# SOUND ON SOUND

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all into any well-stocked pro audio dealer's store and you'll find a number of different multitrack recording systems, mainly digital, all using different hardware and different storage media. Not so very long ago a typical music studio was built around an analogue mixer and an analogue multitrack recorder, and even though tape formats were not always compatible, the common currency in professional circles was generally 2-inch tape running at 15ips with Dolby A noise reduction. Analogue tape is far from perfect as a storage medium, and as the 'sticky shed' saga has illustrated (wherein tape degenerates under certain conditions and becomes sticky and unplayable), archiving is not without its problems, but if it's properly cared for, an analogue recording will remain playable for many decades. What's more, with a little TLC and regular servicing, the machines required to play analogue tapes will last seemingly indefinitely.

Most digital formats are too young for manufacturers to be able to predict an accurate media archive life, so most figures are based on accelerated ageing tests, augmented by educated guesswork. Even so, the best-guess figures for digital media longevity don't seem to improve on those of analogue tape — indeed, most manufacturers seem reluctant to think much beyond a decade. There's also the problem of checking the integrity of digital storage media, because while

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analogue recordings deteriorate in a progressive, and largely predictable, way, digital recordings are less easy to evaluate because of the way error-correction hides the degradation from us until it becomes too severe to correct. Of course, it would help if more digital equipment came with sensible error-monitoring facilities.

Perhaps even more worrying than the life-expectancy of the storage media, whether it be tape, magnetic disk, magneto-optical disc or whatever, is the frightening rate at which storage hardware itself is being superseded. Apart



from digital tape, most of the storage systems we use today have been borrowed from the computer industry, and as we all know, six months is a long time in computers. How many people bought Syquest 44Mb or even 88Mb removable drives, only to find now that you can't even give them

away? The newer Syguest 135Mb drive seemed a far more attractive option — indeed, I bought one myself, to store samples — but almost before I'd got it hooked into my SCSI chain, it was deleted from the catalogues and the 230Mb EZ-Flyer had taken its place. This isn't knocking Syquest, it's just the way things are in the computer industry, but it beas the question; will we be able to find any hardware to play back our recordings, even if they do survive for more than 10 years? And even if we manage to squirrel away a few drives in a time capsule, will the connection protocol required to read them still exist in 10 years' time? SCSI has already undergone a number of reincarnations, and at the moment backwards compatibility is good, but what happens when the next big thing, that's 10 times faster, comes along, consigning SCSI to the technological gravevard? As I see it, the audio industry is building its house on shifting sands, and I'm not really sure I want to be around when the tide comes in!

Paul White Editor

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# Crosstalk

Send your letters, queries, tips and comments to: Crosstalk, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.

Our email address is sos.feedback@sospubs.co.uk

The SOS web site can be located at www.sespubs.co.uk

#### Reductio Ad Absurdum?

Keep up the good work on your excellent magazine. I find your gear reviews and feature articles very interesting and useful. But I have a topic to moan about which really bugs me: (Hyper) Depreciation.

I am a hobby songwriter and music enthusiast. I've purchased several new pieces of musical gear in the past two or three years and have accepted that these would depreciate over time. What I am not happy with is accepting the recent trend by some manufacturers towards hyper-depreciation. In fact, although I would like to purchase several items of newly released gear, I refuse to be fleeced by these manufacturers again.

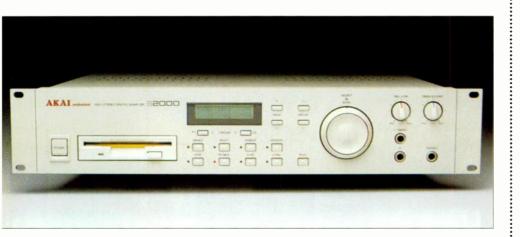
What I am referring to is this: I purchased an Akai S2000 sampler as a bundle with 10Mb RAM a little over a year ago for £850, which at that time was a good price. I now find that you can buy the same gear new with 18Mb of RAM, for as little as £580. Allowing for secondhand values as well, this means that I have lost over half the value of this sampler in about 14 months! And this on a well-regarded item of gear.

What annoys me about this is that somewhere along the line Akai have reduced their prices to retailers, and between them half the current price, maybe then I'll reconsider. But don't bank on it.

Incidentally, I'm aware that this practice is not confined to Akai. I've had a very similar experience with a Korg X5DR. Over two years the price fell from £549 to £329 for a new purchase of this item of gear. I realise that the pound has been strong recently and that this could explain the situation, but the pound was pretty strong a year to 18 months ago! Does this have rather more to do with dubious marketing approaches? I'd like to know.

In conclusion, my message to all potential buyers of new gear is — don't buy until the price hits rock-bottom, which it probably will in a year or so. Make do with what you have and let the manufacturers and retailers fight it out in the pro and studio markets. And while you wait for the price of your next upgrade to fall, write some decent tunes and save your money. Michael Dublin via email

Paul White replies: Yes, it is a pain — I'm the one who paid £400 for a 16Mb memory chip for my \$2000, and now they're about 10% of that price. Most things only really fall in price when they're at the end of their product life and due to



they have passed on precisely nothing to me as a previous customer. I would actually be happy if they had, for example, sent me some sample CDs or offered something by way of recompense. Sure, I have had the use of a piece of gear for a year; however, if I needed to or wanted to sell or upgrade I might as well throw it away. I'd like to purchase an Akai DPS12, but I'm not going to — I'm voting with my wallet. When there's a DPS12 v3 selling for

be superseded, and no matter how bad it is with music gear, it's a lot worse with computers. I don't think anybody is conning anyone, but that still doesn't stop you feeling bad when the resale value of your used gear takes a drastic tumble. The only way to win is to wait until something is about to become obsolete, then buy it at a knockdown price. You can either have it cheap or you can be up to date, but you can't generally have both.

#### Box Clever

I wonder if you or any of your readers can help me with some info on how to go about making the guitar effect that was used extensively by Steely Dan. I think it was referred to as a Voxbox and was, I believe, invented by another of its exponents, Peter Frampton. It was, as far as I can recall, simply a tube held in the mouth, the other end of which was fed a sound signal from the guitar, movements of the mouth adding a vocoder-type



effect to the sound of the guitar. Its use is obvious on Frampton's 'Show Me the Way' and Steely Dan's 'Haitian Divorce'. I think it never really lasted as a practical piece of gear, as unfortunately saliva and lager dribbles from the player quickly made their way down the tube and into the electrical gubbins, with predictable results! However, I really love the sound and would really like to recreate it if someone can point me in the right direction.

Craig Alexander London

We've had your letter for a while,
Craig, but didn't know quite where to
point you — until now. This very issue
carries a review of a box called The
Talker, made by effects specialists
Digitech, that will create a similar
effect to what you're looking for,
but without the drool, for around £250.
It's not confined to use with guitars,
though. Check out what editor Paul
White has to say about it, starting
on page 252.



he new Alesis ADAT XT20 is a 20 Bit Digital Audio recorder offering a new standard in audio quality while remaining completely compatible with the huge foundation of over 100,000 ADATs in use worldwide. Using ADAT Type II, the only modular digital multitrack recording format that writes 20 bits to tape, the XT20 raises the standard of sonic excellence that ADAT recorders have established since their introduction in 1991. Rather than just a 25% increase, the jump from 16-bit to 20-bit recording provides audio quality that's sixteen times more detailed than the 16-bit sound of compact discs, resulting in a wider dynamic range and lower quantisation noise. This, coupled with high quality A-to-D and D-to-A convertors and the lack of any form of data compression gives unparalleled sonic quality.



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## Crosstalk

#### Error Correction

In the Sample Shop column in our March issue, I wrongly stated that the *Korg Universe* support disk (which we didn't review), included with the Akai format CD-ROM samples (which we did review) was for the Korg Z1 synth. I should, of course, have said the Korg Trinity. The mistake was due to a long and complicated typo that started with me hitting 'Z' instead of 'T' (easily done as they're so close), then '1' instead of 'r' (it happens all the time, 1ight?), then typing 'inity' correctly, followed by accidentally hitting the backspace key five times while leaning over to answer the phone. Apologies for any confusion, though it seems most of it was mine! The samples were good though. *Paul White* 

## Module Elation

Recently one of your readers enquired about the availability of 4-channel input modules for a Studiomaster desk [the Series 5]. I have two, which I no longer have any use for. Could you please give my details to your reader? They are both in good condition and working well, and I removed them because I only needed a 16-channel desk in my modest home 8-track studio.

Thanks, and keep up the good work.

Mark Breecher

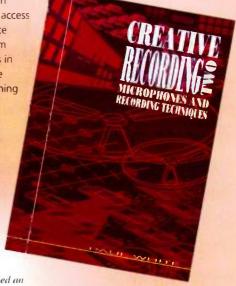
Birmingham

It's nice to see people helping each other out! We've passed on your details and Rich Aitken, who was looking for the modules, may well be in touch.

#### As You Mike It

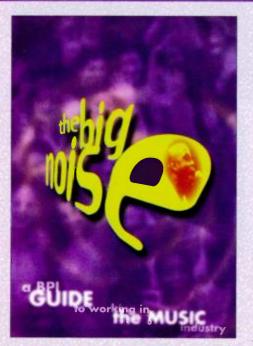
I am a second-year Music Tech student, and although I have access to a large number of reference books at school, none of them seem to cover mic techniques in any great detail. I'm therefore requesting your help in obtaining any text or illustrations on miking of wind instruments, pianos, drum kits, string instruments, acoustic instruments and guitar amps. Ben Newton

We can certainly help you out with some of this information, as mic techniques are covered frequently in SOS. Our November 1996 issue carried an article on miking up and recording electric guitar styles, we covered acoustic piano miking in October 1994. acoustic instrument miking in September 1995, and drum miking in April 1994, and in December 1997 and January 1998 (a two-part series). Back issues, or photocopies of articles where the back issue is not available, can be obtained from SOS Mail Order, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ. Tel: 01954



789888, fax 01954
789895. You could also have a look at Paul White's book, Creative Recording Two: Microphones and Recording Techniques, which has chapters on miking acoustic and electric guitars, drums, piano, stringed instruments, and various types of wind instrument. It costs £9.95 plus £1.95 UK postage and packing, and has an order code of B316 from the SOS Book Shop, contact details as above.

#### Take Your Pic



I am considering a career in writing music for picture (adverts, films, and so on) but am confused as to how to get started. Can you suggest any suitable universities or colleges that specialise in providing courses on this particular area of music production?

Paul Lester

Hereford

We haven't come across any specific college courses for this area of music, but the British Phonographic Institute publishes a very nice guide to music courses run by universities and colleges all over Britain, and there may be something in there that fits the bill for you. The guide, called the Music Education Directory, is completely free, and you can get your copy by writing to BPI Ltd. Savile Row, London WIX IAA, calling them on 0171 287 4422, or faxing on 0171 287 2252. Their email address is general@bpi.co.uk, and their web site can be found at www.bpi.co.uk. You may find, though.

that music for picture is usually covered as a part of more general music or recording courses—
the SAE Technology College (0171 609 2653), for example, touch on the technical aspects of the subject in their diploma course, but don't do a course dedicated specifically to this area.

Likewise, the venerable Gateway college cover aspects of music to picture work as part of their two-year Higher Diploma in Sound Recording, Music Technology and Music Business Studies. This latter course is modular, though, so you could take just the relevant module. You can contact Gateway on 0181 549 0014.

There's also a home study course developed by a company called SFIDA Creative Learning that might interest you. It's called 'Music for the Media' and is apparently "written and tutored by full-time professional media composers". The company advertises with SOS, so check out their ad for more details, call for a brochure on 0181 749 2828, or check out their web site at www stida.com



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# shape of things to come

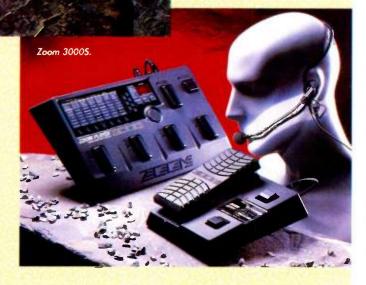
# Fruit of Zoom the Zoom

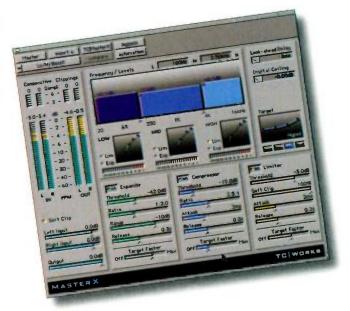
ast month, you may have read the surprise NAMM news that Zoom have released a drum machine (the RhythmTrak — look out for a review very soon). This month we have some news about what the company is primarily known for: effects. The Zoom 503 (£99.95) is a guitar and bass amp simulator, with cabinet simulator and a selection of chorus, delay and reverb effects.

The 503's job is to recreate the sound of famous "industry-standard" amps. It also features a stereo aux input (so you can play along with a CD), and high- and low-impedance inputs.

The Zoom 3000S Performance System (£299.95) is a multi-effects pedal providing 37 effects types (up to nine simultaneously), 80 patches, and built-in tuner. Effects include two simultaneous distortions, "intelligent harmonised" pitch-shifting, talk box effect (a headset mic is provided), and a held delay function (maximum two seconds)

- A Exclusive Distribution Ltd, Unit 10, Furmston Court, Icknield Way, Letchworth, Hertfordshire SG6 1UJ.
- T 01462 481148.
- 01462 481149.





## C for your PC

TC Electronics offshoot software company, are adding to their portfolio of plug-ins for various platforms. New for Pro Tools TDM systems is MasterX (£659), a multi-band dynamics processing plug-in which features integrated multi-band expansion. compression and limiting, all optimised for mastering. An "intuitive" user interface provides a streamlined approach to dynamics processing, and MasterX features accurate level metering with clipping counters and peak hold indicator. A digital ceiling parameter allows the user to precisely limit the maximum volume for mastering CDs, or other types of applications where 'brick-wall' limiting is required. There's also a 'Look Ahead' feature, which allows MasterX to "look into the near future" of a recording for sudden anomalies in the program material, and ensure

that they won't create any audible artifacts.

PC users also have something new from TC Works: a suite of PC plug-ins, for DirectX-compatible audio applications such as Cakewalk, Sound Forge, WaveLah, Cool Edit Pro and Cubase VST PC. Native Essentials (£159) is an entry-level bundle consisting of TC-quality reverb, EQ and dynamics processing. The reverb section of Native Essentials offers a simple user interface: the only parameters you need to set are reverb type, decay time and mix. The EQ consists of three bands of parametric EQ, while the dynamics processing section is optimised for multi-channel use, and can be used with inserts. A mode button allows you to switch the dynamics curve from soft to hard knee.

- A Arbiter Music Technology, Wilberforce Road, London NW9 6AX.
- 0181 202 1199.
- **E** 0181 202 7076.
- W www.tcworks.de

## **Emu play their cards right**

wo new products from Emu are taking the company into new areas. The Emu Audio Production Studio (APS), which was developed in tandem with Emu's parent company, Creative Labs, is based around a Windows 95 PCI card for multi-channel audio (up to 64 dynamically assignable hardware voices) digital sampling and sound design. The card features a new custom chip designed to handle a number of high-level audio functions, including wavetable sampling/synthesis, streaming digital audio, sample rate conversion and simultaneous multi-effects processing. It also features professional-quality analogue and digital inputs/outputs. In addition to the main PCI card, dubbed the E-Card, APS comes with the so-called Audio Access Bay front panel, with balanced quarter-inch connectors and switchable mic/line inputs. The package is completed by a a collection of Emu and third-party software, and support is provided for for two internal MIDI ports.

Emu's new Audity 2000 has more in common with the company's established product line, such as the Planet Phatt and Carnaval synth modules. The press release for the new rackmounting instrument calls it a "rhythmic synthesizer that introduces synthesis and rhythm-generation technologies to give life to your music like never before." More specifically, the Audity 2000 features twelfth-order resonant modelling filters, multiple synchronisable modulation destinations, a 16-channel acpeggiator/rhythm pattern generator, and 24-bit dual stereo effects processor.

The Audity 2000's arpeggiator/rhythmic pattern generator allows you to simultaneously play up to 16 fully synchronised arpeggiator patterns. Patterns can be edited using pattern-flow commands such as delay for two bars, play for four bars, hold for two beats and repeat. Sound-wise, the Audity 2000 is equipped with 16Mb of raw waveforms (which are configured as 256 RAM and 384 ROM patches, with



four layers per preset) and is 16-part multitimbral and 32-voice polyphonic. The rhythmic action is based around the Digital Rhythmic Modular Synthesis (DRMS), a synth architecture which allows each patch to have up to eight LFOs and 12 envelopes (all sync'able internally or via MIDI) controlling the filter, pitch, pan, volume, and more. There are six audio outs, and a stereo digital output, and the sound ROM is expandable. The front panel also offers four real-time control knobs.

- A Emu UK, Suite 6, Adam Ferguson House, Eskmills Park, Musselburgh, East Lothian EH21 7PQ.
- 0131 653 6556.
- 0131 665 0473.



## Quasimidi's rising star

he latest release from Quasimidi is not the long-awaited Polymorph analogue synth/sequencer or Nucleus keyboard, but a totally new instrument. The Sirius expands upon the synth, sequencing and drum machine aspects of the Rave-O-Lution 309 (reviewed in May 1997, with upgrade options reviewed in December) and adds a 4-octave keyboard, vocoder (claimed to be the first included on a keyboard for 14 years) and pitch-bend and mod wheels. A total of 22 real-time controls and 70 lit switches (plus alpha dial) adorns the front panel. The instrument inside offers 28-voice polyphony, 7-part multitimbrality, arpeggiator and an 11-channel vocoder (with 16 presets). The sequencer offers four percussion channels (kick, snare, hi-hat and percussion) and three polyphonic synth channels. The pair of audio outs is joined by a pair of audio ins (these are optional on the 309), and an XLR connector for a mic (to feed the vocoder). Interestingly, the Sirius can be synchronised to external audio — turntables, CD players and so on — with "intelligent beat recognition" via the audio ins.



## Digital converter

he Midiman range of digital tools just keeps growing; the latest entry is the CO2 co-axial/optical bi-directional convertor, which converts S/PDIFformat digital audio coming in on a co-axial connector to an optical output and vice versa. Both outputs are always active, so you have access to the non-converted signal if you need it.



Midiman CO2

A more traditional studio tool is the Audio Buddy dual mic preamp/DI box, with phantom power. This has been designed specifically with the PC soundcard

## with Sparkle



The amicably-named Audio Buddy.

in mind, allowing you to easily plug your mic or guitar straight into the audio In of your soundeard. XLR and balanced jack inputs are provided, as are balanced output jacks. Separate gain control and phantom power switching is available for each

- Midiman UK, Hubberts Bridge House, Hubberts Bridge, Boston, Lincolnshire PE20 3EU.
- 01205 290680.
- 01205 290671.
- 106133.2372@ compuserve.com
- www.midifarm.com/midiman

## shape of things to come

oundtracs have recently completed the fitting out of a new digital demonstration suite at their head offices. The facility, 30 minutes from Central London, is fully equipped to present the Virtua and DPC II digital



desks in both recording and post-production environments. Potential customers can see the desks operating in a working situation, and discuss their individual requirements with the on-site engineers.

- A Soundtracs plc, Unit 21D, Blenheim Road, Longmead Industrial Estate, Epsom, Surrey, KT6 6AH.
- 0181 388 5000.
- 0181 388 5050.
- sales@soundtracs.co.uk
- www.soundtracs.co.uk



Left: GML equipment, now being distributed in the UK by HHB.

## **Mass marketing**

e've just heard that equipment from George Massenburg Labs (see our interview with George Massenburg himself back in March 1997) is to be distributed in the UK by HHB Communications. The company's range includes professional studio EQs and dynamics processors such as the 8200 parametric EQ, 9500 dual-channel 5-band parametric mastering EQ, 8300 mic preamp and 8900 limiter/compressor. Brand new from the company is the 9550 digital dynamic noise filter, which is particularly suited to the restoration of old and damaged recordings, especially for the film industry (it was apparently developed in conjunction with the Walt Disney Company). The 2-channel 9550 is equipped with AES/EBU, S/PDIF and Toslink optical digital connections, and is bundled with both hardware and software remote controls. HHB's range of recordable CDs now

includes the CDR74 Gold P, which features a "white paper-like" surface. This can be written on by hand or printed on by CD-capable inkjet printers. The audio performance of the disk is identical to the non-printable version released last year, The CDR74 Gold P has a retail price of £2.49 per CD including VAT; the original non-printable CDR74 retails for £1.99.

- HHB Communications, 73-75 Scrubs Lane
- F 0181 962 5050.
- sales@hhb.co.uk
- www.hhb.co.uk

Below: HHB's new CDR74 Gold P recordable CD. CDR74IP **唯一主** 

> WARRINGTON WASHINGTON WATEORD GAN WIGAN

London NW10 6QU.

- 0181 962 5000.

SOUND ON SOUND . April 1998

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## shape of things to come

**Blue Chip** pick a Winner



erman company Blue Chip Music Technology have developed a novel approach to guitar-to-MIDI conversion, with their Axon AX100 system. Now available in the UK through Wersi UK, the AX100 offers fast pitch recognition, using a patented neural network. Actually, the neural net works by recognising transient pulses - your finger or pick playing a string - first. Blue Chip claim this results in much faster tracking than systems that work by recognising pitch alone, which makes the Axon particularly suitable for use with bass guitar. In fact, suitable pickups are available for electric.

acoustic and bass guitars, although Roland's popular GK2A can be used.

The 1U rackmounting AX100 controller itself (£699.90) for basic model), available in versions with or without an internal synth board, features an arpeggiator, 128 editable presets, two programmable footswitch and two programmable expression pedal inputs, and a built-in tuner; the SB (synth-board model, £799.90) comes with 480 sounds, 32 editable synth patches. 200 waveforms and three effects processors, and can be added later to a basic unit.

Blue Chip also make a "virtual tonewheel drawbar" MIDI-equipped organ module, the

a sound generation system dubbed Virtual Physical Tone Generation. the OX7 aims to sound like a Hammond B3 or H100, or certain Wersi analogue and digital organs. There are nine drawbars, percussion options, a rotating speaker simulator (separate speed and acceleration/deceleration parameters for horn and bass). virtual tube distortion, vibrato, keyclick and reverb. You can save custom registrations in any one of 32 memory locations.

OX7 (£999). With

- A Wersi UK Ltd,
- 07000 783731.

PO Box 2011, Seaford, East Sussex BN25 2UY.

07000 783732.

E sales@wersi.co.uk

## Virgin's new baby

irgin Euromagnetics have gained retail distribution rights to CDfender, a novel CD-protection system. Not only does the clear polycarbonate film of CDfender, when stuck on, protect a CD from scratches, but it

can apparently also help scratched CDs, whether music, data or multimedia, to play without skipping. The company have also released two types of CDR: the Virgin CDR is designed for one-off recordings, and costs £4 per disc, while the Virgin CDR-W is a rewritable CD costing £18. Special packs of four CDRs and one CDR-W will



be available for £29.99. Both the CDfender and the new CDRs will be launched with a series

- A Virgin Euromagnetics, Salbrook Road, Salfords, Redhill, Surrey RH1 5DY.
- T 01293 776252.
- F 01293 775527.

SOUND ON SOUND . April 1998

Games console manufacturers Suga have recently upgraded their London-Music Lab. The facility now contains what is believed to be the largest Digidesign Pro Tools system outside the USA. Installed on a Power Mac 9500 350MHz muchine, the system harnesses eight DSP cards, with 48 inputs and outputs, courtesy of six Digidesign 882 24-bit Interfaces. Another Mac handles 64 tracks of MIDI sequencing, another runs the automation for their over-sized Mackie mixing system, and one more runs the studio's old 16-track NuBus 48-track. Other nice touches include Mackle's HU! (Human User Interface) for the Pro Tools system, two 9Gb hard drives, and full Dolby surround

Music Lab 0171 388 5392.

As of the beginning of February, Bruel and Klaer microphones now carry the brand of DPA (Danish Pro Audio) Microphones, DPA will continue to service and support the large number of B&K mics already in use.

T Sound Network 0171 890 7070.

Abbey Road Studios have taken delivery of a TL Audio M2 8-channel valve mixer: this joins the studio's collection of TL Audio equipment, which includes a C1 ressor and an EQ2 equaliser.

01462 490600.

A team of "top programmers" is behind a new soundcard for Korg's Z1 multitimbral physical modelling synth. The Contemporary Card (£129) contains 256 sounds, 32 multis and 15 arpengiations, plus complete de sequences to show off all the variations

Brochure Line 01908 857150.

The Audio 98 show, run by the APRS (Association of Professional Recording Services) will take place from November 12 to 14, at London's Olympia 2, This vear the show will include a Saturday, in response to attendees' requests. Look out for Sound On Sound's stand --- we'll

T APRS 0118 975 6218.

