer.

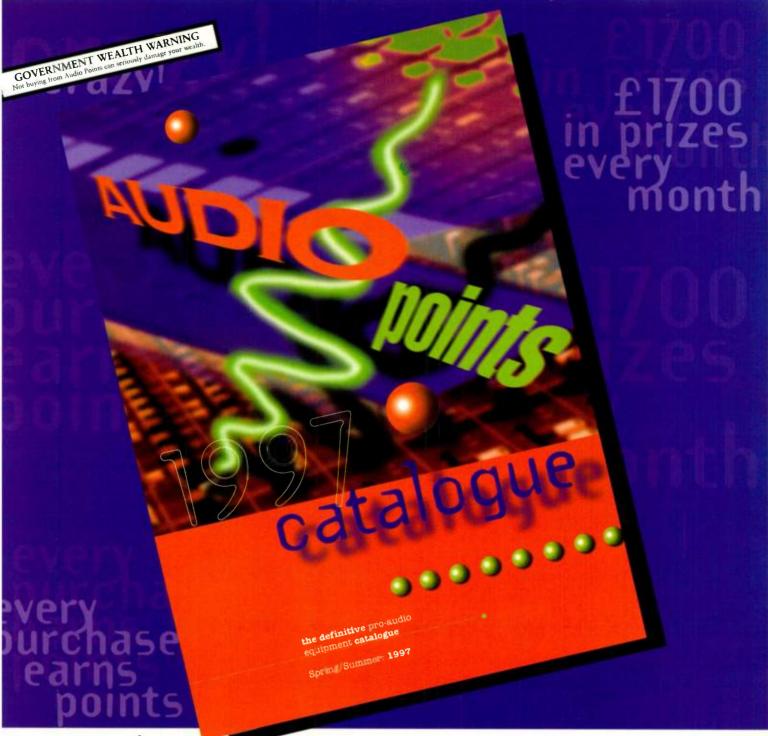
#### **EAROBICS CLASS**

The PC Native Power Pack ships with versions for both Windows 95 and Windows NT, but because the Power Pack is a 32-bit application, it will not run in legacy Windows 3.1. The PC package contains three floppy disks, a slim, ready-authorised copy protection key (dongle), a brief installation guide, and the user registration card, but no printed manual! Fortunately, the on-line Native Power Pack Guide is highly informative, and includes useful tutorials, but its HTML format means that you will need an Internet browser installed on your PC to view it (for example, Microsoft Internet Explorer or Netscape Navigator). I emailed Waves in early March about the manual situation, and Yoav Kali, the Native Power Pack Product Manager, explained that Waves will be including a printed manual in future, and that the first of the updated manuals can now be downloaded from the Waves web site. The Guide includes information on both PC and Macintosh versions, and contains general information about Native Power Pack that is not included in the Windows on-line Help files. I found myself occasionally confused by discrepancies

Waves TrucVerb

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#### Waves Native Power Pack

#### pros & cons

#### WAVES NATIVE POWER PACK 1499

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- L1 is probably the best software limiter in the world.
- Superb. versatile EQ.
- · Excellent reverb.
- Great steren imager.
- Real-time preview.
- Stable.
- · Amazing value for money.

#### com

- Needs a powerful computer for real-time preview processing.
- Documentation muddled in parts.
- No printed manual
- Effects cannot be used serially in Sound Force.
- Compressor/Gate not frequency-conscious.

#### summar

The Native Power Pack provides a stunning set of essential studio mastering tools at an unbelievably low price — despite the inconsistencies in documentation, no audio eduing facility with a PC or (non-TDM-equipped) Mac should miss this one — it's the business!

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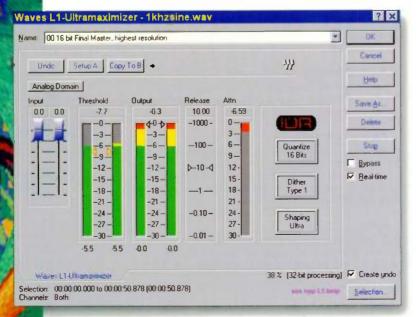
between features described in the Guide, the description in Help, and those actually present in the plug-ins. For example, the Q10 section in the Guide shows the Q10 equaliser with integral IDR dithering/noise shaping, but IDR was neither included in the Help nor in the Q10 itself; similarly the on-line Help refers to Autotrim, a normalisation feature, yet this is nowhere to be found on the Q10 window. Contextual help also contains some blank areas, which I hope will be remedied in future releases.

Installation is straightforward; the Native Power Pack integrates seamlessly into the Sound Forge environment, and an extra menu for ActiveMovie plug-ins appears, listing the Native Power Pack modules. Each plug-in operates from within its own window. These are well designed, with a clear layout and good — if basic — use of colour. Changes to parameters are made with the mouse or keyboard, either numerically or by dragging graphical elements. Each plug-in, apart from the IDR, features control of input and output levels, typically with clip and peak hold indicators, and channel faders may be linked to give parallel operation. Your own settings can be named and stored as presets, and a temporary buffer is provided to store and switch between two setups — a feature that is useful when making comparisons between different versions of the same basic preset. There is a huge amount of editing power in the Native Power Pack, and it may take a little while before inexperienced users become familiar with the more subtle aspects of processor editing, but each module includes a set of preset patches to help you get started, and the real-time processing makes getting to know the Power Pack easy and enjoyable — after all, what you tweak is what you hear, so your ears can be your guide.

#### PLUG-INS

#### • TRUEVERB VIRTUAL SPACE REVERB

To quote the on-line manual: "TrueVerb uses virtual reality techniques to place sounds convincingly within

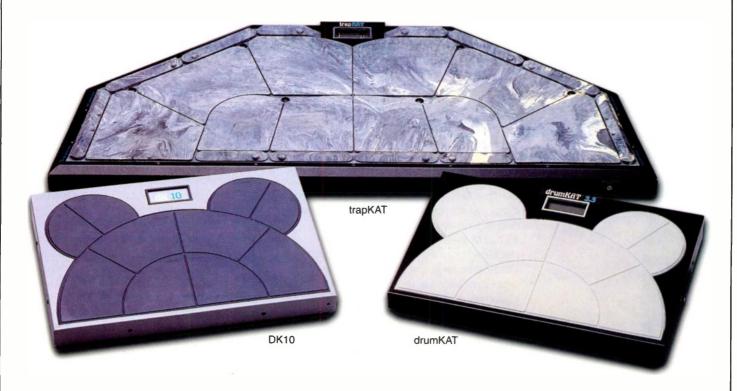


the actual space of a virtual room with good acoustics". *TrueVerb* is a true stereo device throughout all stages of its internal signal path, including early reflections and reverberation. Each audio element within the input stereo mix maintains the integrity of its original stereo position during processing, to produce a more natural and life-like result than the blanket effect imposed on incoming audio by many reverb devices. In *TrueVerb*, sounds located in different parts of the virtual room are affected by factors such as their proximity to reflective surfaces, just as would happen in a real room.

The TrueVerb produces its effect through the interaction and combination of three sound components: direct sound, early reflections, and reverberation. During real-time preview, any of these components can be bypassed to allow comparative monitoring. The TrueVerb application window has two main areas — the Time window and the Frequency Response window — and parameter settings can be adjusted by clicking on the Numeric displays or by dragging graphic icons. In this way you can define the width, depth, and reflectivity of your virtual room; also, with a feature unique to TrueVerb, you may specify the distance from the listener to the source audio. For more on the general theory and practice of reverb, see 'Reverb from First Principles' in SOS March 1997. The Time window displays time response as a graph of relative amplitude against time in milliseconds and room size in metres. The Room Size button, beneath the Time window, shows the volume of the virtual room in cubic metres: for example, a room 8 metres wide, 10 metres long and 4 metres high would be 320 cubic metres. Room Size and Distance from source parameters are displayed on the Time window as blue and yellow markers respectively, and can be adjusted by dragging. When Distance exceeds the Room size, the marker turns red and the sound is projected beyond the room and into the virtual building next door (honest!). The graph also shows the early reflections as vertical white lines and the reverberation pattern as a turquoise block which moves with the PreDelay value. The Link control automatically matches the PreDelay, Room and Reverb levels to ensure an accurate acoustic space simulation, and can be used as a short-cut in attaining a good basic reverb effect. The lower window is the Frequency Response graph, and this is where the TrueVerb displays the reverb frequency curve, reverb input HF Shelf filter, and the room's early frequency absorption characteristics. Augmenting this are the Reverb Damping controls (which define the high and low frequency qualities of the processed signal, and provide the ear with important information about the surface texture of the room), and the Reverb Tail setting, which can be manually adjusted to last from 0.1 to 198 seconds. Input level gain can be adjusted, and output levels are shown on the VU meters. Above these are the clip indicators, while sample-accurate peak hold levels for each channel are displayed below.

Generally, I have been somewhat underwhelmed with the software reverb modules I have heard —

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#### Waves Native Power Pack

#### **POWER PACK** FOR MAC

Although the focus of this review is the Windows 95/NT version, the Native Power Pack is also available for Macs. The minimum recommended regulrements are a 68040 machine or better (PowerMac, AV or PCI) with at least 16Mb of RAM, running MacOS version 7.5 or later. To run TrueVerb in real time, however, a minimum of a 120MHz Power Mac is required

The Mac version ships on four floppy disks. For copy protection, Waves are relying on a slim hardware dongle, or Wavekey, which connects to the ADB (Apple Desktop Buss)

port on the keyboard or into the back of the computer. Installation is pain-free; to run the plug-ins in Cubase VST. all you have to do is drag the WaveShell from the newlycreated Waves folder into the Cubase Audio FX folder. The individual nlug-ins are then accessed via WaveShell from the effects list in the effects modules window. To run the Native Power Pack with Cubase VST, you will need version 3.02 or later of VST.

The Mac version also Includes the new Waves Track Pack Lite (a lossless hard disk audio file compression utility

that can reduce file sizes by up to 50%), and a freeware Browser to run the Native Power Pack's Guide (just double-click on the file NPP.htm in the Waves folder to launch the htmlviewer application.)

There are a few specific points that the prospective Mac user should be aware of: TrueVerb will not process 8-bit sound data; Cubase VST applies processing to audio after it leaves a plug-in, which unfortunately adversely affects files processed with IDR; and finally, the plug-ins do not run in real time on 68K machines, so users with these Macs must first wait while the preview sound buffer is processed.

none of them come close in terms of warmth and character to my trusty old Lexicon LXP15 - but the TrueVerb is exceptional, and has wonderful clarity and configurability that make it eminently suitable for mastering duties.

#### • L1 ULTRAMAXIMIZER

I must own up to the fact from the start that the L1 Ultramaximizer is my all-time favourite digital processor, and it is the software limiter most commonly used in premier recording studios. The L1 combines superb look-ahead peak limiting and level optimisation with high-accuracy requantisation routines based on the IDR noise-shaping and redithering process (developed by the late psychoacoustics pioneer Michael Gerzon). Basically, IDR is a dithering and noise-shaping technology that minimises the non-linear distortion at low levels which is commonly introduced during digital audio processing.

Most digital audio files contain numerous short-duration high-level peaks which can give an overall peak signal level that is way above the average signal level, and whilst some of these are essential to the dynamics of the audio, many can

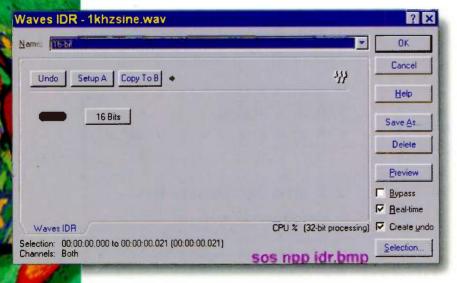
be contained or limited. The art of good limiting is to accomplish this, and simultaneously raise the average signal level to its optimum in as accurate and musical a way as possible, without introducing undesirable side-effects — a feat far beyond the capabilities of conventional normalisation processing. Subjectively, when a recording is given the L1 treatment, it sounds richer and fuller, with enhanced low-level detail, and the polish and solidity that is associated with top-quality studios. Waves recommend that the L1 is used last in the audio processing chain to preserve the maximum possible resolution of the processed audio.

Although the L1 is an extraordinarily sophisticated and complex program, the user interface is simple and intuitive, especially given the luxury of real-time preview. The application window has controls for limiter threshold, output ceiling, release and input levels. Limiting only occurs when the input signal crosses the threshold, and audio levels below threshold are subject to a constant gain change that is determined by the difference between the threshold and the output ceiling. Once the threshold is set, all you need to do is to define the actual peak level that you want the processed signal to reach usually -0.3 dB for mastering. From then on, limiting and level rescaling are automatic. The Release parameter controls the time taken, in milliseconds, to return to constant gain after a peak is encountered, and is usually best left set to 1ms. For heavy limiting, release times between 30 and 100ms may be required, but care is then needed, as long release times may induce distortion. The degree of gain reduction (the amount by which the threshold is exceeded by the input signal level) can be monitored from the attenuation meter display. Domain mode is for selecting the type of duplication medium for your master: for CD duplication, Domain should be set to Digital and for cassette duplication, set Domain to Analogue.

The L1 has excellent requantisation facilities, and combines its level maximisation functions with IDR processing, to actually enhance the perceived quality of audio. The L1 provides two dither types and three noise-shaping curves. Simply put, dithering adds very low-level noise to neutralise artifacts and distortion introduced during digital processing, while noise-shaping shifts noise to frequencies at which the human ear is least sensitive. For the more inquisitive among you, comprehensive information on IDR, and how best to use it, is included in both the on-line Help and in the Power Pack's Guide.

The Native Power Pack also includes a basic IDR module featuring requantisation and type 1 dither (the better dither type for audio files that will pass through multiple edit stages). IDR should be used after effects processing and prior to saving to disk, and will enhance the perceived quality and dynamic range of quiet sounds, which would otherwise be adversely affected by the conversion from the Native Power Pack 24-bit internal resolution back to the 16-bit format of most PC soundcards, DAT machines and CD-Recorders.

The IDR module adds dithering and noise-shaping prior to conversion to 16-bit from Native Power Pack's internal 24- bit resolution.



The intelligent choice for digital mastering has to be 18 bit DCC. Why? - mirror-image reproduction, a greater dynamic range than 16 bit DAT or CD and a price that just can't be argued with. Philips 18 bit DCC recorders are used in thousands of studios across the UK. Like them, why not examine the facts then make the intelligent choice?



#### Intelligent Comment

'the recording quality is to all intents and purposes indistinguishable from DAT or CD. Indeed, if you're using the analogue input, you'll actually get a little more dynamic range than you would with a DAT machine.'

"... it's easy to forget you're listening to tape and not a silver disc., the improved dynamics of the 18 bit system are again apparent... certainly there's no feeling that this is CD's poor relation." What HI-FI

"...the Philips exhibited excellent dynamics and a beautifully seamless sound that caught the air and space of the hall, subjectively far superior to when it was recorded from either analogue or 16 bit CD. ...All in all, I was seriously impressed with the DCC's'.

\*\*H-FI World\*\*

#### **Discerning Rightly**

These new generation DCC machines start out by sampling the incoming signal not at 16 bits but at 18 bits which gives rise to a potential improvement in both dynamic range and residual noise of around 12 dB... DCC sounds just the same as DAT...The way DAT lieeps going up in price, DCC could well become the home recording standard of the latter half of the nineties." Sound On Sound

...DAT is starting to get out of reach with its escalating, almost elitist price range...The DCC730 is much better and cheaper than the recordable MiniDisc; it even makes a handsome partner for a direct to disk system. If only you could use it to back-up data I'd give up on DAT altogether. Go out and buy one...' The Mix

Philips allegedly invested £500 million in the research and design of DCC... the low-cost DCC730 could seriously challenge DAT's hold on the high tech market. ...could encourage small studios to adopt the format over the increasingly expensive DAT alternative."

#### uture Music

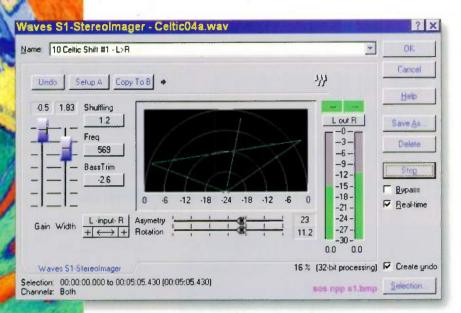
'I've used a good quality DAT machine for years and am no stranger to the way digital tape can render analogue sound dry and antiseptic. But the Philips simply wouldn't entertain the possibility, giving a surprisingly warm and fulsome rendition. The bass was particularly well-rounded and lacked the sense of sterility so common with digital. There was no trace of hardness higher up the frequency range." HI-FI World

'All DCC recorders will accept a digital input at 32, 44.1 & 48khz, which is good news for anyone who wants to transfer a DAT collection to DCC. DCC's ability to handle any sampling rate you can throw at it might even precipitate a glut of second-hand DAT machines!'

The Mix.

SRTL, Record House, Emsworth, Hampshire P010 7NS

#### Waves Native Power Pack



The \$1 Stereo lmager superb for adjusting the balance of audio elements in stereo recordings.

#### S1 STEREO IMAGER

The S1 Stereo Imager provides control over the stereo soundstage of your recordings, and is used for stereo image enhancement through gain balancing, width adjustment, phase correction and channel reversal. As the S1 is fully phasecompensated, it does not add phase errors between the stereo channels during processing. The S1 window depicts the stereo soundstage as a halfcircle and the original stereo image is displayed as

an inverted triangular stereo vector shape that can be dragged with the mouse to produce changes in gain, balance, stereo width, rotation and asymmetry. The \$1 can be a great timesaver when correcting off-centre stereo mixes: the stereo image width may be reduced to mono or stretched so that appears to extend beyond the monitor speakers; central in-phase mono elements may also be repositioned in the stereo image without affecting sounds panned to the left or right; and the relative level of left and right sounds can be varied without affecting those in the centre (the input selector can also be switched from the usual Left/Right mode to M+S to accommodate accurate metering of Middle + Side recordings).

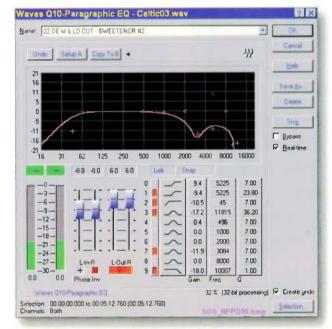
Due to the different ways our ears and brains determine the location of bass and mid-range/treble frequencies, bass components in sounds panned to intermediate stereo positions become directionally less well-defined.

The impression of spaciousness in a mix can be enhanced by adjusting three parameters: Shuffling affects bass width; Frequency controls the threshold below which the shuffling width is applied (usually between 600 and 700Hz) and Bass Trim is for extra control of frequencies below

about 150Hz (Bass Trim is not mentioned in the Power Pack Guide, or the on-line help). The 51 can be used to ensure the mono compatibility of mixes destined for TV and radio - poor mono compatibility can produce dropouts, excessive colouration and other undesirable effects. With the S1, these problems can be avoided by ensuring that all three vector lines displayed on the 51 stereo soundstage graphic are within 45 degrees of vertical. I like the \$1, and in use during a recent mastering session, I found it to be a surprisingly convenient and timesaving way of correcting outof-balance recordings.

#### • 010 EO

The O10 is a 10-band paragraphic equaliser, with each band offering a choice of five filter types: bell or band pass, low shelf, high shelf, low pass, and high pass. The Q10 amplitude/frequency graph displays the current frequency curve with the markers for individual bands appearing as a plus symbol when the band is active and a letter O when inactive. Band Markers can be dragged with the mouse to adjust the parameters of individual bands, and may be grouped together and moved en bloc, retaining the original curve patterns with all changes applied to all selected bands simultaneously and reflected in each associated parameter field. Both channels also feature input meters with clip and peak hold indicators, independent phase reverse, and output level control. The Q10's default mode is linked 2-channel operation (or Strapped mode in Waves-speak)



10-band parametric EQ with a choice of five filter types.

#### The new benchmark in PC audio? The Q10 equaliser features powerful

#### WAVES *audiotrack*

AudioTrack is a useful simple-to-use Waves plug-in for Sound Forge and Macromedia Director offering EQ, compression and level balancing. The version I have is not ActiveMoviecompatible, and when I attempted to Install it for Sound Forge, it did horrible things to the Power Pack, and rendered it unusable until AudioTrack was removed! If you have bought AudioTrack and would (not unreasonably...) like to use it without experiencing these problems, contact Waves for further advice.

which is the usual way of working on a stereo soundfile, but the EQ for each channel can be adjusted individually if required. When 'unstrapped', the Left and Right channel frequency curves are represented on the Q10 graph and coloured yellow and blue respectively. Gain can be adjusted by plus

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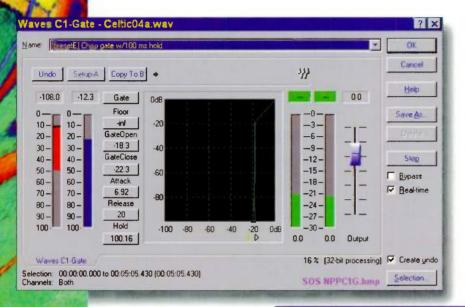
#### Waves Native Power Pack

or minus 16dB in increments of 0.1dB over the frequency range from 16Hz-13.57kHz, with control of Q (the width of the frequency band).

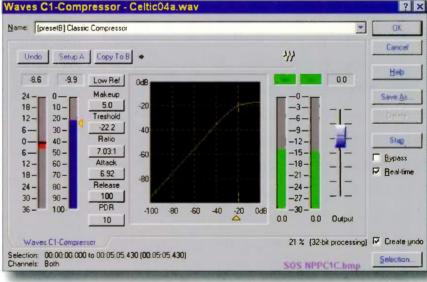
Q is a method of expressing the bandwidth covered by a filter relative to its centre frequency measured at the -3dB point (that is, half its original level). Although the basic premise is still 'the higher

Mac TDM version, the Native Power Pack C1 does not provide frequency-selective dynamics processing (more's the pity). This means that you can't use it for compressing or gating audio at specific frequency bands, such as when de-essing. Unlike the TDM version, it does not seem possible to link the Native Power Pack C1 Compressor and Gate modules: the documentation is rather muddled on this point, with the Native Power Pack Guide compounding the confusion by describing these unavailable functions at some length! But what you do get is a useful and very capable gate, and a fine-sounding compressor with a few surprises up its figurative sleeve. Briefly, the C1 compressor is a soft-knee processor with a variable compression ratio. When set at maximum, it produces soft-knee limiting, and when set to a negative value, it will produce expansion. There is

"The C1 gave run-of-the-mill drum loops extra punch and solidity."



The C1 is a high-quality studio stereo dynamics processor featuring compressor and gate modules.



#### MEET THINE HOST — NATIVE POWER PACK HOST SOFTWARE

#### MAC

- Opcode Studio Vision Pro v3.5
- Steinberg Cubase VST
- Bias Peak
- Macromedia SoundEdit16
- Adobe Premiere
- Digidesign Audio Suite

#### PC

- Sonic Foundry Sound Forge v4.0a
- Steinberg WaveLab v1.6
- Cakewalk Cakewalk Pro Audio v6
- Steinberg Cubase VST PC is due to follow later this year.

the Q setting, the narrower the frequency band affected', the numeric Q values in the Q10 differ from those found in traditionally engineered equalisers. This is because the Waves Q10 filter designers felt that calculating the Q value based on constant bandwidth rather than constant Q produced a more musical and intuitive control surface. In all, I found the Q10 a joy to use. It produced top-quality results without any noticeable side effects, and could well become the benchmark for software equalisation on the PC.

#### • C1 COMPRESSOR/GATE

The C1 is a high-quality studio stereo dynamics processor and features two fully independent stereo plug-in modules, but unlike the original

also a cancellation mode to defeat signals that exceed the threshold level.

The C1's compressor operates in two modes: in Low Reference mode, it acts like a conventional compressor, and when the threshold is lowered, the output automatically drops. In Peak Reference mode, the C1 keeps the output level constant despite changes in threshold. Also of interest is the PDR (or Program-Dependent Release) function, which varies the compressor release time by referencing the length of transient signals in the audio material. If the PDR is set to 15ms, all transients shorter than this will be given a quicker release time, while for longer transients the release time will be that set in the Release field.

#### PC REQUIREMENTS AND REFERENCE SYSTEM

The Native Power Pack uses the computer's CPU to emulate DSP functions and consequently, a fast processor is required. Realtime preview functions in the Native Power Pack rely on the more powerful Intel Pentium processors - I would recommend an Intel P200 PC with a minimum of 24Mb of RAM. This may seem big by today's standards, but in a year or so the P200 will no doubt be the de facto norm, even for smaller office and domestic systems. If you are content to forgo the advantages of realtime previews, you can use a 486DX100 or one of the slower Pentiums, and run the Power Pack's applications off-line. For this review. I used the Power Pack under Sonic Foundry's

Sound Forge v4.0a, as this is the first - and at the time of writing, the only - audio editing package to implement Microsoft's ActiveMovie technology. However, in the near future we shall see ActiveMovie-compatible versions of Cakewalk's Cakewalk Pro Audio v6 and Steinberg's WaveLab v1.6, with Cubase VST for PC following later this year. No doubt the remaining leading major software developers of PC audio editors and MIDI + Audio sequencers will follow suit soon.

The reference PC used for this article consisted of the following:

- \* Intel Pentium P200 CPU.
- 48Mb of RAM.
- PCI motherboard with Intel

Triton 82430 VX version 3 chipset and 256K pipeline burst cache.

- · 2.3Gb hard drive space.
- 2MB PCI Video card.
- 17-inch SVGA monitor at 1024x768x64k resolution.
- MQX32m SMPTE/MIDI card.
- Turtle Beach Multisound Pinnacle soundcard with digital option.
- Turtle Beach Multisound Classic soundcard running Windows 95.

I also ran the Native Power
Pack on the same PC but with
an Intel Pentium 100 and 32Mb
of RAM, and although the C1,
L1, S1 and WaveConvert ran
well, the system could not cope
with the complex real-time
processing in the Q10 or the
TrueVerb.

The C1 gave run-of-the mill drum loops extra punch and solidity, and vocal recordings gained a presence and clarity not evident in the original recording. In short, the C1 proved to be a fine-sounding processor, capable of producing excellent results across a broad range of source material.

#### WAVECONVERT

Unlike the Native Power Pack plug-ins, WaveConvert is a stand-alone program, and does not require a host application to perform its roster of important but admittedly rather unexciting tasks, which include file conversion (AIFF/WAV), bit rate conversion (16- and 8-bit), sample rate conversion with super-low aliasing, level maximisation, automatic gain control, gating, brightness and batch conversion. All in all, WaveConvert is a high-quality utilities toolbox that complements the functions of the Native Power Pack plug-ins. It is worth mentioning that I had some problems during the WaveConvert installation routine: a dialogue box opened requesting me to enter the serial number to be found on the Native Power Pack floppy disks - and there wasn't one! I tried entering the serial number printed on the carton and the registration card, and was informed that it was invalid — but despite all of this, when I double-clicked on the WaveConvert icon, the application booted and worked normally. Once again, the Power Pack's manual could be more helpful: this time, it provided information for the Mac version, but none for PC. However, the on-line help is fine.

#### **CONCLUSIONS**

The Native Power Pack plug-ins do differ from their previous TDM incarnations in that you can only use each plug-in one at a time — in TDM systems, you can run as many as six versions of C1, for example, all with different compressor settings, but not with the Power Pack versions. Furthermore, some of the plug-ins — most notably the C1 - offer more limited functions than the TDM versions. The supplied documentation does need tidying up, so that only information relevant to the Native Power Pack plug-in modules is included, but it would be churlish to make too much of this shortcoming in the light of the high-quality processing on offer at such a low cost. It's positively altruistic when you consider that the Windows version of the L1 for Sound Forge on its own was £449, and that the individual Macintosh TDM versions together would have cost in excess of £2000! To conclude, the Waves Native Power Pack is a set of sweeteners and sophisticated audio production tools without current equal. It should boost the editing muscle of all recording facilities involved in postproduction, mastering, remixing, audio restoration, or in sound design for games, multimedia and the Internet. Very highly recommended - sell your granny if necessary! 1505

Special thanks to Stacy Moran at Sonic Foundry.

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Karl Jenkins' music mixes ethnic and classical influences with rock's production techniques; his unclassifiable first album sold a million copies. The latest master of crossover tells PAUL TINGEN why he doesn't care about categories.

KARL JENKINS • ADIEMUS

he music is powerful, unmistakable; it instantly grabs your attention. It makes you sit up straight in your seat within seconds and ask: 'What on earth is that?' As such, it makes a perfect accompaniment to a TV ad, and that is indeed how it initially became famous: as the 'uplifting' theme tune to the Delta Air Lines commercial. Most of you will realise by now that I'm talking about Adiemus, one of the most commercially successful exponents of this decade's cross-everything-over-with-everything-else wave. Adiemus mixes an ethnic-tribal vocal sound with a romantic orchestral sound, ethnic and sampled percussion, and a rock-music approach to production. Unsurprisingly, Adiemus' debut album, Songs Of Sanctuary (1995) caused huge arguments within the classical music establishment, who couldn't decide whether to allow it in the classical music charts or not. Equally unsurprisingly, the public couldn't care less how it was defined or categorised, as long as they could get their hands on it. With one million sales worldwide, Songs Of Sanctuary is one of the most successful contemporary classical albums to date, and it even made inroads into the pop charts. Earlier this year a follow-up was released: Adiemus II: Cantata Mundi, which also achieved impressive chart-crossover

Inaequalis', with its gorgeous melody and soft, subtle singing, accompanied by delicate percussion and pizzicato strings, is another example.

On the other hand, there are tracks such as 'Amaté Adea', which sounds as though it's been lifted in its entirety from some well-known romantic classical piece and just had a few bits of Bach thrown in; or 'Song Of The Trinity', from the new album, Cantata Mundi, on which the childlike, African vocals and phonetic, meaningless words become somewhat mannered. Although Cantata Mundi incorporates some new musical influences, such as Eastern European and Arabic sounds, and adds different textures such as woodwind and brass to the strings-only orchestra of Songs Of Sanctuary, it's really just more of the same; and it's only occasionally, in the dramatic, monumental brass sections of 'Song Of The Spirit', that it comes close to being as exciting as that opening track on Songs Of Sanctuary.

#### SPIRIT LEVEL

Most of Karl Jenkins' Adiemus music is actually perfectly tailored to advertising and other occasions where an instant effect on the listener is needed, but in my opinion it's often a bit too easy on the ear — so it was fascinating to hear the composer talk about the ecstatic reactions he gets from his fans. Many people do perceive a great deal of depth and meaning in his music, to the degree that some claim it has changed their lives.

"It's quite a humbling experience to have people come up to me and say that, or write it in the many letters that I get," says Jenkins. "People say that the music touches them deeply, and that they have spiritual experiences listening to it. Whether that's valid or not, I don't know. I didn't put

any spiritual message into it. I compose in a

success in the UK by entering at Number One in the classical-crossover and classical combined charts, and at number 15 in the pop charts.

High time, therefore, for SOS to talk to the main man behind Adiemus, composer Karl Jenkins. Our meeting was, however, slightly more troublesome than expected, the composer taciturn and our exchanges lacklustre — although the lack of chemistry might have been because I was still trying to make up my mind about Adiemus' music, and so some scepticism may have been evident on my fluflushed face. Later, I heard that it was just Jenkins' regular, introverted, phlegmatic temperament — but this sits uneasily with the very passionate nature of much of his music.

The opening, title track of the first album, parts of which were used for the Delta Air Lines ad, is Jenkins at his best: melodically inventive, strikingly original African-sounding vocals; very effective rolling, bubbling percussion, and a deliciously lilting flute, all contained in a wash of gentle, harmonious strings. It's stirring stuff, even if the influences are numerous and obvious: the whole is more than the sum of its parts. 'Cantus

completely intuitive way and just express myself through music — which may be a naive comment, but that's what I do! I'm not conveying a message; particularly because the language is made up by me and is purely phonetic: it means nothing. So I'm certainly not conveying a dramatic message in a libretto or a lyric. But the aura of the music is spiritual: it sounds like spiritual music for secular people, and that's what people respond to. The title, *Songs Of Sanctuary*, suggests a different world. Sanctuary is a place you can escape to — not necessarily in religious terms, just in general terms. So the music provides a world of escapism, in a way.

"It may or may not still be played in 10 years' time, and that's fine with me," he remarks prosaically, in an even Welsh drawl. "I don't have any ambitions. I don't think that I or Adiemus is that important. I consider myself totally of no consequence, ultimately, compared with the great composers. I wouldn't presume to put myself remotely at the same level as Bach, Beethoven, Wagner, Strauss, Stravinsky, Bartók... My music doesn't deserve all the fuss and controversy that it



has generated in some circles. It's not that important. It's just music that I've written and that a lot of people have responded to, and that's all."

But how does he see himself in relation to contemporary composers such as John Adams and Steve Reich (with whom he shares the same prestigious music publisher, Boosey & Hawkes)?

"I don't place myself in the same category as Reich or Adams, because my music is not classical in the way theirs is: it borrows more from other cultures. But it's a question that doesn't need to be answered, really. I don't feel a need to place myself next to anyone. And I wouldn't put anyone writing music in the last 50 years in the same

category as the great composers I mentioned. John Adams is great, and Steve Reich is fantastic too — I went to one of his concerts and it was like going to a Weather Report concert; there was a great buzz. But I wouldn't in a million years put that next to the body of European classical music, next to Mahler or Bartók.

"I also think that rock music has assumed an importance in our culture that it doesn't really deserve. You get Mick Jagger in the arts pages next to Picasso, and I don't think any pop musician or band remotely deserves that... no, not even the Beatles. I don't wish to sound cynical — there's fantastic music being written nowadays — but

"It sounds like spiritual music for secular people."

#### KARL JENKINS • ADIEMUS

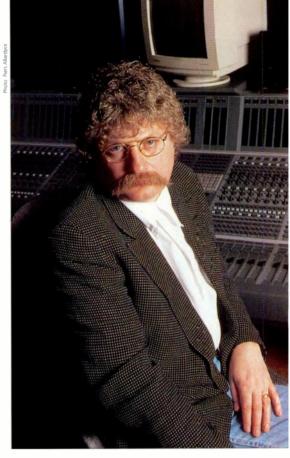
when you look over the whole history of music, our period is pretty insignificant."

#### JAZZ AGE

Karl Jenkins' music explores and fuses different music styles and cultures - Adiemus uses influences from Celtic, African and Arabic music, and rock too, of course - but his return to the semiclassical fold is actually quite recent. Born in Wales in 1944, he studied piano and oboe as a child, eventually becoming principal oboist in the Welsh National Youth Orchestra; he took a degree in music at the University of Wales, and went on to a postgraduate course in London, at the Royal Academy of Music. At university he became interested in jazz and started playing the saxophone; after leaving college he embarked on a long spell of playing in two jazz-rock crossover bands. The first was his own band, Nucleus, which won first prize at the Montreux jazz festival in 1972. Soon afterwards he joined the well-known progressive rock/jazz band Soft Machine, and he played with them until 1982, eventually expanding his sonic armoury to include synthesizers. He also met keyboardist Mike Ratledge, and when they both left the band they became musical partners, producing records, writing music for theatre, and eventually building a reputation for themselves as top-class media composers, winning several prestigious awards for their advertising music in the process. Songs Of Sanctuary, which featured Ratledge as percussion programmer and arranger, was their first album as a partnership. Since then, Ratledge has moved off into CD-ROMs, and Jenkins has composed and produced two more albums on his own: Diamond Music in 1996 (featuring Palladio, heard in the 'Diamonds are forever' TV commercial) and Adiemus II: Cantata Mundi.

Karl Jenkins spent more than 10 years working on advertising music, but he's unapologetic about using his musical talents in this field.

"We had to earn a living, so why not apply our



Karl Jenkins at CTS Studios, where Adiemus II: Cantata Mundi was recorded.

skills? I preferred writing TV music to driving a taxi—as Philip Glass did—but people prefer you to starve for your art!"

In fact, he took little interest in the protracted debate over whether Adiemus counted as 'proper' classical music, as the BPI classical committee first banned *Songs Of Sanctuary* from the classical charts, and was then overruled by its parent body after protests from Virgin Records and the London Philharmonic. "It's meaningless," he says. "My music is in one of those difficult areas that people don't know how to categorise, and that bothers them. It's nonsense that it bothers them, really. It's just silly. Why don't they just enjoy it if they like it, and not listen to it if they don't enjoy it? It's of no consequence to me what it's called."

#### **DELTA BRAVO**

Adiemus is difficult to categorise because it's the culmination of 25 years of experimenting with and integrating different kinds of music. The composer explains how it came into being...

"I had the idea of writing a piece of music based on European classical music and an ethnic world music vocal sound, and using a meaningless, phonetic language — I didn't want the distraction of words, of any dramatic message conveyed in the lyrics. I wanted to use the voice as an instrument, because the voice is the first instrument of man. So I wrote some of the tracks, including the first track, in manuscript form, with the phonetic vocals structured and written out and scored. Then, in autumn '94, I was approached to do some ethnic crossover music for a Delta Air Lines commercial. I made a demo of the opening piece, it was accepted, and we recorded the music at Angel Studios in London."

"I think that rock music has assumed an importance in our culture that it doesn't really deserve."

#### **JOHN FREDERICKS**

John Fredericks is an audio engineer who also designs and builds specialist audio equipment, and runs his own company, Technical Earth Ltd. Karl Jenkins asked him to assist with the live sound for Adiemus' world-premiere concert at the Royal Albert Hall last December, on the basis of his experience with the show Lord Of The Dance.

"I co-ordinated the multitrack playback for the Royal Albert Hall," Fredericks explains. "I've designed and built a multitrack switcher, primarily intended for live use. The playback material for that concert was on an analogue 24-track multitrack master, and we

had another 24-track as backup. We had the two multitracks feeding the A and B sides of my switcher, and the output went through Dolby SR and then to the line system and front of house. Obviously, the show must go on, whatever happens, so should the master 24-track have stopped, then my switcher box would have switched to the back-up in under 10ms, and there would have been no interruption. "I made my first switcher box for the Lord Of The Dance show. and it's still working every night. It's a 3U rack that works using timecode or a pilot track. but this can be manually overridden, so you can switch

between playback sources when you have a piece that's longer than a reel. I saw an obvious gap in the market, and was a bit amazed that something like this hadn't been made yet. At the moment, Karl and I are transferring and submixing all the 24-track data to two Akai DR16 hard disk recorders for a show in Helsinki — Karl's considering touring with Adiemus later this year, and it's not feasible to be lugging two 24-tracks around on tour. So we'll have two DR16 machines. each with its own hard drive, located and started via MIDI by my switcher, then running independently. If for any reason one of them stops, the switcher will immediately swap over to the other machine."



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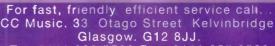
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#### KARL JENKINS • ADIEMUS

Funnily enough, it was the ad's spectacular footage — aeroplanes flying in close formation over a coastline, interspersed with shots of dolphins — that really got it noticed:

"The visibility of the Delta Air Lines commercial sparked record company interest, and I agreed with Virgin Venture that they could have the piece if they allowed me to finish the album."

There's been some confusion about exactly who or what Adiemus is. Many people seem to think that it's simply part of the first album's title, and therefore regard naming the second album Adiemus II: Cantata Mundi as a cheap commercial ploy to sell more CDs. Karl Jenkins has a different explanation.

"It's an identity, both in terms of people, and in terms of doing music in a certain style. Adiemus means my compositions within a certain style, with Miriam Stockley's vocals, the London Philharmonic Orchestra, ethnic percussion and Pamela Thorby's recorder playing. It's like a band; it's not like a Karl Jenkins solo

"My music doesn't deserve all the fuss and controversy that

it has generated in some circles. It's not that important."

The Party of the P

Karl during a mixing session at CTS in Wembley.

record, such as *Diamond Music*, which is. There have been performances of the music of Adiemus by symphony orchestras and choirs all over the place, but these are not Adiemus performances, they are *Songs Of Sanctuary* or *Cantata Mundi* as performed by XYZ. That's why when we did the Royal Albert Hall performance last year, it was the first-ever time Adiemus performed live."

To sound like the album, Adiemus had to use backing tapes to reproduce elements of the studio recording that couldn't be performed live: Miriam Stockley's vocal overdubs and some of the percussion. The music does have a score, so it can be performed by classical performers anywhere on the planet. But modern studio technology and rock production techniques are also essential ingredients of a 'proper' Adiemus performance, and of the albums: to achieve the spectacular massive tribal vocal sound, Miriam Stockley's vocals were

overdubbed up to 30 times, and samples of ethnic percussion formed an integral part of the 'jungle' percussion sound. The Adiemus sound could not have been achieved without extensive multitracking and the use of computers and samples, so it's in terms of the hardware it uses as well as its combination of musical influences that this is genuine crossover music.

#### TRIBAL CULTURE

At least some of the creative process remains untainted by modern technology, though.

"I write all my music with pencil and paper," says Jenkins, "the old-fashioned way. I first write it down in short score, with a piano on two staves and two or three vocal parts, and then I orchestrate the piano part, again only on paper. Finally, I use the Acorn computer with the Sibelius 7 system for setting and printing out the music. Mike Ratledge programmed the percussion on Songs Of Sanctuary, using an Emu Emax for the samples and a sequencer that he developed himself many years ago, to a guide synth track that I'd laid down to a click-track. The rhythms on the first album were conceived very much in a pop way, because the tempo was the same throughout each track, and Mike programmed the rhythm so that each part went through from the beginning to the end. There was some live played percussion as well, but the end result was quite a quantised, pop-like percussion sound. My son, Jody Barratt-Jenkins, plays percussion in the National Youth Orchestra, and he did all the percussion on Cantata Mundi. We had more preparation time for this album, and thought things through more deeply, and we decided to play all the percussion rather than program it. We also worked hard on creating a rhythm track with ebb and flows in the tempo.

"We have a room at home where there's an Apple Mac and some keyboards: a Roland D50 and Yamaha DX7, plus a Roland JV 1080 sound module, and a U-Matic video recorder for my advertising and film work. It's great because, despite using the Acorn, I'm computer-illiterate, and I work together with my son whenever I need computer input. Jody and I did the basic rhythm tracks here. I played very basic chord structures on a keyboard to a click, and this was recorded on Alesis ADAT digital 8-track. Jody overdubbed some rhythm tracks, and then he started slowing down and speeding up the click in certain sections, using MOTU's Performer, linked with SMPTE to the ADATs. After this, he overdubbed percussion again to the new click-track. We ended up with two ADAT tapes, which we took to the studio to transfer the contents to multitrack. Songs Of Sanctuary was done at Angel Studios on 24-track analogue; Cantata Mundi was done at CTS in Wembley on Sony 3348 digital multitrack. The percussion tracks could take up anything between eight and 16 tracks, so to prevent us running out of tracks we sometimes worked with ADAT slaves for the percussion and vocals on Songs Of Sanctuary.

"After putting the percussion, guide keyboard and click on the multitrack we recorded all Miriam's



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#### KARL JENKINS • ADIEMUS

▶ vocals. Because the amount of vocals overdubs could go up to 30, we usually bounced them down to maybe two stereo pairs and a few individual parts. If there were six unison vocal overdubs we'd bounce them to one track, for example. After the vocal overdubs, we did the orchestral sessions, replacing the guide keyboards — except the first four bars of Songs Of Sanctuary, which are woodwinds played on a Roland D50. But that's the only bit of synthesizer on both albums."

The idea of overdubbing one voice 30 times will raise the eyebrows of anyone who's tried massive one-voice overdubs, and found that double-tracking the same voice time and time again leads to a certain

# "For all their technical forward-thinking,

synthesizers date music more than anything."

saturation point, above which the vocals don't sound bigger any more, but just start to sound dense and muddy. One curious technique to circumvent this problem was applied by top producer Rupert Hine, who had singers sing in different accents and thus simulate different singers. Karl Jenkins had other solutions, one of which was to occasionally give Miriam Stockley a break and use another white South-African singer, Mary Carewe.