SoundTech PS802 Powersource amps have been specified by the US military for use in their latest fighting tank simulator. Military engineers chose a PS802 based on its compact 1U package, light weight and 800W power

7 Smart Sound Direct 0990 134464.

> SOS can be reached at sos.feedback@sospubs.co.uk

Our web site address is www.sospubs.co.uk



## OK for writing letters



## BRILLIANT FOR WRITING NOTES

ractical, sure. Musical, er...well.

For all its qualities, the QWERTY keyboard is not exactly a source of inspiration when creating music.

The new Yamaha QY700 on the other hand is designed from scratch to deliver instant and intuitive access to one of the most powerful composition engines ever devised.

A high resolution, 110,000 note professional multitrack sequencer forms its heart with 32 instrument and 16 accompaniment tracks. And an ear boggling 3,876 preset phrases, covering all styles of music, take the grind out of writing backings.

Non-destructive "Groove Quantizing" templates let you change the feel of the song without losing the original data.

While the 32 part multitimbral XG tone generator offers 480

editable voices and 11 complete drum kits.

There are three on board effects processors too with 11 reverb, 11 chorus and 42 variation

effects including delay, modulation, distortion and EQ.

But thanks to the QY700's brilliant interface, this massive power is at all times under control. Your control.

With a suggested selling price of just £999 you'll want to know more, so call 01908 369269 today for a free brochure.

High resolution (1/480 quarter-notes)... 110,000 event battery backed sequencer memory... 48 track, 64 note polyphonic sequencer... MIDI in\*2, MIDI out \*2... 32 part multi-timbral sound generator... Full voice editing - Resonant filters - LFO and Mono mode... 3 independent effects processors... Database of 3876 phrases let you create 16 track loops (up to 256 bars in length) then apply 100 editable groove templates... MTC synchronisation... DD/HD floppy disk... Footswitch control..



Yamaha-Kemble Music (UK) Ltd. Pro Music Division

## shape of things to come

Earthworks LAB 101 single-channel mic preamp.

Roland UK, in what they believe to be a first in the musical instrument industry, have announced a three-year guarantee for materials and workmanship on all Roland and Boss products purchased after January 1, 1998. The exception is for Boss compact pedals, which already carry a five-year guarantee. In order to qualify, return your registration card within 10 days of purchase; in addition to three years of support, you'll get Roland's In-Touch magazine, as well as news of new Roland products.

Brochure line 01792 515020.

Sound Control, the retail chain with a heavy Scottish and Northern presence, are opening a branch in the centre of Leeds at the end of March. The exact location hadn't been finalised at press time, but the grand opening will be preceded by six days of clinics, workshops and promotions from major software and hardware manufacturers. In addition, Sound Control will soon be making a major move south: the next branch after Leeds will be due to open in Bristol. Watch this space, or Sound Control's ads elsewhere in Sound On Sound.

T Sound Control 0800 525260.

South London label Downtempo has signed Italian artist Guido Zen — his demo was praised by Demo Doctor John Harris back in 1995. A limited 12-inch (23 Guigno) is already out, and a CD is due in April. In fact, two tracks of the eight on the CD actually appeared on his SOS demo.

Korg have released a multimedia driver for their 1212 I/O PCI audio card which can be used in conjunction with sequencing software on PCs. In addition Steinberg have released an ASIO driver which allows all 12 channels on the 1212 I/O to be used by *Cubase VST* on the PC. For the Net-connected, this driver is available via ftp (ftp.steinberg.net/dist/\_support/asio/k org1212io\_asio). The Korg multimedia driver can be found at www.korg.com, although those without internet access can call Korg UK, on 01908 857101, specifying Windows Driver PSD41.

SOS can be reached at sos.feedback@sospubs.co.uk
Our web site address is www.sospubs.co.uk



## Dig this!

arthworks are best known for their omnidirectional mics (such as the OM1, reviewed back in November 1996), but now the company have launched a cardioid model. The Z30X (£975.25 including VAT) offers an on-axis frequency response that's flat from 30Hz to 30kHz, with a "very natural uncoloured sound and mild bass proximity effect".

including VAT) improves on the older TC30K and TC40K models, with the main benefit being lower self-noise (22dB), making it more suited to ambient recording work and delicate sources.

Lastly, Earthworks have released a pair of precision mic preamps — the single-channel, half-rack LAB 101 (£740.25), and the full-rack 2-channel LAB 102 (£1468.75). The specification of both units includes a frequency response of 2Hz-100kHz. Three separate outputs are available, via the precision-stepped gain switch, and a variable gain control allows 20dB of gain



Its front pick-up pattern is like a very open cardioid, with a claimed greater rejection at 90 degrees than most directional mics. The rear half of its pickup pattern resembles a good hypercardioid. It has a high SPL of 145dB, improved noise of 22dB (A-weighted), and is intended for natural, uncoloured close-miking of most instruments and vocals.

Back in omni territory, the new QTC1 (£975.25

reduction. Gold-plated switch contacts are used throughout. Standard features include +48V phantom power, phase reverse, and both XLR and jack connectors.

- Unity Audio Limited, Upper Wheeler House,
  Colliers End, Hertfordshire, SG11 1ET.
- 01920 822890.
- F 01920 822892.
- E sales@unityaudio.co.uk
- W www.unityaudio.co.uk



# The Beyer necessities?

eyerdynamic have released a new family of condenser mics designed for the project studio. All four mics have a large-diaphragm electret condenser transducer, and are transformerless in design. The flagship of the new line is the MCE90, primarily intended for vocal recording. The MCE90 has a linear frequency response and tight cardioid polar pattern, with low self-noise characteristics for an electret condenser (greater than 72dB). The mics can handle very high sound pressure levels. A switchable pre-attenuation pad and a low-cut filter are included,

and the mic can run off phantom power between 12 and 48 volts with no change in performance.

The MCE91 is a hand-held variant of the MCE90, for use on stage or in the studio, and without MCE90's pre-attenuation pad and low-cut filter. The MCE93 and MCE94 are electret condenser mics designed mainly for instrument recording, although they offer all the features of the MCE90 and MCE91. Both mics come equipped with a shockmount to reduce unwanted mechanical noise, and while both run from phantom power, the MCE94 can also be powered by

a single AA battery. Beyer's new mics are joined by new headphones, designed for studio monitoring of digital recordings. The DT831 (enclosed) and DT931 (open) headphones both use neodymium magnets and feature newly developed super-refined steel in the magnetic circuit for extended frequency response. This is also claimed to provide better low-frequency response, even at high audio beyendynamic) levels. Beyer have also designed the 'phones to be comfortable, and a fully modular design allows for MCE91 (above) easy in-field servicing. and MCE90 (right) large-diaphragm A Beyerdynamic (GB) Ltd, condenser mics, and 17 Albert Drive, Burgess Hill, (top right) DT831 West Sussex, RH15 9TN. headphones. 01444 258258. F 01444 258444.

E sales@beyerdynamic.co.uk

# OMDOS NO OMDOS

Sound On Sound Limited, which publishes

Sound On Sound ('SOS') magazine, and EMIS have successfully defeated a civil law claim made in the name of AMP Records Limited. AMP was struck off as a registered company on 13th June 1997. The claim, brought in the name of AMP, concerned the publication by SOS in November 1997 of an article announcing the appointment of EMIS as the sole authorised distributor for Doepfer Musikelektronik GmbH products in the UK.

It was claimed on behalf of AMF in a County Court summons dated 24th November 1997 that the article had caused it £25,000 worth of damage, despite the fact that Doepfer had discontinued its agreement with AMP as its distributor in March 1997, due to poor sales by AMP. SOS and EMIS defended the action on the basis that the published article was true, that AMP had not substantiated its claim (ie. that the claim was embarrassing in the legal sense of the word) and that AMP had been disso ved and so could not bring an action. At the hearing at Cambridge County Court on 11th February 1998, the Judge dismissed AMP's claim. He also ordered that Mark Jenkins, the former Director of AMP, pay the costs of Sound On Sound and EMIS. No-one from AMP attended the court hearing.

Dave Lockwood, Editorial Director of Sound On Sound magazine said, "The claim made in AMP's name was clearly spurious."

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## X-tended life

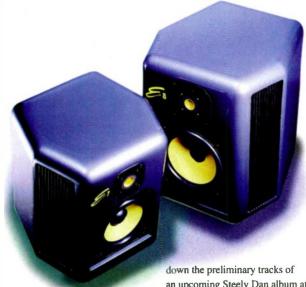
nsoniq have announced an upgrade to their ASRX desktop sampler/synth/ sequencer, reviewed back in September 1997. v2.5 offers the following enhancements:

- Song Mode allows the user to chain sequences into a song playlist;
   Songs can contain up to 128 sequences arranged in up to 200 steps
- Input Record Quantise corrects the timing of MIDI data as it's being recorded.
- SCSI disks can now be copied and optimised.
- SMDI transfer is now available; the ASRX can receive samples via SCSI from any SMDI-compatible application or instrument.
- · Faster ASR10 disk loading.

- WAV and AIFF files can be read from ISO-9660 CD-ROM.
- The ASRX sequencer can now play sounds on external devices.
- Samples can now be time-compressed and expanded.
- A Key Audio Systems Ltd, Robjohns Road, Chelmsford, Essex CM1 3AG.
- 01245 344001.
- F 01245 344002.
- www.ensoniq.com



## shape of things to come



E, by gum

RK's new E8 Exposé powered nearfield monitors (we reviewed the E7 Exposé in November 1997) are already proving popular: Dreamhire in London recently purchased a pair, and they went straight into Masterock Studios for three weeks of mixing by producer Gil Norton. He loves "the power and detail" they bring to his work. In addition, recording engineer Elliot Scheiner will be endorsing the Exposé Series; he plans to use E8s for upcoming mixes for Fleetwood Mac, Toto, Peter Gabriel, and John Fogerty. Scheiner started using his E8s to lay



Elliot Scheiner with his E8s.



down the preliminary tracks of an upcoming Steely Dan album at New York's Clinton Studios. "Although I trusted the monitors I'd been using on every project, including six Grammy-nominated albums," says Scheiner, "I didn't particularly like their sound." With regard to the E8s, Scheiner says, "Everything is distinctly audible and natural. It's pretty amazing how they open up a mix."

KRK will also be showing their new V8 bi-amped powered monitors at the forthcoming Musikmesse in Frankfurt. The V8s feature 8-inch woven Keylar woofers and 1-inch soft dome tweeters. The internal amplifiers drive 130W into the woofers and 70W to the tweeters, via DSP-aligned active crossover networks. Magnetic shielding is included as standard for use in close proximity to video monitors. Add KRK's RoK-Bottom subwoofer for a balanced full-range monitoring system.

Before we close, we'd like to note that the web site listed at the end of last month's KRK RoKit monitors review was incorrect.

Netizens looking for more info on this range of monitors should point their browsers at the URL at the end of this item. Our apologies for any confusion.

- A The UK Office Limited,
  Berkhamsted House,
  121 High Street, Berkhamsted,
  Herts HP4 2DJ.
- 01442 870103.
- 01442 870148.
- sales@theukoffice.co.uk
- W www.krksys.com

## Et Cetera hit the road

t Cetera are going on tour with a PC music hardware and software roadshow. Demos will showcase notation software, hard disk recording and editing, new multitrack digital audio cards and more. Confirmed dates include:

- April 11: Chapells of Bond Street, London.
- April 18: Millennium Music Software, Nottingham.
- April 26: Sofiscotech, Leeds.
- May 5: Sound Control, Glasgow.
- May 8: Sound Control, Edinburgh.
- May 14: Sound Control, Newcastle Upon Tyne.
- May 29: Musical Exchanges, Birmingham.

An event is also planned for Bristol; call Et Cetera for details.

- A Et Cetera Distribution, Valley House, 2 Bradwood Court, St Crispin Way, Haslingden, Lancashire BB4 4PW.
- 01706 228039.
- 01706 222989.
- W www.etcetera.co.uk

Sheffield's Lovebytes Digital Arts Festival covers three days of special events, running from April 23 to 25. A range of multimedia seminars, film screenings, workshops, performances and live music events will be held at the Showroom Media and Exhibition Centre.

A Lovebytes, Unit 320 Workstation, 15 Paternoster Row, Sheffield S1 28X.

T 0114 221 0393. F 0114 279 6522.

Producer/composer Steve Helier (half of duo Death in Vegas) has recently completed work on the soundtrack to the forthcoming film, *Acid House*. Steve used a Korg Z1 for all the Hammond and Rhodes

sounds on the soundtrack, in conjunction with a G4 rotary speaker simulator.

01908 857150.

www.lovebyte.org.uk

London Music Week takes place this year from April 25 to May 1. A live music festival, jointly promoted by BBC Radio 1, Metropolis Music and LMW, runs side by side with a conference and exhibition. Six islington venues will also be home to Undiscovered, an event for unsigned

0171 359 3535. Www.london-music-week.com

Moving Music is running a residential beginner's recording course at Lancashire College in Chorley, Lancashire. Price has yet to be finalised (although it should be under £100), but the date is fixed at May 27 to 29; food and accommodation will be supplied. Topics covered include arranging, mixing, recording, effects and simple MIDI programming. You'll have a chance to get your hands on hardware from the likes of Spirit, Alesis, Yamaha, AKG and Shure. A library of SOS back issues will also be on hand!

01772 335469.





Loops, bass lines and beat boxes - indispensable elements in electronic music. Now Propellorheads joins forces with Steinberg to put a whole new spin on the theme.





A new filter module has been added to the ReBirth arsenal of sonic tools. Switchable between low and band pass, this filter further enhances the sound capabilities of ReBirth and can be routed to any of the two synths or the drum machine.

## Virtual Synthesizer

Two 303 synths, one 808 drum mochine, pattern based sequencing, delay and distortion.

ReBirth is a self-contained program capable of generating sweeping synths, dubby bass lines and stonking drum patterns entirely in the software domain. Just like the real thing, the filters are programmable in real-time and drum sounds can be tweaked with decay and tone parameters

Every parameter can me controlled via MIDI and the program can sync to any midi sequencer. Available for

Matching audio loops to sequences can be time consuming and tiresome. ReCycle has been designed to make this task easy.

ReCycle can match one loop with that of another within seconds. Simply play back a ReCycle midi file from your sequencer to trigger your sampler and change the tempo to

whatever you want. No TimeStretching required. The automatic mapping facilities also make ReCycle ideal for transferring sample I braries fast. Analyse an audio file with a selection of samples and send it to your sampler. Instant key mapping and perfect truncating. PC and Mac.

ReCycle is compatible with the following samplers: Akai \$1000/2000/3000, Roland \$760, Kurzweil K2000/K2500, Emu ESI-32, E-64, E4, Ensonia EPS/EPS16+, ASR10/88, Digidesign Samplecell & Cubase VST 3.5 Mac.

## **Groove Analysis**

## Visualize your Mix

Promotional Videos, Live Performance or Multi-media Production for MIDI musicians.

X<>Pose uses midi for triggering and control of images and QuickTime video footage...Just activate the visual material by playing on a midi instrument. A wide range of effects are also included to allow real-time processing and most of them can be controlled via midi controllers. So even basic images can be processed to create exciting obstract, futuristic, ambient results. X<>Pose is available for Mac, PC version scheduled for the new year.







lacintosh: Power Macintosh 603e processor or better, 66 Mhz or faster, 16 Mb or Ram ystem 7 5 3 or later.

PC: Intel Pentium 75 Mhz or faster, 16 Mb Ram, Windows 95, Direct X compatible sound card



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Unit 2 Borehomwood Industrial Park Rowley Lane, Borehamwood, Herts WD6 SPZ. Tel: 0181 207 5050 Fax: 0181 207 4572

www.steinberg.net

# shape of things to come



## **Net Sales**

econd-hand gear ads are a subject dear to many hi-tech musicians' hearts, so a new free service for users of professional audio equipment is likely to be very popular. Audace, a professional audio technical services company, is offering you the chance to advertise your used gear on their web site, free of charge. Ads will be shown on the web site for a full month and automatically removed at the end of that period, though if you want to go on advertising the gear in question you'll be able to re-submit the ad.

Denise Waters, General Manager of Audace, comments: "As well as specialising in the repair or modification of professional audio equipment, Audace was conceived as a service for individuals or companies seeking advice and assistance not easily available elsewhere. We received numerous comments and enquiries from people wanting to buy, locate or sell second-hand equipment, who had not been able to find a specialist pro audio area for this on the Internet. After searching in vain ourselves for a suitable facility, we decided to set one up."

The address to head for is ourworld.compuserve.com.hom epages/audace\_tech

- Audace, Polbathic Road, Redruth, Cornwall TR15 1PZ.
- T 01209 214147.
- **F** 01209 217701.
- E audace\_tech@compuserve.com
- W ourworld.compuserve.com/ homepages/audace\_tech/

Werk for less

.....

hanks to a new manufacturing process, several Doepfer Musikelektronic products have been reduced in price — just in time for the new Regelwerk sequencer/MIDI fader and Schaltwerk sequencer to benefit. They've had £100 slashed from their prices before release, meaning that the Regelwerk now retails for £449, and the Schaltwerk (which also includes the previously extra £99

CV option as standard) costs £999.

Other items which are now cheaper

include: the MAUSI MIDI-to-CV/sync interface, £99 (was £115); MCV4 MIDI-to-CV interface, £69 (was £99); MSY2 MIDI-to-Sync 24, £59 (was £69); and MMR4/4 MIDI Merge/Thru, £99 (was £159).

- A EMIS, The Old School House, Cossham Street, Mangotsfield, Bristol, BS17 3EN.
- T 0117 956 1855.
- F 0117 956 1855.
- W dspace.dial.pipex.com/ emis/index.htm
- W www.doepfer.com



If you want to look at equipment we'll send you some brochures...



If you'd prefer to listen and evaluate a wide range of products by strict A/B comparison there is currently only one option.

Turnkey's revamped and enlarged demo facilities feature what we believe to be the world's largest digital comparator systems for pro audio\* and the only one of its type in the U.K.

Over 70 effects processors are available for instantaneous A/B via relay switching, eliminating the repatching time which makes good comparisons so difficult. 16 pairs of studio monitors, 10 power amps, 16 mixing consoles and around 30 sources and recorders from DATs, CDs, HDRs and Multitracks are on the same matrix so you can instantly configure complete systems.

Take 8 bus consoles - hundreds are bought each year on recommendation. Bearing in mind the sums involved it's hard to believe that the opportunity to properly compare the various brands for EQ and noise has not previously been offered.

We've taken the same innovative approach to demonstrating all our products from CD Rom samples to analog synthesisers.

Most dealers will tell you which products best suit your needs. Only one can show you.



One side of the switcher-equipped recording room



Compare 6 mics, by recording simultaneously to ADAT.



Waldorf Wave, Pro-Tools IV and Big by Langley In Scudio



Huge range across Mac, PC and Acorn platforms.

#### NDEX

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- 5 Multitrack Recording
- 6 Outboard
- 7 Outboard

- Computer Software/Hardware
- 9 Computer Hardware & Samplers
- 10 Synthesisers
- 11 Synthesisers & Drum Machines
- 12 Keyboards & Guitars
- 13 Mics, PA/DJ, Mixers & Monitors

\*The leading manufacturer of this equipment tells us that the Turnkey systems are the largest ever supplied worldwide

## DREAM RECORDING PACKAGES AT DREAM PRICES

#### GHOST CONSOLE

- Pristine Audio Quality Throughout
- 4 Band EQ & Fully Parametric Mids
- Up to 12 Auxiliaries
- MMC, Jog/Shuttle, Track Arming, MIDI Muting & Synchronisation Built-In (not LE)

The project studio has changed how professional musicians make and record music. Record advances used to pay for studio time,

but now its for an artist's home studio utilising digital 8 track and a compact high quality console.

The Ghost, though, is more than a project console, you only have to look at the features to see this. Soundcraft continues to break new

bringing fully professional facilities. Ultra low noise inputs, 4 band EQ with 2 fully parametric mids up to 12 auxiliary sends, MIDI mute automation and MTR transport control (not LE) are a few of the features that put other project consoles to shame. In fact the only comparison with a project console you could make is the price



RRP £6729

ALL PACKAGES INC FREE LOOMS

RRP £7469

**GHOST 24** + ADAT XT

## Soundcraft

#### ADAT XT DIGITAL MULTITRACK RECORDER

- Industry Standard Digital Tape Format
- Ultra High Speed Transport
- Digital Dubbing Between Two Machines
- Fluorescent Bargraph Metering

RRP £8327



Alesis pioneered low cost digital multitrack recording with the introduction of the ADAT, and changed the face of home and professional recording. The new XT version is totally compatible

with the old machines, but has numerous improvements.

The design features a die-cast chassis and has a completely redesigned transport. which rewinds and fast-forwards four times as quickly as the old machines. Also BRC style editing can be performed from the front panel with two machines, and an all new display further simplifies operation.

+ ADAT XT

ADD £399 ... FOR Ach METER BRIDGE

**GHOST 32 LE GHOST 32** + ADAT XT + ADAT XT ADD £499 to FOR 32ch METER BRIDG ADD €1499 ... FOR 2nd ADAT XT

RRP £7575



Ask anyone in the know in the audio industry about who are the foremost acoustic designers in the business, and the chances are that the name of Roger Quested will be top of the list. He has built an unrivaled reputation for himself in a notoriously difficult process which is half science, half art.

Whilst his initial designs were all large bespoke projects for his studio installations, the last few years have seen the emergence of a very carefully thought out, high quality range of monitor speakers, to cater for the demands of the modern speaker market, from the innovative new FII, to the incredible HQ410.

The Quested range is probably the most comprehensive available, covering active, passive and self powered designs, as well as amplifiers and active crossovers, from subwoofers through nearfields to custom built soffit mounting units

Call Turnkey Professional to arrange a demonstration, a free trial in your own studio, or to enquire about our generous part exchange facilities.



#### F11 SELF POWERED MONITOR

The FII's cabinet design is another Quested first, being made from a new mineral loaded material which offers excellent acoustic properties using a considerably smaller box than would be possible ising conventional materials The design is a self powered two way bi-amplified one, with 165mm bass driver, and 28mm soft dome HF unit. resulted in a speaker which produces a superb sound, totally



#### VS2205 SELF POWERED MONITOR



odels in the Quested range, the VS2205 is designed as a highly accurate reference monitor, and its low profile and shielding made it ideal fo a wide variety of uses. The built in amplifiers separately drive two 130mm bass units and a 28mm ferrofluid



damped soft dome tweeter Switches are provided for input sensitivity and HF and LF equalisation, to compensate for room conditions and positionin

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#### ProTools 24 & G3 Pack

- G3/203 38\* SECTO, ZIP & Ext. Keyt
  Apple ColourSync 17" Display
- ProToole24 Core Syste
- 888/24 Interface
- PCI SCSI Accelerator
   4Gb External Barracuda Hard Drive

#### ProTools 24 & 9600 Pack

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   Apple ColourSync 17" Display
- ProTools24 Core System ● 888/24 Interface
- PCI SCSI Accelerator
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#### ProTools III

- ProTools III Core



Antares Auto-Tune

Focusrite D2

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.0883

£580.#

## OW



AKG's reputation in microphone manufacture is second to none. Over the past fifty years they have brought us such classics as the C414, the D12, and the legendary C12 valve mic. Whilst many other smaller manufacturers have rushed to take advantage in the resurgence of interest in valve mics, AKG have taken a long hard look at the market, and spent many hours at the drawing board, before coming up with the final design for the brand new Solidtube.

Ultra high quality components have been specified throughout, and construction is of the precision level engineering that you can expect from an AKG professional product. The Solidtube has a fixed cardioid response, ideal for studio recording of vocals and many instruments. Also present are a switchable 20 dB pad to prevent preamp overload from high level sources, and a high pass roll-off filter to eliminate rumble transmitted through the stand, as well as any other low frequency nuisances.

> Included with every Solidtube is a high tension power supply. pop shield, custom designed suspension mount, all connecting cables, and a thoroughly constructed flightcase to protect your investment. For a limited period only, we are also including a boom microphone

> > stand free of charge. All provide is the voice!

And the sound? The Solidtube's smooth frequency response and large size diaphragm, together with the superb tube circuitry provide one of the silkiest sounding mics we've ever heard, at any price.

DTUBE STUDIO MICROPHONE

Initial stocks will be very limited, so get your order in early to avoid disappointment - banish dull and lifeless acoustic tracks forever!

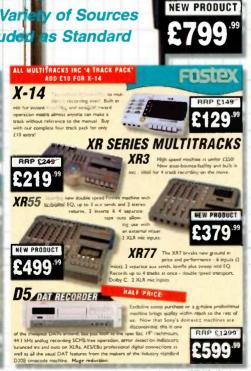
 Affordable Valve Technology from AKG

Constructed with Superb Attention to Detail
Suited to Recording a Wide Variety of Sources

Full Set of Accessories Included

#### THE UK 4 TRACK CENTRE





INCLUDES FREE BOOM MIC STAND

## DTC-ZE700

#### DTC-A8 DAT RECORDER

£499

£399

#### MDS-JE510 MINIDISC RECORDER

MZ-R30 PORTABLE MINIDISC RECORDER



#### DA20mkii DAT MACHINE

a quality machine reliable tray

a quality machine reliable tray-oading mechanism, SCMS is switchable in or out, both analog and digital recording at all 3 samp and out. High sound quality is gu back, and there is a special Table

#### 102mkii & 202mkiii TAPE DECKS

astering cassette decks Both are full 19" rackn

units, the 102 Mkll is a double deck, which reci only at these prices, ide

#### SV3800 INDUSTRY STANDARD DAT RECORDER

#### DMT-8 VL 🚥 DIGITAL MULTITRACKER

YAMAHA

#### MT50 MULTI-TRACKER

E269

## MT4X MULTI-TRACKER

## PRICES GUARANT



VS880 DIGITAL WORKSTATION



## **VIRTUAL** STUDIO? **VIRTUAL** GIVEAWAY!

Roland's VS880 has become the de-facto standard for compact digital eight track recording, hardly surprising with it's combination of great sound quality, compact size, and excellent feature set.

Each of the 8 tracks has 8 virtual tracks, allowing you to record several different takes, and then compare

them afterwards, even if you've already recorded on the other 7

tracks. The built in digital mixer can handle up to 14 channels, features 2 band parametric EQ, I external and 2 internal aux sends (to the optional FX board), and is fully automatable over MIDI. The SCSI port allows the connection of external SCSI devices for recording or backup, which can also be made to DAT via the digi i/o. There's not even any need for a separate synchroniser, as it puts out MTC as standard to sync up your sequencer.

New version 2 software not only allows automation data to be recorded directly to the hard drive for total integration, but also brings numerous new effects to the optional board, including COSM based mic emulation - make your SM58 sound like a U87! Existing owners can upgrade to version 2 for only £49%.



To offer a completely integrated solution, we are bundling the VS880 with a 1.4

gig hard drive and mounting kit, and the FX board together. These would normally

have a combined retail price of £2238, but for a limited period only all this can be yours for only £1499\*\*!





- Built in MIDI Sync
- 64 Virtual Tracks
- Built in Effects

RRP £2238

INCLUDES 1.4Gb HD, MOUNTING KIT & FX BOARD

#### MDMX4 DVER 40% DFF DIGITAL MULTITRACKE The MDMX4 offers 37

minutes of high quality four track digital recording on an MD data disk.

It also features the exclusive Track Edit system and a host of other

functions that will revolutionise your concept

of personal recording, and Sony's second generation data compression algorithms give it a significant sound advantage over similar machines.

The 10 input mixer (2 XLR's) has 4 busses, individual track outputs, 2 aux sends and 3 band EO. Random access transport includes 11 point locator, jog-shuttle wheel as well as rehearsal and auto-punch modes. There's no need to leave a track spare for bouncing, and whole songs can be digitally copied forward for a 'safety' version. MMC and MTC compatibility for use with MIDI sequencers - you can even control it from your sequencer!

MIDI Clocks are also supported for use with keyboard workstations and drum machines

> Stocks are very limited on this exclusive deal - order now!

SOUNDLINK 168RC

The 168RC features 16 digi 44444444

ilo in the ADAT optical format, as well as eight analogue mic/line inputs, two of which have

phantom power, master outs are also available as SPDIF.

Also available from Korg are high quality external 8 channel A/D and D/A convertors in ADAT format for more analogue connections, and you can cascade multiple 168RC's together for unlimited channels!

Internally, the 168RC has 8 subgroups, 3 band parametric EQ, 2 external and 2 internal aux sends. The internal sends go to 2 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

HD MULTI-TRACK RECORDER

......

Call now for a demo!

First there was the DR4, then the DR8,

and now Akai bring you 16 tracks of

no-nonsense hard

disk recording in a

single box!





£1299

PDR-04 CD RECORDER



PDR-05 ALSO AVAILABLE with symple rate co

## CDR870 RE-RECORDABLE CD WRITER

NEW PRODUCT

#### aıwa HD-S200 PORTABLE DAT RECORDER

#### ALMOST 40% OFF!

Turnkey's incredible buying team bring you the DAT exclusive of the year!

This beautifully manufactured mach ne from AIWA, records at 32kHz (long play), 44.1kHz or 48kHz through either the analog or digital inputs. Digital input and output via optional optical cables (£29 each), back-

tit LCD display, full complement of ID buttons. Comes with lithium ion rechargable battery (no memory effect), additional dry cell battery case for extra battery life, mains adaptor, phono cables and headphones included in the price.

Very limited stocks grab your once in a lifetime bargain now





DR-16

Buy now from Turnkey and we will includ CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

8 inputs and 16 individual outputs are provided making it perfectly suited for full

lown multitrack recording. Amongst the options available is a video output board

## MULTITRACKS NEW, USED & EX DEMO

to give a full colour display of all the tracks, which makes

#### E'S LOWES ROP



Zoom is a Japanese company that was set up a few years ago by 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!

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

MOON!

Freeform Analog Technologies FreeBass is already one of the most successful sound modules of the year, and now following hot on the heals of the Freebass and PCP330 Procoder is the new THC-00 Resinator.



Not one, not two, but three band pass filters with resonance! And we mean res nance! Feed any mono signal into this unit and get out some of the most wacky and groovy sounds you've ever heard in glorious auto panning stereo. Each of the filters has it's own cutoff point which is modulated in a selection of ways, by a combina-tion of the built in LFO, the polarity reversable envelope follower and even an external control voltage. Ideal for processing loops, vocals or indeed

any another signal, for results ranging from the sublime to th eme! Must be heard! More fresh thinking from F.A.T.

The 1201 is a full 19" rack unit, featuring true stereo 16 bit processing at 44.1kHz, with 64x oversampling convertors.

The quality of the reverb alone would make it worth the price, but there's lots more: two simultaneous effects are offered, from a choice of 33 including delay, chorus, flanging, tremolo and pitch shifting, 'vocoder', karaoke, 'lo-fi' and vocal distortion effects as well as various NEW PRODUCT reverb types including reverse. If one of the 363 presets doesn't suit exactly then using the two parameter knobs will allow you to tweak the program until it does,

- 16 Bit 44.1kHz True Stereo FX Units
- Great Quality Reverb & Multi FX
- Vocoder and Mic Input on 1204
- Up to 512 Different Presets



1204 TRUE STEREO FX PROCESSOR

The 1204 builds on the success of the original 1202 by adding MIDI control, 100 extra user presets for storing your own

edits, and 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.

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

RRP £324





Quad features not only their custom designed and ultra-powerful 'S DISC' chip, but also 4 independent inputs and outputs, which using the built-in sub-mixer, can even be configured as 4 mono inputs feeding 4 effects processors, feeding 4 stereo outputs!

The huge screen and new intuitive operating system make editing a breeze, 20 bit convertors give greater than 90 dB signal to noise ratio and the range of effects includes reverbs, delays RRP (524 detuning, chorus, flanging etc... Hundreds of other

features too numerous to mention Exclusive end of line deal only at Turnkey.

#### PCP330 VOCODER



a vocoder anymore?" - well here it is, with a fantastic 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 signal. Remember, this does n't only create robot voices, there are thousands of creative uses NEW PRODUCT and it's also ideal for processing drum loops.

Order now and own an instant classic

DIGITAL **PROBLEM SOLVERS** 

FRIEND-CHIP

In today's increasingly digital world, many people are still using their equipment's analogue ins and outs, because of the difficulty of connection 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 (£299.99) has 8 inputs and outputs (2 each on optical), can accept both AES/EBU and SPDIF signals, and is MIDI controllable. An XLR version (£499.99) is also available for greater AES/EBU reliability. The Audio Time Base (£499.99) is a Tu 19" rack which acts as a master clock source for your studio, outputting word clock, Digidesign Super Clock and SPDIF. 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 range:		
N Salta Emplished and standard	€49.99	
TOTAL SPEED IN LESS AND AND HOLD WAS ARRESTED BY	£129.99	
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ADAT Audio Chick. ACAT II Fit is restricted, facel that and lifted cost specific	£129,99	
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Rect Kill holds up to freed black bosset: \$46,99	. 3	



Two channels of classic dbx compression with new Auto-Dynamic Ti Attack and Release controls, program-adaptive expander gates, balanced inputs, precision LED metering and sidechain insert. Front panel selection of stereo or dual mono operation, all RRP £249 in a standard 1U rack design and at an unbelievable price! Entire dbx range also on demo at Turnkey

#### GUARANI PRIC



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 exorbitant prices for their product, but not Bellari, and our factory direct exclusive makes the range unbelievable value for money!

## PREMIUM **QUALITY** *VALVE* **OUTBOARD** EOUIPMENT

The RP583 Studio Tube Compressor / Limiter has become an instant hit.

offering as it does two channels (stereo linkable) of some of the finest sounding compression money can buy, with a smooth and natural compression

characteristic. 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 3/00 outs, and sidechain access is fully catered for. Ideal for a variety of instruments, vocals and complete mixes.

NEW PRODUCT

£169



#### 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

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 exciter section adds a wonderful sheen to virtually any sound, NEW PRODUCT 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!

00500



#### 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

Traditional exciters usually do a good job of brightening

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

RP562 Stereo Exciter

up the extreme top end, but can often leave 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 Jack 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. ADB3 Stereo Direct Box

FINALIZER 2 MASTERING PROCESSOR £1899

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

4 POLE waldor!



#### X POLE FILTER

#### MP110 Direct Drive Mic Pre Amp



MIKEMAN MIC PRE-AMP

£179

#### VITALIZER STEREO JACK ENHANCER/EXCITER PROCES

£179

#### 5021 IVORY RANGE 2 CH. VALVE COMPRESSOR

NEW

**NEW PRODUCT** £469.55

Audio

## FOCUS EQ PARAMETRIC EQUALISER

bargain prices, but

bargain prices, but not often does the chance come to own something as prestigious as Focusrite outboard, at a fraction of the original cost. The Focus EQ features an ultra high quality mic preamp complete with phantom power and phase reverse, as well as line and instrument level inputs, making it an excellent recording channel, or even top quality preamp for bass or acoustic guitar. In addition to the four parametric EQ bands, there are also variable high and low pass filters, and the EQ and filters such home those tops beautiful processors. each have their own bypass switches. Typical Focusrise build BBP £939

quality can be taken for granted, as can some of the best sounding EQ you've ever heard. Very limited quantities available for this exclusive deal - order now or regret forever!

DUAL MIC PRE DUAL CHANNEL MIC PREAMP

transparent ways available of getting

available of getting your mic signal up to 60dB per channel, ultra stable 48v switchable phantom power supply, 12dB per octave high pass roll-off filter, and an amazing Equivalent Input Noise figure of 128dBu. Small quantities only at this incredible price. The Quad Com

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

## Parametric EO

TLA's range of outboard must be the best selling valve gear ever! Their classic warm valve sound, combined with the low noise floor that modern digital

noise floor that modern digital recording demands have made them a huge success story. Our tremenda power now allows us to offer the superb EQ1 at this incredible price. The adual 4 band (or single channel 8 band) parametric EQ - a high performance transformerless pre amp is followed by four valve tages per channel, which provide a fine and gradual overdrive while price The FOLL RRP £821

characteristic, and a frequency response which is virtually fit from 20Hz to 40kHz. Limited quantities only at this price!

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

#### REFLEX UNDER HALF PRICE EFFECTS PROCESSOR

Once the preserve of only the world's top studios, Lexicon reverb has become more affordable in recent years, but this incredible exclusive deal means anyone can own one!

The Reflex packs stunning reverb quality together with other effects such as delay and Resonator, and some of the most comprehensive MIDI control available into a 1U rack unit. Reverse, gated and plate reverbs are included along with more traditional algorithms, and up to 10 editable parameters are available for each program. Lexicon's famous Dynamic MIDI allows for any four of these to be controlled in realtime via virtually any MIDI information - imagine varying decay time via note number, or feedback from your modulation wheel - the possibilities are endless! The best sounding reverb RRP £469 this side of an MPXI.

Limited stocks only - first come, first served!

362 SONIC MAXIMIZER



362SW SONIC MAXIMIZIII & SUB WOOFER CONTROL only £169.95

#### **OUTBOARD** NEW, USED & EX DEMO

/ERB4 . . £188.99

## OW



THE TURNKEY PRO TECH **PENTIUM:** A TOWER OF STRENGTH

MU10 OUT OF THIS WORLD GM SOUND MODULE

Turnkey's incredible buying team have done it again! Yamaha's MUIO was already great value for money, but this exclusive offer makes it unbeatable! The "XG" range of products (including the famous DB50XG) has long been highly regarded for its 676 excellent sounds, 3 built in effects processors and superb integration with computers.

The MUIO comes in a handy module format which means there's no need to open up your computer, no IRQ conflicts or DMA problems, you just connect it to the senal port of your Mac or PC (cable included). What's more its MIDI in and out ports means it also acts as a MIDI interface, and it can

be used as a stand alone modul-

The 34 built-in effects can be used not only with the built in sounds, but also with any external signal (eg your voice, guitar etc) via the stereo audio input. The MUI comes with the CD-ROM version of Steinberg's famous Cubasis MIDI sequencin software, and this incredible ofter includes Yamaha's XgEdit editor free for detaile A complete starter kit for anyone looking to get into making

This exclusive offer is only available whilst stocks last - get

£169

#### CAKEWALK PRO



MIDIMan Dman + DB50 £335.99

SIBELIUS-7



Ringing round for the cheapest Pentium? We sell audio equipment - not office software and games! The computer is the heart of any studio setup, and a

Turnkey Pro Tech audio-ready PC, built with carefully selected components, means a quality solution at an affordable price. We deliver a tested, working, integrated system - if you have a problem, just call us!

A modern Pentium can be used for a myriad of tasks ranging from desktop publishing, multimedia, games, and office work. However, few applications are as demanding as digital audio recording. Criteria which are irrelevant to most PC shoppers (such as the level of radio frequency interference within the casing), become very important, and sound cards which are otherwise considered "best buy" in the press often lack the

essential "full duplex" ability which permits monitoring of audio during recording.

By supplying a pre-installed computer which we build from carefully selected components, we ensure that you get up and running imme diately, you won't need to delve into DMA channels and P'n'P BIOS conflicts, and you won't get any nasty surprises like "insufficient system resources" warnings, when you try to run your software. Call us to discuss your requirements - satisfaction guaranteed!

CUBASE VST STARTER PACK

#### CAKEWALK STARTER PACK















#### VST / WAVELAR SUPER PAGE



**CODA FINALE 97** 



#### MUSIC AT PASSPORT



BAND-IN-A-BOX

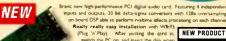


Acorn

#### MIDI INTERFACES



#### **DMAN 2044** PCI DIGITAL AUDIO CARD





#### MIDIQUEST 6.0



## SOUND FORGE 4 PC SOUND EDITOR

## REBIRTH RB-338 SOFTWARE SYNTHESISER

CUBASE VST FOR PC!



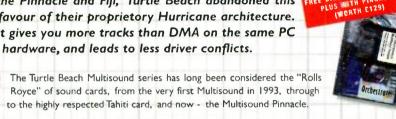
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## RICES GUARANT

## A DIGITAL HURRICANE IN YOUR PC?

99% of available sound cards use the old-fashioned "DMA" system of recording

audio in order to be compatible with Soundblaster games. With the Pinnacle and Fiji, Turtle Beach abandoned this system in favour of their proprietory Hurricane architecture. Basically, it gives you more tracks than DMA on the same PC



to the highly respected Tahiti card, and now - the Multisound Pinnacle. The audio quality of the Pinnacle is beyond reproach, based around a Motorola DSP, with 20bit convertors on

both record and playback, 64x oversampling, and Delta/Sigma convertors. An on-board Kurzweil chip provides a top-quality set of synth sounds, which can be augmented with your own samples which can be mapped to a MIDI keyboard via the SampleStore™ control panel. (Up to 48 Meg of samples can be loaded, depending on the size of SIMMs fitted). Create your own drum-kits, mix in break-beats sampled from CD etc... etc..



Other upgrade options include a synth daughter-board (eg DB50XG), cable for MIDI interface, and S/PDIF daughter board allowing direct digital transfer to/from DAT, CD player, MiniDisk etc... (£99" for either card). The Pinnacle is bundled with Voyetra's D.O.P. sequencer which gives up to 16 audio tracks with digital effects (eg reverb, delay....) depending on hardware specification.



20 BIT DAC / ADC

Enhanced or Std Duplex

Sample Store (up to 48 Meg)

■ WaveBlaster™ Connector (for DB50)

Optional S/PDIF Daughterboard

Kurzweil Wavetable Synth

ALSO INC. FREE DIGITAL ORCHESTRATOR SE



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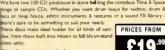


#### SP202 SAMPLING UNIT

£299

YAMAHA SAMPLING UNIT £249 ALSO AVAILABLE WITH 3 OCTAVE MIDI KEYBOARD only £319.99

#### SAMPLE LIBRARIES



#### S3000XL INC FREE ZIP DRIVE & 32 MEG A TANK WORKHORSE SAMPLER



workhorse samplers to the studi-market with this sturdy offering. The compact 2U rackmount machine feature

market with this compact 2U rackm 32 note polyphony. 10 outputs. 2 meg expandable to 32 with SIMMS, SCSI as standard, MESA editing software, and a whole carage of expansion abilities including digital Vo and an extra filter board. Buy from us and get 32 meg and a ZIP drive free!

#### \$2000 SAMPLER



Akai's entry level studio sampler, the \$2000 doesn't slump on features 32 noue polyphonyclow pass resonant filters, 2 meg RAM expandable to 32 meg, illow full graphic editing from your computer.

£999 99

B208P	B outputs & digit to for \$2000	£249
B304F	2nd filter board for \$2000 \$3000XL	£299
EB16	multi FX board for \$2000/\$3000XL	£299
B005MX	8 meg expansion for \$2800/s3000/\$3200/CD3000	£388
BOOMX	8 meg expansion for \$1000/t100	£399
BM208P	8 outputs & digition for MPC2000	£249
8807V	monitor output board for DRB/DR16	€499
B804AEX	8 on 16 our ADAT inverface for DR16	£399
B803M	MIDI interface for DR8/DR16/DD8	£199
BB02T	SMPTE board for DRB/DR16/DD8	£249



#### \$20 SAMPLER All new sampler from the maker



#### MPC 2000 SAMPLING DRUM MACHINE



#### E6400

Building on the success of the E64



comes the E6400 from EMU. As well as coming with 4 meg of RAM as standard, and all the features of version 2 software, expandability

is unrivalled with options including an extra 8 outputs, RRP £2499 32 MIDI channels, 18 bit dual stereo FX processors. and up to 128 note polyphony!

Huge E-MU CD ROM library available at Turnkey

*ESI4000* 



The ESI4000 has all the features o the ESI32 we have come to know and Tove, but now has 64 note polyphony memory capacity of up to 128 meg, and an style multi mode filters. All E-MU samplers come with free RRP \$1604

RRP £1693 on CD-ROM) and of course, ex

#### CALAMARI ESI4000 TURBO EXPANSION BOARD



229.9 yet sige extra outputs giving a total of ten, the simultaneous FX processors, and a plethora of new filter types taken from the E4x. Unbelievable value for money - every ESI owner should have one!

## COMPUTER NEW, USED & EX DEMO

SAMPLING NEW, USED & EX DEMO

House Spaces

#### *A3000*

YAMAHA

## DWES



Fostex dominated the home recording market in the 80's and early 90's with such classics as the Model 80, the A8 and the R8 8 track recorders. Now in the late 90's they have combined that wealth of experience, together with that of key New England Digital staff to bring you this superb range of digital multitracks, specifically designed for the project studio owner. Just check out the range!



QUASIMIDI

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

undoubtedly Quasimidi's best and most innovative product to date. Imagine the raw powerful sound quality of Roland's TR909 and TB303, give them 50 times as many sounds, add resonant filters to the drums, and you've

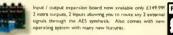
still only got half the instrument that is the Quasimidi 309! Knobs for all functions all send out MIDI controllers, built in real-time and step-time sequencer, 2 on board effects processors & EQ, optional rack ears, typical German

build quality - far too many features to mention here! The ultimate dance production workstation, must be heard to be believed. "superb bass synth ... excellent drum sounds ... one of the most immediately useable products on the market" - Sound On Sound. FACTORY DIRECT

Call for a free demo CD. Money back within 7 days if not satisfied (ask for conditions).

RACK EARS ALSO AVAILABLE only

#### 309 AUDIO-EXPANSION



## *POLYMORPH*

Coming soon, the



#### tracks. Comes with 1,3Gb Hard Drive as standard :1099° SYNTHESISER

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**EMU** 

£799

Polymorph is a four part analogue style synthesiser, with 8 note polyphony, 4 outputs and superb 309 style realtime editing facilities and sequencer & FX. Call for more details

## E769

#### ATC-1 ANALOGUE MONOSYNTH

a company that serviced and mod-ified old Moogs,

moved on to producing remanufactured Mini Moogs in 19" rack form, and then developed the SET - a mode

Mini Moog whose components were painstakingly researched to provide an in-ment that was according to the reviewers indistinguishable from the real thing Most recently has come the ATC-I Tone Chameleon - hand crafted in the USA in

**■**Roland

#### JV1080 SYNTH MODULE

#### JV2080 SYNTH MODULE

#### INC '4 TRACK' PACK DMT-8 VL DIGITAL MULTITRACKER

last, and at a price you won't believe! 8 separate tracks of CD quality audio recorded to 1.6 Gb hard-disk (36 minutes). Record 2 tracks simultaneously, jog-shuttle audio and sync to MIDI without

losing a track. The 8 channel mixer accepts 2 mics, with a 2

D90 HD RECORDER LIGHT

band EQ and 2 aux sends. Separate outputs and S/PDIF optics

D160 HD RECORDER

standard DAT machine and direct digital recording. Easy to us ows cut, copy and repeat pasting across

D80 HD RECORDER LINE 1.365 HD

all with no track loss, and has S/PDIF digital ins and outs to allow backup to a

Latest In the family from Fostex is the superb D160, giving you a

Price includes 3.6 Gb Hard Drive

£1299

The D80 is a 3U rackmount unit, with 8

individual in/outs and outputs, a removable

front panel doubles as a remote and

meterbridge, and a removable cannister drive slot. Slaves to MMC as well as being able to act as a master

recording for well under £3000 - less than the price of a secondhand analogue machine! D/A conversion is 20 bit delta-sigma 128x oversampling, so sound quality is superb. An amazing amount of machine for your money - cal RRP £2932

- Uncompressed Audio for True Digital Quality
- Removable Canister Drives for Easy Portability
- Jog / Shuttle Wheels on all Models
- Back up to DAT via Digital Ins and Outs

## AL ANALOGUE SYNTH

the D80, but also has ADAT digi

I/o as standard, and optional kits

for connecting SCSI drives &

balanced analog vo's for interfacing

Our price includes a 1.6 Gb Hard Drive fitted free.

with pro level equipment

access

Control specialists Access have used all their considerable expertise in the design of their new 'virtual analogue' synth, the Virus.

All major parameters have their own dedicated knob or switch, and ar 'expert' mode allows super detailed editing via the LCD display and parameter controls. Of course, all edits send out controllers in realtime Synthesis facilities are unparalleled - 64 oscillator waveforms (2 per voice), 3 LFO's, 2 multi-mode filters per voice, oscillator sync, filter overdrive, built in FX - you name it, it's got it!



12 note polyphony, 16 part multitimbrality, 6 outputs and 2 filter inputs mean you're not just limited to one sound at a time. We're so confident that you'll love this synth that we're offering a seven day money back guarantee (ask for conditions)

> The most flexible and best sounding virtual analog on the market

SYNTH MODULES

Orbit ORBIT **PLANET PHATT** CARNAVAL

DEEP BASS 9 TB303 CLONE

114 Charing Cross Road London WC2H ODT E-mail Sales@turnkey.dem

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!

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

MC-303 GROOVEBOX

DANCE WORKSTATION

Exclusively Available at Turnker

00 000000

MEGADEAL ALERT New low price!

lator - no more continual drifting!

## PRICES GUARANT

## YAMAHA

## STAY IN THE **MIX WITH** YAMAHA

## **PROMIX 01** Digital Mixer

This is the digital mixer that shattered the price/performance barrier. You get I stereo and 16 mono inputs (8 are mic/line), all with 3 band parametric EQ, 2 external aux sends, 2 internal sends to the built in SPX990 based FX processors, 3 assignable dynamics processors, motorised faders and total automation. The SPDIF digital output means you can connect the ProMix01 directly to your DAT,

- Up to 20 Inputs in Total
- Moving Fader Automation
- 2 Built in Effects Processors
- 3 Assignable Dynamics Processors

CDR or MiniDisc with absolutely no loss of quality. This was incredible

> value at the original price, but this new low price makes it probably the best value for money mixer on the market.

111 14 14

## **03D** Digital Console

Like the 02R, the 03D is a fully-automated 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.

Unira Compact Format

\*\*\*\*\*\*\*\*\*\*\*\*\*

- **Moving Fader Automation**
- Surround Sound Capabilities
- Takes ADAT, TDIF or AESEBU Digital Board

Call now for a Turnkey Professional brochure and a free trial!