"It can be difficult to sing that tribal sound for a sustained length of time," he explains. "We also brought Mary in to give Miriam's vocals a little bit of extra thickness and weight, and to add a slightly different timbre to the voice. But 90% of the vocals were done by Miriam. Another technique we used was to vary the speed of the tape slightly when

recording her. We'd play the tape a little bit faster during recording, so she'd sing to music that had gone up in pitch, a semi-tone at the most, and on normal speed playback she'd still be in tune with the music, but her voice would sound thicker. Conversely, if we recorded her with the tape playing slower her voice would be thinner on playback. We did that occasionally, just to create a greater fullness in the sound."

#### **MODERN TIMES**

"Recording studios have made a major difference to the way music has changed during this century," Karl Jenkins says, but he's not so sure that they've influenced his own music. It isn't until he's told me all the technical intricacies of how the Adiemus records were recorded that he admits that they might have had an effect after all — with a little persuasion. "Yes, well, I suppose you're right!" he laughs. "I suppose I meant more that I don't see myself as a technical person. I don't use synths and I don't use computer technology in that sense. What I'm making is a pretty traditional type of music that's scored and played by an orchestra, even though I do use studio techniques, such as overdubbing, and the way the sound of the albums is layered and textured. So I suppose that we used a rock approach to recording and production. But that wasn't something that we thought about when we did it. We just made it sound as good as we possibly could."

It's odd that he thinks of himself as a nontechnical person: although as an instrumentalist he was classically trained, he learnt his orchestration techniques mainly from the technology-strewn medium of TV advertising, and in the '70s and early '80s he was working at the cutting edge of music technology when he played keyboards, sax and oboe with Soft Machine.

"Mike was playing a Lowrey organ through a fuzz box," he remembers. "We also had an EMS Synthi A synth, as well as a Minimoog for effects and bass lines. I was playing a Fender Rhodes and a string synth, and, towards the end, a Roland Juno 106. For a while we were really very actively experimenting with synthesizers, but soon we just stuck with what we had and didn't constantly chase new sounds or new synths any more. I began to realise that, for all their technical forward-thinking, synthesizers date music more than anything. I mean, acoustic music can be timeless, but the moment someone plays a D50 or a DX7 you can straightaway hear what era it's from."

Karl Jenkins has been quoted as saying that, though little music of consequence is written today, at least pop music has done something new with creating new sonic textures.

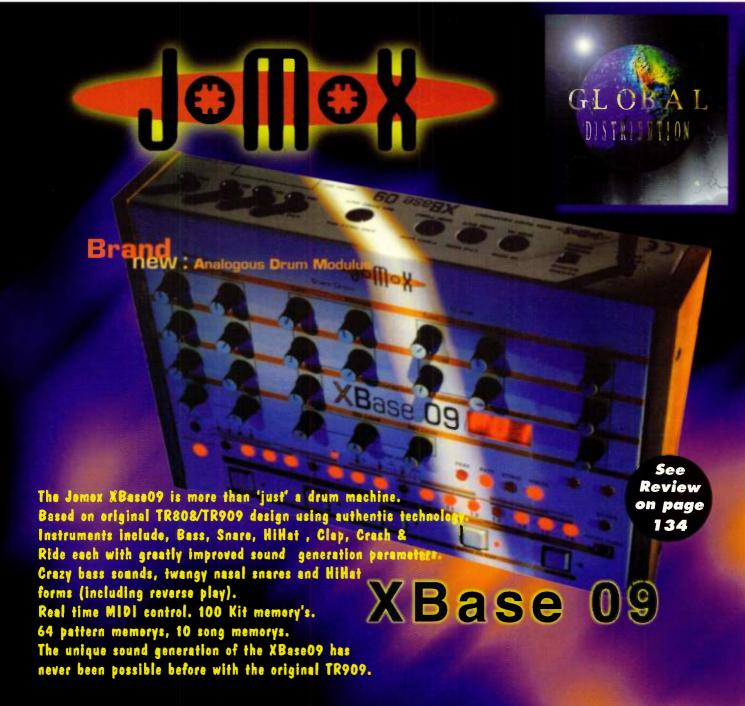
"That's pretty correct," he confirms. "What I meant is that, with the development of synths, sounds are available to us that are kind of new-ish. But pop music still uses the same chords and predictable rhythms. My music also uses the same basic chords, but it's not limited to three chords as most pop music is. It's also fairly chromatic, and shifts around in keys quite a bit. I suppose you could say that my music is also new-ish, because nothing else sounds like it. It's a combination of different existing influences."

At which point we're back where we started, arguing about when music is great or original; whether the various influences of Adiemus have really been transcended and a genuinely new style evolved, or not. Karl Jenkins, however, clearly can't be bothered with concerns like these.

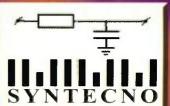
"I don't care what the critics say. It means more to me to do a concert at the Royal Albert Hall, or to do a session with the London Philharmonic and have the orchestra applaud me at the end of that session. If you have self-doubts, that's the only compliment you need. They're working musicians who play every day and have seen and heard much, and for them to enjoy what I do means that I've accomplished something."



Karl Jenkins with Miriam Stockley, the main vocalist for the Adiemus projects.



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Take an Atari Falcon, strip away the

outer casing, add some major circuitry and a host of external connections and package in a sturdy rackmount box. Stir in a copy of Cubase Audio, connect up a CD recorder, and the result is the new Sunrise Audio Workstation. DOMINIC HAWKEN checks out this unique new recipe.

rod

#### tari were the first company to corner the market in computer-based sequencing hardware. I've always thought that this was something of a lucky accident — some bright spark in the R&D department came up with the idea of fitting MIDI sockets to the ST computer, and the rest is history. During the early '90s I was lucky enough to carve out a career as a session keyboard programmer, and the humble Atari 1040 (fully upgraded to a massive 4Mb of memory), proved the mainstay of my keyboard rig. I always found it slightly bizarre, when working in a great studio, surrounded by half a million pounds worth of SSL mixing console and untold outboard equipment, to think that

the entire song was being generated by a home computer costing under £400. It was a hit-and-miss affair, however, with the computer choosing to break down at the

# CTX

#### THE SUNRISE AUDIO WORKSTATION DIGITAL RECORDING SYSTEM

most unfortunate moments. While the Atari was capable of functioning flawlessly for days on end given a stable home environment and careful use, throwing the thing in the boot of the car to transport it between studios certainly took its toll, and I managed to work my way through at least six systems during the course of three years probably not a bad result considering the abuse that they had to cope with. I also remember working at Sarm West for a while, when one of the engineers connected my humble 1040 to the Synclavier (which recorded MIDI timing data to about six decimal places). How we laughed when we saw the results — the kick drum moved (albeit inaudibly) almost four milliseconds either side of the beat, and the system could only cope with a maximum of six MIDI outputs.

"Buy an Apple Mac", he said, and being young, impressionable and eager to stay in work, I did. I bought into major whizz-bang digital technology -Cubase Audio, Logic, 64 MIDI ins and outs, fabulous mixer maps and sound librarians, the world was my lobster. OK, so it didn't actually make me play better, and it cost around 15 times as much as my Atari, but surely that's not the point.

Anyway, the upshot of the story is, I plugged my Mac into a Synclavier the other day — the timing was worse.

#### IT'S JUST THE SUN RISING...

As the Atari 1040 began to disappear from the shops, superseded by the latest Amiga and Nintendo games consoles, the music industry continued to buy up every last unit. Atari decided to launch a new computer — the Falcon — geared towards

the audio world, with on-board digital signal processors and MIDI as standard. The word was out that 8-track digital recording would be possible without the need for external circuitry, and the release of this new computer was eagerly awaited. Production and software development problems emerged, however, and though Atari did their best to improve the system (and finally released a new operating system to fix the faults), by this time the Falcon had gained a bad reputation. This was unfortunate, not least for Atari — which lost millions of dollars worth of development finance — because the second-generation Falcon which hit the streets was actually an extremely capable machine. In the meantime, a fall in the price of Apple Macintoshes had meant that much of the Atari's fan base had given up on the Falcon, and had either gone back to the 1040 or bought a Mac instead.

Enter Sunrise Audio Systems, who recognised both the value of the Falcon and the limitations of its packaging and marketing stance. Having used a Falcon successfully for music production, they decided to take the fundamental hardware engine and package it in a unit capable of withstanding the everyday knocks of session and studio work, building in all the extra circuitry and hardware needed to turn the Falcon into a professional digital audio workstation.

The result is an 8-track digital recording and sequencing package (and by '8-track' I mean eight individual inputs and outputs) driven by Steinberg's *Cubase Audio* for the Falcon and packaged in a sturdy rackmount box, together with all the relevant hard drives and D/A interfaces necessary to make it work in a modern studio environment. Sunrise Systems have also included the option of a CD recorder, to back up data from each session or to master your own audio CDs (compatible to Red Book standards) directly from the computer.

# **COMPUTING POWER**

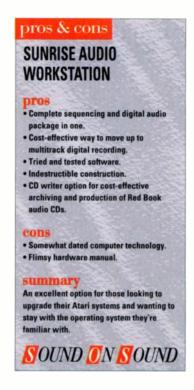
It must be said that, in today's world of Windows '95 and Mac OS 7.5, the Falcon is lacking in a number of respects. The standard display for processorintensive applications is monochrome, and there are therefore no full-colour screens or icons to aid the programming process (though Cubase will run properly in colour with an optional processor expansion, and the less demanding software included with the system runs in colour anyway). Hardware-upgrades are also less plentiful and more expensive than those for, say, PCs. Having said that, however, in an obscure respect Atari have a clear advantage over the Mac and PC competition, in that their operating system is not multitasking. Modern computers are designed to run more than one piece of software simultaneously. This means that processor time is shared between any number of applications, all eager for a slice of the computing cake. With the Sunrise Systems Falcon, only one program can be run at a time. This means that if you're using a sequencing package all the computer needs to do is to concentrate on squirting accurate MIDI data from the MIDI ports, or receiving MIDI input from a master keyboard. The entire computer is dedicated to performing a single task at a time. and accuracy — to a point — is therefore quaranteed. The downside is obvious, in that it's

impossible to run a patch librarian simultaneously with your sequencing package, but if this is not required, the Falcon may be your best bet. After my stint as a session player, I programmed a sampler editor for Akai, running on the Atari 1040, which worked fine and is still available today. The problems began when we had to cross-platform the software to run on Macs and PCs — with all of the constraints that multitasking involves. Believe me, if you switch on even the CD-ROM driver on your Apple Mac it will affect the timing of your sequencer package, because the computer will begin polling the CD drive every half a second to see if a new disc has been inserted, at the expense of your precious MIDI timing.

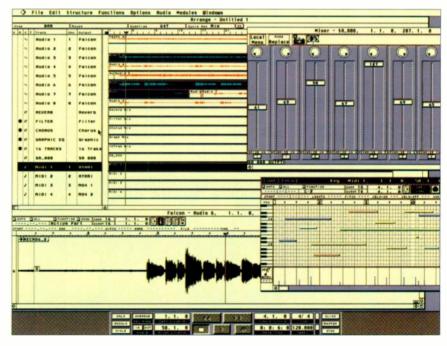
#### **HARDWARE**

The Sunrise Audio Workstation is effectively a repackaged Falcon, with new D/A circuitry and Cubase Audio software. The resulting unit fits in 2U of rack space, with a floppy drive, power switch, dongle slot, and an optional CD-ROM writer on the front panel. The power switch and keyboard connections are also on the front, so it would make sense to mount the unit close to your current programming area. External audio connections are all on the rear of the unit, with eight individual jack-based inputs and outputs, standard MIDI In, Thru and a total of five MIDI outputs. Connections are also available for an external SCSI drive — to expand the record time — printer, meter bridge and external DSP, the latter being currently under development. A stereo microphone input, and optical and S/PDIF digital connections are all fitted for digital signal recording, and on the CD version, stereo output via phono sockets is fitted as standard.

Internally, the system is comprised of an Atari Falcon motherboard, complete with 14Mb of RAM (expandable with an optional processor board) and a 2Gb SCSI hard drive (which is capable of recording around 200 minutes of stereo CD-quality audio). The whole unit is cooled via a fan on the rear of the machine which, although noisy, beats burning the studio down if the CPU decides to overheat.



Cubase Audio.



# Sunrise Audio Workstation

## SOFTWARE

Sunrise have chosen *Cubase Audio* to take full advantage of their Falcon system, and they bundle the software with every unit. Steinberg developed the Falcon-based MIDI/audio sequencer to coincide with the launch of the computer, and were hit by the lack of sales due to the problems with the initial batch of computers. The program itself, however, is extremely good, and certainly on a par with the other flavours of *Cubase* software currently on the market. The company spent a

lot of time developing the program, and at one stage offered to buy up the remaining stocks of Falcons from Atari to produce a bundling deal and recover their investment, so we're not dealing with a half-hearted program release. The main difference between *Cubase Audio* on the Falcon and on the Mac is that of colour support; the actual audio side of things is on a par with that of the latest systems available today.

Cubase itself is an extremely intuitive piece of software, with a front end that arguably influenced Emagic for their release of Logic. The

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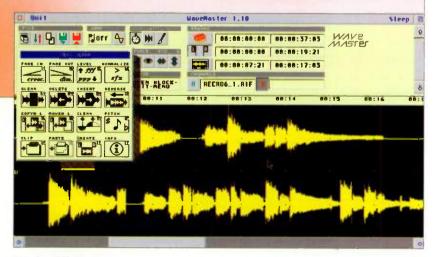
# SOFT SPOT

The software included with the Sunrise Workstation CD writer option is SoundPool's CD Recorder Pro. which is capable of editing PO data and writing a Red Book compatible CD to serve as a master for CD pressing. The software creates a project file containing the name of the CD, date, media catalogue number and pre gap. Each track you want to appear on the CD goes Into the Master List, where such things as track number and name, start time and length can be set. A track properties dialogue for each track being loaded into the software allows you to change track names and PQ data, including ISRC code, pause and track length, copy permitted and pre-emphasis flags. It's also possible to make mixed-mode CDs with CD-ROM and audio data on the same CD (up to 99 tracks).

While we're on the subject of software, some of you will be aware that Cubase Audio for the Falcon isn't a mainstream product for Steinberg in the same way that Cubase Audio for the Mac and PC are. The Falcon version is still being supported, with the help of Steinberg boss Karl Steinberg but, in addition, Sunrise say they're committed to ensuring that the software which drives their workstation remains up-to-date in its functionality, working closely with several companies developing accessories for the Falcon

# Soundpool CD Recorder Pro.

version of *Cubase Audio*. One current example is *Wavemaster*, which adds extra audio editing features, and a Stevenage-based company is developing modules for the Sunrise system which will take advantage of the extra processing power available with Sunrise's processor upgrade option. *Debbie Poyser* 

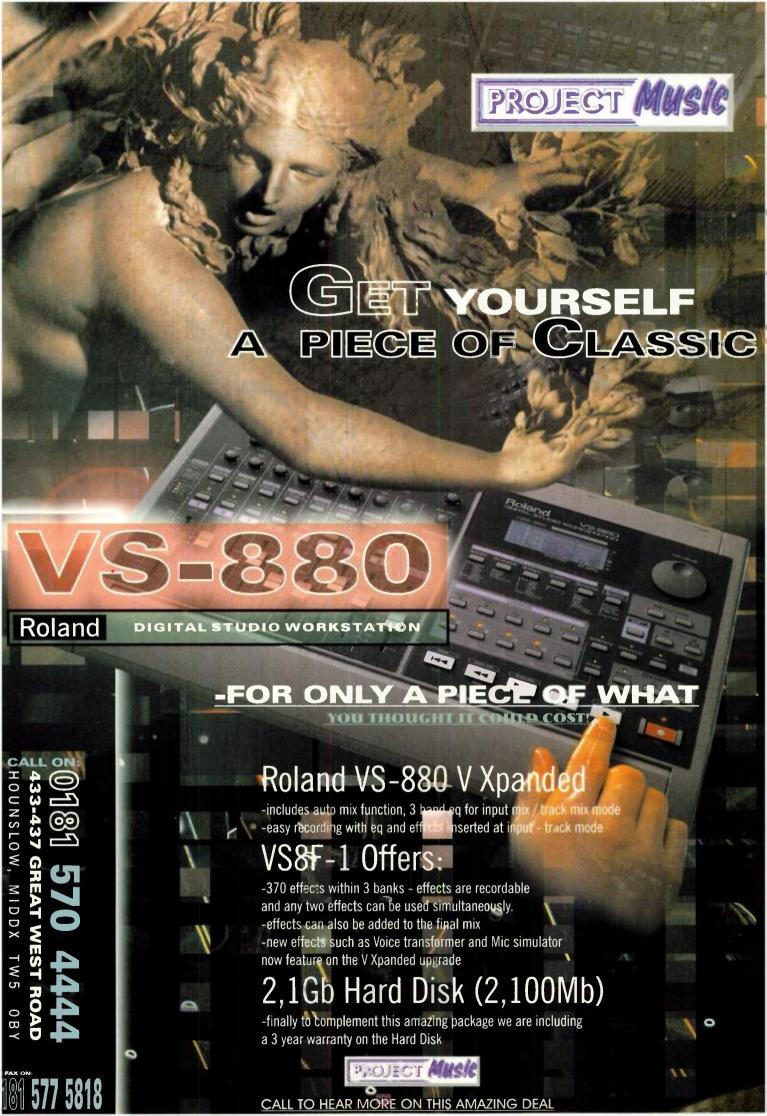


Soundpool Wavemaster.

# "Hardware-wise, the system seems flawless."

screen can be thought of as a piece of multitrack tape, with recorded parts appearing as blocks and a time indicator scrolling from left to right across the display. Audio and MIDI data is displayed in the same style and can be dragged around the arrangement, or edited by clicking on the appropriate part. The various editing functions are comprehensive, and range from a piano-style scroll of MIDI notes, to a waveform display with cut, paste and sample manipulation available as standard.

Any of the eight audio outputs and inputs can be called into play to record sounds along with sequencing data, and the results are committed to the on-board hard drive. Quitting *Cubase* and invoking the CD-writing software allows the user to archive any session to recordable CD — very important when a track involves a large amount of digital data — without the need for an external



# Sunrise Audio Workstation

► DAT drive. It's also possible to record a finished track back into the computer (after mastering onto DAT, say) and write a CD master to send to a pressing plant, or to check on a home system using any standard CD player. Other options include the ability to master CD-ROMs and crossplatform discs capable of working in computers and audio players.

## **IN USE**

It has to be said that the Falcon operating system lags behind the rest of the world by a couple of years. Despite this, once you get used to the monochrome display and the dongle-style software implementation, the system does perform remarkably well. MIDI sequencing is glitch-free, and the way that Sunrise Audio Systems have implemented the hardware certainly resolves many of the hardware problems associated with the original release of the Falcon. The inclusion of Cubase Audio is vital to the functionality of the system, with the usual attention to detail that we have come to expect from the company. The alternative systems that are capable of producing eight tracks of digital audio, played via individual outputs, certainly cost a lot more than the Sunrise system, and this has to be borne in mind when making any comparisons.

Hardware-wise, the system seems flawless. If only Atari had made a version of the 1040 in such

This is a 1U rackmount unit displaying input and output, with a 10-segment LED display on each channel (range -30dB to 0dB; inputs switchable to -60 to -30dB). No extra power supply is needed, as power and signals are derived from the workstation meter bridge port on the rear panel of the main workstation. Price: £300 including VAT.

OPTIONAL EXTRAS

#### 040 PROCESSOR BOARD

This is a Motorola processor upgrade for improved buss and CPU performance; it also allows the onboard RAM to be upgraded to up to 64Mb of 32-bit RAM, via two 72-pin SIMM slots. Performance increases of up to 1000% can be expected, depending on how much 32-bit RAM is installed. The package comes with a small IDE drive containing all necessary boot and setup information. Price: £650 including VAT.

#### • 8-CHANNEL MODULE

This is an 8-channel input and output module, in a 1U rack case, which adds another eight tracks of digital audio to the Sunrise system. Up to three units can be added, for a total of 32 tracks of digital audio. The 8track module comes with sample-accurate editing and effects (EQ, reverb and noise gates) and should be available in late summer. Debbie Poyser

considering buying one, at the company's showroom in Warrington (see end of review for contact details) or at an East Anglian commercial studio where a system is installed. Call Technical Director Sol Barnett on 01379 641598 for an appointment.

#### CONCLUSION

All in all, this a good product, ideal for studios that require sensible hard disk recording and sequencing without breaking the bank. The Falcon is a good platform to use, and it delivers consistent and workable results, albeit in a somewhat dated package. The Mac world is rather in turmoil as cheaper PCI-buss machines emerge and current software cannot support them to the level at which most users are accustomed to. The PC world remains stuck about a year behind, and, despite Windows '95, few professional programmers would use one in the studio to produce hit music. The Sunrise Workstation neatly fills the void, and is definitely worth checking out if your current setup lacks digital recording. Sunrise Audio systems have succeeded in bringing yesterday's technology kicking and screaming into the modern recording world.

- Sunrise Audio workstation without CD writer £3150; with CD writer £3995. Prices include Cubase Audio, but a reduction of £500 is available for customers who have their own version of Cubase Audio. See 'Optional Extras' box for prices on the extras available.
- A Sunrise Audio Systems Ltd, The Cottage, Brook Lane, Rixton, Warrington, Cheshire WA3 6DT.
- 01925 815828.
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# SPECIFICATION

- . 8 audio inputs (64x oversampled sigma-delta A/D), on line-level balanced stereo quarter-inch jacks.
- · 8 audio outputs (64x oversampled sigma-delta D/A).
- · 2 Mic inputs
- Headphone output
- 80 channels of MIDI output
- . MIDI in & Thru
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- · 2Gb Micropolls SCSI hard drive
- 14Mb RAM as standard (up to 64Mb with Processor expansion)
- · Yamaha CDR (if option taken), with 2-speed writing and 4-speed playback.



"This is a good product. ideal for

studios that require sensible hard disk recording and sequencing without breaking the bank."

a strong casing, I could have saved the purchase price in broken computers alone. The components used throughout the system are of the highest quality, and no attention has been spared in providing every possible interface necessary in today's studio environment. The system comes pre-installed with all of the sound software that the user is likely to need, which is just as well, as the installation routines are somewhat more technical than those used by the Macs and PCs of today.

The sound quality is fine for everyday use certainly on a par with CD quality — and the manual, although lacking in depth, sits happily along with the Cubase manual; it certainly should not prove a problem for computer-friendly musicians to get the system up and working within a couple of hours. The audio workstation can actually be seen running by anyone seriously



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# Our regular look at the hottest new sample CDs and CD-ROMs.



# SAMPLING SOUND SYSTEM VOLUME 4: HOUSE

(MIXED-MODE CD)

Sampling Sound System is a new series of discs, from Sounds Good, each of which retails for the budget price of £19.95 (dedicated Akai CD-ROM versions of the discs cost £39.95). Instead of reducing the quality of the sample material on offer at this very attractive price point, the producers present us with the same standard we've come to expect, but simply give us less material.

As with all the other releases in this series, currently comprising seven discs (which will be covered in future issues of *SOS*), volume 4, *House*, presents its sample material on a mixed-mode CD. This means that, in addition to providing 24 minutes of audio samples for you to pick and choose from, the disc can also be loaded directly into a PC or Mac CD-ROM drive, and all the sounds can be auditioned and accessed that way. For the PC, the samples come as WAV files, while for the Mac they're presented in the AIFF format.

House kicks off with a sublime and glorious collection of some of the coolest house loops I've heard all year. Divided into tempo categories starting at 110bpm, there are 48 individual 2-bar and 4-bar loops. At the more 'housey' tempos of 120 and 130bpm there's a kicking selection of about 180 further loops, with a handful also up in the 140bpm area. There's a vast amount of sonic depth to all of these loops and, instead of revisiting familiar 909 and 808 rhythmical styles, the drum patterns and grooves presented here create a real feel of experimentation.

Following the drum loops is a handful of 'melody loops' which, stuffed full of TB303-type phrases and piano riffs, also rate very highly. The sleeve notes are very helpful in listing all the tempos and key signatures, and Sounds Good have a history of making the loops and samples on all of their CD releases as interchangeable as possible, by working to tempo increments of 10bpm.

After the riffs, two tracks contain some large string multisamples (one very synth-style, the other more 'authentic' sounding), and these are followed up by some highly useable synth pads, in the form of both multisamples and single chords. A few squidgy bass noises and some single drum samples complete the line-up.

This is a good collection of samples that are not only relevant to the genre, but dare to push the boundaries just a little further than you might expect from a library of this price. On the downside, I noticed that some of the individual drums had a very slight click on the end of the samples — nothing that couldn't be edited out when you sample the sounds, but a little disconcerting all the same. Apart from this and the relatively short length of the CD, what your 20 quid gets you here is a solid and contemporary set of highly useable, flexible and ultimately inspiring dancefloor sounds. Value for money? I think so! *Paul Farrer* 

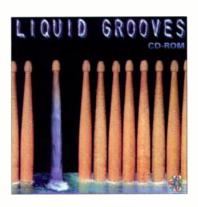
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# LIQUID GROOVES



(AUDIO CD/CD-ROM)

I've often wondered how Eric Persing, the man behind *Liquid Grooves* and several other fine sample CDs, finds the time to produce so much high-quality sample material, but at a recent NAMM show, I was let into his secret by his distributors — apparently he has his sampler and computer set up at the end of his bed and he keeps working until he falls asleep. When he regains consciousness, he just sits up and picks up from where he left off. Every once in a while, somebody pushes a plate of food under the door, but most of it goes uneaten!

Liquid Grooves sees Eric at his creative best as he blends manually played acoustic, ethnic and electronic drum sounds (and the odd sampled whale 'drum'), then subjects them to heavy electronic processing using reverbs, delays, filters, vocoders, and whatever else he can get his hands on. The result is a collection of slow to medium-paced beats (some as slow as 52bpm), with a hugely atmospheric feel. Several versions of each groove are presented with different degrees of effect treatment or instrumentation.

Burning Grooves, reviewed in our December 1996 issue, and Liquid Grooves are very different collections, with Burning Grooves concentrating on a live kit sound. Liquid Grooves, on the other hand, really is a masterpiece of layering, effecting and processing. Furthermore, the CD-ROM version (which also comes with an audio CD version) includes over 450 hits that don't come with the CD-only version. Eric says this is a plot to persuade us stubborn Brits to buy the CD-ROM version! Personally, I think life is too short to sample from audio CDs anyway. If you can stretch to the CD-ROM version, all the elements of every full mix and remix are available individually, for maximum flexibility.

The Korg Wavedrum appears on several examples, as do clay drums and other ethnic sounds. I think I also heard some Lexicon resonant filter programs ticking away in the background of some of the examples, though this effect may have been achieved with a vocoder. Some examples have a pitched element

to them, and in these cases the pitch is annotated, along with the bpm, though versions of the same loops are also available with the pitched elements removed. Resonant delays are used in some places to create metallic or aboriginal drones, and some sounds have been treated with distortion to give them a contemporary edge. Most of the rhythms are fairly straightforward, in terms of time signature, making them musically useful, and virtually all of them spark off compositional ideas. A few more laid-back rhythms would have been useful for old hippies like me but, given the breadth and quality of the material on offer here, I think Eric is long overdue for his full five stars. He's currently locked away doing a four-disc vocal and choral set. I await this with anticipation, having heard a few snatches at NAMM. Paul White

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# DOUBLE PLATINUM DRUMS



(DOUBLE AUDIO CD/CD-ROM SET)

With seemingly every drum sample CD these days telling us that theirs is the ultimate, the one and only collection of samples we could ever possibly want, you could argue that the market for drum sample CDs is getting a touch crowded. However, a look at the sleeve notes of *Double Platinum Drums* from Ilio Entertainments (the people behind the acclaimed Synclavier library) might make you start to wonder if it's worth forking out on some extra memory upgrades for your sampler after all.

The producers of this four-CD-ROM set have taken the decision to make two copies of each sample and loop and present them both with and without ambience. The upshot of this is that discs 1&3 and discs 2&4 contain the exact same loops and samples, one disc with ambience and the other without. Disc 1

(and 3) is taken up with drum loops and grooves. Each volume within the eight partitions is given a bpm (ranging from 66 to 199) and its size is listed in Megabytes. The library has been designed with 32Mb of sample memory in mind, but whilst many of the programmes are indeed very memory-hungry, most will fit comfortably into 16Mb or less.

Loading up a volume is straightforward and relatively quick (depending on the speed of your CD-ROM drive, of course) and the layout of the loops and fills across the keys is both sensible and intuitive. Most volumes feature not only the main drum loop, but also deconstructed (or less busy) versions, plus fills. rolls and intro drumming. The playing is superb, and drummer Michael Botts clearly has a strong feel for contemporary rock and pop drumming. Constructing a full and authentic drum track using a sequencer takes only a matter of minutes. The playing styles move easily from funky 6/8 feels through to country music styles (I feel a line dancing album coming on!) and onto some truly excellent shuffle and frenetic bossa nova loops.

Discs 2 and 4 present a massive collection of the individual drum samples used in the recording of the loops. Again, disc 2 provides the samples with ambience and disc 4 features the same samples dry. Names like Tama, Gretsch and Remo feature heavily, and the samples are very good indeed. The supplied documentation goes into some depth about the drums used, and their background, and also includes a handy note-mapping diagram that corresponds to the drum samples' positions as they boot up. This adds to the overall feeling of user-friendly open-endedness that goes with almost every aspect of this release. The recording quality is fine throughout, with particular attention being paid to the 'thump' of the kick drum and the 'ting' of the bright and crisp cymbals.

In short, this is a true professional's product. Double Platinum Drums puts the emphasis firmly on quality, as opposed to simply bombarding the user with a huge quantity of mediocre loops. Of course, whether this 'doubling' of sample material represents a value-for-money, time-saving idea or simply an easy way of selling four CD-ROMs instead of just two, is entirely a matter of opinion. One thing that is clear, however, is that the quality of the playing and the intelligent way these samples are presented means that this powerful and rewarding collection is a real pleasure to use. Paul Farrer

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# PC DANCE TOOLS



(PC CD-ROM)

This collection, from the Best Service stable, is described as a 'Techno and Dance Production Tool', consisting of a total of over 1200 WAV files. Best Service have tried to take the drudgery out of sample making by providing sets of pre-looped and multisampled sounds which can be imported directly into the SoundBlaster AWE32, Turtle Beach Tropez, Maui and Rio cards, and Digidesign SampleCell, as well as universal WAV file versions for use with any other card. WAV file collections have often in the past been the poor relation of the sample CD — a sort of junior cut-down version that picks up a few more pennies from people who don't have access to a 'real' sampler. Thankfully, as PC soundcards have come of age and their sound quality has improved, this attitude is disappearing and, judging by this CD-ROM, WAV files now equal other formats for sound quality, as well as providing a far more convenient source of sounds for people who rely mainly on soundcards with sample RAM on board. The only fly in the ointment is that, since the quality is more in line with other formats, so is the price - no more bargainbasement WAV collections here!

The selection is comprehensive, carefully steering a sensible course between total specialisation (if you want 1200 bass drums, look elsewhere) and trying to be all things to all people. Sticking to dance sounds just narrows the subject matter enough to ensure that most will be relevant. Best Service provide a help file, including track listings, on the disc, but there's no manual or sleeve notes. Fortunately, the file names have been chosen sensibly, and most are self-explanatory.

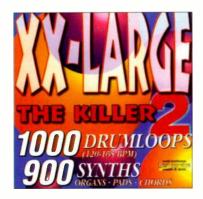
In the general WAV folder, sounds are further divided into 37 sub-folders. To give you an idea of the depth and range on offer, the analogue bass folder contains 94 WAV files in total, with three or four samples per instrument. Other sounds include 24 drum loops (eight each at 130, 150 and 170bpm), kit sets for TR606, 808, 909 and CR78 (plus a good selection of general drum sounds), a wide range of special effects,

# sample shop

vocal phrases (both male and female), metal guitars, pads, choirs (real and synth varieties), strings, pianos (with a nice Fender Rhodes)... need I go on? Sound quality and looping is generally very good — the occasional hint of distortion, hum and noise creeps in, but always as part of the source material and not as a result of sloppy sampling.

I like the idea of these Production Tools — if you want a wide basic selection of quality sounds to dip into in a particular style, here's a collection that's been neatly put together, with the hard work of looping and mapping already done so that you can achieve quick results. Check it out. *Martin Walker* 

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# XX-LARGE: THE KILLER 2



(AUDIO CD/CD-ROM)

With 1000 drum loops and 900 synth sounds on this CD-ROM, I had my suspicions that reviewing it would be something of a chore. I was wrong. While the title of this product may make it sound like a crummy B-movie sequel, hidden inside the packaging is a riproaring, bass-booming dance-floor filler of almost unparalleled delight.

First up there's drum loops, starting at the classic disco tempos of 123 and 125bpm, then moving steadily on up to frenetic and exciting jungle territory at 165bpm. In each of the disc's drum partitions are around eight programmes, and within those programmes are anything between seven and 28 different samples at the same tempo. The upshot of this is that once you've selected the tempo field you want to work in, you simply load up one of the matching programs and get 20 or so drum loops, deconstructed into ready-to-use blocks of rhythm. The intelligent layout of the loops means that starting from C1 on the keyboard and moving up a semitone at a time makes you feel as though

the rhythmical equivalent of Carl Cox or Junior Vasquez is living in your sampler and making all the creative drumming decisions, while you can get on and worry about the other elements of the music. It's that easy.

Sonically speaking, the bass drums really kick, and the excellent mix and effect levels of the various percussion parts within the loops mean that, no matter how complex and frantic the loops become, everything seems clear and bright. Most current 'cool' areas of dance music are covered in some way, from basic four-on-the-floor styles, through techno, right up to some of the more experimental areas of drum & bass programming.

The second half of the CD-ROM concentrates on synth and chord samples, generally stereo single-hit samples with 30 or 40 different programs in each volume. These are, for the most part, extremely useable and very contemporary. I found only a couple of really clichéd noises, and sometimes clichés are no bad thing anyway. After the single chords comes a set of wonderfully nasty rave synths and some gloriously cheesy organ samples. Good recording standards have been maintained throughout. Swirling pads and a small but interesting set of odd vocal bites are tucked away at the end of the CD, and the whole thing is topped off with a large and totally authentic collection of house bass samples (both multis and singles).

The emphasis of The Killer 2 is unmistakeably on powerful house sounds, and its vast number of swirling pads, tight synth chords, organs, pianos and basses will be a source of inspiration for a long while yet. The programming of the sounds and the partitioning and arrangement of the CD-ROM is superb and, although the sleeve notes omit to tell us each volume's size in Megabytes, even the most complex drum sets aren't as memory-hungry as you might think. Indeed, if I was forced to make one negative comment it would probably be that, with half a Gigabyte of samples, it sometimes seems as if there are almost too many sounds to choose from.

The CD-ROM version of *The Killer 2* (Akai/Emu, Roland or SampleCell) is currently on sale for £99 and, in my opinion, it would be worth it for the drum loops alone. The producers of this CD have provided a near-faultless collection of contemporary dance music samples that producers and remixers should not miss. *Paul Farrer*.

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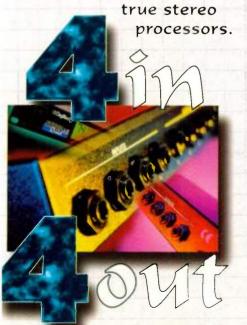
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# ess<sub>2</sub>

Do you fully appreciate your mixer's capabilities when it comes to using effects and signal processors? CRAIG ANDERTON reminds you of a few tricks your desk might have up its sleeve.

ur recorders and effects are turning increasingly digital, but when it comes to hooking all this gear together, it's often still an analogue mixer that does the job. The flexibility, number of patch points, and hands-on control available from analogue mixers remain appealing, as does the cost. However, in many ways these venerable boxes are still under-utilised, particularly when it comes to using effects. Here's a selection of tips designed to better integrate mixing and signal processing.

signal processor

# from 100 multitrack fx out fx in fx return. fx sendinputmixer input strips Figure 1.

# KEEP A STRAIGHT SOUND STRAIGHT

Although mixer input-channel effects loops are convenient for patching in effects, some processors alter the straight sound. Fortunately, you can preserve the integrity of the dry signal vet still add the desired effect; the patching option depends on your mixer setup.

In any case, the first thing you need to do is get a send from the input strip signal. There are three ways to do this:

- If your mixer has separate input-strip loop send and receive jacks, patch into the send. This should not break the normalled channel connection that allows the dry signal to pass through to the stereo mixdown buss.
- Newer mixers often use a TRS (tip/ring/sleeve) stereo jack to handle the effects send/return. Plugging a lead halfway into the jack (so that the plug tip contacts the jack ring) should provide a send without breaking the normalled connection.
- If you don't have loop jacks, use an aux buss to provide a send from the channel.

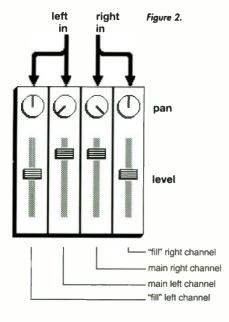
Patch the send into the processor, which should be set for effected sound only (no dry signal). Then bring the effects output back to a separate channel and mix in the desired effects blend at the mixer (dry sound on the original channel, processed signal on the additional channel). As a bonus, using this approach lets you modify the effects signal with panning, reverb, aux sends to other effects, and all the other input channel options.

### **BETTER REVERB PRE-DELAY**

For more control over your reverb sound, patch a delay line between the effects send and the reverb input. This provides more control than the pre-delay found in most reverbs — for example, adding a bit of feedback can create a more complex reverb effect.

# **UNDEAD COMPRESSION**

If you're using compression as an effect (as opposed to preventing tape saturation or some other utilitarian application) but don't like that squashed kind of sound, patch the signal to be compressed through the main channel and send its direct out or effect loop into the compressor, then return the compressor to a separate channel (as in Figure 1). Use the compressed channel as your main signal, then bring up the unprocessed channel, to restore some of the dynamics.



# **BIGGER STEREO PIANO & GUITAR**

Here's an effect you can use on guitars to create a wider stereo image with two mics: it also works well with piano. 'Y' the main right and left channels to two additional channels, using either a Y-lead or a send from the direct out or effects loop send. Pan the main left and right channels left and right, and centre the other two channels (Figure 2) but bring their levels down about 5-6 dB (or to taste). This fills in the central hole that normally occurs when you pan the two main signals to the extreme left and right. While you're at it, experiment with adding reverb in different ways — only the main channels, only the middle channels, weighted toward the left, weighted toward the right, and so on.

## **AUX BUSS FUN & GAMES**

Get creative with your aux send processing — there's no law says that you can use only reverb. Here are some favourites:

 Add a mild distortion device (a SansAmp, tube preamp, or something similar) and send it drum tracks, bass, or whatever.

# RETURN TO SENDER

If you have enough mixer channels, bring your reverb returns back into two mixer channels rather than the dedicated effects returns.

FULL-FEATURE EFFECTS RETURNS

rather than the dedicated effects returns.
Using mixer channels gives you more control over the returned signal (EQ, panning, sends to other effects, and so forth), which the returns usually don't have.

# SAVE AN EFFECTS SEND

Most stereo reverbs are not true stereo; instead, they sum the two inputs together to mono and synthesize a stereo field from that. Therefore there's no real need to use up two sends, since the original stereo imaging is lost anyway. (However, do use stereo returns.)

The distortion can add a nice edge and warmth; bring it back at a fairly low level at first just to add a bit of crunch.

- Feed one aux send to a vocoder carrier input, and another send to the vocoder's modulation input. Note that this requires a real vocoder with two inputs, not one of the digital simulations that have only one input (and perhaps an additional input for MIDI control). This allows any signal to modulate any other signal, which can provide a very cool effect if you take something percussive as the modulator input and use it to trigger a more sustained part, such as bass or long piano chords.
- Missing that Roland Space Echo you sold at a garage sale years ago? For that unmistakable tape-echo sound, patch a pair of aux sends to an analogue 2-track, 3-head recorder set to Record. Roll tape, and patch the playback head outputs to the effects returns. You'll end up with a slapback echo which has that warm analogue quality. If the deck has multiple speeds and variable pitch control, so much the better. For a truly grungy delay, use this technique with a 3-head cassette deck.
- For some audio excitement, I often patch the Aphex Model 104 Aural Exciter into an aux buss send/return rather than use

"In many ways, mixers are still under-utilised, particularly when it comes to using effects."

it in-line on the entire mix. Although this kind of unit was originally intended to process an entire mix, these days it's not uncommon for samples to already be 'excited' (particularly drum samples), and adding more exciter on top of that can give a really tinny sound. Adding exciter selectively, using the aux buss controls, gives a much more controlled mix. But note that some of these devices do not allow for cutting out the straight signal so that you have processed sound only --- a necessity when you're using exciters in an aux loop context. However, a simple hardware mod can often do the trick (for example, if you're an AOL user, the Articles Library in my AOL site, keyword SSS, has an article on how to modify the Model 104 so that it outputs the effected sound only). 505

Thanks to Spencer Brewer and Jay Graydon.





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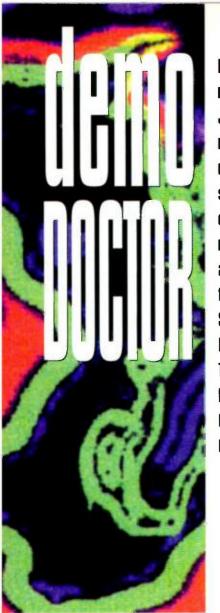
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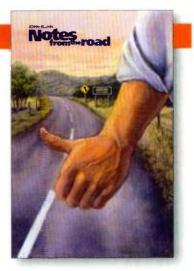
# JOHN BLINN

Recording Venue: Home.

Recording Equipment: Mackie 1202 VLZ mixer, Alesis 3630 compressor, Akai S900 sampler, Boss SE50 effects, Roland SPD11 drum pads, Turtle Beach Tahiti soundcard, Syntrillium CoolEdit sample editor, Opcode Visian for Windows, IQS Software Audio Workshop and Workshop Plus software, Shure SM58 mic, Tascam 488 8-track Portastudio, Tannoy PBM 6.5 LM monitors with Limpet amplifiers.

Following the inspirational lead of Alison Brown, who quit her job as an investment banker on Wall Street to play the banjo, John Blinn packed in his job as an attorney and, well, bought a studio. Do attorneys get paid more than bankers, or something? John tells an interesting story about how he decided not to take up the offer of a contract to play in San Francisco in the '60s and instead went to law school. Itt took him until he was in his fifties to get into music again. The rigours of playing with bands were attempted, but he decided instead on a solo recording venture, the fruits of which are now in my CD player.

Unfortunately, the sampler CD is simply a series of extracts from John's CD Notes from the Road, with a spoken explanation of the context of what we are about to hear. John mixes location recordings of places he's visited — the sounds of the streets of Bangkok, a visit to a Taco bar in Austin, Texas, for example — with music inspired by those places. The concept is a good one, but on this CD the listener becomes frustrated by the fact that only tiny snippets of music can be heard.



whole track or two complete. And it would have been worth it, because the recording quality is excellent, with a wonderfully fat sound to the mix and a clarity arrived at by using fairly sparse instrumentation.

Some of the samples are a bit grainy, with a touch of HF whistle floating about, but for the most part they are interesting and evocative. The music that follows 'Storm in Dublin' is pleasant enough, but the cuts from one section to another are rather sudden especially the one to the 'Port of Piraeus' section. Also, in the case of 'Storm in Dublin', there's nothing really to identify the storm as coming from the skies above Dublin. No squeak of brakes, sound of Guinness pouring or sign of the characteristic Dublin accent. To be honest, John would have got a better sample from a Dublin bar — that's where all the action is. Sadly, I have to admit that the lack of flow in the edits and absence of any music over a few bars long would not really inspire me to seek out the full-length CD. 📮

# PD SHEPPARD

.....

# Recording Venue: Home

Recording Equipment: Fostex R8 8-track, Atari 1040 running Steinberg Pro 24, Philips DCC 730 mastering, TEAC W415 cassette deck, Yamaha SPX90 effects, SansAmp amp simulator, Shure SM58 mic, Realistic condenser conference microphone.

Hailing from Hull, PD Sheppard is not only a dab hand at the old guitar playing, he's also a pretty good singer. Both his playing and his singing seem to be reminiscent of Clapton, but where the voice isn't quite as husky as the superstar, the guitar wades in with more overdrive.