The enduring popularity of the TB303, MC202 and TB909 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 Groovbox which combines all their classic drum machine sounds, a tent lime. Facilities for the machine of the second has the sum of the second has the second of the second has the second of the

panel filter controls and a whole host of other useable sour (it's 16 part multi-timbra!). This box is an all in one dance mu solution, and believe us, it sounds the business! Initial suppliantly will be very limited, order now to avoid disconnections. ALSO AVAILABLE WITH MK149 MIDI KEYBOARD only

## **O2R** Digital Console The fully digital 40 input 8 bus console

with total automation and moving

M-BD1

SOUND MODULE

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 interface cards allow full digital connection of ADAT, T-DIF and AES/EBU formats for integration of MTR and hard disk systems.

- Up to 40 Inputs in Total
- Moving Fader Automation
- Dynamics Processors on Every Channel
- Takes 4x ADAT, TDIF or AESEBU Digital Boards

#### RRP £6999

#### MICROWAVE XT WAVETABLE SYNTHESISER

WSA1

POLYPHONIC MODELLING SYNTH

The Microwave XT takes all the features of the incredible Micro is new software and the user interface you've been waiting for! It's simplicity of is obvious with knobs everywhere (which all send MIDI controllers) and a 2x40 racter back it LCD. At the rear the Microwave XT 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 oscillators, 2 wave generators, a mixer, two filters in series, a stereo amplifier, four envelopes, 2 LFOs, a modulation matrix with 16 slots and several 'modifiers', more than enough to REW PRODUCT.

Technics

#### RHYTHMTRAK 234 DRUM MACHINE



The 234 RhythmTrak is a brand new product from FX giants Whilst drum machines have remained little changed In recent years, the 234 certainly brings some fresh with a fresh price!

find, the 234 also incorporates some of the best electronic kits we've ever heard Parameters such as level, pitch and hi-hat opening can be edited in real time, whils pads can be set to trigger whole patterns for

shipment, call now to reserve yours

**Z**[2|2|4





#### MICRO PIANO PIANO MODULE



## KURZWEII

## YBOARD VERSION

... £169.99 ... £349 99

#### SOUND MODULES NEW, USED & EX DEMO

.. £1.599.98 STUDIO ELECTRONICS ATC1

THE RAVEN
KEYBOARD DANCE
WORKSTATION

THE PROPERTY OF THE PARTY OF TH

this top German manufacturer. Also available, Raven Max expansion board giving over a thousand new sounds. Call in for a

Wave TURNEEY EXCLUSIVE! Synthesiser 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 PRICES FROM

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#### Roland JP-8000 ANALOGUE MODELLING SYNTH



Roland

**EPOA** 

£139

YAMAHA

£729

YAMAHA

£499

nly £799.99

XP-80

RRP £1499 £1099.\*\*

XP-50 WORKSTATION KEYBOARD

PC-200 MkII

AN1x

MIDI CONTROLLER KEYBOARD

VIRTUAL ANALOGUE SYNTH

CS1X SYNTHESISER

The analogue emulation market is hotting with this exciting new release from Yamaha. Building on the incredible success of the CSLX, the ANLx is built on the same design principles, but uses technology from the groundbreaking VL range to produce stunning virtual analogue sounds. With a Soctave aftertouch sensitive

same design armicipes, out use terminogy from the grounder produce stunning virtual analogue sounds. With a 5 octave aft keyboard, 10 note polyphony, 8 knobs and a ribbon controller, a the ANI k is sure to be an instant hit.

Demand will far outstrip supply – get your order in early!

RRP £1029 £P04

## PROPHECY

taken it better value for money than ever. Virtual syntilesis not only gives some reat acoustic simulations, but also superb analog sound afrom Moogs through ARP! great acoustic simulations, but also se to some of the classic Rolands. The one of the best around today, and the ribbon

controller and knobs galore make for a highly expres-sive instrument.

at this price - buy now or forever hold

£499

£849°

## TRINITY

KEYBOARD SYNTHESISER

When it comes to workstation keyboards, the Korg name is legendary. Their cur-rent flagship product, the Trinity not only features the customary range of exemplary sounds, but also touchscreen technology to make it one of the most intuitive instru-ments on the market, and a range of options to turn it into a fully fledged recording ments on the market, and a range of opi studio sample playback (Akai compatible disk recording!

£1449

#### HP 330e **Roland** HAMMER ACTION PIANO

range, the HP330e is the perfect instrur alike. Encased in a newly-refined cabinet ner-action digital piano featur excellent stereo samplings of grand sounds, including harpsichord, vibes &

RRP £1799 **EPOA** 

## DTR-1

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Oversize easy to read LED meter.
 Auto tuning with 3 selectable modes; Strobe, Cent, Hz.
 Two tuning inputs to handle tuning of 2 instruments.
 Bull-I-in microphone is perfect for funing acoustic instrument.
 3-Octave reference tone. <a href="#">Sable check function</a>.

RRP £249 £169

RBP £149

RRP £1042

£129

## DTR-2 RACK-MOUNT DIGITAL TUNER

#### AP10F 88 NOTE WEIGHTED ACTION

Reserve Weighted Action
The Ceivano APIDF from Casio is truly unrivalled in its class, combining a high-quality piano sound & fine weighted touch with all the versatility you would expect from a digital piano. With full MIDI compatibility, dual headphone sockets and recording facility, this instrument is perfect for the beginner, whilst accomplished musicians will appreciate the layer, reverb, chorus & tremolo effects available to use with a total of 5 authentic sounds. Plano, Electric Piano, Harpsitchord, Pipe Organ & Strings. Featuring an elegant woodgrain finish cabinet, complete with silding lid, the APIDF great value for money with quality to match.

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## CASIO

£299.\*

CALL CHARING CROSS KEYBOARDS ON 0171 497 5559 FOR DETAILS

VOODU VALVE VALVE DRIVEN DSP PRE-AMP with HUSH

Full 7 octave tuning range.
 Auto reference calibration function can automatically calibrate.

GUITAR SILENCER

#### SANSAMP RANGE

## MK149 MIDI CONTROLLER KEYBOARD

PSR-330 MIDI KEYBOARD

RRP £149 £99

#### P-150 FREE STAND STAGE DIGITAL PIANO

BUY WITH VL70M VIRTUAL LEAD MODULE for

RRP \$509

YAMAHA

#### KEYBOARDS NEW, USED & EX DEMO

MULTI-FX FLOOR UNIT

Souredorati

## PRICES GUARANT



#### **MONITOR 2** MID FIELD STUDIO MONITOR



Buying a great pair of speakers for your home studio setup often envolves a compromise between sound quality, cost, bass performance and portability. Now you can have it all with this once in a lifetime deal on the stunning Alesis Monitor 2's.

Flat bass response down to 40Hz assisted by the substantial ported cabinets which come in a mirror image pair. The three way design with 10" woofer offers superior transparency with excellent quality reproduction across the whole frequency range. Power handling is up to 150w per RRP C609 speaker. We cannot hold this offer forever - buy now before it's too late!

BUNDLE WITH SERVO 550 only £699.99

#### ABSOLUTE ZERO by SPIRIT NEW NEARFIELDS

ABSOLUTE 2

#### by SPIRIT STUDIO MONITORS



£199'

#### CONTROL 5



NOLE WITH DENON PMA250 only £269.99

#### DMS600 INCREDIBLE DIGITAL MONITORS



#### DIGITAL 328 DIGITAL MIXING CONSOLE



SPIRIT

FOLIO NOTEPAD SPIRIT



£149.99

#### FOLIO F1 NEW MIXER

£299

£169

RRP £379

#### Soundcraft STUDIO

#### CONSOLES BY SPIRIT

In line' layout means 40, 56 and 72 inputs respectively for the 1 idesks, 4 band EQ with 2 mid sweeps, 6 aux, sends, 8 true subgrevery channel, LED metering, fader reverse - the list is RRP £2065

#### GHOST CONSOLES



MTR transport control are a few of the features that project consoles to shame (no MIDI on LE versions)

#### MIXERS NEW, USED & EX DEMO EMINI PS727 FMINI PS924 £149 TIMIDATION DON2 ... £499.99 MIDATION KILLSWITCHES

NT1

**SERVO 170** 

LARGE DIAPHRAGM MIC

F249 99 RDL G115 CABINET. . . . 269.99 SAMSON MIXPAD9 ..... (99.99 SOUNDCRAFT FOUO 12R , 5229.99 SOUNDCRAFT FOLIO LITE, £129.96

... £1399.96 SOUNDCRAFT SPIRIT STUDIO 24 ... £1369.9

£169

£199

## C1000 CONDENSOR MIC

WMS51BT WIRELESS MIC SYSTEM

WWS51HT HANDHELD ALSO AVAILABLE only \$199.

C3000 LARGE DIAPHRAGM MIC

£229

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**SM58** 

DYNAMIC MIC

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INDUSTRY STANDARD

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## MICS NEW, USED & EX DEMO

MIX PACK

Rechnics

#### AMPS NEW, USED & EX DEMO CAUDIO RA1001 POWER AMP

NT2 ALSO AVAILABLE only \$429.



## IMPACT SERIES

JND SYSTEMS ON 0171 497 5737 FO

SOUNDLAB DLP3Rs &

KAM GMX7



#### MONITORING NEW, USED & EX DEMO

DYNAMIX D112 POWERED MONITOR . . . . . . £69.99 SONY SRDS300 AV SPEAKERS . . . . . . . £119.99 

#### **POWERSTATION 600**

SL 1210 MKII

# Kinetix Wobbly Bits

## Variable-Rate Digital Recording System

PAUL WHITE previews a new digital conversion technique designed to provide highresolution sound without the need for extravagant sampling frequencies.

igital recording is good, but it's nowhere near the perfection that was first claimed for it, even though on paper you get low distortion and a ruler-flat frequency response across the entire audio band. Part of the problem with conventional linear PCM (Pulse Code Modulation), or sampling, is that steep antialiasing filters are required just above 20kHz, and these tend to ring, adding high-frequency energy to the original sound for a significant time after the original transient that set the filters ringing has ended. Pundits tell us that the answer is to use more bits to improve resolution, and to use a higher sampling frequency to offset the need for sharp filters, but there's still a problem — linear systems



Kinetix's Wobble Board, the heart of the Wobbly Bits system.

divide signals up into equal steps of level in equal packets of time, so whatever artifacts are generated by the sampling process are always correlated. In a well designed system, these artifacts may be of a very low order indeed, but because any side-effects are rigidly related to the sampling frequency and quantisation step size, they invariably concentrate at specific points within the frequency and time domains, making them more likely to be noticed. Furthermore, because low-level signals are represented by fewer bits, the distortion level rises dramatically at low signal levels, and technical subterfuge, such as noise-shaped dither, has to be used to extend dynamic range and lowlevel clarity. But now, scientist Rila Oplof, working at the Bulgarian Institute of Railway Kinetics (B.I.R.K.), thinks he's found a better way, and oddly enough it's closely related to the railway technology to which he still devotes most of his academic life.

#### WOBBLY CONVERTERS

To spread unwanted artifacts evenly in both the frequency and time domains, it's necessary either to have an infinite number of quantisation levels and an infinite sampling frequency (clearly impossible), or to break up the linear relationship that has constrained linear PCM for so long. Instead of a regular sampling frequency, Oplof's system uses an Analogue-to-Digital conversion process based on a pseudo-random number system to generate a clock frequency that seems to vary or 'wobble' at random between 44.1kHz and 48kHz. The pseudo-random number cycle (which was apparently generated by computer from the relationship between the Bulgarian National Railways timetable and the times the trains actually ran) repeats on a two-second cycle, and includes an embedded code for synchronising the D-A conversion system at the other end of the chain. In practice, the audio is clocked out with its original time relationships intact, but artifacts due to the clocking frequency are now smeared gently over a wide area, rendering them inaudible. In many respects, this emulates how analogue artifacts are randomised, but in the case of Wobbly Bits, the artifacts remain at a much lower level.

This leaves the equal quantisation step size problem, and Rila approached this in a very similar way. By changing the resistor ladder in the A-D converter that defines the quantising step size from equal values to pseudo-random values spread over a 2:1 ratio, he found that the analogue signal could be quantised into a series of irregular step sizes, and if the resistor sequence is rotated every clock cycle, each successive sample is quantised differently. This time the random number sequence is based on prime integers (derived from the differences in time between the announcement of certain digital mixing consoles and their actual arrival in the shops? In which case it probably involves imaginary numbers!). The length of the cycle is approximately 1.7326987519353728 seconds, so it remains essentially uncorrelated with the

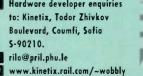
sample frequency loop cycle.

Once again, this process has its equal and opposite counterpart in the output converter, so that the original audio is correctly reconstituted with very low noise and distortion. Quantisation distortion, which most people regard as objectionable, is redistributed as almost perfectly gaussian noise, and if the appropriate pseudorandom quantisation step sizes are chosen, this noise can be shifted into the 15-18kHz part of the audio spectrum, where it is less likely to be audible. This technique completely does away with the need for noise-shaping dither systems (as it achieves the same thing automatically), and actually produces less background noise and distortion, while bringing about a noticeable increase in low-level signal transparency and enhanced stereo imaging. Indeed, panels of listeners thought the Wobbly Bits system sounded far more accurate than the 30ips (inches per second) analogue tape from which it was copied!

#### WOBBLY WORLD

Though Wobbly Bits systems (based around Oplof's appropriately-named Wobble Board and to be marketed under the brand-name of Kinetix) have already been tested for recording, there are obviously interfacing problems with other digital equipment locking to a rapidly varying clock will throw all normal digital equipment into a tight spin, and attempting to devise DSP mixing and EQ algorithms for variable sample rate, variable quantising step size audio is going to take a lot of lateral thinking. Nevertheless, the only alternative for highdefinition audio is to use a vastly high data rate, and given that demands on digital editing and mixing systems are always increasing, this is not a direction most manufacturers want to consider. Indeed, it seems that Wobbly Bits is presently the best hope for low bit-rate, high-quality uncompressed audio, and systems working on this technology are expected to be available by next April.

- A Hardware developer enquiries to: Kinetix, Todor Zhivkov Boulevard, Coumfi, Sofia 5-90210.

















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# dbx MC6

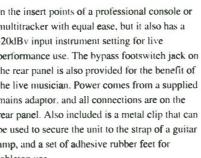
## Mini-Comp Compressor

PAUL WHITE tries out a compressor that looks like a cross between a portable CD player and a Stealth soap dish, but discovers the sound is much bigger than the package.

bx have been making compressors for a long time, and they can be seen in professional and project studios everywhere. but the MC6 Mini Comp under review here is the company's attempt to take a larger share of the desktop studio market, where not everyone wants to splash out on rackmount processors. Instead, they're offering traditional dbx technology in a plastic desktop package with faders instead of knobs. Optimised to work with line-level signals of -10dBv, the MC6 can handle levels up to +16dBu, so it can be used

in the insert points of a professional console or multitracker with equal ease, but it also has a -20dBv input instrument setting for live performance use. The bypass footswitch jack on the rear panel is also provided for the benefit of the live musician. Power comes from a supplied mains adaptor, and all connections are on the rear panel. Also included is a metal clip that can be used to secure the unit to the strap of a guitar amp, and a set of adhesive rubber feet for

Inside this deceptively small package is a full-featured stereo compressor based on the circuitry used in the dbx 160, and though the inputs and outputs are on jacks only, these are TRS types that can accept balanced or unbalanced connections. It's possible to use the compressor in mono mode, but in this case only one channel is usable as the side-chain circuitry is common to both channels. Perhaps surprisingly on a unit of this price, the side-chain uses a separate RMS detector for each channel, the outputs of which are fed into a summing circuit. This is far better than summing the audio and then using a single detector, where phase cancellations between



#### pros & cons DBX MC6 £100 • Flexible, with good range of controls and metering. Delivers the classic dbx sound. · Affordable. cons • Fixed stereo or single-channel mono operation only · Sliders not calibrated • +4/-10 switching would be useful. A compact and cost-effective way to buy into the dbx compressor sound without compromising on SOUND ON SOUND

the left and right channels can cause the detected level to be lower than the actual level of the individual channel signals.

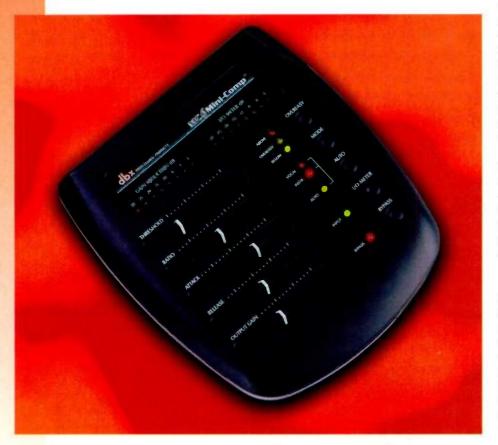
The OverEasy approach to soft-knee compression is something dbx are famous for, and the MC6 can be switched between OverEasy and conventional hard ratio modes. Five sliders provide full control over Threshold. Ratio, Attack. Release and Output Gain, but for those who'd rather let the compressor do the thinking, there are two auto modes, for Vocal and Instrument use respectively, that override the Attack and Release sliders and optimise these parameters automatically, depending on the input signal characteristics.

Many budget compressors suffer from poor metering, but the MC6 doesn't fall into this trap, with two 8-section LED meters to show gain reduction and I/O levels. The I/O meter can be switched to monitor the compressor input or output, depending on the front-panel I/O button setting, and another nice touch is that all the buttons have status LEDs. Curiously, the top level shown on the I/O meter is -3dB, which seems a little low when you consider that the unit can handle levels of up to +16dBu without distorting.

Compressor activity is monitored by three LEDs that show green for below-threshold signals, Yellow for levels within the OverEasy or soft-knee range, and red for levels above the threshold. In hard-knee mode (OverEasy off), the yellow LED remains unlit, as there's a prompt transition from uncompressed to compressed when the signal hits the threshold.

#### **IN USE**

I checked out the MC6 with vocals, guitar and drums, and was greeted with the characteristic flattering unsubtlety that I've always thought the hallmark of the dbx sound. For reference, most of the tests were conducted with the MC6 connected to the insert points of a small Mackie mixer, and as long as the Output Gain fader on the MC6 was set to near full, there was sufficient level available to keep the mixer's gain structure happy. Vocals from a



"The MC6 has enough flexibility to get most jobs done, and certainly retains the essentials of the dbx sound, which is something of a classic in studio circles."

decent capacitor mic are evened out very nicely, with an audible thickening of timbre, but if you slip out of auto mode and combine a long attack time with a fast release, you can get very close to the opto compressor sound that's currently very fashionable.

With guitar and drums, the Instrument mode provides the best result, as it emphasises the transient attack of the sound while still smoothing out level variations. Drums take on a more aggressive, punchy feel, while acoustic guitar combines sustain and tonal density with a well-defined attack transient. What's more, you can add quite a lot of compression and the result is still good—you can hear that processing is taking

place, but it works in a musical context and doesn't rob the sound of definition.

Switching from OverEasy to hard-knee mode makes the compression more noticeable, especially at higher ratio settings, but there are times when this is exactly what you need to create a specific effect or to enhance the impression of power.

#### **SUMMARY**

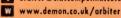
The MC6 may not look as impressive as a rackmount unit, but it seems to perform every bit as well. Furthermore, dbx haven't found the need to strip down the feature set, other than the fixed stereo configuration — you still get the full complement of controls, a choice of

OverEasy and hard-knee compression, two distinct auto modes and decent metering. My only real criticism is the lack of calibration on the sliders — you don't know what ratio you've selected, or what the attack and release times really are. This isn't vitally important, as most settings are carried out by ear, but I still like to know what's going on in a little more detail.

The MC6 has enough flexibility to get most jobs done, and certainly retains the essentials of the dbx sound, which is something of a classic in studio circles, though it doesn't suit every application. This is a compressor that makes its presence known, in the nicest possible way, and, with such a low price tag, has to be considered something of a bargain.

- £ £99.95 including VAT.

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# TLA Ivory 5050

## Valve Preamp & Mic/Line Amp

TL Audio's Ivory range of affordable valve-based processors continues to expand. Big game hunter PAUL WHITE strikes (c)amp and bags the latest two in the herd (SOS wishes to point out that no elephants were harmed during the writing of this review)...

L Audio's new Ivory series of processors uses hybrid valve/solid-state circuitry, with the aim of combining the tonal magic of valves and the low noise and reliability of semiconductors, at a price point acessible to project studio owners. As this point is lower than previous valve products from the company, the philosophy behind the Ivory range seems to be to keep it simple.

#### 5001 MIC/LINE AMP

Presented in a very traditional looking 2U rack case, the 5001 provides four identical mic preamps, all powered by an internal mains PSU. There are no line or instrument input options, and the metering is very basic, with just one LED showing the amount of drive through the valve stage and a second warning of peaks that are within 5dB of clipping. The brightness of the Drive LED

gives some indication of how much 'warmth' is being added by the valve.

The single Gain control is continuously variable from 16 to 60dB, with a separate Output Level control adding up to a further 15dB of gain. Phantom power (48V) is switchable, as are phase reverse and a 90Hz low-cut filter with a 12dB per octave slope. All four mic inputs are on rear-panel XLRs, and the outputs are available on both balanced XLRs (+4dBu nominal) and unbalanced jacks (-10dBv nominal). A voltage-select switch is also located on the rear panel, along with the mains inlet. With the exception of the Power button to the right of the front panel, none of the buttons have status LEDs.

Internally, each channel comprises a solid-state, low-noise mic amp followed by a two-stage valve amplifier based around a single ECC83 dual triode. An audio bandwidth flat within 1dB from 10Hz to 40kHz is claimed, and the equivalent input noise is specified at -127dBu for maximum gain. Of course, the really important measure of performance is how quiet the input is at more typical gains, but this is perhaps best judged subjectively under real recording conditions.

#### **5050 VALVE PREAMP**

The 5050 Preamplifier combines a single preamp and compressor, and has a front end based on that of the 5001, except that it adds line and instrument input options. The Instrument input jack is on the front panel, while the unbalanced line out jack is on the rear panel next to the mic XLR socket. On this model the output is on a line-level, balanced jack only. Again, the circuit is a hybrid design

#### pros & cons

#### TL AUDIO 5050 & 5001

#### pro

- · Well engineered, with a clear layout.
- · Attractively priced.
- . Hybrid valve/solid-state circuitry.

#### cons

- The 5050's compressor is more workmanlike than exciting.
- · Little or no mic amp metering.
- The 5001 has no line or instrument inputs.

#### summary

These are practical and well designed processors that combine simplicity and affordability with a clean audio path.

#### SOUND ON SOUND

featuring a solid-state front end followed by a valve buffer, but this time it seems that only one stage of the ECC83 is used. The other resides in the compressor amplifier block. There's no mic-level metering at all on this model, and no phase switch, though the 90Hz low-cut filter and phantom power switching have been retained from the 5001. A single Input Gain knob sets the mic gain, up to 60dB, though the Output Fader following the compressor can add a further 15dB to this figure, with yet more gain available from the compressor's Gain Makeup control if required.

Most compressors monitor either their own input or output to derive the side-chain control signal, but this design appears to do both. Threshold and Ratio are fully variable, as is the Gain Makeup control (+20dB max) with attack and release independently switched between fast and slow. To prevent distortion when compressing low-frequency sounds at the Fast release setting, the circuit has a built-in hold time that prevents the compressor from attempting to go into release mode after each cycle of the incoming signal. Gain reduction is shown by a meter above the mic/line amp, and a green LED above the compressor shows the Bypass switch status. A further bargraph level meter is fitted above the Output Fader knob to indicate output level.



TL Audio PA5001.

> Right: TL Audio 5050.



# & 5001

Though the compressor has a conventional Ratio control, with a range from 1:1.5 right up to 1:30, the voltage-controlled circuit has been designed with a soft-knee response, so the compression ratio actually increases towards the target value as the signal level approaches the threshold. Overall, the technical specification for the unit is similar to that for the 5001 preamplifier.

#### **PERFORMANCE**

Despite the use of valves in these units, there's no obvious noise penalty, and the mic amps perform cleanly and transparently. Driving the valves more heavily does produce a thicker tone, but it's not an effect that I actually like on vocals — I think the sound is best when it's clean or very mildly driven. There's no obvious difference in performance between the mic preamps on the two units under review.

I tried the 5050 instrument input with my Strat guitar and found it matched pretty well, giving a clean and lively tone. I've no doubt it would work equally well on bass guitar. However, some EQ would generally be needed to achieve acceptable guitar voicings, and as none is provided, that would have to come from elsewhere. I experienced no problems with the line input.