The first song lays the groundwork for the style, which verges on the raw side of MOR, and also demonstrates the main problems that plague one-man rock material recording productions. First, the drum programming is suspect in places, with some of the fills sounding

most un-drummer-like, especially when they're not accented, like the timbales on 'Credit Card Love'. There's certainly an art to programming sequencers to work like drummers for this kind of material, and I'd suggest trawling the back issues of SOS for some tips. On the other hand, when a fixed pattern is playing, like the shuffle on the second song, Mr Sheppard is hitting the groove — it's just those extra bits that make the icing on the cake. Another trick is to use more than one snare drum to provide a variation in the sound on alternate snare beats. This would have to be mixed fairly low to give a flavour to the beat selected, rather than a complete change in sound. Using a variation in tone or reverb on alternate snares is also a common production trick.

The guitar sounds, produced by a combination of Fender Performer 1000 guitar

amp and SansAmp amp simulation, sound fine for the lead guitar but a little thin for the clean sounds. This is especially noticeable on the second track, where the rock/reggae guitar doesn't quite sit with the rest of the mix, through a lack of lower-mid frequencies. It's also mixed a bit too loud. I notice that the problem with the guitar is improved for the fourth song, 'Silly Games', and this is probably because a big fat synthesizer pad occupies the lower-mid area of the mix where the guitar is lacking, and backs it up to the hilt in the mix.

On the third song, 'Can't Stop', the mix and programming are much better, with the occasional blip — this time from a sidestick snare fill into the verses that's too loud Otherwise the vocals are well delivered, the harmonies are solid on the chorus, and the lead guitar is tastefully played.

I expect that this band haven't waited for my review before going ahead and doing their final mixes, so what I have to say may be redundant, or painfully true in retrospect. Still, here goes.

It may be of interest to readers that the tape was recorded around the time that

beloom, lander l this band had some success with the theme music to BBC2's This Life series. The sound is retro, from the stabbed flutes (Magical Mystery Tour, Strawberry Fields) on the opening bars of the first song, to the McCartnevesque bass lines and mellow sound of the bass guitar - wonderful stuff if you're a Beatles fan. What gives the band an original slant is the vocal — thank goodness the singer isn't another Lennon clone! The

vocal style is pop, verging on the cynically aggressive for the first song, but by the second it's moving into the South Eastern style of the '60s and, coincidentally, Britpop.

All the playing is good, but the guitar playing is worthy of note, again for not

pandering to the retro sound but going for a more modern version. It's a little disappointing that the guitar sound itself is quite hard and scratchy in places. I'd put this down to the digital recording medium, which can make it harder to get a full sound. One tip is to pay more attention to the bass end of the guitar sound, because it's this that tends to lose out during the digital recording process—sometimes as a result of an increase in treble definition and at other times, as in the case of my early ADATs, because they can cut some of the bass.

Another tip is to use some sort of valve processing to counteract the harshness of digital, and I notice that the band have some valve units on their equipment list. Often, to get the best out of valve equipment you have to drive it harder, so don't be afraid to slam the level into your valve gear and listen to what happens. The result is usually a fattening of the bass end, and that indefinable valve warmth is added to the sound.

It seems to me that the band must have taken advantage of their valve processing by the time they recorded the third track on the tape, which has a nice overall sound and a really fine guitar sound with a nice feedback break. There is a tendency towards over-EO in the upper-mids of certain sounds in the mix. and the snare and the drums seem to have been squashed a bit hard by compression, to my ears. However, I should point out that, on the whole, the third and fourth tracks work really well, and that this is a good demo for a band who are recording an album even as I write. 🗖

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# OUICKIES

**STAN IVORY**: This is an interesting one, included because it was recorded in New York and Washington DC and sent over



from Total Control records. This is cool material from a man with an excellent voice that has some rather strange treatment in places. For example, 'E Mail Xpress', where the voice is so heavily compressed that you can hear it dipping in places, and it's also been treated to a type of EQ and reverb which makes it sound like it's coming from the inside of a bucket. The 500Hz area has definitely been severely cut, yet the voice still sounds good enough to carry the rather tacky lyric. As I said, interesting.

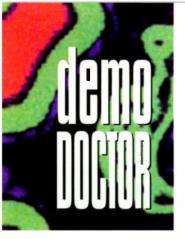
AVENUE are Jon Brooks and Sarah Barrington from Worcester, who produce a pleasantly melancholic dance/pop sound with their demo *Kiss the Future*. The arrangement begins with a simple major key three-chord arpeggio on a synth guitar sound, before falling to the relative minor for the verse. The result is quite nice, as the song slips from minor to major for the chorus and back for the verses, but



otherwise has little to offer in the way of variation. Some percussion added around the relentless breakbeat here and there would have helped, and some sixteenthnote looped sequencer in the upper-mid

region would have been an uplifting addition to the chorus sections; something like this could also have been utilised in a break of its own later in the song. On the engineering side, the tape sounds a bit grainy and overcooked, but I'd put this down to a poor cassette or cassette recorder rather than the skill of the engineer.

Continued on page 244



# QUICKIES

# THE LONE ROGER: Roger's

demo was recorded in France where he once planned to settle, but he seems to have ended up in Wales instead! He describes his first track as "Euro with Junglish influences". The sound of the mix is a little odd, because the synths are mixed so high in relation to the drums, and I can just about make out the kick drum as a dull thud in the background. The snare, too, is low but audible, and I can only surmise that Roger must have wanted the mix like this. because the second track, 'Dis aBeat', is much better on this score. Here the kick drum is a dull thump over which a synth rises from sub-bass to audibility, with a slight buzz of opening filter. This is replaced later, in the mix by the aggressive sound of a very resonant filter run through distortion, which was just far too reminiscent of a visit to the dentist for my liking. On balance, the track is a bit busy in the uppermid area, with continual stereo looped synth 'clacks', like an army of insects miked up and amplified in the fashion of a '50s sci fi epic. However, I did like the use of the appropriately-named 'dirtbox' to mess up some of those clean synthesized sounds. Possible improvements would be in the drum programming - more variation is needed for jungle, surely?

WINE DARK SEA: This is quite an evocative name for a band that attempts to emulate the art-house style of bands such as Japan. Vocalist Mat has got the slightly nasal quality of Sylvian's voice down to a tee, and the musicianship is of a pretty high standard. Unfortunately they're rather let down by the mix on track one. The drums barely get a look in, and the scratchy acoustic



Wine Dark Sea.

guitar - over-equalised and treated to a fair bit of pitchshifting, is way too high. This is rectified on the second song, where the overall sound is improved 100%. And if the band need a yardstick to measure other mixes by, this is probably quite a good one. The acoustic guitar could still be made less scratchy on this mix, by cutting the mids at around 1kHz, but the other instruments, such as the sax, have a wonderfully mellow sound. This works because the guitar occupies the region of the mix that a brighter saxophone sound would need to cut through. Interestingly, the sax now sits nicely under the guitar. The third mix is also pretty well handled, with a brash, overdriven guitar sound that pops up to slap you in the face on the chorus. This is the best song on the tape, but some credit must also be given to the keyboard player, without whose mellow, filter-swept pads the mix would have sounded lacking in lower-mid and just a bit spiky!

## THE LEARNING CURVE:

Despite once getting the 'Worst Demo in the World' award from a rival magazine that has since bitten the dust, David Scarlett has continued recording! He now has the smug pleasure of outliving the

THE LEGARNING CURVE

What On Cartin

The CD Centains Both Andre and Computer Date For FC's

publication that so unjustly ridiculed his recordings, which were after all, just for fun, and receiving a decent review from these columns. I guess his recording skills must have improved by a factor of a few thousand, because there's nothing wrong with the instrumentals on this CD at all. In fact, the general instrument balance, often using classical or ethnic synthesized sound sources, is good and the sounds clear. My only criticism is that the digital nature of the sounds sometimes makes the overall picture a bit clinical, and a slight cut at 2kHz, with a bit of boost (a mere 2dB at 12kHz) does the end product a lot of good. However, that's splitting hairs and the EQ is probably just making up for the poor converters on my CD

CAMELEON DREAM: In part sequenced, using an Atari and Cubase, the music of Cameleon Dream is "mainly dependent on the interaction of live playing and mixing on the fly". A sort of modern-day Tangerine Dream, then? Perhaps so, as fat analogue synth loops of a vaguely polyrhythmic nature duck and dive



Cameleon Dream.

their way through the first mix, with slowly opening and closing filters, variations of resonance and decay times over a heartbeat bass drum. The bass drum works well so low in the mix, suggesting a pulse but really leaving the detail to the looped synth. Underneath this ebb and flow, a pad synth builds to two chords, with the occasional echoed organ breaking through, then fading into the background. The final mix could

probably be chopped by a minute or so before the climax, but the calm after the storm is well timed. The second mix begins with Japanese-style pentatonic meanderings on what sounds suspiciously like a slap bass sound played beyond its boundaries and masquerading as a koto. Surrounded by a cosmic wash, the result is, almost to my surprise, very pleasant indeed: the best bit is the vocal sub-bass sliding around and taking over from the pentatonics. Excellent late-night listenina.

JULIAN ROWE makes extensive use of the Korg O1/W's



distortion, with wah filter and reverb, over a rearranged traditional orchestral piece. This is the musical equivalent of taking a fine painting and doodling over it something which most of us have wanted to do at some time in our lives, I suspect. The second tune is based around a jazz-rock bassline loop, and a left and right arpeggio figure with stereo flange, which is constantly popping in and out of phase. Other sounds are thrown in and out of the musical quagmire, which then takes on the semichaotic air of a musical collage for a section of the mix, before later turning into a workout on the delay unit. Julian likes people to listen closely to the sounds he's playing with. For example, the third composition features a guitar chord treated to a combfilter flange effect to bring out the harmonics, but more interesting are the high-energy jazz rhythms he manages to come up with in the background and his 'bubbly' use of log drums.

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# PAUL WHITE tries out

Roland's MBD1 Bass and Drums Sound Expansion module and discovers a wealth of really useable off-the-peg sounds.

# ROLAND MBD1 BASS AND DRUMS SOUND EXPANSION MODULE

f you recall our review of Roland's Sound Expansion series of modules (see SOS October '95), you'll recognise a similar theme in the MBD1 Bass and Drums module, and that's probably because these modules are all direct spin-offs from the JV-series soundcard expansion sets. The MBD1 combines simple operation with very high-quality sounds and is presented as a straightforward mainspowered 1U rack module. It has the usual MIDI connections and stereo audio out jacks, but there are also two audio inputs, allowing any other stereo module to be cascaded in situations where mixer inputs are scarce. There's no permanent user patch memory and only the most superficial editing can be carried out without the aid of a JV software editor, but any user setting that's made by whatever means can be saved as a SysEx dump.

The MBD1 is 28-note polyphonic and 8-part multitimbral, with MIDI channel 10 dedicated to providing drum/percussion sounds. There are actually 17 different programs, the first 11 of which are different drum kits (though some of the percussion sounds are common to each kit). Kits 12 to 15 are similar kits but with missing kick, snare, hi-hat or tom parts, enabling you to use these kits in conjunction with the more specialised drum sounds found among the regular synth voices.

A JV-style MIDI bank change command (controller 0, values 80 and 81), enables the user to flip between two banks of 128 patch locations, though the actual number of patches seems to be 255. In fact, the MBD1 module can operate in either of two modes: Performance or Patch. A Performance is a collection of patches on different MIDI channels plus a choice of drum kit, and is recommended for use with sequencers. In this mode, program changes may be sent on the individual channels to select new patches. Patch

mode is designed for live performance, where only one sound at a time is required. Switching between the two modes involves powering up the machine with the appropriate button held down — the selected mode is retained when the unit is switched off again.

One of the reasons that this module is so easy to use is that the sounds are effectively presets; though they can be edited via suitable software, effects levels (reverb and chorus), level and pan can be accessed via the front panel, as can transposition and detuning. Most sequencers also make it a simple matter to create a mixer map for these functions — I tried this using *Logic* and had no problems. The unit also has two patch tables: the one shown in the manual, and a second one for when a GM System On or GS reset message is received. When the power is switched off and then back on, the system reverts to the original patch table.

The limited number of parameters accessible from the front panel are navigated using a matrix of four Part buttons, one Select button and four LEDs. The four LEDs also double as a kind of MIDI-velocity VU meter. Patches are shown by number only, so you'll need to keep a patch chart close at hand.

# **BASS AND DRUMS**

The sounds for this module were created by five well-known session players, with Marcus Miller, Abraham Laboriel and John Patitucci providing the bass input and Abe Laboriel Jnr plus Bob Wilson contributing the drums. Most of the bass sounds are presented as single-note samples, and include slap, fingered, picked, fretless, harmonic and acoustic bass examples, in addition to a few synthetic basses. However, there are also a few trick settings with double notes, notes followed by harmonics, harmonic runs and so on, some of





which are very atmospheric.

The last few patches of bank 1 are drums, as are all the examples in the second bank, the highest patch number being 197. Many of these bank 2 sounds are single drums or groups of drums, though you also get 14 complete kits. However, these are fairly basic in the number of instruments they contain, unlike the dedicated 'full keyboard' channel 10 kits, which stretch from C2 to C7 and have all the bells and whistles you could want — plus many of the coveted TR-series drum sounds. By combining drum hits from

"There's a lot to be said for the convenience of being able to run through a whole list of bass sound options without having to load up individual samples."

different parts, you can create some interesting, non-standard kits, and whichever way you look at it, the choice is immense. Channel 10 kits 16 and 17 contain useful drum loops (tempos are marked in the manual listing), and there are a few useable 'drums-plus-bass' loops tucked away around the place.

#### THE SOUNDS

The overall sound quality is generally good, with very little background noise and no nasty quantisation distortion to spoil what are actually very good samples. The lack of editing facilities isn't really a problem with bass and drum sounds, especially when there are so many to choose from. Where looping has been used, it is exceptionally

good. The key splits are generally smooth, although as in any natural sound, there's always a slight difference at the changeover point. However, I've always felt that a slight degree of variation is a good thing, as it makes the sounds appear more real when they're used in context.

There are some very nice 'straight ahead' bass guitars, the usual slaps, and some particularly good acoustic bass examples. There are also several fretless samples, which sound quite authentic. The repertoire includes a few of the more electronic, filtered bass sounds and a whole section of bass synth patches, and my only adverse comment is that there's sometimes quite a level difference between different patches. Some of the sounds are also a little too polished — nothing quite convinces me that I'm hearing a miked bass guitar amp.

The channel 10 drum kits are excellent, and comprise both regular kits and those containing classic Roland electronic sounds. Roland users will find many familiar drum sounds in here. Indeed, the selection is so good that you probably won't need a separate drum machine unless you desperately need to be able to treat the drum sounds separately. There's only one stereo output, so everything comes out of the module mixed, but the ability to add different amounts of effects to the different parts mitigates this to some extent.

#### **SUMMARY**

There's little the MBD1 can offer that a sampler can't, but there's a lot to be said for the convenience of being able to run through a whole list of bass sound options without having to load up individual samples. The same is true of the drum kits which, considering their size, would take up a significant amount of sample memory. I still feel that front-panel editing for basic functions such as attack, release and brightness would have helped sell the idea to those who like more control, but the vast majority of the sounds are perfect right out of the box, and once you have a good sample of a bass guitar, what else would you want to do with it?

If you want a good selection of really nice bass and drum sounds for little more than the cost of buying a similar set of sounds on a CD-ROM, then you need look no further than the Bass and Drums expansion module.





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SOUND ON STAGE's in-depth practical tutorials offer no-nonsense advice on crucial topics like getting the most out of your PA system and how to get gigs, plus the hottest instrument/equipment news around and major interviews with topranking musicians like U2's Larry Mullen Jr, who reveal how they tackle their music on-stage. We also take you behind the scenes at top-billing gigs and check out what's hot and what's not in the equipment world. Have you got your copy?

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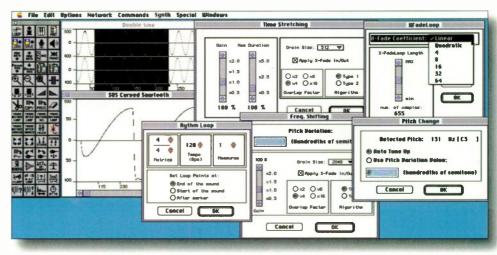
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# This month MARTIN RUSS looks at technical support, operating system updates and shareware...

'm a great fan of shareware. Ever since one of my own shareware programs for the Atari got a 75% rating in a computer magazine, I've regarded it as an excellent way of supporting the on-going development of high-quality software from ordinary individuals, instead of merely contributing to the profits of huge faceless organisations. So it probably comes as no surprise that I use a shareware utility to change the resolution on the Mac that I'm writing this on, or that I'll be compressing this month's column to SOS into an emailable form by using a shareware utility. Even the screenshots here are prepared using a shareware application!

In the past, the major problem with shareware has always been the money. How do



A composite screenshot from D-SoundPRO.

you send 20 US dollars to someone in Arkansas or Osaka? The wide availability of modems (because of the WWW and email) now means that this is all much simpler. My most recent shareware has all been paid for by credit card. to companies that act as intermediaries for shareware authors. You enter your details using a small application built into the shareware program (or included with it) that you want to register, and it produces an encrypted block of ASCII text which you email to the relevant people. Your credit card, name, email and address details are hidden in the message, and within a few days (sometimes the next day!) you get a software key by email (or post) which unlocks the full version of the application there's no messing with International Money Orders, foreign cheques, postage and so on. Instead, you often get to influence the next version, bugs are fixed by the author, and you can save yourself lots of money as well.

#### **D-SOUNDPRO**

For something that illustrates the real value of shareware, you only have to look at Stefano Daino's *D-SoundPRO*. This Italian-developed program is a comprehensive sample editor for the MacOS computer platform. It uses both AIFF sound files and MIDI Sample Dump Standard I/O, which means that it's very useful for synthesizers like my Yamaha SY99, which only use MSDS (MIDI Sample Dump Standard) and have very limited sample editing functions.

D-SoundPRO has sound-manipulation features to rival those you find in professional editors: crossfade looping, time-stretching and frequency-shifting, spectral re-synthesis; a special rhythm loop; a synthesizer oscillator; and interpolated resampling. The user interface includes undo-able sample edits, a sample clipboard, floating palettes



# APPLE NEWS IN BRIEF

#### MACOS 7.6.1 UPDATE

The 7.6.1 update should be available by the time you read this. You can ftp it from:

ftp://ftp.info.euro.apple.com/Apple.Support.Area/Apple.Software.Updates

Alternatively, it should appear on the cover CDs of most Mac magazines about now.

(This is probably also a good place for a reminder that you should NEVER use a US updater to update a UK- (or any other country) localised Mac Operating System. Always wait for the local updater — it should appear within 90 days of the US release.)

#### • LEVEL 2 CACHE?

Following on from the first item of news... If the Level 2 (L2) cache feature on your Performa, Power Macintosh or MacOS computer is disabled after you've installed Mac OS 7.6.1 or the '54xx/64xx

Update' extension version 1.1, then you may need to install the '54xx/64xx L2 Cache Reset' extension.

#### • OUICKTIME 3.0

Expect the next release of QuickTime sometime in the summer. The Windows version will finally include the QuickTime Music Architecture that MacOS computer users have had since version 2.5 was released. Although it never quite happened with version 2.5, this time Apple are promising that the MacOS and Windows versions of QuickTime should now happen within a few weeks of each other. Video effects, streamed VR panoramas, MPEG software decodes, and AVI file compatibility are all promised in QuickTime 3.0.

#### • ORACLE TO BUY APPLE?

With a rising share price as I write, it's probably no surprise that Apple is still a ripe target for takeover and alliances. Companies currently being mentioned include: Oracle, who have a database-oriented, networkcentric, setup; Motorola, whose MacOS clones are apparently selling very well; and even past bidders such as IBM and Sun. I think we've been here before...

#### • RESOLUTION

After extolling the virtues of a larger monitor elsewhere in this month's column, and then mentioning the MacOS7.6.1 update, I need to mention a final side effect which concerns both!

If the resolutions available to your AppleVision 1710 or 1710AV series display monitor change after installing MacOS 7.6.1 to only the default 640 by 480 setting, then Apple's workaround is that you do a 'clean install' of MacOS 7.6 (or use the native video support). PCI-based Power Macintosh computers should be okay — this should only affect NuBus-based computers. You should also check that you have version 1.5.2 of the AppleVision software.

# TIP OF THE MONTH

This month's quick reminder is for two boring tasks that you probably keep putting off...

- . Do a virus check of your MacOS computer NOW!
- Make a backup of your important data files
   NOW!

for edit tools, loop monitoring, easy zooming, and a 'Virtual Keyboard'.

It supports mono and stereo AIFF audio files with sample rates of up to 48kHz, as well as MSDS, Roland S-series, Yamaha SY99, and Akai sample dumps. It can use Opcode's *OMS* (v1.2 upwards) for its MIDI connections, and even allows MIDI sample playback control using a 'Virtual Synthesizer' module. The application is a Fat binary, and so will run on both 68K and PowerPC MacOS computers — and it's available in English, Italian and Japanese versions.

And for all this the price is a mere 30 US dollars — less than 20 quid! So if you've been put off by the cost of sample editors for your MSDS-based synthesizer or sampler, try supporting a fellow Mac musician and programmer from Italy. You can get the program from:

- http://www.harmonycentral.com/Software/Mac
- http://www.synthzone.com/dsound.htm
- Compuserve's MIDI Forum
- Any of the 'Info-mac' database mirrors (use Alta Vista to search)
- Mac Shareware CDs: try http://www.amug.org/amug/store/order.html

# **HOW IT WORKS**

After all the performance enhancement tips that I've published over the last few months, it's time to take a break and look at something else. So to temporarily close the series, here are some final thoughts.

# ON THE NET

One of the best uses for the World Wide Web is in publishing information that changes frequently — when printing on paper would produce huge volumes of out-of-date information. Technical advice about problems and solutions for MacOS computers fits very neatly into this area, and Apple publish a wealth of information about their products in the Technical Support Online (TSO) section of their web site. The basic URL is:

http://support.info.apple.com/tso/tso-home.html

You can also access Technical Support Online by clicking on the Technical Support button which you can find on:

http://www.info.apple.com

In Technical Support Online, you'll find frequently asked questions (FAQs) and their answers, and details about important software updates, as well as forums where ideas, problems, and solutions can be discussed.

Chuq Von Rospach, who calls himself a Software Gnome and Apple Server Marketing Webmaster, said in a recent email to an Apple announcements mailing list: "Please wander down to the support boards and try them out...These discussion areas allow you to post questions concerning problems you experience with Apple products. They also allow you the opportunity to help someone else by posting a response to a question". As examples of some of the things you can find, look at this month's 'Apple News In Brief'.

Apple's WWW Tech Support pages start here...

http://support.info.apple.com/tso/tso-home.html



# Technical Support Online

Desktop Computers
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Mac OS & Applications Servers & Networking

- If you have a 68K-based Macintosh, and you never use System 7 features such as aliases, the 'recent' folders, drag-and-drop clippings etc, then you might well find that your Mac will run much faster if you use the last of the System 6 operating systems: 6.071 or 6.08. You may well have the original floppy disks with one of these old operating systems all ready to install. Before you do this, make sure that your current software will still run many of the newer pieces of software require the internal features of System 7 (for example, Opcode's Vision v3.0, Galaxy v2.0, and Max v3.0 require System 7.01 or higher).
- If your MacOS computer is running really slowly when you're using the Finder to display files and folders, then go to the Views control panel and look at the 'Calculate folder sizes' option. It should be off turning it on will dramatically reduce the speed with which the Finder displays information about your folders. If it is on, turn it off and stand well back.



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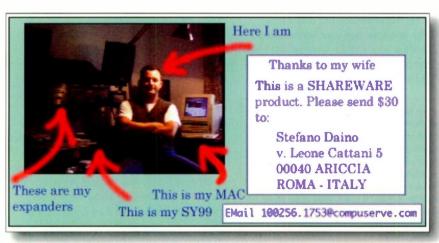


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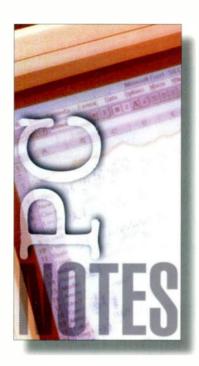
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#### Ambrosia Software's ColorSwitch.

- Perhaps the simplest and easiest way of improving the performance of a MacOS computer is to put it into black and white display mode: two colours only. You can either use the Monitors control panel, or one of the many menu-bar shortcut utilities I use. Ambrosia Software's excellent *ColourSwitch*. One some MacOS computers, this simple change can give huge increases in speed and for most music sequencing software I reckon that you rarely need all that colour and three-dimensional shading.
- One very effective way of improving your working environment may actually slow your MacOS computer down, but you might be prepared to put up with that side effect. Replacing that 14-inch colour monitor's 640 by 480 pixel display with a modern 17-inch display (around £500) could easily double your screen area which saves you from all that searching for buried windows, and lets you see more of the music at once. You will need to check that your computer can cope with a larger monitor first, of course!



Stefano Diano's homepage.



This month's hot topic is processors — lots of them! MARTIN WALKER goes into OverDrive.

any computer owners exist in a permanent state of creeping featuritis - very rarely content with their current hardware capabilities, and always looking forward to the next upgrade. Part of the problem is that, due to economies of scale, today's luxury becomes tomorrow's necessity, and no sooner have we bought our latest toy than the next generation arrives. Nowhere is this more obvious than in the world of PCs, where the intense competition drives prices ever downward and makes dealer margins ever smaller.

Intel's latest MMX processors are a case in point. Suddenly, many people feel the need to upgrade existing machines or buy new ones, either through feelings of system inadequacy or even anger at Intel for daring to introduce a product 'better' than their existing one. However, despite its excellent potential for the future, what does the MMX version actually give PC owners now, beyond the basic 10% speed improvement over the standard Pentium chip? Apart from a few games, and a couple of enhanced graphics

entium

packages, very little software is yet available that takes advantage of the new features, and of course software developers will have to be careful to ensure that their latest masterpiece still has good performance on the vast majority of non-MMX machines out in the field.

One of the most important features of music software is its stability - when you spend so many hours using the product, the last thing you want is a hastily released MMX-compatible upgrade with all the stability of a novice tightrope walker. Nevertheless, if you're thinking of upgrading your PC anyway, then it's only sensible to opt for an MMX processor but don't forget that some mail-order suppliers will offer you a trade-in price for your current processor (and more if you buy the new processor from them as well). This must be better than putting the old one in a cupboard and forgetting about it.

## **MMX OVERDRIVE UPGRADE**

Many of the most recent motherboards can use MMX processors as direct plug-in replacements for their existing processor, but only f they allow 2.8V operation (see your motherboard manual, or ask your supplier whether you have MMX compatibility). If not, you may be interested in the new MMX OverDrive chips,

THE MMX CRYSTAL BALL even if the Mac version did come first! Emagic have no specific plans to release new versions of Logic I quizzed several manufacturers about their future with MMX support, as far as their UK distributors plans for MMX products. Steinberg are currently Sound Technology are aware; in fact, Sonic Foundry, more concerned with finishing their Cubase VST the makers of Sound Forge, think that MMX is a bit of a red herring altogether for high-end audio, since it processes parallel 16-bit data streams. With the advent of 20- and 24-bit audio, MMX is not ideal. and their boffins predict that MMX will not be adopted widely for high-end PC audio software

which are now available as direct plug-in replacements for Pentium 75, 90 or 100MHz processors. There are two models available: the first takes a Pentium 75MHz or 90MHz processor to 125MHz MMX or 150MHz MMX respectively, and the second upgrades a 100MHz processor to 166MHz MMX. Each is basically just a normal MMX processor with a voltage regulator to provide the required 2.8V supply. Talk seriously to your supplier before taking the plunge, as the OverDrive chips cost about £100 more than the standard MMX versions: if you do have an older motherboard. you may get more of an improvement by buying a standard MMX processor and a new motherboard for the same total price. The advantage of the OverDrive is that it only takes five minutes to install.

#### AMD K6 MMX PROCESSORS

Meanwhile, the other processor manufacturers are not resting on their laurels. AMD have, in the past, tended to target the lower end of the market — last year they introduced the K5 series, designed as lower-cost replacements for Pentium 100 and 133MHz processors. This time they've leapfrogged the competition by introducing a threat to Intel in the shape of the new K6 processors, which started to ship in April. These are designed to out-perform Intel's follow-up to the Pentium Pro — known as the Pentium II (although still widely referred to by its development name of Klamath), which is



due to be launched in May.

Both the Pentium II and the K6 use designs based on RISC (Reduced Instruction Set Computer), renowned for high speed. Each instruction is translated into a small number of RISC operations, and the overall efficiency of the translation will determine how fast the processor will run. Intel have optimised the Pentium Pro and follow-up Pentium II for 32-bit operations, resulting in a processor that's slower than normal Pentiums when it's running 16-bit code (this is why Pentium Pro machines always run the primarily 32-bit Windows NT operating system, rather than Windows 95). AMD, on the other hand, have ensured that the K6 works well with both, giving it wider application. The K6 also incorporates full MMX

model than in producing an MMX version. Cubase VST is due for an August '97 release, and this will be the first version native to 32-bit Windows 95. Now they've shown what improvements are possible by taking this route with WaveLab - real-time EQ and effects - this should be a major step forward,

implementation (under licence from Intel), but Intel did take exception to 'MMX' being emblazoned on the K6, and tried to prevent AMD using the term in advertising. A federal judge has denied Intel Corporation's request for a temporary restraining order while legal proceedings are considered. Cyrix are still working on their forthcoming M2 processors, but are providing MMX compatibility for these by re-engineering the code, rather than using identical licensed code from Intel.

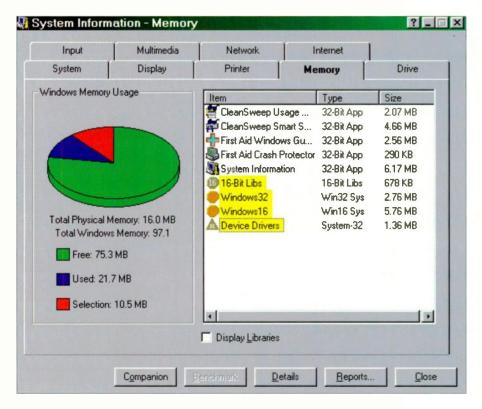
Versions of the K6 are initially available at three speeds - AMD-K6-166, AMD-K6-200, and AMD-K6-233 — and there are promises of yet higher speeds to come. Much is made of their full compatibility with the Pentium Pro range by AMD, but Intel have opted for a completely new physical design for their Pentium II, which sits on its own plug-in circuit board with a larger associated cache memory. Although the performance of the II is extremely good, a completely new motherboard design is needed to accommodate this new plug-in board. In contrast, the K6 range will plug into most existing Pentium motherboards as a direct replacement for a standard Pentium, but giving better than Pentium Pro performance. As long

# TINY TIPS

It's amazing how many little PC tips you pick up over the years - little tricks that I use all the time meet with blank stares of incomprehension when other people see them, and the inevitable 'How did you do that?' swiftly follows. First up, for all those who entered the PC arena post-DOS: at any time during bootup, you can pause the screen by pressing the key marked 'Pause/Break' (above the cursor keys). This is one way to give you time to actually read the screen full of data provided by your BIOS, which details the hardware it's found as well as listing the results of processing the AUTOEXEC.BAT and CONFIG.SYS files - which in turn tell you whether your soundcards, CD-ROM drives and so on have been configured correctly. Press any other key to resume when you are ready.

Hands up all those who usually press the Apply button after changing something in a dialogue box, and then press the OK button to exit. Actually, the only difference between the two is that OK also shuts the window. Apply 'saves the changes you have made without closing the box'. OK 'closes this dialogue box and saves any changes you have made.' So, pressing Apply then OK is superfluous — just OK will do exactly the same thing!

Most of you will probably already know that you can change the width of data columns in programs such as *Explorer* by clicking and dragging (the cursor changes to a dividing line with horizontal arrows when you move it over the column position). What you may not have realised is that, if you double-click at this position instead, the column width will automatically adjust to exactly the correct width to show whatever data is in the column.



Using the System Information utility provided with Norton Utilities (reviewed in April '97) shows that Windows 95 itself used 10.5Mb of memory in my machine for library functions and drivers (the highlighted entries). With only 16Mb of RAM, it's hardly surprising that when an application was loading as well, lots of shuffling to and from the swap file occurred, slowing operation down. With 24Mb or, preferably, 32Mb, you should experience a much smoother ride between applications.

as the motherboard supports the necessary supply voltage, the only change needed seems to be for the BIOS to correctly report the processor name — no functional changes to the BIOS are required.

Initial tests of the K6 must be worrying for Intel, as not only do AMD's 166 and 200 versions out-perform the equivalent Pentium MMX models, but they are also perilously close to Pentium Pro performance even when running Windows NT, without having to use a different motherboard. As always for musicians, compatibility with standard Intel designs seems to be as important as anything else, but the K6 could be an interesting option, especially as the competition should force all processor prices to drop. All things considered. AMD look set to do extremely well with the K6 range — if music software manufacturers can give us the OK, it should be well worth contacting your supplier to see whether your current motherboard is up to scratch.

# THANKS FOR THE MEMORY

This month I upgraded my PC's RAM from 16 to 32Mb — memory is not likely to get any cheaper than it is currently, at around £60. Besides, many people have claimed that having the extra 16Mb is more worthwhile than getting the next higher processor speed; for any of you out there wondering what the

results really are, here's what I found.
First of all, as I fully expected, it's extremely unlikely that this kind of upgrade will make a single application run any faster, unless it's so big that it won't run effectively within your existing memory. After all, adding memory makes your PC bigger, not faster. My initial findings are that where you will get big improvements is in loading speed. The load time for *Cubase Score v3* on my machine went from 11 seconds to just four!

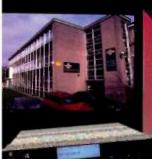
When you're running more than one application simultaneously, you'll see huge improvements in the time taken to switch from one to another, which makes it a lot easier when you're running sequencers and synth editors, for instance. This improvement is because Windows 95 has to spend far less time shunting data back and forth to the swap file, which acts as virtual ('pretend') memory when needed. Having more RAM available means that the swap file itself also becomes much smaller — since upgrading I have found anything up to 10Mb more space on my hard disk, previously taken up by the swap file. If you find, after booting up and before you run any applications, that you have a swap file that is already several megabytes in size (Windows 95 itself swallows quite a few megabytes for system files and drivers), then you'll probably benefit greatly from a memory upgrade. 505

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# DEREK JOHNSON gathers together more Atari-related news, products and tips.

n March's Atari Notes, we looked at two pieces of software from Electronic Cow - MIDI Arpeggiator and Sound Chip Synth — both of which have now been upgraded. The most interesting aspect of v2 of the 2-track, 16-step MIDI Arpeggiator is that it can now run as a desk accessory, allowing you to use it alongside your MIDI sequencer. Other enhancements include an individual track flip-transpose mode, new manual, duophonic parameter editing and four different duophonic algorithms (the duophonic option, remember, adds a computer-generated part to the other two). The increase in facilities has necessitated an increase in price, from £10 to £15 (plus £1.50 postage and packaging). But that's still cheap software by anyone's standards.

Sound Chip Synth v2.31 (which stays at £10 plus postage for the moment) now comes with speedier sample export routines, faster

processing of sounds, STE/TT/Falcon DMA chip digital audio playback, a choice of sampling frequencies and a new manual.

#### **COWABUNGA!**

Completely new from Electronic Cow is Snippit Synth, a 'granular' synthesis package for any Atari, costing just £16 plus postage. Granular synthesis is an esoteric sound generation system, for the most part confined to the research departments of universities. It's certainly not a feature of much generally available synthesis software, for any platform. The theory behind granular synthesis has been around since the late 1940s, and proposes the creation of sounds from very small sonic events (called grains), each of which is given its own frequency, amplitude and time position. These events are then combined to form the finished sound. In practice, much trial and error is necessary before useable results can be extracted, but start with the supplied examples, and experiment. It's worth the effort. The final result can be saved in 8- or 16-bit AVR, SPL or AIFF formats, or dumped via MIDI Sample Dump Standard to a compatible sampler or synth. The one significant drawback, for STFM users anyway, is that audio playback is only available if you use a DMA-equipped STE, TT or Falcon. Demo versions can be located at Electronic Cow's web site (http://dspace.dial. pipex.com/town/terrace/abi91/cownet.htm). Otherwise, contact them by post at: 350 Broadwater Crescent, Stevenage, Herts SG2 8EZ, telephone 01426 281347 or email electronic\_cow@dial.pipex.com.

## **FALCON FOCUS**

Sol Barnett, Technical Director of Sunrise Systems (their Falcon-based digital audio workstation is reviewed on page 226) has generously supplied us with a collection of useful tips aimed at Falcon users. Thanks, Sol.

- Use Cubase Audio Falcon v2.06, the latest, bug-free version of Steinberg's software, and defragment your hard drive before recording.
- Make sure your Falcon has had the proper clock modification done; without it, you'll have problems with digital noise and using SCSI hard drives. Remove the lid and you

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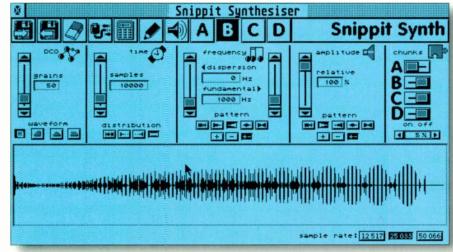
Issue 5 of AtariPhile, the Internet mag for Atari/TOS users, is now on line (at http://www.walusoft.co.uk/fff/). Staying with the web for the moment, the UK's sole print Atari mag, the subscription-only Atari Computing, is now on the Internet

(http://www.tachyon.demon.co.uk/ac/). You'll still have to subscribe to get the full benefit (and access the cover disk), but the site gives you a run-down of the current issue plus a smattering of news and general information.

should see a small 74f04 chip located near the COMBeL system manager chip and the Falcon's CPU. If this chip is missing, you need a mod. Sunrise Systems can supply a little fact sneet that illustrates the necessary components.

- Make sure you have the latest TOS version; this can be found under the memory board in your machine, and should say 4.04.
- Only run your Falcon in two-colour mode, since Steinberg's Cubase Audio requires all the processing power available. Running in colour overloads the system.
- Keep the number of desk accessories to a uninimum (two at the most), as these also take up valuable CPU time.
- The Auto folder in your Drive C partition should only have programs related to audio

   for example, FDI Int, Blow Up Boot and Metados. Once again, you don't want to burden the CPU with non-audio software. If you'd like access to more Auto programs, use a boot selector to control what you need.
- Don't use Screen Blaster with the Falcon, as Cubase and other other audio programs won't work properly; Blow Up 030 works OK.
- If your Falcon has only 4Mb of RAM, upgrade to 14Mb. RAM is cheap at the moment, and Cubase Audio (which needs the best part of 4Mb to run) uses RAM to buffer audio during recording and playback. This is due to the way the Falcon's audio system has been designed to stop data loss and overruns. The machine crashes if no buffer memory is available.
- If you have problems playing audio through audio expanders such as the SA800 or FA8, check that the related audio mixer's controls are assigned to DSP in the audio mixer maps.
- For full 8-track Cubase Audio operation, you need a very high-spec hard drive I recommend the 2Gb Micropolis 4221, which matches the Falcon's 8-bit SCSI controller perfectly. Other drives work OK, especially if you're just using a few tracks, but suffer from audio pops and clicks, and can even crash when the machine is pushed to its full performance.
- Use AHDI Vision v6.06 with the SoundPool driver; this new update offers many bug fixes and support for larger hard drives.
   Alternatively, use HD Driver v6 or higher.
- Never play with the NV RAM in your Falcon unless you know what you're doing. This contains boot-up information and, when reset, can cause booting and hard drive problems.



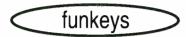
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Emu's latest swingbeat sample player is home to a colony of wicked sounds for hip-hop, trip-hop and acid jazz fans.

DOMINIC HAWKEN puts on his space suit to explore this strange new world...

ver since the launch of the original Emulator, Emu have maintained a high profile within the pro sound industry. Their samplers dominate the American market, and their range of sound modules has also found a place in many studios and keyboard racks. The recent release of the Orbit dance module, an extensive collection of classic sounds and breaks, took the concept of the sample player one stage further, including MIDI-clocked rhythms and built-in sequencing options; now the Planet Phatt effectively re-packages the Orbit, with a range of samples geared specifically to the hip-hop, trip-hop and swing-beat market.

Utilising Emu's long-standing programming experience, the Planet Phatt is a 16-part multitimbral module which employs the same successful design standards first applied to the Proteus range of modules. The unit contains a wide selection of bass and synth sounds, from dreamy organ settings to cutting Moog-style lead presets and sinister FX noises. On the drum front, the Phatt is equipped with Emu's 'Beats' system, featuring 100 usereditable drum loops stored in memory. These can be synchronised to a MIDI clock, and edited with the

built-in 'X-Factor' control to produce an almost unlimited array of new grooves and patterns. All the sounds can be adjusted with filters, modulation and MIDI-sync'ed LFO parameters, and then stored for future use. The module also includes three stereo outputs for external processing, and the usual array of MIDI parameters for use with a sequencer.

In performance, the module can stand alone as well as being used for external MIDI sequencing: there's memory space for up to 28 songs, which control the various beat programs and loop or jump between different patterns. In addition, when it's used with Emu's Launch Pad Performance Controller, the Planet Phatt becomes a self-contained 'groove machine', with an array of velocity-sensitive drum pads and MIDI controllers all interfacing seamlessly with the module to allow easy programming and sequencing of song data. (See the separate 'Launch Pad' box for a detailed description.)

# **INTERNALS**

Sample players such as the Phatt are excellent tools for songwriting and arranging. When you have instant access to such a vast array of different patches, all geared towards a particular style of music, there's no need to fumble through your disk library before you can start work. Although a dedicated sampler may provide a greater degree of control over the individual sounds, plus extra programming facilities such as cross-fading and time-stretch, the processing power included within Emu's new modules extends their capabilities so far that they rival the power of sampling systems costing many times the price — and that power is coupled with a huge range of sounds.

EMU PIANET PHATT

As with other Emu multitimbral modules, up

PLIANES VALUE PHATET

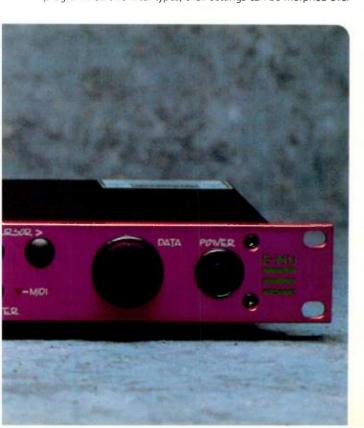
The Survey System PHAT

to 16 individual sounds can be programmed to play concurrently, and any sound can be changed and auditioned on the fly. It's when you start editing, however, that the Phatt really excels: Presets within the system each have a 'primary' and 'secondary' Layer, with each layer containing a complete set of parameters to make up a sound. Presets are organised into five different banks, each containing 128 Presets. Three of the banks contain modifiable factory-set sounds, and the other two are available for you to store modified programs and patch data for later recall. Naturally, you can decide which waveforms, from the 480 on offer, you want to assign as primary and secondary Layers and, once assigned, the primary and secondary sounds can be stacked together, or cross-faded and switched in various ways to produce changes in timbre. Lastly, as the icing on the cake, up to four presets can be linked together, so that more than one can be available across the

# "The filtering section in particular offers radical control over the timbre of each sound."

keyboard simultaneously. These linked presets can overlap each other to produce layered sounds, or be set to operate between different keys to produce split settings.