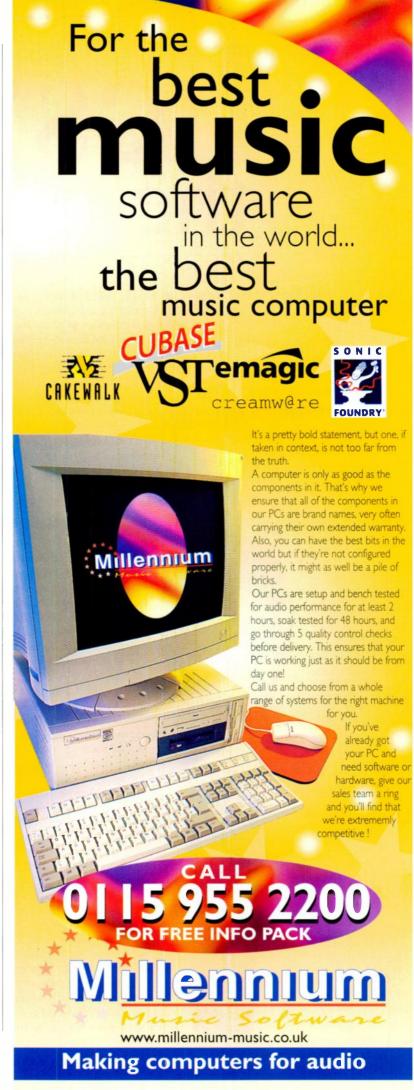
Moving on to the compressor section, this is surprisingly transparent, to the extent that you really have to push it hard if you want to hear compression as an effect. The effect is most obvious with the slow attack and fast release setting, which imparts a nice glassy edge to guitars and brings out the attack in bass and drum sounds, but most of the time the effect is just a gentle evening out of levels. I didn't really miss not having variable attack and release controls, though a hard/soft setting might have been useful for occasions where more overt compression is demanded. There's plenty of makeup gain, and in combination with the Output Fader this means that there's no problem getting enough level out of the unit, even with relatively weak input signals.

#### **SUMMARY**

Both these products are well built, clearly set out and easy to use, and both treat the signal being processed with respect. The mic amps are about as good as you'd expect to get in a good mixing console, but because you can patch them directly into your recorder, the resulting signal is likely to be cleaner, as you cut out all that unnecessary routing through a mixer. The 5050's compressor errs on the side of being over-polite for me, and you seem to have to pile on a lot of gain reduction to get the job done, whether you're after simple levelling or thickness and warmth. The slow-attack, fast-release setting works particularly well on transient sounds, but in all other respects I'd say the compressor is competent rather than exciting.

Given the relatively low cost of these units, they have to be considered good value, and their signal integrity wouldn't disgrace a serious professional recording facility. There are better-sounding products out there, but you generally have to pay a lot more than this to get them. If you want no-nonsense processors that get the job done simply and cleanly without costing a fortune, the Ivory range fits the bill nicely.





# Mics: the mechanics

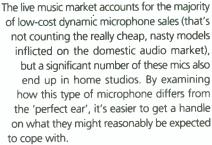
#### MIC TYPES & CHARACTERISTICS

The type of mic you choose for a given task can have a profound effect on the quality of the resulting recording.

PAUL WHITE sorts out the dynamics from the capacitors.

n theory, the microphone is just an electronic ear — point it at a sound source and it should pick up pretty much what the human ear would. Unfortunately, this over-simplification has a flaw — it's over-simple. The perfect microphone doesn't exist, and while some of the top models are very good, the ability of the human ear to resolve sounds varying in level from the proverbial dropping pin to an exploding tank-shell takes some beating. What's more, we can't all afford top-end microphones, and lower-cost models invariably have to compromise on performance somewhere along the line. The purpose of this article is to look at various types of microphone, and to discover which jobs they can manage and which they'll fall over on.

#### THE DYNAMIC MIC



A typical budget dynamic mic has an upper frequency-response limit of around 16kHz, as opposed to the 20kHz or so of a good capacitor mic. The human hearing range is always quoted as extending up to 20kHz, even though few can actually match this. Subjectively, the result of this curtailed upper response for dynamic mics is that most of them don't do justice to very high-frequency sounds such as cymbals, bells, or the upper harmonics of the acoustic guitar or piano. They'll make a fair stab at the job for demo purposes, but if you compare the result to that achieved with a capacitor mic, you'll notice that a lot of the 'air' and transparency around the top end is missing.

Another feature of the typical stage dynamic mic is that it has a 'cardioid' pickup pattern (picks up sound better from one direction). This can lend the microphone a slightly nasal quality, especially in low-cost models, but more significantly, it also results in what we call the 'proximity effect'. Most mic users will know that when a cardioid model is used very close to the sound source, as it is in stage vocal applications, the bass end rises considerably.

To stop this bass rise from getting out of hand, the designers put in a deliberate low-end roll-off below 100Hz or so, but the outcome of this is that whenever the mic is used at a distance of more than a few inches from the source, the sound will be noticeably bass-light. Designers also tend to put a presence boost at around 3-4kHz, to help vocals project better in a busy mix, but in more discerning studio applications this can lend the mic a slightly 'honky' quality. In my experience, models with a presence peak at around 5 or 6kHz sound smoother for studio use than those with a peak at 3kHz.

The final shortcoming of the dynamic mic is its restricted sensitivity. Sensitivity is simply a measure of how much electrical signal comes out of the microphone for a given level of audio input; the less sensitive a mic, the more amplification you need to get the sound up to a useful level. As you've probably already noticed, the more you turn up the gain control pot on a mixer's mic preamp, the more hiss you get, and the less sensitive the mic, the further up you'll need to turn the control to get the level you need. In practical terms, this means that dynamic mics are fine for loud sounds, such as drums and electric guitar, and they're good for medium-level sounds at close range, such as vocals, but they can fall down badly when you try to record quiet or distant sounds. To summarise:

- Dynamic mics are useful when the sound source is close and reasonably loud, and where the sound is predominantly bass or mid-range.
- High-frequency detail reproduction isn't as good as with a capacitor mic.
- The bass roll-off of cardioid models can affect low bass reproduction unless the mic is close to the source. Capacitor cardioid mics also exhibit the proximity effect, but they tend to have switchable low-frequency roll-off filters, enabling the response to be better optimised for close or distant use.
- Dynamic mics have the benefit of being tough and relatively inexpensive, and they don't require phantom power or batteries.

"Dynamic mics are useful when the sound source is close and reasonably loud."











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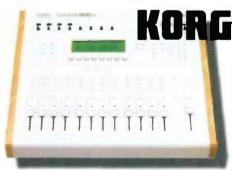


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#### MIC TYPES & CHARACTERISTICS



"An audio chain is only as good as its weakest link, so there's little point in using a top-price capacitor mic with a cheap cassette multitracker."

 As a general rule, the more expensive dynamic models will have the best sensitivity, the smoothest frequency response and the most natural sound. However, no two models are the same, so always try to hear several side by side and make up your own mind.

#### **CAPACITOR MICS**

Capacitor microphones are the mainstay of professional recording and are characterised by high sensitivity and a good high-frequency response. Though a capacitor mic can tackle any job that a dynamic model can, dynamic models still tend to be used for bass drum and tom recording because of their physical strength (drummers are notoriously bad shots!), and because of their good mid-range punch. However, some engineers use capacitor mics for drum-kit recording where a more natural sound is required — in jazz recording, for example.

Studio vocals are generally recorded with capacitor mics, though some rock singers like to use their dynamic models to give them a more punchy, middly sound. Mick Jagger and Phil Collins are reputed to prefer recording via dynamic models, so even if you do have access to capacitor mics, try recording your vocals via your dynamic mics and compare the results. You might be surprised at which you prefer.

For instruments with lots of top-end detail, capacitor mics are unsurpassed, and the same is true of quieter sounds, where the increased sensitivity of the capacitor model is a real bonus. Furthermore, it's possible to build dual-diaphragm capacitor microphones with switchable pickup patterns.

It sounds as though capacitor mics have all the plus points, and in many ways they do, but they tend to be expensive when compared to dynamic microphones and they're not quite as robust and if you damage them, they cost a lot more to fix. Modern models do tend to be reasonably tough, but most capacitor mics (with the notable exception of RF models, such as the Sennheiser MKH series). suffer if they're used in high-humidity environments where condensation is allowed to form on the capsule. Though the effect is not permanent, condensation may cause a loss of sensitivity, intermittent noise, and a dulling of the high end. This is a particular problem when recording close-miked vocals in a cold studio, though placing a pop shield in front of the mic will help. If condensation does strike, the only solution is to put the mic somewhere warm until it dries out.

All capacitor mics require power to polarise the capsule and to drive the on-board preamp. Solid-state models usually run from phantom power, whereas valve models require a separate power supply. To recap:

- Capacitor mics work well in most situations and have sufficient sensitivity to pick up quieter or more distant sounds properly.
- Their weaknesses are their high cost compared to dynamic models, their reliance on external power and the susceptibility of some models to succumb

"Capacitor microphones are the mainstay of professional recording."

to condensation. (High sensitivity is not usually a weakness in high-SPL (Sound Pressure Level) situations, as most models intended for these applications have inbuilt 'pad' switches, enabling them to handle levels in excess of 140dB.)

#### **BACK-ELECTRET MICS**

It's usual to see back-electret mics as the poor relations of the true capacitor microphone, but this is a largely unfair perception. The capsule construction of the back-electret mic is essentially the same as for the capacitor model, except that the charge for the capsule comes from a permanently charged electret material fixed to the capsule backplate. Indeed, some of the best studio mics, such as those made by B&K, use back-electret capsules. However, the nature of a back-electret capsule means that it is generally considered impractical to build a multi-pattern model working on that principle. For that reason, all the back-electret mics I know of have a fixed polar pattern, or one that can be modified by acoustic means only to provide differing widths of cardioid pattern.

Another potential weakness of the back-electret



mic is that the permanent electrical charge sealed into the electret material will weaken with time; some manufacturers claim that the capsule life is around 25 years. You might ask why manufacturers build back-electret mics if they can only be single-pattern models and the capsules need replacing every 25 years or so. Well, they can be cheaper to build than true capacitor microphones, and they can also be made to run from batteries rather than phantom power (though not all models offer this alternative). However, battery powering usually equates to a reduction in the maximum SPL that can be handled, and this is a compromise that some manufacturers are not prepared to make. To summarise:

- The strengths of the back-electret mic are similar to those of the capacitor, but multi-pattern back-electrets are not usually available.
- The use of a permanently charged back-plate means that a back-electret can be cheaper to build, but the electrical charge weakens over time and eventually the mic capsule will need replacing.

#### SUMMARY

Microphones can be priced anywhere from £50 to over £5000, but a lot can be achieved using models from the lower end of the price range, providing you

know what their limitations are. It's worth remembering that an audio chain is only as good as its weakest link, so there's little point in using a top-price capacitor mic with a cheap cassette multitracker, and, by the same token, a budget dynamic mic isn't going to do justice to that nice new Neve mic preamp you've just bought.

If you're going to spend more than a few hundred pounds on a microphone, it might be worth looking at a separate high-quality mic preamp to go with it, as the input stages on most project studio recording consoles have to be built to a price and are unlikely do full justice to the capabilities of a really good capacitor mic. As well as obtaining a slight improvement in noise performance, you should also notice a cleaner, more natural sound.

A good microphone might seem expensive, but unlike that computer you've just spent a fortune on, it will never become obsolete, and its benefits will be heard on every recording you make.





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# ryul Chaments NEW MOVEMENTS Sakamoto

The classical and pop music worlds collide in the person of Ryuichi Sakamoto, with even his latest ambitious orchestral work due for remixing by a team of DJs. PAUL TINGEN explores the attraction of opposites...

F BUDDHA

he world of Ryuichi Sakamoto is characterised by stark contrasts and by contradictions both apparent and real. He has an obsession with synthesizers and the latest music technology, and as a member of the Yellow Magic Orchestra he was one of the inventors of techno-pop. Yet some of his greatest and most well-known work has used the vehicle of that centuries-old mainstay of Western classical music, the orchestra. While being one of Japan's greatest pop stars, he's also a revered orchestral film music writer. He often blends musical influences in idiosyncratic, contradictory ways: on his classic solo album Beauty (1990), for example, he incorporated influences from funk, rock, flamenco, African, Japanese traditional and classical, techno, R&B and dance musics, to create a collage of styles, rather than a seamless whole. Sakamoto is also one of the world's few music technology adepts who is happy to admit to actually liking the 'coldness' that comes from using sequencers and computers something that may be related to the formality and emotional rigidity that's part of his Japanese heritage. Yet he speaks with great affection about film director Bernardo Bertolucci's forceful attempts to get him to write more emotional music. He has successfully appeared as an actor in several major feature films (including Merry Christmas, Mr. Lawrence, The Last Emperor), yet he reportedly hates the sight of himself in movies.

It's easy to suspect that it is his very Japanese-ness that lies at the root of many these contrasts and contradictions, for it often sits awkwardly with the

Western music idioms in which he writes. And as his international profile has become more prominent, the contradictions and contrasts in his work have become more apparent. During the last few years, Sakamoto's activities have not only increased, they have also spread into more diverse areas: film scores during the '90s, including Pedro Almodovar's High Heels, Volker Schlondorff's The Handmaid's Tale, Bertolucci's The Sheltering Sky (which earnt him a Golden Globe Award) and Little

Buddha (which was nominated for a Grammy Award); the writing and performance of the music for the Opening Ceremony of the 1992 Paralympics; acting in Madonna's 'Rain' video; chamber music, including live piano performances with cellist Jacques Morelenbaum and violinists L Subramaniam and Everton Nelson; and a concert entitled Music Plays Images X Images Play Music, with Japanese visual artist Toshio Iwai, which was broadcast on the

Internet and awarded the golden NICA in the Prix Ars Electronica competition of 1997.

This is not to mention live rock tours, productions for other artists (amongst them Aztec Camera's Dreamland), collaborations (for example, with David Sylvian on Hector Zazou's 1992 Sahara Blue, the launch of his own record label, the release of a new YMO album, Technodon (1993), and, not least, his solo albums — Beauty, at the start of the decade; the dance music-influenced Heartbeat, about which he was last interviewed in SOS (July 1992); 1994's Sweet Revenge; 1996, a pastoral, breathtakingly beautiful reworking of many of his best-known works for piano, violin and cello; and Smoochy (UK release in 1997), Sakamoto's excursion into the land of easy-listening and Latin. And, as if to balance out the glibness and sweetness of much of Smoochy, there's now Discord, released in early March. Discord is probably his starkest, darkest, most emotional work ever. It's his symphonic meditation on the suffering in the world, and our inability to alleviate it.

#### **INSPIRATION**

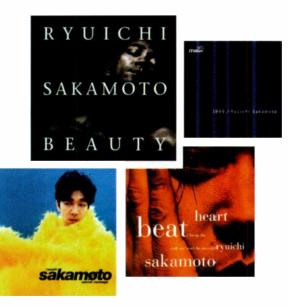
Sakamoto himself has gone on record as saying that he's 'pretty much schizophrenic' (*Premiere*, August 1996). And every time I've spoken to him he returns to the topic of 'balance', his need to find an equilibrium between the disparate strands of his work.

This time I'm interviewing Sakamoto in one of the most unusual hotels I've ever set foot in. He seems to have a taste for the out-of-the ordinary, whether in music or in hotels, but this takes some beating. It's located in West London, and is so private that there's no signposting outside it. Inside, it's composed from rectangular shapes painted white, with interior design in an ultra-sparse, minimalistic style somewhere between Zen and '60s chic. The corridors are laced with identical white panels as far as the eye can see, the only thing indicating that these panels are actually doors being a small button on each, with a tiny red light and a keyhole.

Sakamoto's room is done in the same minimalist, all-white style. Cosy it's not, but it is certainly unique — a bit like Sakamoto himself. That's not to say that he's not extremely polite and forthcoming. But, at 46, the boyish charm, humble openness and model good-looks he's presented on previous occasions have made way for fleshier features and a more reserved attitude. Maybe it's because we're meeting at the end of the second day of interviews and he's just plain tired, but there's a sense of taciturn authority, of the maestro, about Sakamoto.



#### ryuichi sakamoto



"Working with sequencers and samplers is a great way of writing for orchestra, but at the same time the modern process can make you lazier, especially from a rhythmic point of view."

His English may have improved since the last time we met, but Sakamoto remains as reluctant as ever to consider conceptual questions. His orchestral work 'Untitled 01', which fills the Discord CD, was apparently inspired by feelings that came to him when watching starving children in Africa on the news. "What can I do to help these people?" is one of the questions he asks, and it's answered in speech excerpts on the CD by the likes of Laurie Anderson and David Torn. Five years ago, when talking about his CD Heartbeat, Sakamoto explained his own and other people's interest in dance music in these terms: the bass drum reminds us of our mother's heartbeat when we were in the womb, the only totally safe place we've been. In a world full of fear and suffering, dance music supplies us with back-to-the-womb solace. Now I ask Sakamoto whether human suffering and his desire to do something about it, which appear to be at the root of both Heartbeat and 'Untitled 01', are therefore a crucial source of inspiration to him. He responds: "I don't think that way about myself or my music. But yes, I must agree, your observations sound right."

#### **CHALLENGE**

He laughs apologetically, but doesn't enlarge on his comment. The same happens when I say that 'Untitled 01' appears to be not only his saddest and most emotional work to date, but also has

the strongest unity of style of any of his solo work. Guitarist David Torn may be weaving in and out with atmospheric effects, DJ Spooky may scratch here and there, almost as inaudibly as Torn's guitar effects, and there are the many voices that are mixed into the fourth movement, but 'Untitled 01' is at heart an orchestral work, firmly rooted in the Western classical music tradition. It features Sakamoto's trademark, lush, lyrical, often pentatonic string-writing, as used in his best-known film music, such as Merry Christmas, Mr Lawrence.

When I compare the grand line and unity of style of 'Untitled 01' with the collage-like bittiness of Beauty and much of his other film music, he laughs again and answers evasively: "Musicians and artists have to give interviews like this. To promote your art and music you have to give your words, so we need to talk... but it's not easy." When I retort that journalists have to ask questions like these, he laughs again, and for once he elaborates: "I believe that concepts like these, concepts like the philosophy of the music, the recipe with which it is made, only come after we get the music. In most of my cases it comes after the music is finished. When I write music I get a mood or an emotion or a feeling. I write and music leads me to some destination. So I don't know where I'm going until after I've finished the music. It's a very unpredictable process. Music has its own language and grammar. When I'm writing I feel like I'm riding a wave or something. I'm just surfing it to see where I end up. But with 'Untitled 01' it was different. This time when I started writing I had clear emotions for each movement. So I was trying to realise these emotions in music. That was a very different writing style."

'Untitled 01' is made up of four movements with the very descriptive titles Grief, Anger, Prayer and Salvation. Sakamoto agrees that Prayer and Salvation are not emotions, but they're "states of being, and I tried to capture that state of being. It's a big challenge. Like for the last piece of Bertolucci's *Little Buddha* I also had to write about an abstract state of being. In this case it was reincarnation, and I was struggling and



suffering to do it. The themes of Prayer and Salvation came out of the feelings of sadness and frustration that I expressed in the first two movements, about the fact that people are starving in the world, and we are not able to help them. People are dying, and yet the political and economical and historical situations are too complicated and inert for us to do much about it. So I got really angry with myself. I asked myself what I could do, and since there's not a lot I can do on the practical level, all that's left for me is to pray. But it's not enough just to pray; I also had to think about actually saving those people, so the last movement is called Salvation. That's the journey of the piece." When asked to whom or what the prayer is directed, Sakamoto asserts that he's "not religious, but maybe spiritual. The Prayer is to anybody or anything you want to name."

The naked emotionality of 'Untitled 01', or



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#### ryuichi sakamoto

#### LIVE RECORDING

In line with Sakamoto's love for digital sound, 'Untitled 01' was recorded digitally, on a Sony 3348 48-track recorder, plus two Alesis ADAT recorders. Oddly enough, it was the ADAT recordings that made it onto the CD: "We recorded all nine Japanese live shows, with a microphone for each pair of musicians. That's almost 50 microphones, and that's the reason why you can hear hiss at the beginning of the first movement. We recorded everything to the 3348, and at the same time did 14-track live submixes to the two ADATs. When we compared the sound quality of the 3348 and ADAT recordings we found that the ADATs sounded better. So we loaded the best performances from the ADATs into Pro Tools, and then edited them in there. Finally we mixed them, with the O2R desks, to DAT. Both David Torn and DJ Spooky were mixed quite far in the background, because they were only playing atmospheric things; they didn't play things that were part of the score. I played plano throughout. In sections of 'Prayer' I played inside the plano, directly on the strings, incidentally, the percussion in 'Anger' was all played live; there were no sequences used during the live recordings."

"Every time
I get a new
keyboard
there's a new
improvement,
or a new way
to generate
the sound.
It's hard to
keep up."

Discord, is unusual in Sakamoto's oeuvre. It appears to have taken him a lifetime to get to this point, and, quite possibly, to free himself of the restraints of a Japanese background that prevented him from expressing emotions as directly as this. Sakamoto was once a child prodigy who studied composition, aged 11, at the Tokyo National University of Fine Arts and Music, and eventually received a BA in composition and a masters degree centering around electronic and ethnic music. His personal outlook was shaped by the student radicalism of the '60s, which is why he still calls himself a "rebel" who likes "breaking the rules." In the '70s he did this through his interest in the avant-garde classical music of Cage, Stockhausen and Boulez. But then he rebelled against this atonal, abstract and unemotional music, and founded YMO in 1978. The musical language was now tonal and therefore more approachable, but there was still a strong emotional constraint because of the 'cold', robotic rhythms.

#### **MUSICAL POWER**

Twenty years later, Sakamoto has finally gone for the emotional jugular. He agrees that 'Untitled 01' is his most emotional work to date, expressing his fears about this in the same breath: "I believe that music can be very powerful, and a part of me is afraid that music can be used in the wrong way. When you look at human history, music was sometimes used for wrong things --- Nazis used powerful, emotional music to manipulate people, leading them in a wrong direction. So I want to be very careful with the power of music. As an artist I've always been afraid of that aspect of music, and yet on the other hand it's also the beauty and attraction of music. So I have to be careful about achieving a good balance. I cannot drop the dangerous side of music, but I also have to get the right balance when I use it. Discord is very powerful, and I hope it will not lead people in the wrong direction. I want my music to be symbolic, metaphoric, without it having a straightforward message."

Oddly enough, the circumstances under which 'Untitled 01' was written were hardly conducive for the emergence of a work of this kind. Apparently, Sakamoto had boxed himself into a corner by prebooking an orchestral tour of Japan for January 1997. Orchestra rehearsals were scheduled for the beginning of January, but by late November 1996 he still didn't have any repertoire to play. It was under these tight circumstances that he got the idea for a symphonic piece about human suffering, and he wrote the whole piece in exactly one month, during December 1996: "I finished writing the very last note on the morning of the first rehearsal day. It was close! I didn't have much time for experimenting. Normally I experiment with different things, unknown techniques, and I'll use errors and accidents that happen when I'm writing. I sometimes do similar things to John Cage, putting patterns and ideas together randomly, without any musical consciousness. I may number some themes and then just throw some dice. You can get some weird, very unusual results, but it's not always a success. But this time I started with the words, and then wrote as straightforward and quickly as I could because of my deadline in January."

Writing took place in his home studio: "I have a Macintosh with [Opcode] Studio Vision software and 16 tracks of [Digidesign] Pro Tools at home. My master keyboard was the Korg Trinity, which I like very much. When writing 'Untitled 01' I worked almost excluvely on the Trinity, saving everything I played in Studio Vision. I improvised phrases and patterns and then it was a matter of going back and forth between the keyboard and the Mac, editing, changing, creating a shape and chord structure and so on. Once I'd developed a certain theme and decided that I was going to use it, I started improvising again, for a theme for a 'B' section. Maybe it wouldn't fit, in which case I discarded it and tried another idea. So I was composing the whole piece through from beginning to end. I wrote using the appropiate orchestral samples — strings, woodwinds, brass, piano, harp — and so ended up making a demo that sounded almost like a real orchestra."

#### TROUBLED TECHNOLOGY

Apparently, the need to make almost real-sounding demos of Sakamoto's orchestral compositions arose from the fact that Bertolucci couldn't imagine what things would sound like from a piano-only demo. Nevertheless, Sakamoto comments that he also made orchestral mock-ups in the pre-sampling days using "piles of synthesizers. But what is very handy today is not only having the samples, but also the capacity to print out all parts from the sequencer. I did this at the end of my writing process, and then made final additions and changes on the actual manuscript. I think working with sequencers and samplers is a great way of writing for orchestra,





#### ryuichi sakamoto

▶ but at the same time the modern process can make you lazier, especially from a rhythmic point of view. Sequencers tend to be based around 4/4 meters and 8-bar units. Even 5/4 is difficult to do. And if you think of someone like Stravinsky, who, especially in his ballet music, used irregular meters and structures all the time, that would have been very, very hard to do with sequencers."