Although most users will initially take advantage of the built-in patches, and set them up to play across various MIDI channels, the Phatt offers a great deal of control over the make-up of each sound, and it's worthwhile reading through the detailed manual and experimenting with each sound to produce alternative versions. The module contains complex filtering and modulation controls, as well as a number of adjustable sample parameters which can radically alter each preset and produce new and interesting sounds. All of the most common parameters have been included, and the filtering section in particular offers radical control over the timbre of each sound. Emu have employed their Z-Plane filtering system (as used on their Morpheus synth), which can not only change its settings over time — as a sound progresses — but is also capable of 'morphing' between different states. This system includes settings to cover cutoff, resonance and full parametric control. Once you've programmed two filter types, their settings can be morphed over





# Emu Plane<del>l</del> Pha<del>ll</del>



"There's a whole host of favourites on board the Phatt, all available for instant recall and editing without any worries of memory constraints or disk space."

the course of the sound, and also controlled using an external system such as the Launch Pad, or from an LFO or external keyboard. Virtually all the settings can also be adjusted using MIDI System Exclusive commands, so that you can record edits into a sequencer and play them back to adjust sound settings in real time, for the ultimate in creativity.

In 'Beats' mode, the Phatt turns into a programmable drum machine, working with loops as well as individual drum sounds. These loops are not sampled, but are MIDI sequences stored in the Phatt, so that when you change loop tempo, the pitch of the loop is unchanged. Also important in Beats mode is the 'X-Factor' — a type of transpose function that replaces the individual drum sounds with others, thus completely changing the feel of a loop. Subtle use of the X-Factor produces mad combinations of fills and percussion-based loops, all of which relate to the original break and flow seamlessly together. When the Phatt is used without a sequencer, an internal MIDI clock allows the various loops to be programmed into a song (complete with looping and jump points), and the synth section of the unit can then still be accessed to play parts over the top — excellent for live work. Adding a Launch Pad offers extra real-time control over the beats and sounds, with a number of data sliders and wheels that can be assigned to alter various parameters. The Launch Pad also generates a MIDI clock to drive the beats section, and gives the user a tape-transport-style interface, with controls such as Play, Record and Rewind to handle the sequencer functions.

# **CONTROLS AND CONNECTIONS**

Once they've got over the vivid colour scheme, anyone used to operating the Proteus or Vintage Keys range of modules will find themselves at home operating the Planet Phatt. The standard volume control and headphone socket sit at the left-hand end of the control panel, and editing is achieved via a single data wheel and five edit buttons, which move the cursor around the two-line LCD that defines the internal parameters. Usefully, the display is backlit, and can be adjusted to be fully visible from almost any angle, so the Phatt can be mounted right at the bottom of a pile and still be easily monitored. The six main outputs are fitted to the rear of the unit, and accessed via standard unbalanced jack sockets. Designed as stereo outputs (although the main sockets defer to mono if a single lead is plugged in), the sub outputs have a further, if familiar, trick up their sleeve: if a stereo jack plug is used, the ring of the plug acts as a return to the main mix output, and in this way the sub outputs can be used as effects sends, returning the resulting signal back to the main stereo outputs. Mains power and MIDI In, Out and Thru are also available on the rear. Although in most studio environments you won't need to use the effects sends — you'll connect the outputs directly to a mixing console — their addition is a useful afterthought, and will no doubt prove invaluable to many live players.

## **PROGRAMMING**

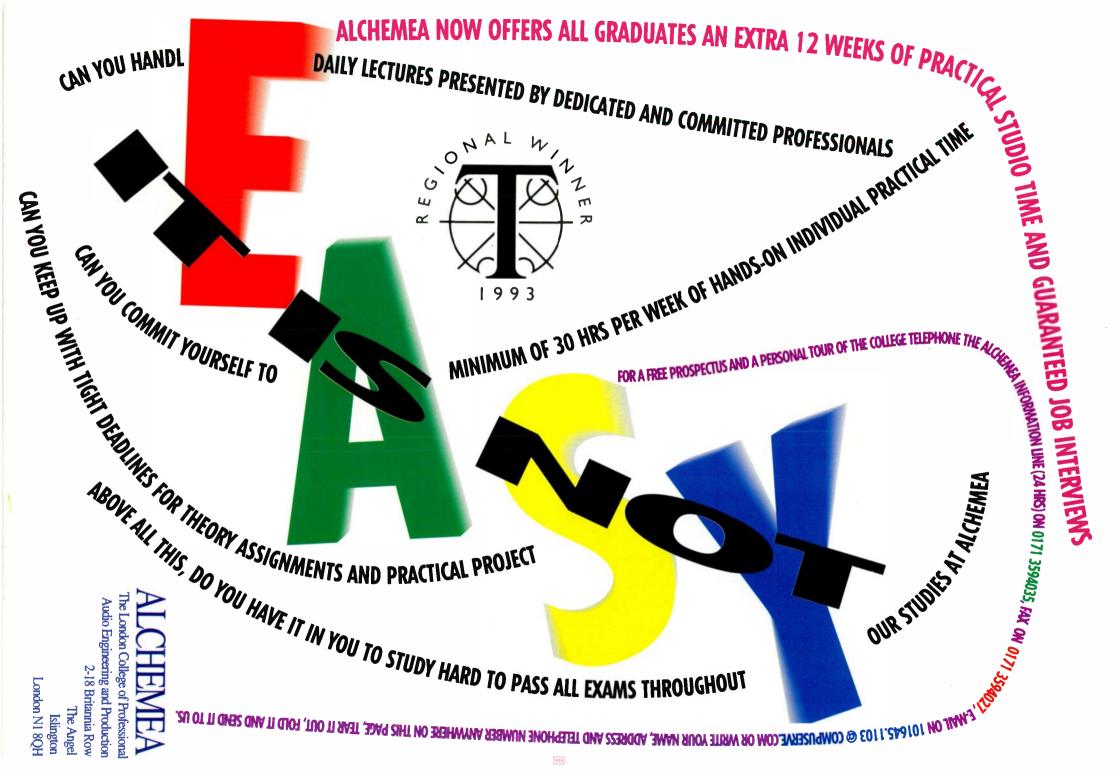
As I mentioned above, the sound presets on board the Phatt are made from a combination of both primary and secondary instruments, and different presets can be linked to produce layers of up to four different patches. The simplest way to combine sounds is by utilising the keyboard split, where

"It's when you start editing that the Phatt really excels."

different sounds play across different key ranges. To do this, a single preset is assigned a range of keys over which to operate, and then linked to other presets which cover the empty keys. You could use this, for instance, to set up a bass sound over the bottom two octaves, and a piano and string mix over the higher ranges. Larger sounds can be created by assigning different presets over the complete keyboard, and mixing or crossfading between sounds to produce rich and vibrant new patches.

In addition to the basic mix of presets that's possible, the individual Layers can be modified by filtering and modulation. The filter parameters on board the Planet Phatt are far more comprehensive than those found on much of the competition, with an adjustable 'pole' setting which affects the steepness of the cutoff slope acting on the sound. In this way, the filter can emulate the basic 'buzzy' sounds of a cheap analogue unit, as well as the tight, digital alternatives available on today's modern modules. This is a great addition to programming facilities on the Phatt, as many of the sounds used for hip-hop and swingbeat tend to sound fairly 'crusty' in the first place — no doubt as a result of their being sampled from old and scratchy records. The ability to apply a gritty filter across the sound enhances this quality further, and makes the Planet Phatt sound more like an analogue tool than a slice of modern technology. That said, the six-pole filtering that's also on offer sounds sweet and clear, so if true definition and accuracy is required, the Planet Phatt is only too happy to oblige.

Parametric filtering is also possible: a range of frequencies can be defined, and cut or boosted at varying strengths and bandwidths. To adjust more than one range, the filters can also be 'cascaded', creating complex filtering curves and effects. The morphing facility allows different filter settings to crossfade into each other as a sound progresses, with each filter smoothly interpolating to the next — Lexicon's Vortex effects unit, released a couple of years ago, did something similar. Another way of altering the sounds is through the use of modulation, driven from an LFO, or from the keyboard and velocity settings (which key is



# Emu Plane<del>l</del> Pha<del>ll</del>

"Phatt with a capital
'F' is the order of the
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also on offer."

pressed, and how hard the note is struck). These values can be assigned to any number of internal parameters, from the pitch of the sample to the bandwidth of the current filter. Other modulation sources can be accessed with the Launch Pad, or by setting up some real-time MIDI controllers using your sequencer. These can be set to affect the cross-fade times and filter frequencies, as well as

most of the other major parameters within the module.

Lastly, some extra parameters are also available to the user, allowing low-level control of the preset samples: 'Delay Time', which varies the time between a MIDI note being received, and a sound starting; 'Start Point', which denotes where in the sample the sound begins to play; pitch; portamento; and 'Reverse'. which forces the current sound to play backwards. Added together, these offer a great degree of flexibility when you're tuning the sounds to a particular track or mood. With the addition of the SysEx implementation, it's possible to program dedicated mixer maps in a good sequencer to allow graphical editing, or use the Launch Pad to vary any of the parameters in real time.

#### **SOUNDS**

In reality, it doesn't matter how many amazing editing features are available on any MIDI module if the basic source sounds don't live up to expectations. As the Phatt's name suggests (not to mention the 'Swing System' tag, promoted by Emu in its advertising literature), most of the sounds are geared towards the trip-hop, swingbeat market that Acid Jazz and First Avenue, not to mention many others, have promoted to great effect in the UK charts. Phatt with a capital 'F' is the order of the day, with big ballsy bass sounds and summery Moog-style leads that blend happily together, driven by the host of loops and hits also on offer. As far as I could tell, as well as producing their own recreations and samples of some of the classic instruments in use at the moment. Emu have mercilessly plundered their record collection — there's a whole host of favourites on board the Phatt, all available for instant recall and editing without any worries of memory constraints or disk space. Some of the most impressive are the multisampled sections, with a great selection of guitar licks and strums, plus loads of acidy noises and hits ideal for adding depth and ambience to any track. They've even included a selection of vinyl-style 'needle noise' samples for that true '70s sound. There is also a fine selection of scratches and tape-stops, all spread across individual notes and easily edited to blend with different styles; perfect for hip-hop.

In the percussion department, the loops cover a wide range of styles, and the 'X-Factor' control

is great for introducing strange fills and breakdowns, especially when inspiration is lacking. Because the loops are programmed with the internal sounds, they tend to sound somewhat similar after a while, but the ability to alter the tempo and control the transposition means that there are thousands of combinations to work with, so the novelty's unlikely to wear off.

The samples for keyboard are impressive too: they're all programmed well, with very few glitches across the keyboard spans. Lead sounds, pads and classic old-school noises have all been attended to, and the result is a positive treasuretrove of useful patches. Admittedly, a few of the sounds are a little on the thin sound, but all of the 'must haves' are on board, and for sheer quality and innovation the Planet Phatt is hard to beat. If I had one complaint about the unit, it would be that some of the sounds are a little on the dull side, tonally speaking - something that I've always thought about many of the sound modules on the market (with the exception of the now ancient Roland U220). On the Phatt, however, this isn't so much of a problem, as crusty, cutting sounds with loads of bass and high-mid frequencies are the order of the day.

#### CONCLUSION

If you take it as a multitimbral or solo sound module, there's little bad to be said about the Planet Phatt. The patches are excellent — and certainly one step ahead of the competition, where 'safety first' is often the main consideration when the sound library is put together. Buying the unit is analogous to buying a great sample CD, except that all the samples are immediately available without the need for a sampler, and any sound can be filtered and edited with the excellent analogue-style control section. The beats section offers a great selection of rhythms, ideal for songwriting and generating ideas even if they don't guite cut it on the final mix, and the individual sounds available as on-board patches are excellent — they're sampled well and cover the entire frequency spectrum. Using the Phatt as your main instrument, you should be able to produce great tracks, without the presets sounding weak and inferior; use it in conjunction with an expanded keyboard rack, and you'll probably never be stuck for that elusive sound still missing from the chorus. An excellent addition to Emu's ever-expanding range of modules and other than that, the only recommendation I can make is that I'm buying one!

#### LAUNCH PAD

The Launch Pad is effectively a MIDI performance controller. designed to interface directly with the Orbit - Emu's dance-based module - or the Planet Phatt, although its functionality can also be used to good effect with any number of the MIDI modules on the market. Rather than being a specific keyboard replacement, the unit offers a number of other MIDI controllers (data wheels and sliders, for example), which can be programmed to send specific MIDI data to alter some of the more obscure parameters available within today's modules. When you're using a master keyboard alone, it's often possible to adjust only the pitch-bend and modulation settings; adding a Launch Pad enables you to edit sounds and settings in real time, recording them in the same way as specific note data. The unit also offers a built-in MIDI-clock generator, together with Play and Record controls, so that it can be used as a master controller for sequencers, or the Beats section contained within the Planet Phatt. (See the October '96 issue of SOS for a full review of the Launch Pad.)

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So what do you have to do to be in with a chance of winning this great prize? As usual, there's a set of trivially simple questions to answer, plus the obligatory witty and amusing tie-breaker to compose. Entries should be with us no later than 30th June 1997.

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ROLAND DEP5 multi-effects vgc, £200 ono; Roland D110, boxed as new £180. 20 0181 390 2700

ROLAND SRV 2000 reverb £225 ono; Roland V110 sound module with three cards including drums, percussion and synth £200. 22 Mick 0191 426 1307.

ROLAND U110 £150; Lexicon LXP15 £450; LXP5 £200; D110 £150: wanted TC2290, Akai MPC60 Tony Glidewell, 1 Tame Road, Oldbury, Birmingham, B68 OTA

SAMICK SM820 8-channel mixing desk, 3-band EQ, pan, monitor and effect controls, phono line insert and mic channels. Home use only £130. # Paul 01902 352497

**SOLO MIDI 16:8:2** Soundtracs studio mixer, as new £1550♥ 01323 736017 or 0402 333570.

SONY D7 portable DAT, same as D8 except for 44.1 analogue in £350; CD3000 sound library CD-ROM promo for Akai samplers £30. © 0181 870 0523 or 0181 944 0391.

SONY TCDD3 portable DAT, spares or repair, nearly new head. Unit is dead, not internal fuse, bargain only £30 for case, adaptor unit, manuals. \$\infty\$ 01386 832961. SONY DTC1000 DAT machine, vgc £450; Alesis microlimiter £75; Decca PPMs £100; Mackie Mixermixer, new £75; Studior rack cabinet 120 £75; Tannoy 10-inch mon gold £200. \$\infty\$ Alan 01379 676670.

SOUNDCRAFT FOLIO SI 18:2 mixer, rack version £300; Ultrafex II £150; Digitech TSR12 reverb multi-effects 24-bit £200, all home use only. The Neil 01268 750236.

SOUNDCRAFT SPIRIT STUDIO 16:8:2, 18 months old, home use only, any trail, 32 channels on mixdown £750 ono. The Neil Studies of the Neil Studies

SOUNDCRAFT SPIRIT STUDIO 16:8:16:2 4-band EQ, 5 aux, 40 inputs on mixdown, boxed with manuals and PSU, as new £700 ono. \$\pi\$ Kesh 0181 340 7503.

SPIRIT FOLIO 12:2 6 months old, hardly used. Sale due to upgrade £225; Also vanous looms and patchbays (unbalanced) cheap. # Mark 01952 273862 after 6pm. SPIRIT FOLIO F1 mixer, 16.2 boxed, mint condition £350 ono; Novation Drum Station, brand new £399 ono. # Rob 0161 256 1548

STUDIO MAGNETICS AR2400 24-track 2-inch tape machine, immaculate, hardly used, very high quality, similar size/specification to Atari MX80, 9 memories, autolocate remote £4500, consider part exchange, WHY. # 01482 448767.

STUDIOMASTER SERIES 5 16:8:2 mixer £450; Soundcraft 1-inch 8-track recorder plus noise reduction and looms £550. 

■ Tony 01206 735324 ansaphone.

STUDIOMASTER SESSIONMIX GOLD 8:2 mixer, full flightcase, manual, excellent condition £225 ono # Peter 01827 880091

STUDIOMASTER TRACKMIX 32:12:24 Serious recording desk, six auxes, 3-band EQ (swept mid and low), full-size faders, stand included £1800 ono. © Simon 01428 653756.

TASCAM 38 analogue 8-track, vgc, with manual, box and test tape £595. ≠ 01323 736017 or 0402 333570.

TASCAM 38 half-inch 8-track, Alice 12:4/8 mixer, 8V/U monitor, Revox 877 (15/7.5), stereo limiter/compressor, Roland TR808, all with manuals, fully serviced, un-gigged, unblemished (one owner) serious offers. # 0181 688 2211.

TASCAM 38 Half-inch 8-track plus remote £600 ono; Hill 16:8:2 console £350 ono; Bell 8-channel DBX £100 ono; All excellent! Plus cables etc, will exchange for sampler/outboard toys. ☎ 01737 210848

TASCAM 488 8-track Portastudio, excellent condition, never moved, new headphone socket, offers around £550. #2 Rob 0116 251 0405 day 0116 276 1242 eves.

TASCAM 488 MK2 8-track Portastudio, bought new Aug '96, excellent condition, boxed with manual £580. 

Graham 01423 771440

TASCAM 644 Portastudio £425; Alesis Nanoverb £120; Roland JX3P and PG200 £375; Kawai R50 drum machine £75 All as new, boxed, manuals. © 0113 230 5036

TASCAM BR20T quarter-inch, 15ips timecode, full pro spec, IEC/NAB, switchable reel sizes etc £500. 

Rob 0973 332027.

TASCAM MSR16 multitrack recorder, dbx-type 1, synclock, varispeed insert and location points. Includes head demagnetiser and 16-way loom £1700. Will swap for Pentium PC. © 01462

TASCAM MSR24 Studiomaster 24:16:24:2, DP/4, Vitalizer, RA100, JBL 4208, Studer 867, Technics cassette, Roland R70, 12 mics, 12 stands, little home use, quick sale £12,500. # David 01243 641604.

TASCAM M3700 24-channel automated console including stand £3500; Tascam DA88 including SY88 £2500; Tascam DAP1 DAT £950; EMU Vintage Keys Plus £550, DBX 1066 £350. #0181 245 0928. TASCAM PORTA 07 Mint condition, boxed with PSU & manual, little used, 6 months old, owner upgrading £200. #01785 823204.

TC ELECTRONIC 1210 Spatial Expander, great-sounding time domain processor, see retro review in SOS Feb '97, an extremely rare secondhand buy, will accept £750. 

### Julian 0115 914 2433.

TC ELECTRONICS M5000 £2000 ono; Akai MPC3000 sampling drum machine

sequencer £1700, Mackie 24:8:2 desk £1900 ono, Akai \$2800 sampler, onboard 80Mb hard drive £1100 ono, everything boxed, vgc # 01856 874785.

TEAC A3440 4-track, requires attention/use for spares £150. ♥ 0181 806 2376.

TOA MIXER 18 channels, built-in delay, flightcased £500; Sony ECM979 professional stereo microphone £175, all in excellent condition. ■ Simon 01252 795100

YAMAHA MD4 mini-disk, 4-track recorder, new, unused £800 ono # 01483 562810.

YAMAHA MD4 4-track mini-disk recorder, boxed with manual, in mint condition plus 6 data disks, selling due to upgrade £725 ☎ Graeme 0161 797 4305.

YAMAHA NS10M studio monitors, immaculate, the studio reference standard, as new complete with boxes and manuals £250. \*\* Jon 0121,449 6603. YAMAHA NS10M nearfield monitors in great condition, the industry standard, yours for £195. \*\* Julian 0115 914 2433. YAMAHA PROMIX As new, 6 months old £1175, also various looms and patchbays going cheap (unbalanced). \*\* Mark 01952 273862 after 6pm.

YAMAHA TX81Z sound module, multitimbral, great sounds, fully editable, a classic piece of equipment in immaculate condition, hardly used, with original box and manual £170.  $\Rightarrow$  01482 448767.

#### SAMPLERS

AKAI CD3000XL v2, SCSI, 10Mb built-in CD-ROM, will record plus play back CD-ROM plus audio CDs, analogue inputs, 10 outputs, 30 FX, mint condition, manual receipt, new ASR10 needs the room £1100 = 0171 736 8823.

AKAI MPC2000 sampling sequencing drum machine with 18Mb RAM fitted, bargain at only £900, no offers. ≈ 01709 880379

AKAI \$950 sampler, absolutely immaculate, hardly used, expanded, 8 outputs, manual, sound library £725. 

□ 01482 448767.

**AKAI \$2000** plus 8 output board plus 10Mb, mint, boxed as new £800. # Jim 0966 122934/0973 132493.

AKAI \$2000 Absolutely brand new, never used, genuine offer, band separated, boxed with manuals and disks, still sealed, £600 \$\infty\$ Steve 01203 732703

AKAI \$3000 Internal FX, 10 outs, bargain £900; Yamaha Promix 01 with rack fittings £1150, Roland Juno 60 with case £250. 

Andy 01482 448674.

AKAI S3200XL Fully expanded, 6 months old £2500; Akai S3000XL, 32Mb, one month old £1500; Akai S1000PB, 8Mb £600, Sampson E62 EQ, 31-band £150; Ultrafex 2 £100, TR505 £100. ♥ Steve 01273 413766

AKAI 53200 16Mb spec includes second filter board, effects board, digital/optical in/out, hard disk recording, SCSI, better sampling quality than XL-series, as new (boxed) £2500. © 01494 556056 day 0171 2240920 eve.

CASIO FZ1 keyboard sampler, 16-bit, 8 outs, manual £425. 

James 01257 276780 or 0161 2735127.

CASIO FZ1 sampling keyboard, eight outs, cut off and resonance filters, large display screen for quick and easy looping, truncating etc. £550. 

John 01592 644471.

CHEETAH 5X16 16-bit sampler with eight outputs plus library £325; Atari 1Mb with Vestax monitor £150; Boss D5330 GM sound module £150. # Dom 0121 633 4242 or 01494 562714.

EMU E64 Mint condition, hardly used, with warranty. Latest software, dual SCSI, sequencer, 64-note polyphony, boxed with Emu CD-ROMs and disks £1300. 

■ Jon 01788 813907.

EMU E64 SAMPLER 10Mb SCSI etc, as £1500. **±** 01902 657223.

EMU EMAX IITurbo sampling keyboard, 8Mb, loads of processing, must go, offers Martin 01580 763094.

EMU ESI32 sounds available on floppy

or zip, classic analogue and digital waveforms, great for all styles of electronic music \*\* Roy 01843 845057

EMU ES132 8Mb v2 0 software upgrade, Emu disk library, boxed with manuals, immaculate, home studio use only £1100 ono. # Paul 01902 352497.

EMU ESI32 boxed with manual and disks, excellent condition, great value for money £850 ono. 