It's the first time I've ever heard Sakamoto argue that modern music technology has any shortcomings and dangers. Five years ago he stated that he saw "no danger in music technology at all. It simply makes the whole of my writing and recording process easier." But this time, although professing his love for digital recording (he also owns an Akai DR16, providing, together with Pro Tools, a total of 32 digital tracks, plus two Yamaha 02R desks, giving him a home studio that's "100% in the digital domain") the Japanese maestro administers praise and blame in equal measure: "There's a difference between the keyboards from different nations. I don't usually get a very rich, warm bottom end from Japanese keyboards. They are very bright, but also kind of thin and plastic-sounding. German synthesizers are good for bell and metallic sounds, more harsh sounds. But I get most of my bottom end from analogue American synths like the Moog and so on. I have a large collection of analogue synths, like the ARP 2600 and Odyssey, and various Moogs, and I like their sound. I also have an 8-bit Fairlight Series II that gives a great grainy,



grating sound." [Scratches fingernails on the table and laughs].

"Most Japanese companies, like Korg and Yamaha, send me their newest keyboards, so I start with checking out their preset sounds. But every one of these new keyboards has maybe only five useful presets. That's not great, cost/performancewise. It can take me hours to listen to all the presets of one keyboard, and then to find only five that are any good is simply bad. I do normally program my own sounds, but learning how to program a new keyboard is complex and time-consuming. Every time I get a new keyboard there's a new improvement, or a new way to generate the sound. It's hard to keep up. I can't even remember the names of all these new ways to generate sounds. So in the end I keep maybe only 10 modern keyboards in my studio, and the rest I send back, or store in my cellar. A new keyboard that I do like a lot is the Korg Z1. It has just replaced my Trinity as my master keyboard. And now Yamaha will be putting out a new keyboard called the EX5, which contains both new and old ways of generating sounds, which you can layer. So you can get a great variety of sounds, and that's really fantastic."

#### **EASY-LISTENING MUZAK?**

With the contributions of David Torn and DJ Spooky being essentially cosmetic, 'Untitled 01' is at heart a rather traditional symphonic work. However, Sakamoto wouldn't be who he is if he wasn't transgressing some boundaries: the 'Anger' movement of 'Untitled 01' is apparently being re-mixed by several DJs from the Ninja Tune label. With 'Untitled 01' being released on Sony Classical, it's the first time that a project will exist in one form on a major classical label and in another form on an independent remix label. Moreover, Sakamoto is also pioneering developments on the Internet. His live performance, 'Music Plays Images X Images Play Music', with visual artist Toshio Iwai in 1996, was broadcast live on the Internet, including the MIDI data coming from Sakamoto's piano. A MIDI piano was also remote-controlled by users of the Internet. And on January 23rd 1996 and February 11th 1997 live performances of 'Untitled 01' were also broadcast via the Internet. The former performance was part of his Japanese tour, while the latter took place at the World Financial Centre's Winter Garden Centre in New York.

Sakamoto explains: "For the most part the Internet broadcasts are just regular broadcasts like you'd get them on TV, with visuals and music. But that's not really using the Internet to its best



advantage. The best part of the Internet is the possibility for two-way conversation, for interactions between individuals. We've been developing interactive technologies to use together with the regular broadcast. One is the 'f' key 'remote clap'. People sitting in front of their PC can hit the 'f' key to show their appreciation, and that signal will go to the server and then to the concert hall where it lights up a large 'f' logo on stage. So players and concert audiences can see the reaction of the Internet audience. And, with a 20-second delay, Internet audiences can see their own reaction on stage as well. Another interactive thing is the remote piano. There's a graphic representation of a piano plus a grid on the web site, and you can highlight keys or squares on the grid to create melodies. I choose the eight notes that people can play, and we worked out a situation where 10 people at any one time have access to the MIDI piano on stage for 100ms at a time. What about the problems with bandwidth? Well, obviously there were many times where we had to sacrifice audio quality and picture resolution. But in the last three years data-streaming technologies have developed dramatically. With two ISDN lines at 128,000 bps you can have CD-quality audio and video-quality resolution. Otherwise we gave people a choice of 128, 56 and 28K quality, and we compressed the data accordingly."

There are just two final loose ends I'd like to tie up, two more noteworthy contradictions in Sakamoto's work for which I request explanations. The first is the fact that he has gone on record as saying that performing music on stage is not a creative act. It's an odd assertion for someone steeped in the classical music tradition, and Sakamoto apparently even has gone as far as extending it to jazz performance. That he has an unusual view of live performance is clear from a concert he gave in London as part of his Sweet Revenge tour (1994), when a 5-piece backing band seemed to have little more to do than fill a few minor gaps left in the dominant backing tape. During a break between songs, a woman shouted: "Ryuichi, we want you live!", leaving the man visibly flustered. When gueried about his attitude towards live playing and the London incident, he answers: "I think my case has been a little bit overstated. What I mean to say is that live performances differ from creating music. In my performances I'm concerned with repeating what I've created in the past. So performance is just recreating for me. Having said that, you can't just play your audience a CD. They want some kind of live energy, I understand that. But for the Sweet Revenge tour, and also the Smoochy tour, the drum samples were really important for me, so I sacrificed the energy of life performance and used backing tapes." And he got a predictably frustrated reaction from some members of his audience.

The mention of *Smoochy* brings the final contradiction into focus. There's hardly a bigger contrast possible than between Sakamoto's last two solo releases: 'Untitled 01'/*Discord* is dark, emotional, overpowering. *Smoochy* is, in part, an interesting Japanese version of Brazilian music and late-night jazz, but in part also descends into easy listening and even muzak. Sakamoto shifts uneasily in his seat when 'easy-listening' and 'late-night jazz' are mentioned: "Both albums are aspects of myself. With *Smoochy* I just wanted to make a pop album. I'm a big fan of Brazilian music and I've always banned myself from using Brazilian influences, because I knew people would accuse me of making easy-listening. Jobim is one of my favorite composers, but to use his influence is dangerous — his music is very smooth jazz. This is the first time I've allowed myself to use Brazilian influences, and I still believe in it."

Given his slightly defensive reaction, perhaps there were more reserved reactions to *Smoochy*, and this begs the question of whether Sakamoto is in danger of spreading himself too thin. Maybe he's in danger of becoming a jack of all trades, and a master of some.

Or is that a contradiction in terms?





f you've done much in the way of recording, you'll probably have come across that apparently dull but sometimes essential studio tool, the DI, or 'Direct Injection', box. DI boxes perform two important roles: they provide electrical ground isolation between input and output, and they match the impedance of the source signal to that of the load. For example, a DI box with a high input impedance and a low output impedance may be used to match an electric guitar or bass to the input stage of a mixing console.

There are two main types of DI box: passive transformer and active electronic (though there are some active electronic models that also include transformers). Passive transformer DI boxes require no power, while active models need either phantom power or batteries to operate.

#### TRANSFORMER DI BOXES

The simple transformer DI box has the advantages of simplicity, excellent electrical isolation between input and output, and lack of dependence on a power supply. Good-quality transformers are

Transformer
DI box (with
ground-lift switch
and thru socket).

Ground Lift Switch

Hot
Screen
1
3
Cold
XLR Output Socket

Figure 1:

expensive (which is why most low-cost DI boxes are active), but transformers used on their own are limited in what they can do, by virtue of the fact that they are passive devices. If you discount any losses due to inefficiencies in the transformer, the total power going into a transformer equals the power coming out, and as power is equal to the current in Amps multiplied by voltage, it's apparent that if you step up the voltage you end up with a lower current capability. If you step up the current, on the other hand, the signal will be at a lower voltage. In the example I referred to above, where a transformer DI box is being used



to match a guitar to a mixing desk, the output side of the transformer is required to deliver a higher current than the original signal source, which means a significant drop in signal voltage. To overcome this, the DI box needs to be be plugged into a console mic input, where sufficient gain is available to restore the signal level.

A transformer DI box usually comprises a single transformer with a centre-tapped secondary winding, as shown in Figure 1. The centre tap provides the ground for the output signal, the ends of the winding providing the '+ve' and '-ve' balanced outputs. The unbalanced input is completely isolated from the output, but you can

connect the input ground to the output ground if necessary, by setting the ground lift switch to 'Off'. Again, Figure 1 should make this clear. Note that the input connection has a thru socket so that the DI box can be used to take a feed from an existing signal path without breaking the signal flow. This is useful in live sound applications, where the DI box can be inserted between the instrument and its amplifier, to permit an isolated feed to be sent to the mixing console. Note that a transformer DI box doesn't necessarily provide a foolproof safeguard against electric shock in fault conditions, as it's possible that the connected cabling is grounded at some other point in the system.

#### **ACTIVE DI BOXES**

Many active DI boxes dispense with transformers altogether — although, as mentioned at the outset, some include both active components and a transformer output stage. A typical transformerless DI circuit uses a minimum of two op-amps to provide a 'floating' output where the input and output signal grounds are independent, but unlike the transformer, there is no true galvanic isolation. As with transformer models, ground lift switches and thru sockets are generally fitted, but because active circuitry can produce power gain, the input to output voltage ratio can be made independent of the impedance ratio. To make the devices more flexible, it's not uncommon to include switches, so that the user can choose the output level, or to provide two different output connectors, one operating at line level and one at mic level.

#### JARGON BUSTER

DUMMY LOAD: A high power resistor that can be connected to the output of a power amplifier to make it function as though a speaker is connected, but without producing any sound.

GALVANIC ISOLATION: A transformer provides 'galvanic isolation' in that no electrical current can flow directly from one winding to the other as they are not in direct electrical contact. However, a signal can flow via electromagnetic coupling between the two windings.

GROUND LIFT: Where it is desirable to isolate the ground of one circuit from that of another, for example to prevent ground loop hum, a piece of equipment with a ground lift facility is required. In a DI box, this may simply take the form of a switch that essentially disconnects the incoming signal screen from the outgoing screen.

IMPEDANCE: Though this definition is oversimplified, impedance decribes the effective resistance of a circuit to alternating current signals such as audio signals.

Power for an active DI box can come from internal batteries, but most professional models will also operate on phantom power, which means that they must be plugged into a console mic input with the phantom

power switched on. A number of models can use either batteries or phantom power, and when phantom power is applied, it's usual for the internal battery to be automatically switched off, to conserve power.

#### SPEAKER DI

Sometimes it's desirable to take a DI feed from the speaker output of an amplifier, and both active and transformer DI boxes can do this, as long as they are fitted with an input designed to accept speaker-level signals. Amplifiers' speaker outputs carry signals of several tens of volts, while line-level signals are usually only around a couple of volts, so

"Even relatively inexpensive DI boxes can work extremely well, so it's worth having at least Active DI boxes such as these units from MTR, incorporate one in a buffering amplifier to isolate the input from your tool kit." loading effects.

it's evident that plugging a speaker signal into a line-level input would overload it massively, probably to the point of causing damage. Mic inputs are designed to accept signals of typically only a few thousandths of a volt in amplitude, so the effect of plugging in a speaker signal would be even more serious than in the case of the line input. DI boxes with speaker input jacks should also have thru connectors allowing connection to either the original speaker or to a dummy load. The DI output signal will be at either mic or line level and can be fed to the appropriate console input.

#### SPEAKER SIMULATORS

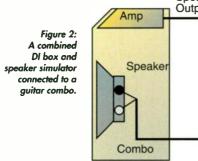
Guitar amplifiers and, to some extent, bass amplifiers are special cases when it comes to DI, as the final sound they produce is dramatically affected

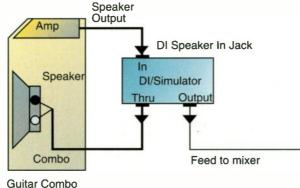


#### DI BOXES & WHY WE NEED THEM

"The simple transformer DI box has the advantages of simplicity, excellent electrical isolation between input and output, and lack of dependence on a power supply."

> by the character of the loudspeaker cabinet through which they are played. This is largely due to the restricted top end of a typical guitar or bass speaker, so some additional circuitry is required to emulate the frequency response of a speaker cabinet if DI'ing from the speaker output of a guitar amplifier is to be really satisfactory. This type of circuitry is known as a speaker simulator, and both active and passive models are available. Passive models, such





as the Palmer Junction Box, combine the elements of a DI box with those of a speaker simulator, but it must be stressed that unless the speaker simulator also contains a 'dummy' loudspeaker load, it is necessary to connect a loudspeaker to the amplifier via the thru connector of the DI box. Failure to do this will leave the amplifier running into such a high impedance that it is effectively the same as having no load connected and, depending on the amplifier type, this could do serious damage to

> the output stage. Figure 2 shows a combined DI box and speaker simulator connected to a guitar combo.

#### **SUMMARY**

DI boxes are essential pieces of equipment in recording, as they allow signals from either instruments, preamps or power amplifiers to be used as recording sources without the risk of impedance mismatch or ground loop-induced hum. This can be particularly important in live recording situations where the source from which you are recording may also be connected to the PA system. Even relatively inexpensive DI boxes can work extremely well, so it's worth having at least one in your tool kit, as they can solve problems that are very difficult to cure by other means.



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Is the RX8 the latest sporty model from Mazda? No — actually, it's a keenly priced 8-buss mixing desk from Soundtracs. CHRISTOPHER HOLDER secures the first test drive.

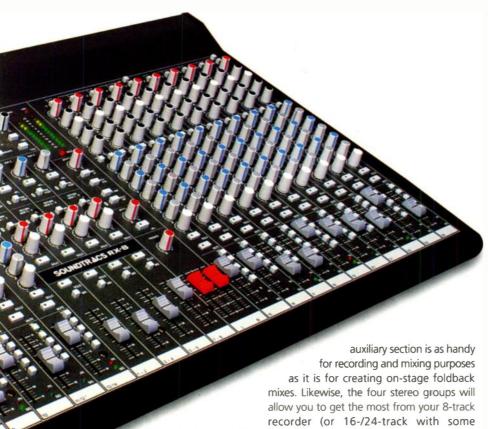
I made it up (I didn't). This guy had just bought a Lexicon PCM80 and a PCM90, and wanted to know what my opinion was about mixing desks. I thought "OK, he's spending upwards of £3500 on effects alone, so how about looking at a Yamaha 02R or a Soundtracs top-of-the-range Topaz, or an Allen & Heath GS3?" No, he was wondering whether there was anything that could compete with the Mackie 8-buss at around the £2000 mark. After we had a brief chat about mixers, he started to ask for advice on a further effects unit. Noting that he already had two top-notch units, I assumed that he'd be after a more budget-conscious multieffects workhorse: but no, actually, he was thinking about something more in the £1200 region, like the Lexicon MPX1 or TC Electronic M2000.

Incredible. That's about five grand on effects alone, while he was still contemplating spending only around £2000 on a desk.

It all made me think about the relative costs of studio equipment and what you'd expect to pay to get a 'professional' sound. Traditionally, the mixer would have been the most expensive single item of gear you'd need to budget for, and it followed that it would be the single piece of gear that, perhaps more than any other, distinguished a home studio from a pro/semi-pro concern. Evidently, times have changed, and the perception is that you can get away with spending less on your desk and not be penalised with a crap sound. This of course isn't entirely the case — the less you spend the more limitations you'll encounter, both sonically and in terms of facilities — but it's true to say the compromises are becoming less severe. The Soundtracs RX8 could be a case in point: it's an affordable console in the same mould as, say, the Spirit Folio range, only it's big — 24 or 34 channel inputs. But if what we're talking about is simply a grown-up budget console, it's got to fall over in some departments, right? You might be surprised.

#### **WORTH THE WEIGHT?**

Looking at the box and having little idea of scale from the promotional pictures, I embarked on a major clear-out of my studio to accommodate the huge bulk of the RX8. When it was time to pull it out of the packaging I was surprised to find a board rather more compact than expected. I was reviewing the 24-channel version, which is 86cm wide and a miserly 48cm deep. At 42kg in weight, this desk is not something you can tuck under your arm, but it's a fairly comfortable one-man lift (once it's out of its



packaging), and this is made easier by conveniently moulded sides you can grab hold of. Physically, despite its small dimensions, the RX8 still looks like a 'real', grown-up mixing console. This is important if you're operating your studio as a semi-pro concern (or intending to): the desk is the focal point of peoples' attention and you don't want something that looks as though it fell out of a Christmas cracker.

In Soundtracs' promotional material much is made of the RX8's dual functionality: this desk is intended to be just as much at home in a live environment as it is in the studio. Although SOS is a magazine that focuses primarily on studio equipment, we know many of you out there gig as well, so it's worth noting some of the live features. Those on the live circuit will be happy with the six independent auxiliaries, with individual pre-/post-fader switching, so you can have as many as six foldback mixes. In the EQ section you'll find a high-pass filter to help cut low-frequency stage noise picked up by your mics. The group faders are actually stereo (eight groups, four faders), which can be more useful in a live situation, where you can have one fader controlling a stereo mix of drums, backing vocals, or keyboards (if your front-ofhouse mix is in stereo and not mono, of course). There's an additional mono output as well, which would come in handy to feed another zone, or a bass bin, another monitor mix, or a stage-centre speaker cluster. Unfortunately, there isn't actually a mono mix buss as such — it's a mono sum of the stereo output — so you can't assign just a vocal mix to a central cluster.

That's the live bit over with; what are the main recording attractions? For starters, the

for recording and mixing purposes as it is for creating on-stage foldback mixes. Likewise, the four stereo groups will allow you to get the most from your 8-track recorder (or 16-/24-track with some thoughtful patching). Tape monitoring is handled by eight extra inputs into channels 1-8. These inputs are normalised to four stereo returns located above the four group faders, acting as monitors during recording. When it's time to mix down, a Tape button on each of the first eight channels switches the signal from the multitrack into that channel. Channel muting and a well specified monitor and talkback section are all included in a rather sophisticated feature set for the price.

#### **SPEC CHECK**

If we take a look at a mono channel strip we can get an idea of what exactly is on offer. Each channel comes equipped with a phase reverse switch. A rotary gain control offers a mic gain range of +10dB to +60dB, and a line input range of -10dB to +40dB. There's no mic/line button or pad button, but there should be a enough leeway to accommodate practically every signal you might throw at the RX8. A phantom power switch is supplied either side of the central master module — ie. one for each set of 10 mono channels, which should be enough to get you out of trouble if you should find yourself having to deal with some sources that can't accept phantom, whilst needing to use your condenser mics.

Next up is the equalisation section, a fairly standard 3-band EQ with a swept mid. The HF and LF controls use a shelving filter and administer up to 15dB of boost or cut from above 12kHz or below 80Hz respectively. The mid-range section is sweepable between 190Hz and 7.2kHz, again with 15dB of boost or cut available (with a Q value of 1.5). Additionally, a high-pass filter can roll off the frequencies below 80Hz at 18dB per octave. An EQ on/off switch is also provided, which is great for comparing your carefully tweaked





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settings with the unprocessed signal.

Further down the channel strip in familiar order comes the auxiliary section. I quite like the way in which Soundtracs have attacked the aux conundrum. (How many should be pre-fader? How many should be post-fader? Should the auxiliaries be grouped in pairs? And so on...) If you're aiming to design a truly multi-purpose console, you have to accept that some people may want all the auxiliaries in pre-fader mode (to set up multiple foldback mixes) for a live situation. When it comes to a mixdown situation in the studio, however, others will probably want all of them to be post-fader (to incorporate the maximum number of effects units into the mix). Soundtracs have dealt with this by making each of the six auxiliaries switchable pre/post on the aux master section. This makes the channel strip considerably less cluttered and, short of a few more auxiliaries, offers all the flexibility your heart could desire.

A pan pot sits under the auxiliaries, with solo and mute buttons beneath it. There's a decent amount of space around those two crucial buttons, and both are individually equipped with a status light. You may consider this mandatory, but it isn't always offered at this price point.

The routing section is much as you would expect, with a switch for left/right mix routing, and one each for Group pairing, 1/2, 3/4, 5/6, and 7/8. Below the routing switches lurks a red LED to indicate that the channel is 5dB off clipping and a green LED to indicate that a signal is present,

"The RX8 is intended to be just as much at home in a live environment as it is in the studio."

with a -20dB threshold. A 60mm fader completes the picture. If like me, you're used to 100mm faders, you might find the shorter variety cramped, but you do get used to it, and I don't think it makes life significantly more difficult.

The two stereo channels are virtually identical to their mono counterparts. Two balanced jack inputs service the stereo channel and, naturally, there are no mic facilities, but everything else is the same, although the EQ section is 4-band fixed, rather than 3-band with a swept mid. I suppose the rationale is that a stereo source like a synth or drum machine doesn't normally need such precise doctoring, although personally I'd tend to disagree.

#### **MASTER OF THE UNIVERSE**

Soundtracs are past masters at setting out an uncluttered and flexible master module, and this one is no exception. The talkback section is quite comprehensive: your dulcet tones can be routed to any or all of aux 1&2, aux 3&4, aux 5&6, and the groups; ditto for the 1kHz oscillator (the groups routing being more useful there, to help calibrate

your multitrack tape recorder). Each auxiliary is equipped with a master level knob, pre-/post-fader switch and an AFL solo button (with status LED).

The monitor section is nicely self-explanatory. You can either monitor the mix or the 2-track return (2-track A or 2-track B), while the 2-track input can be routed to the mix buss as a further input (handy in a live situation if you're playing a tape during intermission). A latching switch gives you the option of PFL (Pre Fade Listen), or Solo In Place (where you can monitor the signal at the actual mix level and panning position) — again, a rather nice feature at this price.

The separate mono output (with its own level control) could be pressed into service in live work as an extra monitor send or to feed a sub-bass unit. It's also useful in a studio environment, for feeding an extra monitor to check mono radio/TV compatibility.

Metering is handled by two 12-segment LED ladders. The display area also features LEDs marked Power (self-explanatory); +48v (to indicate whether phantom powering is activated); and Solo (to show whether any Solo button has been activated).

The eight groups are controlled via four stereo faders, each with accompanying Solo buttons (with status LEDs), and a Mix button to route the group signal to the mix buss.

Above the group faders are four stereo returns. In reality, you're not likely to use this section for multitrack monitoring unless all the channels are tied up with inputs for recording. Just the basics are provided (Level, Balance and Solo controls), and a Tape/Group switch which allows you to toggle between the output from the group and the tape for comparison, if you are working in that configuration. Most of the time these inputs will be used for conventional effects return purposes.

#### **INS AND OUTS**

All the inputs and outputs are rear mounted. Channel inputs are on XLR connectors for mics and a balanced jack socket for line inputs. All jack socket surrounds are metal rather than plastic, even though providing plastic ones could have been a justified price-cutting move. Each channel has an insert point (wired post-EQ), and there are further insert points for each group and on the main stereo output. The manual features a good section on the connectors used, the reasons for using them and the correct wiring, which may prove handy when you're spending a day with the soldering iron. Elsewhere, all inputs are on



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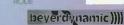
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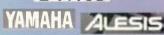
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balanced jack sockets, with the XLR Left and Right
 mix outputs, and the '2-track A' phono in and out being the exceptions. The headphone jack is also around at the back, which is a little inconvenient.

SOUNDTRACS RX8

The power supply is external, being a 'lump in the lead' variety rather than a wall-wart. The power socket on the desk has a locking thread to stop accidental unplugging.

#### **FEELGOOD FACTOR**

I like the layout of this desk. Quite often a manufacturer's claim that their console is 'dual purpose' (for live and studio use) can spell trouble, depending on how much time you spend in one or the other sphere of operation, but from a studio point of view the RX8 is a very well conceived console that should acquit itself well if you should ever need to swing it into live work. The multitrack facilities are very well thought out, and switching between the four stereo channels of the monitor section and the first eight channels when mixing. provided a very easy way of working, with little tedious repatching. During recording I used the two stereo channels for my effects returns, and during mixdown I shifted them to the designated effects returns channels to free up the better equipped channels for stereo synth sources.

All the pots are tastefully colour-coded and moulded to have an actual 'pointy bit', so that you know exactly where you stand when you're twiddling in low light. Similarly, the generous complement of status LEDs leaves you quietly confident that you could find what you need in a hurry.

Having four stereo group faders rather than eight mono ones didn't cause any practical problems for me during testing. Good recording practice dictates that you set up your levels correctly at the input stage, set the channel fader to unity gain, and then the group fader to unity gain, to get the best possible signal on tape, so you shouldn't necessarily need independent control of over each of the eight groups. Setting up sub-groups when mixing normally involves stereo elements (especially if there's any chorusing or reverb involved) and again you shouldn't miss the mono group faders too much.

There are some minor niggles, which are normally the result of cost-cutting — for instance, the 60mm faders, limited metering, and rear-mounted headphone jack are unfortunate but not unexpected. It's the features that you could understand *not* being

present that pleasantly surprise: status LEDs on every Solo and Mute button, two 2-track returns, and the manner in which the auxiliaries, groups and monitoring have been approached. The nature of the desk's internal construction, from a couple of horizontally installed PCBs (rather than a vertical, modular arrangement) means that the pots, switches and faders don't feel absolutely rock solid, but this in no way impinges on the actual sound.

As you would expect from an accomplished manufacturer like Soundtracs, this is a quiet desk. The quoted noise figure for a mic input is -127.5dBu, while -93dBu is claimed for the line input. Crosstalk is also virtually undetectable, and I was quite impressed with most aspects of the sound. The mute switches act predictably and without any hint of clicking, and though the faders have slightly more resistance in their movement than I prefer, they operate smoothly. In fact, the only switches that audibly glitch are the Solo buttons, which admittedly won't affect your recording.