Norman 0171 978 5501

EMU ESI32 digital sampler, 2Mb RAM, unused, boxed, manuals £750, Korg X5 synth, extra sounds, perfect condition, boxed, manuals £450 # 0113 294 0170.

ENSONIO EPS16PLUS Sampler keyboard

waveboy 24-bit effects sequencer memory expander 200+ disks, comprehensive manual, excellent condition £795 or swaps. # 01228 45982

ENSONIQ EP516+ RACK sampler workstation, includes sequencer, excellent assignable multi FX, filters, easy sampling & programming, free sample library, tapes and CD, must sell, bargain £550 ono. 

■ Rob 0116 251 0405 days 0116 276 1242 eves

FAIRLIGHT SERIES III Waveform supervisor, revision 9.34 (1992) 2.1Gb hard disk, 14Mb RAM, 16-bit stereo, 17 balanced outputs including all manuals, perfect condition. #Tory 0181 239 8474 PEAVEY SP (sample player) rackmount module 4Mb, 4 outputs, SCSI, 16-note polyphonic as new with manual, expandable to 32Mb £265. # 01933 678608.

PEAVEY SP sample playback, over 100 disks, offers; Akai ME80P 8 MIDI ins 10 MIDI outs, offers; C-lab Notator SC, offers: \$\sigma\$ Jon 01482 650674 or 0976 839759.

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ROLAND \$760 boxed, never used, plus new system software and leads £995. © 01843 851084

ROLAND COLOUR MONITOR 14-inch display with special RGB cable, suitable for samplers 5750, 5760, 77, 550 and 5330 etc. Good condition, can despatch £85 #0181 668 6077.

ROLAND \$760 £1100 ono, Roland MK\$70 £600 ono, AHB G\$316 desk £1500 ono; Fostex M80 8-track £500 ono, Tascam DA20 £600 ono, Excellent condition. \$\pi\$ 0151 6817304

ROLAND W30 sampling Workstation, 8 outs, filters etc. £700; Ensoniq Mirage sampling workstation £220; Korg EX800 analogue module with MIDI £150. \$\pi\$ Paul 01604 471566.

ROLAND W30 workstation, manual, stacks of sample disks, excellent condition £695 \$\infty\$ 0191 421 8893

YAMAHA SU10 portable sampler, up to 54 seconds' sample time, filters,scratch modes and ribbon controller, with 2 CDs, PSU, boxed as new £200 

■ Neil 01268 750236.

YAMAHA TX16W sampler, 16-note polyphonic, 10 output filters, like Akai, with Typhoon operating system, top sampler, a bargain £400 ♥ Simon 0161 438 0109

YAMAHA TX16W 12-bit stereo sampler, 1.5Mb, 10 outputs, 16 filter types, comprehensive modulation matrix etc. Includes superb Typhoon operating system bargain £475. 

Martin 01244 376446

#### DRUM MACHINES

AKAI XE8 module, boxed, mint, plus 2 cards £140 ono; Korg KPR77 analogue drums plus case & manual (DIN sync plus trigger in & out) £100 ono, four 4Mb 30-pin SIMMS £75, will swap for rack-FX. 

0121 622 2743.

ALESIS HR16B One owner from new £95. # Chris 0181 894 7306

ALESIS SR16 drum machine, excellent sounds, easy to use, as new condition £130. 

Will 0115 955 4715 or 01629 812181

BOSS DR550 MK2 16-bit drum machine, complete with original box and all instructions, excellent condition £100. 

□ 01869 347204.

BOSS DR660 with 32 kits including 808 plus 909, 255 sounds, effects, two stereo outs £200; Roland TR626 with manual £50, home use only. # Neil 01268

KORG S3 rhythm workstation £200;



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NOVATION DRUM STATION 909, 808 clone, mint condition, home use only, 10 outputs £350 or swap with SH101 with CV. © 01708 704927.

ROLAND R8M rackmount drum module, three soundcards including 808 drums, eight seperate outs, manual £350. 

□ 01353 860252.

ROLAND R8 drum machine with USA power drums, card and manual, excellent condition £350; Fostex R8 8-track recorder with manual £750. \$\pi\$ 0.1303 257714. ROLAND R8 drum machine, excellent condition with extra RAM and £320 poor.

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ROLAND R8M module, immaculate with four cards, 808, contemporary percussion,

four cards, 808, contemporary percussion, jazz, brush, dry, as new complete with box, manuals £420 ono. ♥ Jon 0121 449 6603.

ROLAND TR909 as new £650; Matrix 12 £1000; TB303 £350; Midimoog Rack £700; Jupiter 8 MIDI £700; Prophet V MIDI rack £800; Wanted modular systempascal. © 0181 7714720.

ROLAND TR808 £450; Prophet 5 MIDI £995; CR800 £150; CR68 £150; Roland Juno 106 £450; Oberheim MIDI 088 £995; Jupiter 6 MIDI £695; Bit99 £250; Oscar MIDI £795; TR909 £975; Kenton Pro 4 £395; Rhodes Roma £995. 

□ 01813

STIX SR88 £95; ST305 £125; CR68 £125; CR78 £250; Oberheim DX CV/MIDI £195; SD59 £150; Sequential Prommer £50; JSQ60 £40. © 01372 745494.

YAMAHA RY30 Fully programmable drum machine, four outputs, resonant filters, four additional soundcards including dance, good condition, box and manuals £250 ono. 

■ Gavin 0117 973 9534.

#### SEQUENCERS

ALESIS MMT8 sequencer £110 ono; Oberheim DSX 8-track sequencer £100 ono; Technox £450; Ensoniq ESQ1 £150 ono; BassStation Rack £350 ono; Roland S10/E-S. \* Chris 0116 236 6057/0850 740962.

ROLAND MC50 sequencer, boxed with manuals £150. © Geoff 01540 673675. ROLAND MC303 Groovebox £450; Yanaha SU10 portable sampler £200, both new and boxed complete with sample CDs. © Sean 01353 688470.

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ROLAND TB303 with Philip Rees MIDI £695 vgc, no offers. = 0116 255 7057.

ROLAND TB303 complete with handbag £600; Roland RE501 Chorus Echo £400; Tascam 688 8-track MIDI studio £800. = John 01705 477757.

YAMAHA QY20 sound module/sequencer, boxed, case, video £200; Novation mother keyboard (MM10X), ideal QY20 companion £100. \$\tilde{x}\$ Keith 01703 320966.

YAMAHA QY20 pocket workstation, boxed with manuals and PSU, light home use only £225. \*\* Andrew 0131 228 5291. YAMAHA QY20 with PC library software (SQYD) and promotional pattern collection, boxed with manual £219. \*\* 01565 633313.

#### **COMPUTERS/SOFTWARE**

**486 ELONEX PC** with sequencing software, Cubase, Cakewalk, Band-In-A-Box, 600Mb hard drive, 8Mb RAM, Quad CD-ROM, Roland SC1 soundcard, Windows 3.1, Microsoft Works, bargain

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4Mb 30-pin SIMMS 70ns, 2 for sale £20 each. ≠ 01869 347204.

ATARI 1040STFM with hi-res monitor, Cubase software £200; Boss DR660 drum machine, includes 808 and 909 kits, effects on board £200. ♥ Danny 01462 455648

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ATARI 520STFM computer, with memory upgrade board installed; 1Mb RAM fitted, easily upgraded to 4Mb, with mouse, still great for MIDI, £120. Sorry, no monitor, so don't ask! © 01354 695239.

ATARI HI-RES MONITOR Surtable for Cubase/Notator/WP software, two monitors for sale, 14-inch screen with sound, as new condition, can despatch in original carton £90 each. © 0181 668 6077.

ATARI 520 upgraded to 1040ST, monitor, mouse plus Emagic Notator SL £150. ₱ Paul 01782 312270.

ATARI 1040STE 1Mb, hi-res monitor, Cubase prog £145. ★ Vinny 01142 208659/0976 956055

ATARI 1040ST4Mb upgrade 144sm, high-res monitor, extra external floppy drive, Gesteimer 270Mb hard disk, modern/MIDI, extra 16 CHM. Forget me clock £350. 

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ATARI ST/E software wanted, especially Replay 16, Stereo Master, Notator have lots of software to sell/swap. © 01484 667828

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9 01869 249995.

ATARI ST SOFTWARE: Steinberg Synthworks D50; Steinberg Masterscore 2; Steinberg Avalon; AudioCalc 1.05; UIS 3: That's Write 2.07: Fastcopy Pro: Ultimate Virus Killer 6.0; STOS Games Creator: ST Basic (Metacornco): Superbase Personal; Personal Finance Manager Plus; Games: Sim City; Populous; Leader Board Birdie; Diablo; Buggy Boy; 10 Star Games Pack (10 disks). All software legit, with manuals and boxes, some unused; loads of games; Atari 1040ST, no monitor, spare mice, cables, ST power supply, joysticks, switchers; Otocom OS18224A Miracle WS4000 (V2123) modern; 180 ST magazines; Rediffusion RSR50 multi-satellite receiver, with remote control, instructions and RDC50 positioner. = 01225 462286.

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CUBASE V3 Atari ST including dongle, manuals, boxed £200; SynthWorks D110 edit software, Atari ST including dongle, manual, boxed £60; Lexicon MRC MIDI controller including manual, boxed £150. \$\times\$ 0116 243 4338.

CUBASE XT V3.03 £250; Cubase Score V/3 £100; Warez V5 £25; Novation Drum Station £310; Korg Prophecy £700 software for PC, redundancy forces sale. Wike 01494 438965.

DR T'S COPYIST professional scorewriting program, Amiga £20; Dr T Tiger Cub music software £15, both new. ☎ Alan 01379 676670.

EMAGIC NOTATOR LOGIC software for Apple Mac, Steinberg interface, manual, instruction video. # 0161 366 7449.

FINALE 2.2 for Windows. Powerful music notation program with MIDI facility, bargain price £100. 

■ 01582 761864.

MUSIC QUEST MPU401 PC MIDI card including diagnostics and utilities disk £25; Musicator MGW1.00 for Windows 3.1, sequencer and notation software £20. 

■ Ian 01484 646242.

PENTIUM 60 PC computer, 24Mb RAM 540Mb EIDE hard drive, Ensoniq soundcard, Matrox video card, Roland speakers, Cubase vs1.01 mint condition £800. \*\* Graeme 0161 797 4305.

PRO TOOLS III Nubus £3500; 882 1/0 £550; 2Gb AV-drive £400; Quadra 800 plus 21-inch screen £900; Nuverb plus TDM Board £1100; Logic TDM £60; Bass Station Rack £275; JV1080 £800 ono. 

121 449 8024.

STEINBERG AVALON universal sample editor with 16-bit D/A converter for Atari ST/STE, complete with dongle and manual £150; XR300 SMPTE/MTC synchroniser £100. © Graham 0181 640 5280

STEINBERG MIDEX PLUS for Atari, SMPTE read/write with 2 MIDI ins and 4 MIDI outs £250.  $\Rightarrow$  01302 360767

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□ 1604

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CAN THE PERSON FROM SOUTH AFRICA who was asking for a Prophet VS RAM please call Duncan (your ad was in April '97 SOS). # 44 0121 4442681.

CARVER PT2400 POWER AMP 3000W RMS, cost new £2461, accept £950; Dynamix series 3 24:2 PA mixer, mint £395; Terralec 500W RMS mono power amp chassis, as new £150; Beyer TGX480 £125. © 01379 676670.

CUSTOM-BUILT GUITAR Maple mahogany, two octaves, full access neck, '65 Les Paul pickups, ebony board, hard case, swap for sampler, outboard, ok WHY & 0.1733 371773

FUNCTION JUNCTION MIDI patchbay, 16 in 16 out £295; Akai ME30P II MIDI patchbay, 4 in 8 out £175. © 01865 776587.

HEWLETT PACKARD 140A, dual-trace oscilloscope, offers; consider swap for any musical equipment. Boss BI1 bulk librarian £40. = 01484 662828.

JV SQUIER STRAT Black with rosewood fingerboard & trem £275. © 01323 736017 or 0402 333570.

KORG WAVESTATION ROM CARDS Dreamwaves voi 1 and vol.2, superb sounds on these cards £30 each, £50 for both. \$\infty\$ Dave 01642 459355.

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PEAVEY KB300 keyboard combo amplifier £250; Roland U20 keyboard case £350; Roland KR33, case, manual £300; Roland Pv50L volume pedal £20; Elka bass pedals case £50. \$\infty\$ 0161 366 7449.

PHILLIP REES 5x5 MIDI switcher £35; Acoustic guitar pickup £12; Cakewalk Express sequencer £15; Alesis Microlimiter, inc PSU, £35. ♥ Steve 01827 58913.

POWERTRAN ETI VOCODER 14 filters, quirky but fun £275 ono; Korg MS10, mint £150 ono. Wanted: access programmer. © Kev 0113 253 6601 day 01924 470384 other.

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ROLAND RE501 tape/echo £375; HH MA100 amp £150; OHM 4x10 speaker cabinet £50; Roland Juno 60, excellent condition £300. Various other items for sale. # 0956 357418.

ROLAND PG200 programmer, good condition £100. # 0181 440 2121.

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Mark 01706 345648.

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□ Graham 01942 814818.

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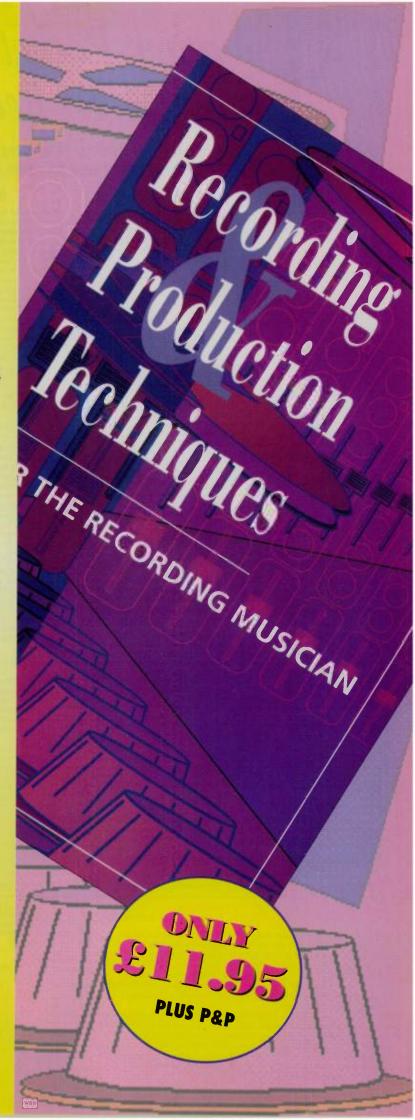
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- Merges 2 MIDI signals into 1 Handles System Exclusive • Merges on all 16 MIDI channels
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 Improves signal to minimise data errors.
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pitch-bend operation • Combine data types
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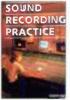
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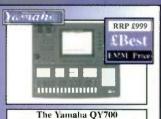
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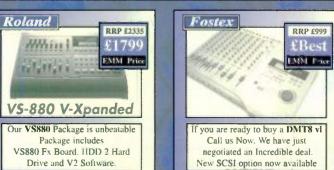
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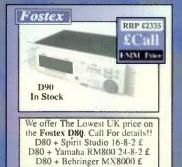
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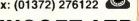
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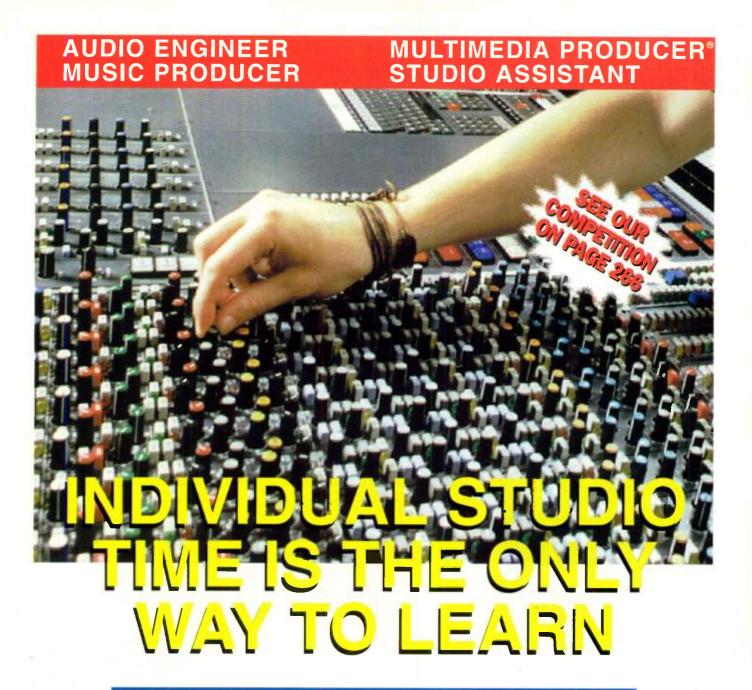
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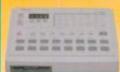
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hen I used to work in middle-of-the-road restaurant bands playing Continental music, one of the highest compliments a keyboard player could receive was 'Shut your eyes and you'd think you were listening to an orchestra...'. You, of course, were not. What you were probably listening to was a fistful of Elka string sounds in the left hand and a Fender Rhodes piano theme in the right. Obviously, the string

machine didn't sound like an orchestra — and was none the worse for it. What it did sound like was a unique electronic

instrument, one that gave

Continental pop music exactly
the right feel. My personal
favourite was the ARP
Quadra strings and I always
loved, but didn't have
access to Roland string and
choir sounds. In fact, the very
name 'string machine' is just
right — an electronic instrument
that fulfils the same role as a string
section but uses different, electronic,

sounds. In any case, most pop string arrangements just consist of sustained chords or some sort of counter-theme — very different from the sophisticated writing you'll hear on, say, Frank Sinatra records, for which real string sections are essential.

In many ways, the early keyboard setup of mid-'70s jazz-rock players was a classic combination of electronic keyboard sounds: Fender Rhodes piano, a solo synthesizer such as a Minimoog, a string machine, and probably a Clavinet as well. None of these sounded like other instruments, even if they were intended to; they were new sounds. Likewise, the drum machines failed to sound like real drums, but became classic for what they really were: new electronic sounds. Electro wouldn't have been the same without the TR808 or DMX. As for the 909 kick drum, the story is so well known that I don't need to repeat it here. This is the ideal state of electronic music: electronic sounds are used because what's wanted is — electronic sounds.

Unfortunately, the technology got better, to the point where electronic instruments could imitate real, acoustic, instruments --- not very well, but enough to convince a lot of people. Now house, techno, and drums and bass use sampled strings and digital pianos, but the majority of their sounds are electronic, and the producers mix established sounds of the idiom with new sounds produced through programming or processing. Listening to this music, there's no doubt in your mind that you're listening to electronic music, from the 909 kick drum, distorted house organ, and scratching, to the everpresent filter sweeps, often over an entire section of a mix. Even though expression is put into dance music and the producers do often aim at a human feel, the overwhelming sensation is that of machine music, and it's all the better for it - it's genuine, true to the instruments, and, by being uniquely electronic, often transcends the medium. The good producers, composers and remixers work within the strict

limitations of the style creatively.

But compare this with the often terrible arrangements, synthesized versions of acoustic lead instruments, and artificial sampled strings of straightforward pop and television music. Even the drum sounds are wrong — they're supposed to sound real, but are obviously machine-made. Why would anyone who has worked with real musicians choose a synth substitute? And why should the music business be able to get away with things other businesses can't - could you add flavouring to sparkling mineral water and call it champagne? Could you put a fibreglass imitation of an Italian sports car body on an old Austin A40 chassis and pass it off as a Ferrari? When you imitate a real instrument, you're using something fake and cheap in every sense of the word. Why not use an unique electronic sound instead? Well, one reason seems to be that we don't really like genuine electronic sounds any more: what we like is a cheap imitation of an acoustic instrument with an electronic gloss on it. The other reason, of course, is money.

These days, the keyboardist's compliment should be 'Shut your eyes and you'd think you were listening to an orchestra, until you open them and see that you're only paying for one musician'. You can cut the cost of professional studio work if you use synthesized sounds instead of real ones: you don't need musicians or an arranger. Studios, composers and companies who can afford to use real instruments have very little excuse. Apart from a not-very-well-paid New Wave group I knew some time ago who claimed that they used a drum machine because drum machines do not have girlfriend problems, the reasons for using synthesizers are neither amusing nor convincing. Among the excuses I have heard are that someone couldn't get a harp up the stairs to the studio, or that the arranger made a bad job of the string parts and so a session was wasted. No one will admit that the real reason is stinginess.

And it's not just the professionals. Recording in your bedroom, you can have all the instruments you desire, albeit in an artificial, not very convincing, form. (You could add a synthesized orchestral track, a soya burger, and a blow-up doll, and have the complete ersatz evening.) You can't afford to employ large numbers of musicians? Neither can I. But musical opportunities are immense in every area. If it's only possible to employ one musician other than yourself, use the strengths of that duo rather than bemoaning weaknesses. Think how many classical composers wrote for solo instruments or duos through choice — unaccompanied cello, violin and piano, flute and harp. There's great music for string quartet; fantastic tunes for solo guitar. Would the classic '50s Miles Davis Sextet have been better if they'd been seven? Would the Art Tatum, Bill Evans or Keith Jarrett solo recordings have been better with another musician added?

So throw away your General MIDI modules and your sample CDs of string orchestras and ethnic instruments. Using your synthesizer to replicate 'real' instruments, or looping a sample, should be a last resort. If you want an instrumental sound, use a musician. And if you can't get a musician, think of something else. You've got the technology to extend your musical palette: electronic sounds are unique and wonderful, and the possibilities they offer a composer are immense.

Synthetic strings, artificial oboes, machine-made drums... lan Stewart wants us to stop faking it and get real — or go all the way and fake it completely.

lan Stewart has been a freelance composer and musician since 1978. He has written pieces for saxophone quartet, soprano and tape, saxophone, piano and string orchestra, stereo tape, and soprano sax, cello and piano, and has had his work broadcast on Radio 3 and performed in Amsterdam, Zürich and London and on BBC TV.

If you'd like to air your views in this column, please send your ideas to: Sounding Off, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 &SQ.

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