The EQ section is perfectly serviceable, and I was pleased with the gentle manner in which you can treat your sound. The 3-band semi-parametric configuration means that you're not going to be able to perform precise sonic surgery on your signal, but I found what's on offer to be pretty useful. The EQ on/off switch is much appreciated as well.

#### **DESK JOCKEY**

To return to my story from the beginning of this review, the weird thing is that I can sympathise with the guy on the phone. If you've got a wad of cash in one hand and a catalogue of synths and recording gear in the other, you want to pour the money into gear that's creative, that fires your imagination. The mixing console seems so prosaic: sound comes in one end and is fired out the other. It's not until you make the switch from a budget mixer to something more professional that you understand what you've been missing out on.

For me, this is where the RX8 fits in — for those who have outgrown their small Spirit Folio or Mackie 1202 but can't afford a Mackie 8-buss or Soundcraft Ghost, the RX8 starts at around £1400, is an 8-buss console, and offers six auxiliaries and plenty of inputs. As such it's going to have immediate appeal to a range of potential buyers.

Soundtracs RX8 (24-ch) £1410;
32-channel version £1821.25.
Prices include VAT.

A Soundtracs plc, 21d Blenheim Road,
Longmead Industrial Estate,
Epsom, Surrey KT19 9XN.

1 0181 388 5000.

1 0181 388 5050.

2 sales@soundtracs.co.uk

A Beyerdynamic (GB) Ltd,
17 Albert Drive, Burgess Hill,
West Sussex, RH15 9TN.

1 01444 258258.

1 01444 258444.





# CONNECTIONS

ESSEX - 01245 354777 BURMINGHAM - 0121 2124777 LEEDS - 01943 850533 SOUTHAMPTON - 01703 233444

### ENSONIO

Envonig's ASR-X is a hybrid machine dedicated to making it easy to sample, resample and loop. In addition it holds

a built-in synth, incredible effects, resonant filters and an easy to use sequencer. The best parts have been taken from Ensonia's famous ASR-10. MR family and all their other ideas they have never had the chance to include. The ASR-X TURBO is expandable to 26Mb ROM and 34Mb RAM not forg ting the Expansion boards and 10 output

expansion options. And now your luck is really in because we are now including SCSI as standard at £1199. However, as an even bigger bonus we are now including the Dance Board & SCSI in a model called the ASR-X TURBO at just £1495.

Just come in and try this awesome

Just come in and try this awesome groove machine for yourself, we can't begin to describe the power of this machine in words, hear what you've never heard before!

Just arrived from EMU, the stunning new E-SYNTH. Just study the specification below to realise what this new combination can do for you.

Up to 128 note polyphonic • Up to 32Mb High Quality ROM sounds • Up to 32Mb Multitimbral with

voice card • 16 Outputs • Digital Modular Synthesis • 64 x 6 Pole filters with 2 filters • 24 bit stereo effects • Advanced 48 track sequencer • Stereo sampling up to 64Mb • Digital resampling • Pc & Mac Editor included • SCSI Interface & 2 Great CD-ROM's included.

## YAMAHA

The 33000 is an atterdable

priced 64-poly, 128 MB professional sampler that's as accessible to technochip-hop dance D1s and seasoned electronic musicians as it is to those in the market for their first sampling unit. With it's unique control knobs and easy to odit sound architecture, the A3000 takes the mystery and prustration out of the sampling process, while providing a powerful performance and composing tool ideal for stage and studio alike. Memory can be expanded to a maximum of 128MB via feur 72-pin SIMM sockets. The internal DSP provides three effect blocks including high quality effects plus special types (for phrases and loops) such as real-time stretch (beat change). Lo-

All of these are available for analog input audio recording and external audio mixing. Dynamic filters (Lo Pass, Hi Poss, Band Pass, Band Pass, Band Pass, Band Pass, Band Eliminate) and a parametric EQ can be applied to each sample, which can be freely mapped to key and velocity ranges with layers and or splits. Other features include a 4-band total EQ, an easy MIDI record playback function for making quick seng sketches, plus sound file companibility across multiple platforms (including WAV, AIFF). All this, and mere, make the A3000 the one sampler that professional musicians everywhere will

Fi effects, and others which can be configured specifically for each

want to take a serious look at.

The rev samples the cap made the war profession add lea lavering to that profession at of the mee and spanded read PSP superal SSP carrell SSP carrell

The rew AKAI
sampiers have all
the capabilities that
made the \$3000 series
the world standard for
prof. scioual sampling, the new range
add Jeannes like a powerful multi-mode for use of
layering and multitumbed sequencing, multi-effects and
that provides four independent channels of effects. RAM
expansion with readily available SIMAI memory, flash
RAM, MESA graphical Macintzib hased front-end etc.
And because we are probably the containy's largest AKAI
retailer we can offer you the best package deals, technical

support and back-up that most of our customers requirements top of our hallist is the standing CD3000XL standard this machine, includes a CD-ROM play r, 8 seperate outputs, 8 M5 ment ry and solety from Music Connection, the brilliant EBI's effects board. If you don't want to be

dissapented call as seer as possible, as the straming price we are selling this for means that our meager stocks will not last very lung



Say goodbre to RAM Limited SAMPLING
...GIGASAMPLER is here!

Unleash the power of your PC.

Today's Jast computing and storage capabilities allow the GRASAMPLER PC software to utilize the inexpensive, high performance hardware that already exists in most PC's GRASAMPLER takes sampling technology to the next level

And as we are the sole retailer of EAST WEST in the Midlands and South of the country you need look no further!



Get ready to shift into a new dimension of sound and value with the new ESI-4000

64 Voice polyphone - the

ESI-4000 gives you 64 voices of music power so you can layer and sequence thick, lush sounds and never drop a note

Easy to use - the ESI-4000 provides you with an intuitive user interface that is easy to warn and a pleasure to use-you II spend more time making music less time reading manuals

less time reading manuals.

Powerful DSP and sample editing - The FSI-4000 gives you incredibly powerful digital signal processing that lets you massage and manipulate samples to create your own inique sounds, Buili-in sample earling wools such as automatic truncation normalization, and cross-fade looping allow you to edit samples quickly and easily.

Unmatched filter technology - the ESI-4000 has 64 digital 6-pole filters with 19 different types available that make your sounds come alive us never before.

Highly expandable Your FSI-4000 can hold up to 128Mb of RAM using 72pin SIMMs and you can easily upgrade the number of outputs, odd dual 24bit effects and digital 10 with the ESI turbo kit

bit effects and digital I/O with the ESI turbo kit.
Unbeatable value - the ESI-4000 starts at only £1199 with 4Mb RAM
making it the best value sampler in it class. Shift dimensions and see the
ESI-4000 at Muste Connections









#### ESSEX - 01245 354777 BIRMINGHAM - 0121 2124777 EEDS - 01943 850533 SOUTHAMPTON - 01703 233444



Kore's new D8 digital multi-track recorder is packed with new and improved features for you to drool over. 16 - bit uncompressed recording and playback at 44.1 Khz, 12 channel 4 bus mixer, nondestructive editing and 1.4 GB internal hard disk come as standard and to list all it's other

features we would have to double our advertising space. To get the full details, come in and try one at your leisure.

The KORG 1212 1/0 brings the price of full function multi-channel computer based recording to a point that just about anyone can afford. The card features 12 inputs and 12 outputs configured as two analog I/O's, an S'PDIF I/O and an 8 channel ADAT optical 1/0. All 1/0's can be used simultaneously for maximum interfacing flexibility. The only sensible choice for those looking Professional quality at a sensible



## **Roland**

#### Roland VS-840P

Roland's new VS840P brings the technology of their acclaimed VS880 to the level of a home studio owner. The drop in price has not brought down the list of features, 8 tracks of digital audio, built-in Zip and multi-effects processor, 64 'virtual' sketch pad track and non-destructive editing just top of the list. Call us for an unbeatable price.



#### THE NEW DPS-12 HAS ARRIVED!

This digital personal studio is a 12 track, 18-bit in, 20 bit out digital multitracker incorporating a MIDI-automatable digital mixer. Sample at 32, 44.1 or 48 kHz without data compression to an internal Iomega 1Gb Jaz drive or other drives via SCSI. With an estimated recording time of 270 minutes at 32 kHz you must not miss this little wonder, or any of AKAI's other products that we hold in stock for that matter.

#### Tube MP / Levelar

APPLIED RESEARCH AND TECHNOLOGY

Bring a little warmth to your hard disk recording with these two exceptional units from ART. Giving low-cost, high performance and a small footprint, They'll be a welcome addition to anybody's set-up.

it's finally here - the affordable digital multitracker which offers 8 true tracks of non-compressed CD quality recording and mixing.
Introducing the great value Fostex

DMT-8VL

While the competition expect you to join the 'digital recording revolution' with less than 8 tracks and compromise the integrity of your audio with cost-cutting compression techniques, Fostex know better.

After all, it was Fostex who invented the first digital

multitracker and have been innovators of ground-breaking recording products for the past 15 years. The DMT-8V1 is quite simply the best alue package with which to enter the exciting world of digital audio Quality, easy expansion, instant integration and a great sound. It's everything you need.

#### NEW FOSTEX FD-4!

The latest dream machine from Fostex promises to be a real winner for quality multitracking on a budget. Designed to look and operate like an analogue multitracker

the FD4 uses a SCSI II port so you can record directly to any suitable SCSI drive, including ZIP's Syquest EZ Flyer and Jaz formats. Call







£CALL

#### FOSTEX D90 D160 Proffesional Digital Multitruck Recording. Choosing to 'go digital' is fast

becoming one of the easier equipment decisions you have to make when considering a new multitrack. But

choosing the right digital multitrack can be somewhat more difficult

Before this decision can be made, you have to be sure that your chosen recorder excels in four critical areas: audio quality, expansion, synchronization and editing.

This is just what Fostex concentrates on when designing a product, their D90 8-track non-linear digital recorder provides all of these points in abundance as well as not breaking the bank. The D160 bears the same hallmarks as it's smaller brother yet with 16 tracks.









cross platform PCI card, PARIS delivers a total audio recording solution at a

revolutionary price.





#### ESSEX - 01245 354777 BIRMINGHAM - 0121 2124777 DUTHAMPTON - 01703 233444



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#### ESSEX - 01245 354777 BIRMINGHAM - 0121 2124777 LEEDS - 01943 850533 SOUTHAMPTON - 01703 233444



#### If you rely on Pro Tools, Mackie's HUI studio console can boost your prod and your creativity?

Now you can literally get your hands on ProTools digital audio workstation software Mackie Design's HUI is designed to control and respond to Digidesign's ProTools Version 4.0 and in the near future, DAE compatible software too. HUI lets you mix via a real, tactile control surface complete with motorized faders...rather than with a mouse or a unidirectional fader pack. Perform teal-time, hands-on multi-channel fades, mutes, select and idjust sends, create subgroups; and change dynamics. In short; track and mix down just the way you would on a large, automated console, yet with complete bi-directional interaction with ProTools 4.0. HUI will

immediately reflect all standard mixing values, functions and pointers. HUI controller architecture supports standard MIDI protocol in either 7-bit or higher resolution 9-bit applications as well utilising simple controller and note values Rear panel I O includes analog jacks (three stereo audio pairs), a footswitch jack, ADB mouse thru, MIDI in and out and RS422 port for direct computer





How many stores are advertising computer packages in this magazine, that frankly are virtually out of date? At Music Connections we don't do this, it's pointless. We will only spec a computer for you

when you are ready to purchase. This policy ensures that

you receive only the latest and best specified computer. Whatever computer package you see in this magazine it is almost certain we can better that package for you. So call us with your requirement and allow us to provide you with a system that will work, and one that we are prepared to give back-up and technical assistance to. Please do not go and buy a system off the shelf, when

these people will not be able to help, as they have no idea how the system is supposed to work. You must buy the system from a specialist like Music Connections.

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#### GREAT NEW PRICES, CALL FOR DETAILS!

The AKAI DR range comes highly recommended as Digital Hard Disk Recorders with sophisticated non-destructive editing functions allowing near instant data access. The DR16 features a 16 channel programmable mixer as easy to use as a conventional MTR machine but gives true 16 track performance from a single hard disk at a highly cost effective price level.

We also stock all AKAI's other products as they excel in quality and value....just what you would expect from AKAI, and we offer exceptional prices on package deals...just what you'd expect from Music Connections.





# MUSIC CONNECTIONS

#### **TUBE SOLUTIONS**

The Tube EQ provides you with stunning musical results at a truly remarkable price. Whether your a experienced recording engineer, live sound technician, or home amateur, you need at least one channel of high-quality studio equalization. Unfortunately, the EQ stages in affordable mixers simply cannot deliver the superior sound and flexibility offered by the tube EQ.

The Tube PAC from ART is a combination of the world's most popular tube mic/line preamplifier and optical tube compressor. ART engineers took the Tube MP and Tube Compressor and combined them into a single convenient aircraftquality, extruded aluminium chassis. This new table-top

design allows for easy placement in the studio or on the stage with immediate access to all the controls, features, and metering. In addition to being a tremendous vocal and instrument preamplifier and compressor package, this may well be the ultimate in tube direct boxes! Check these little monsters out at our stores!

# LONDON - 0171 7315993

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performance tube mic preamp has redefined warmth for both digital and analog gear. Simply plug in your mic and dial in your sound. Great as a direct box. Nothing could be easier, nothing could und better!

The FX-1 brings ART's Dual processing

technology to musicians and recordists of all levels, in a compact all steel chassis. Two banks of thirty single and multi-effect algorithm chains arranged in logical order for ease of use. With ART's exclusive More feature. every program can be enhanced with more of just



the right effect instantly. Dual mono processing allows you to process two individual channels with totally separate effects. The ultimate in ersonal digital processing!

> With all of the same awesome sonic advantages as the Dual Levelar and Pro LA, the new Personal Levelar delivers classic, transparent, punchy and music-friendly compression in a andy, single channel, table-top ackage. The benefits of Vactrol based velling are now for everyone!

#### ART OUADRA-FX

ART pioneered the development of affordable professional multi-effects over ten years ago, now they are redesigning the very concepts that set the standards in the music industry,

resulting in the design of a processor capable of superior effects quality and, just as importantly, superior functionality. The Effects Network is truly a sound solution for the real world.

Dedicated processing enables you to dedicate all DSP horsepower to reverb or dely-based effects resulting in superior sound quality that stems from the abscene of memory limitations. Add ART's benchmark Acoustic Room Modeling, and you have the most realistic-sounding reverbs algorithms ever designed by ART. By the way, the Effects Network retains all of the Dual Processing multi-effect functionality of ART's legendary FXR Elite as well, but with added programmability.

switchable dedicated processing or multi-effects require only one keystroke for you to be up and running. No multiple pages of "add delete effect" and "edit parameter value" are required to achieve studio-quality results. 100 of ART's most usable effects presets are included, which are all user-definable and storable. These are 100 Real world presets with Real world titles to generate immediate productivity, not immediate frustration.

We have exclusive Factory Direct Prices on this product, you won't buy any better!

#### PRO MPA/PRO VLA

f 799

The PRO MPA Mic Pre-amp provides phantom power, phase reversal, variable bass roll-off and balanced operation. It is all the more useful due to it's two large VL's making it easy to see during a eig. Ideal for use in live and stud o applications, the PRO MPA is an essential part of any musicians set-up.

New to the tube MP family is the PRO VLA, this vactrol tube leveling amplifier is prestigious owner of the title 'Best Signal Processing Unit under \$1000° according to Electronic Musician USA. Not surprising when you realise that it uses a VCA-less design for premium performance, opto-electrical and vacuum tube electronics and complete control over compression parameters and metering.

These units are tomorrows classics available today, and as we are offering them at Featory Direct prices you won't get a better deal. Come and try them for yourselves at all of our stores.









APPLIED RESEARCH AND TECHNOLOGY



Spectral Audio's Syntrack is an amazing analogue/digital hybrid synth rack. Audio is generated from a wave table oscillator before passing through a 24dB/oct analog MOOG filter and an analog VCA with distortion control. An external audio input allows anything to be passed through the filter and distortion sections. All parameters are controllable in real-time over MIDI. It sounds absolutely unique. Amazing DX-like basses, jungle dope-basses, squealing leads, and all manner of bleeps and thwaps can effortlessly be coaxed out of this little baby. It really hits the sweet spot!

ART's Dual Levelar, Dual MP and HD31 Graphic Equalizer all provide outstanding performance for home, studio or live applications. These rack units have received critical worldwide acclaim in every field of audio recording.

The subtle, mildly distorted sound is ART's and makes for an unmistakable final mix.



sound system installations.

Blue Max boasts fifteen studio proven preset compressor and limiting settings for those Max aslo includes a side chain for deinstruments that need dynamics processing the most. Imagine, dialling up the perfect compression setting for that killer snare sound or putting vocals in your face without losing the rest of the mix. How about getting that bass guitar under control? With Blue Max it's as simple turning the detnt knob to the setting you want. Don't worry about threshold and ratio, attack or release, soft knee or hard knee ever again. We did it all for you in one beautifully designed, easy to usehalf rack space unit!

In addition to fifteen presets, Blue Max can be run in manual mode that gives you full control over

variable input output, attack and release times as well as ratio settings from 1:1 to 20:1. Full on-borad metering allows reinforcement, broadcast applications and permanent reduction. Blue Max can be operated in stereo or mono with high gain mono inputs for plugging in instruments. Blue essing, ducking and other forms of spectral processing.

Inputs and outputs are 1/4" TRS unbalanced Operation is switchable +4dBu or -10dBV. The power transformer is switchable international operation. Blue 'Max is housed in a single rack space, all steel chassis and in keeping with the Presonus "no wall wart" tradition has an internal power supply. Using our proven dynamics processing technology.



ACP-22 is a two channel dynamics processor designed to provide compression, limiting and noise gating in a variety of applications, such as multitrack recording, live sound reinforcement and broadcastand permanent sound installation. In any application , the ACP-22 provides two cchannels of crystal clear with full control over compression threshold, ratio from 1:1 to infinity, variable attack and release times and switchable hard soft knee. An auto mode takes the worry out of setting the compressor by offering program dependent attack and release times. A link button allows for true stereo link operation. The ACP-22 has onbeard metering for gain reduction as well as input output meters. Independent LED's show soft hard knee, auot in out and channel bypass positions, de-essing, oucking and other forms of spectral processing can be accomplished using the sidechain provided on both channels.

The noise gates on the ACP-22 are unparalleled by giving control over threshold, variable attack and release and switchable gate range (-60dB -6dB). The ACP-22 also has a unique Le Pass gate filter which eliminates cymbals

and other higher frequency range instruments from opening up drum and or vocal gates without effecting the audio output. Independent gate key side chain is included in for external triggering and precise filtering, LED's on the gate show gate position open or closed and gate range (-60dB/-6dB).

Inputs and outputs on the ACP-22 are either XLR balanced or IS unbalanced. channel operates at +4DBU or -10DBV, selected via rear panel switch. The ACP-22 is housed in a one rack space, all steel cahssis. In keeping with the Presonus "no wall wart" tradition, an internal power supply with voltage (for international use) is standard





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Alternatively, phone your local branch or come and visit.



It's common knowledge that Steinberg is the industry standard for Audio manipulation, it is also well known that Music Connections is the largest and most qualified chain of stores to represent such a brand name. From Cubase VST to Recycle and Rebirth we stock it all, and now you can get your hands on the superb 'Producer Pack.' This new audio package includes the renowned Cubase VST, Wavelab and Audio Track.

Steinberg's revolutionary Virtual Studio Technology is at the heart of the latest Cubase VST 3.5 for Mac OS and windows platforms. It's this combiation of software power and flexibilty with hardware sound and feel that makes VST a uniquely productive studio system.

#### Wavelab 1.6 for windows

Wavelab 1.6 is a dedicated audio processing and editing system for stereo mastering applications, including CD burning with PQ encoding and master listing. Highly regarded for its ease of use and amazing processing speed, the programme has a comprehensive spec. including:

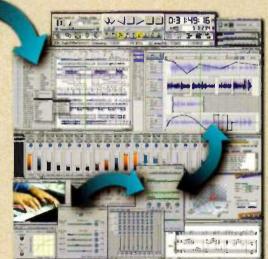
Time stretching/pitch correction Parametric & compression File format converter/Batch processor Markers/Audio access database Spectrum analysis Realtime plug-in interface with 9

#### Audio track

High quality Compression/Expander/Gate EQ in a single plug-in at a remarkable price.









DOCER PAC

"Plug and play" Mark of the Unicorn MIDI interfaces ship with "plug and play" settings so you can begin using them right away with your sequencer, patch editor librarian, and other music software, without touching the unit's front panel or running the control panel software accessory. They support both Macintosh and Windows and our Express and Timepiece families even support both computer platforms in a single unit. In fact, the Express XT and Timepiece

AV can connect both a Mac and a PC at the same time, each with full access to all MIDI devices (and each

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annoy are amongst the oldest of the British loudspeaker manufacturers and have an enviable reputation. One aspect of loudspeaker technology which many automatically associate with Tannoy is their long and keen interest in dual-concentric drive unit designs — the mounting of the tweeter assembly within the bass-mid unit. Theoretically, this approach has some very significant benefits over conventionally spaced drive units, because all frequencies are effectively generated from the same point in space.

#### SYSTEM 600A

Tannoy's new System 600A incorporates their latest generation of dual-concentric drive units. and the new loudspeaker has been coupled to a pair of integrated amplifiers and an active crossover, to provide a self-contained active nearfield monitoring system — all in a remarkably compact and attractive package.

The bass-reflex cabinet is constructed from dense MDF panels (the front panel is an inch thick) and is built in an octagonal arrangement. Besides making the loudspeaker visually appealing, this unusual design is intended to minimise the sizes of the side panels and thus reduce their potential for low-frequency resonances. Other benefits of this design are claimed to be an improvement in the damping of internal energy (the extra joints in the cabinet help here), and a reduction in the diffraction and reflection of sounds around the cabinet compared with a traditional rectangular loudspeaker cabinet. Internally, the cabinet is damped with high-density polyurethane foam.

There's no grille or drive unit protection of any kind, as none is needed. Unlike conventional loudspeakers, where the delicate tweeter is mounted flush on the front panel, the Tannoy dual-concentric system employed here has the tweeter mounted inside and at the base of the bass-mid driver. The cabinet is primarily intended to be used on console meter bridges in 'landscape' format (ie. wide rather than tall), although either arrangement is acceptable. The only caveat is that the degree of magnetic shielding varies on the different sides of the cabinet. TVs and computer monitors can be placed immediately adjacent to the ported end of the enclosure, but must be at least 150mm away from the opposite end and 80mm away from either of the long sides. This is something to also bear in mind if there are movingcoil meters in your console; as these are magnetic

#### TANNOY SYSTEM 600A ACTIVE MONITOR

devices, external fields from loudspeakers will influence their readings and could even cause them permanent damage.

Besides carrying the co-axial drive unit, the front-panel woodwork also contains a pair of forward-firing ports which employ plastic tubes roughly 140mm long and 30mm in diameter. A 'Tannoy Active' badge between the ports can be rotated to suit landscape or portrait orientation, and an extraordinarily bright blue LED illuminates when the system is powered (it's so bright, in

Throughout the years, Tannoy have determinedly supported their successful dual-concentric driver concept in the fierce cut and thrust of the

> and the 600A is their latest mid-priced champion. **HUGH ROBJOHNS** enters the fray...





fact, that several people commented on its resemblance to an "incoming photon torpedo"!).

#### **DRIVE UNITS**

The drive units employed in the System 600A look most unusual — almost as if the central dust cap has been left off! At first glance it appears that there are three concentric brass tubes at the centre of the relatively conventional bass-mid diaphragm. The outer one defines the edge of the bass-mid driver, while the inner pair form a 'tulip' waveguide for the treble driver.



The 165mm (6.5-inch) bass-mid cone is supported by a nitrile-rubber surround on the outside edge, with an inner suspension arranged to allow the cone to slide up and down on the outer of the three brass tubes. The user manual proudly professes that the motor system (ie. the magnet and voice-coil assembly) has been "computer optimised" in terms of coil-winding parameters and magnetic flux strength in the air gap.

The HF diaphragm is made from aluminium and magnesium alloy, supported on another nitrile rubber suspension. The voice coil uses high-temperature copper wiring bonded to a kapton former attached to the outer edges of the diaphragm skirt, and the magnetic gap is filled with ferrofluid to improve thermal power handling.

#### **REAR PANEL**

The rear of the loudspeaker features a large metal panel which carries the signal and power connections, user controls, and a large area of heatsink for the power amplifiers. The latter is mounted in such a way that the greatest convection cooling will occur with the loudspeaker in landscape orientation.

The panel is effectively divided vertically by the heatsinks, and the left side houses the IEC mains connector (with integral fuseholder), a rocker switch to power the unit, and a mains voltage selector. The right-hand side carries the audio input

on a combi-iack connector (which accepts both 3-pole XLRs and 3-pole quarter-inch jacks) wired for balanced operation, although unbalanced connections can also be made by shorting the cold and screen connections in the usual way.

Above the XLR connector are three chromed toggle switches. The lowest sets input sensitivity between +4dBu and -10dBu (although it is obviously intended for use with -10dBV equipment and works well enough in practice). The other two switches provide HF and LF contour adjustment of +2dB, 0 and -2dB for the HF control and 'half space' or 'free space' (whether the speaker is mounted close to a wall or not) for the LF control.

In practice, owners of these monitors will probably just play with the switches until they get a sound they like, but for the technically minded, free-space mode introduces a 12dB/octave highpass filter into the signal path, arranged to boost slightly the levels of low-frequency signals between 45 and 100Hz, but remove everything below 40Hz or so. The idea is to compensate for the lack of natural low-frequency enhancement when the speaker is mounted on stands or a console monitor bridge well away from walls. Below 45Hz, the second-order slope of the filter removes unwanted LF energy which could damage the drive unit and reduce amplifier headroom. If the speaker is placed close to rear or side walls (ie. in half-space) there's no need to boost the speaker's LF output, since it will be boosted through natural acoustic behaviour anyway.

The System 600A is claimed to have a frequency response which extends down to 52Hz (-3dB point in an anechoic measurement) with the filter switched out (half-space mode) and the reflex cabinet imparts a fourth-order roll-off below that. In free-space mode, the bass is extended down to 44Hz (-3dB) but then rolls off much more quickly, with a sixth-order slope (36dB/octave)

When I was running some test tones through the system I discovered an interesting side effect. of the LF contour switch. Between 40 and 150Hz. switching to half-space mode reduced the level of low frequencies slightly compared to the freespace mode — exactly as expected. However, below about 40Hz, the half-space mode has considerably more subsonic energy than the freespace mode (as there is no high-pass filter in the audio circuit to remove it). Potentially this means that in half-space mode a lack of amplifier headroom could be more of a problem, although I experienced no such difficulties during my auditioning!

#### **LISTENING**

The System 600A is no slouch in the performance stakes. Transients are crisp and stereo imaging is pin-sharp. The frequency range is well extended at both extremes, although I found I preferred the quality of the lower register when the speakers were switched to half-space mode, even when mounted well clear of walls. To my ears, the sound of bass instruments was more natural and acceptable, and

#### pros & cons **TANNOY 600A £849**

- pros Elegant design.
- · High-quality build.
- · Explicit stereo imaging
- · Wide dynamic range.
- Typical Tannoy sound character. · Flexible tonal adjustment.
- Excellent connectivity.

- Potential for sub-sonic problems in half-space mode.
- · Little depth to stereo imaging.

#### summary

The 600As constitute a high-quality nearfield active monitoring system with Tannoy's latest dual-concentric driver technology. and are well engineered, with sufficiently good sound quality to compete strongly.







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   2 programmable control wheels



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 61 non-weighted keys, synth type • velocity sensitive with after touch • pitch-bend wheel and modulation wheel • 2 zones for splits and programmable layers



 61 non-weighted keys, synth type • velocity sensitive with after touch • pitch-bend wheel and modulation wheel • 2 zones for splits and programmable layers



#### LOUD & PROUD: The amplifiers

Installed in the rear of the 600A cabinet with eight allen bolts, the amplifier pack is very modest but is optimised to the drive units, and the whole forms a very capable system. It uses a pair of diminutive TDA7294 amplifier chips, providing 70Watts each, coupled directly to the two drivers. The input buffer and active crossover are based around a pair of TL074 chips, and the whole lot is mounted on a single circuit board. The torroidal mains transformer is bolted directly to the back of the panel, the whole of which acts as a heatsink, although the addition of additional cooling fins increases its efficiency significantly.

▶ the high-pass filter associated with the free-space mode seemed to impart a bloated and slightly harder sound quality. At the upper extremity, I found the unity gain position on the HF contour control best suited my listening environment, but the 2dB of lift would be beneficial in an over-damped room and the 2dB cut quite handy in an over-reflective one. The range of adjustment available here seems to be very well judged.

Going back to the stereo imaging, although positional information is commendably precise left to right — explicit, even — everything appeared to be on much the same level, and there was less depth to the image than I'm used to hearing from my other regular nearfield monitors (mainly PMC and Dynaudio Acoustics). Tonal balance is on the warm side of neutral, but this is dependent to some extent on the setting of the contour switches and the precise positioning of the speakers.

The most revealing test for any loudspeaker is a well recorded human voice, especially the spoken word — simply because we all have many years experience of knowing what a real voice sounds like, and any resonances or distortions which the human vocal chords simply can't produce tend to become obvious. I found that spoken and singing voices were slightly 'warmed' by the 600As, but in general the sound balance was usably accurate and consistent. I certainly had no difficulties forming a repeatable frame of reference with the Tannoys, and my mixes transferred well to other monitors.

The Tannoys are capable of handling a surprisingly wide dynamic range in nearfield conditions, although the sound hardens dramatically when the limits are approached. I also found that high levels of very low frequencies (synth basslines being a good example) can generate a lot of 'chuffing' noises from the front-facing ports, which shift an extraordinary volume of air under these conditions. Percussive instruments are also handled well — due largely to the combination of the wide dynamic range and the time-coincident nature of the dual-concentric driver design.

#### **VERDICT**

All in all, the new Tannoys are certainly worthy of extended auditioning and should be on anyone's shortlist of active nearfields, acquitting themselves well in a fiercely contested sector of the market. They're clearly built to a price, but they retain the professional characteristics of typical Tannoy monitor systems in a very elegant and effective package.

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# Definition

passive / pæsiv/ adjective 1 submissive. 2 inert active /æktiv/ adjective 1 given to action; working, effective. 2 practical; diligent.





















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PAUL WHITE tests a new Sony DAT recorder offering professional features at an affordable price. ust a decade ago, most mastering was done to 2-track analogue tape, but now virtually every serious recording facility on the planet relies on DAT, a failed digital consumer tape format rescued from oblivion by the audio industry's overwhelming desire to go digital. Though DAT was never intended to be a professional format, the better machines on the market tend to be both good sounding and reliable, and in an era where there have never been so many different approaches to recording audio, DAT remains one of the few standard items of studio equipment. How long this will prevail in the current climate of 20-bit-itis is another matter, of course.

Sony were the inventors of the DAT format, and their more costly machines have always been respected as reliable workhorses. Indeed, many of the original DTC1000s are still pulling their weight today. However, the company didn't fare so well with their low-cost machines, and we've heard reports of these

breaking down. Perhaps the end user was expecting too much for too little, but I've never really bought the concept that low-cost machines are only designed to stand up to consumer use. If a machine can't cope with being used to mix the odd track every week or two by an audio engineer who knows the value of keeping the machine clean, how the hell is it supposed to cope with the domestic user who uses it on a daily basis as a substitute for an analogue cassette deck, and whose only attempts at cleaning involve wiping the top cover with Pledge when the dust gets too thick? Call me cynical, but surely this is just a mammoth cop-out to excuse machines that aren't fit for any application!

#### THE PCMR300

Having got that minor rant out of the way, I'll move on to the subject of this review, Sony's mid-price PCMR300. While this machine doesn't pretend to be a top-end pro recorder, it is designed with the features serious users need — in particular, the ability to switch out the criminally intrusive SCMS.

BULDER The PCMR300 uses folded and pressed steel SONY PCMR300 DAT RECORDER SOM 74

construction supporting a Sony transport that combines moulded plastic components with a sturdy metal base. The circuit boards are held to the base via plastic pillar clips, and overall the standard of construction is what you might expect from a good hi-fi component. A rackmount kit is included with this model, though the basic machine is obviously designed for desktop use.

Pressing the Open/Close button causes the motorised transport door to open, whereupon you place the DAT cassette on a tilting tray assembly. When the door is closed, the cassette is slotted onto the transport drive hubs and the tape threaded around the head drum. All the transport controls are 'soft touch' logic controlled, with certain record-mode functions being selected via stubby slider switches. A small infra-red remote control is also included.

As with just about any DAT machine, all the usual record, play and track ID functions (Start Skip and End IDs), are supported, as is a long-play mode where a longer recording time can be achieved at the expense of some fidelity. However, to meet the needs of the professional, the machine can be set to record at 48kHz, 44.1kHz or 32kHz (long play), and the SCMS status can be set to one of three modes: copy permitted, first-generation copy permitted, or no copy permitted. Both coaxial and optical S/PDIF digital inputs and outputs are fitted, but the more professional AES/EBU is absent, and audio connections are on unbalanced phonos only.

Another feature that some professionals will appreciate is the inclusion of switchable Super Bit Mapping, Sony's own noise-shaped dithering system. As far as I'm aware this is built into the input-converter hardware, and it has the effect of increasing the dynamic range of the recording by moving dither noise into a frequency range where the human ear is least sensitive, usually in the 15kHz region. It may also be switched out when not required — perhaps if noise-shaped dither is to be added in a later mastering procedure.

One problem with all digital recorders is that their error-correction systems hide potential problems until it's too late -- one minute a tape plays apparently normally, but the next time you play it, audible dropouts appear. The answer to this problem is to provide a comprehensive error readout, but even the better DAT machines tend to make do with a fairly perfunctory error readouts that provide only an overall error figure. Rather more usefully, the PCMR300 provides a separate error-rate readout for both heads on the drum (selected via the Counter Mode button on either the remote or the machine's front panel). Even so, there's no indication of whether the displayed errors are recoverable, interpolatable or non-concealable, and unless you have experience in these matters, you don't really know what maximum error rate is permissible either. All the manual offers is that if 'Err' flashes, or if the error-rate value is positive for more than around five seconds at a time, you have a problem.

The display can also be set to show absolute time, track playback time, remaining time on tape, and tape running time.

#### **PERFORMANCE**

The PCMR300 operates in a similar way to any other DAT recorder, producing clean, uncoloured

results comparable with other digital devices in the same price range. Sound quality is essentially determined by the types of converters used and on the implementation of their support circuitry (such as power supplies and earthing arrangement). Given that professional dedicated stereo converters cost more than twice the price of the complete PCMR300, I think it's safe to assume that the latest generation of consumer converters are being used.

Recording using Super Bit Mapping yields no obvious benefits on most pop material, but if you record acoustic material at deliberately low levels using this system, decaying sounds tail off more gracefully. Because no decoding system is needed, the benefits of SBM will transfer to subsequent DAT clones or CD-Rs, though any benefits will be removed by further processing that adds dither or truncates the data.

Tape handling is fast and positive, but what intrigued me was that I could play back a tape I had made several years ago with no displayed errors at all. It's quite impossible to make a digital tape recording that doesn't include some correctable errors, so either the on-board system has a threshold that doesn't bother you if the number is sufficiently low, or it only reports on uncorrectable errors that are concealed by interpolation (a technical term for guessing the missing bits based on the data on either side of the error!).

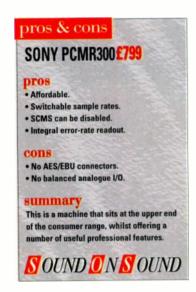
#### **SUMMARY**

Using very cheap DAT machines is asking for trouble, but the PCMR300 strikes a realistic balance between professionalism and affordability, even though the hardware has obvious consumer origins. Of course, long-term reliability won't be known until a given model has been used in the field for a few years.

The switchable sample rates and the option to disable SCMS are essential for any serious studio application, and while Super Bit Mapping isn't vital, it's a nice option to have, especially if you're recording acoustic music or voice directly to DAT, or dubbing from an analogue source. The control layout is good, the display includes absolute time, and all the usual IDs may be added automatically or manually, as well as being edited later. There are no unnecessary frills to complicate the operation, and if you do run into trouble with tapes from other sources, you can at least check the error readout to see what's going on. As suggested earlier, a better description of what the error readout actually measures would be useful, but having the facility at all on a machine of this price is a bonus.

The PCMR300 is a sensibly priced machine with just the right features for most studio applications, so if the lack of balanced analogue connectors or AES/EBU XLRs doesn't worry you, it's well worth checking out.





"SCMS status can be set to one of three modes: copy permitted, first-generation copy permitted or no copy permitted."

## DIGITECH S 100 DUAL-ENGINE MULTI-EFFECTS PROCESSOR

The \$100 offers half the innards of Digitech's Studio Quad, but sells for half the Quad's price. HUGH ROBIOHNS finds out whether it does everything by halves...

he newest in Digitech's well-regarded family of digital signal processors is the \$100 multieffects unit, effectively a simplified version of the Studio Quad (reviewed SQS February 1996; Version 2 reviewed September 1997) that uses two processor modules instead of the former's four. The \$100 certainly looks very attractive, with its extruded blue front panel, but has it been built to meet a price rather than to excel on the range and quality of effects?

#### WHAT'S IN THE BOX

Much like the updated Studio Quad, the \$100 offers a comprehensive signal-processing package made all the more flexible through five different DSP configurations of its "dual-engine processing power". Two DSP modules can be combined to provide a single, powerful stereo signal effect (C1), or arranged as different effects modules connected in series (C2) or in parallel (C3). The DSP power can also be configured to apply completely independent processing on the two signal channels (C4), or the two processes can have separate inputs but combined stereo outputs (C5).

In C1 mode (the single-processor option), the algorithms have access to the full processing power of the DSP engine, so maximum delay times are longer than with any of the other modes, and the reverb programs have far more dense and realistic decay structures.

#### **SPECIFICATIONS**

Digitech's new \$100 is certainly up to scratch in terms of its audio specifications. Although the machine operates at the rather bizarre sampling rate of 46.875 kHz, this does mean that it has a full audio bandwidth of 20Hz-20kHz. I don't know why the converters run at this peculiar rate, but since the \$100 doesn't have digital audio inputs or outputs, the internal sampling rate is of no real consequence. The A-D converters are conventional 20-bit, 128x oversampling types, and all the internal digital data busses and DSP calculations run at 24-bit resolution. As you'd expect in this day and age, the \$100 supports the usual MIDI program change commands and also has rearpanel facilities for footswitch-operated program changes and effects bypass. The program memory offers 99 user locations and 99 factory programs.

The S100 lives up to its 'multi-effects' title the factory presets include a wide variety of reverbs, delays, modulation effects (such as flanging, phasing, chorus, tremolo, panners, and Leslie simulators), plus some far more esoteric programs such as vocoders and ring-modulator effects. There's also a range of combination and split channel multi-effects which should take care of pretty much every requirement.

#### **SOCKETRY**

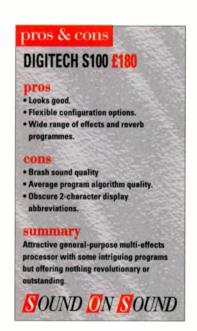
The \$100 is a conventional 1U rackmount unit with a 9V AC external PSU. I'm not a fan of these, but the practicalities of manufacturing units to meet the various EMC laws around the world make this approach increasingly common.

On the extreme left of the back panel, there's an uncalibrated input volume control, of the kind that you generally set once and forget. There are many circumstances when this will be perfectly adequate (such as when the unit is connected to a mixing console's aux send), but should you have to adjust input gain occasionally, this arrangement does make things rather awkward, especially if the unit is mounted in a rack.

There are four quarter-inch sockets for the two inputs and two outputs. The left socket of each pair is marked for mono usage, and they're wired for unbalanced operation, with a sensible headroom of +18dBu. Further to the right, after the coaxial power socket, there's a quarter-inch footswitch jack, and finally a MIDI In.

#### **CONTROLS & OPERATION**

The \$100's front panel is very clean looking, and the controls are reasonably intuitive to operate. A row of 12 push-buttons is arranged beneath a multi-function display, with a relatively large data-input wheel to the right. Unfortunately the printed legends on the push buttons are not engraved, and I fear they may fade away with use — which could make operating the unit rather challenging! Also, on the review model the legends were not all printed squarely on the buttons, which rather detracted from the otherwise professional appearance of the unit. There are secondary legends printed beneath the push-buttons, and if the unit was mounted reasonably high in a rack these would be legible, but if you were looking down towards the S100 these legends would be obscured by the buttons and extrusion. This is a shame, as they provide a useful aide memoire as to which reverb functions are assigned to which parameter buttons, as well





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# DIGITECH S100

#### DISPLAY'S THE THING

The S100's display is divided into three zones. A large, 2-digit, 7-segment LED is positioned to the right, with two collections of LED indicators on the left-hand side. The first block tells you which of the five 'Engine Configurations' is selected. The display shows simple block diagram graphics of the five arrangements, with LEDs to reveal the current mode.

The centre block shows a multi-function LED bargraph input meter, scaled from -18dB to 0dB(FS), in 6dB steps. This provides a guide for setting the rear-panel input-level control. However, when the machine is in 'Edit Mode' and program parameters are being altered, the two LED columns indicate which kind of algorithm each processing engine is running: Mod/Pitch, Delay, Reverb, or Other.

Normally, the 7-segment LED displays the current program number (1-99), and a 'full stop' in the bottom right-hand corner differentiates between the factory programs and the user memories (illuminated for user programs). However, in Edit mode the display also indicates the selected effect and parameter with 2-character alphanumeric codes. When a parameter is adjusted, the display also shows its value, although these are frequently arbitrary numbers rather than anything directly meaningful.

The abbreviations for program algorithms can be obtuse, and I found it essential to use the \$100's manual. This actually states that a table of effect names and their parameter codes is printed on the top of the machine but this wasn't the case on the review model. I would have found this very useful while I was getting used to the machine, although if the unit is rackmounted, such labelling becomes rather pointless.

 as identifying the buttons associated with program editing functions.

As I've already said, the \$100 is fairly straightforward to use — although the program code letters can be rather confusing at first (see 'Display's The Thing' box), a combination of trial and error, with some careful listening, quickly establishes what's going on. The user manual is pretty good at pointing out less obvious facilities, and at only 20 pages it's not too daunting to flip through before playing with the machine.

The key operating buttons tend to be those in the right-hand half of the row, with the customisation and configuration buttons in the left half. The first three buttons (Program, Store, and Config) are reasonably self-explanatory: Program steps the machine through the program memories (as well as restoring normal program operation after editing); Store allows a user-modified algorithm to be saved; and Config selects one of of the five dual-engine configurations.

The next button is labelled Mix/MIDI, and this allows you to turn the dry signal path through the machine on or off, and to set the MIDI data receive channel for program change information. For anyone in any doubt, the dry signal path would generally be left turned on if the \$100 is being used as a stand-alone signal processor with a guitar or keyboard, but should be turned off when the unit is connected to the auxiliary send of a mixer. Even when the dry path is selected, it's automatically disabled in certain effects programs, including tremolo, panning, vocoder, compressor, Leslie simulations and reverse reverberation effects, where the processed sound is all that's required.

The MIDI implementation is basic but appropriate to the functionality of the machine and is centred around program change instructions. Program numbers 103 and 104 select user and factory program banks respectively, with program numbers 1-99 corresponding to the relevant stored programmes in the S100. Program change numbers 100 and 101 apply or cancel bypass, and 102 simply toggles the bypass on and off alternately. The dry signal path can also be controlled via MIDI Continuous Controller 7.

The last button in the configuration section gives access to an EQ/Gate facility which applies to the signal path for all effects processing. The equaliser is a 3-band affair with top and bottom shelf responses controllable only in level (+/- 12dB). These are supplemented with a parametric midband section offering the same boost/cut range with adjustable centre frequency. Unfortunately, the frequency parameter is numerated from 1 to 26, which is not particularly useful, although your ears should be able to tell you when you've found the frequency you're looking for!

If the EQ/Gate button is pressed twice, the noise gate can be set up through simple Release and Threshold parameters. Again, the parameter values are arbitary, with threshold ranging from 99 to zero, plus off, and release from 1 to 10. Nevertheless, this is a useful facility, particularly if



you're using the S100 in stand-alone mode with some of the noisier keyboards. As with all noise gates, great care is necessary in fine-tuning the parameters for the least intrusive operation.

Six of the remaining seven buttons are used for detailed parameter editing, with the last providing a bypass facility. Each of the two processing engines can be addressed separately through a pair of buttons labelled, not surprisingly, Engine A and Engine B (only Engine A operates in the combined single-processor C1 mode). Once the appropriate engine is selected, the desired effect algorithm can be dialed up with the data-entry wheel and the relevant parameters modified to taste by pressing one of the four parameter buttons and spinning the data wheel once more.

This is where the manual becomes indispensable, as not all the two-letter codes representing the different effects programmes and their adjustable parameters are entirely obvious — CH for chorus and Ch for chamber reverb, for example. As I mentioned earlier, there are additional legends on the front panel to identify the adjustable parameters associated with the reverb programs (pre-delay, decay, damping (HF decay), and level), but not for the other effects algorithms. Even in reverb mode, not all programs have a damping parameter — the gated and reverse effects replace this with diffusion.

In general, the effect programs are provided with a predictable but sensible selection of up to four adjustable parameters, and the range of adaptation is wholly usable throughout. I would have felt more comfortable if some of the parameter values were specific rather than arbitrary, although this probably says far more about my audio engineering upbringing than about the usability of the Digitech S100.

#### **EFFECTS**

As you'd predict from its price of well under £200, the \$100 has been specifically targeted at the home rather than the professional studio — not that there's anything wrong in that, of course. The range of effects provided, and their overall audio quality, while being of a reasonably high standard, seems to me to be orientated towards synth-based music, particularly techno styles, more than anything else. The characteristic sound of the reverb algorithms, which tends to be on the 'metallic' side, suits hi-tech music very well, but in more demanding situations I often found the reverb algorithms lacking in subtlety and realism — for example, I got the impression that there was quite a lot of Formica in the 'Wood Recording Studio' program!

Some of the other effects are fun, though probably of relatively limited usefulness. The Vocoder mode has five different preset sounds which, although distinctive, would have to be used sparingly, and the same is undoubtedly true of the ring modulator. This could be used to great



effect in the right place, but it seems to be more gimmicky than really useful.

The Leslie speaker simulator is more impressive and has a useful range of adjustability, though understandably — it's not as good as some of the specialised units now available. The main time-delay effects, such as chorus, flanging, phasing, tremolo and straight delays, are all fine, but these are the easiest of routines to program, after all. The pitch-shifting and detuning options fare rather less well. Although tolerable on simple sound sources, when applied to voices, even the smallest pitch-shifts sound mechanical, and larger shifts become comical sooner than they really should. To be fair, pitch-shifting is extremely difficult to do well, and the best boxes are all very expensive.

#### **OPINION**

Having spent some time playing with the \$100, I would have to say that it doesn't offer anything very new, and you also need a photographic memory or some good lateral thinking to figure out the hieroglyphics in the editing displays. However, the sound quality is perfectly adequate for many applications, and it does offer a decent variety of treatments for the price.

If I had to use one word to describe the overall character of the \$100 I would say 'brash'. If brash is what your music needs — and much in the dance line seems to want as 'dirty' and aggressive a sound as possible at the moment — this box could be what you're looking for.

In all fairness you'd probably have to pay double to get a unit with much more realistic reverbs - the Yamaha REV500, for example. Although the DSP configuration options in the \$100 allow it to do a few things some other budget processors can't, I don't think I would be tempted to replace one of my older units with the 5100. On the other hand, if you're looking for your first multi-effects processor, this one does everything reasonably well for the money. (0)



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# Making Making Tolans for Making Tolans for Midi Interface/Midi Patchbay/Digital Synchroniser

Although it's less than a year old,
Opcode's highly useful Studio 64X
multi-port MIDI interface and patchbay
has been redesigned to incorporate even
more features (including a wide range of
synchronisation facilities), and has re-emerged
from its refit as the Studio 64XTC.
MIKE COLLINS gets connected.

pcode are certainly not a company renowned for resting on their laurels. In Spring 1997, they released the Studio 64X, a combined MIDI patchbay, 4-port MIDI interface and SMPTE generator/SMTPE-to-MTC converter, which was compatible with both Apple Macs and PCs (see review in SOS May 1997). Less than a year later, the company have followed up the original 64X with the Studio 64XTC, which expands the capabilities of the original to include facilities for synchronisation with ADATs and other digital audio equipment. (This is similar to the functions provided in MOTU's competing MIDI Timepiece AV, which retails for over £200 more than the Studio 64XTC, although the MOTU device is an 8-way unit more suited to larger studios). You can use the Studio 64XTC to control one or more Alesis ADATs using MIDI Machine Control (MMC) via the Studio 64XTC's ADAT Sync port (just as on the MOTU MTP AV), while running other digital audio equipment from the XTC's Word Sync output. A Superclock output is available on the 64XTC for use with Digidesign Pro Tools systems (more on superclock in a moment), and the unit will also sync to blackburst house sync or to composite video signals (here, the XTC offers more than the MTP AV, which only has one wordclock output, although this is switchable to provide superclock). Finally, composers working to picture may be interested in the 64XTC's expansion port for Sony P2 9-pin connectors, which will shortly allow MMC control of professional video decks.

If hooking up one or more ADATs is straightforward, controlling a Tascam DA88 via MMC is not quite as simple, although you can with the aid of Tascam's optional SY88 sync card, which can accept MTC (MIDI Time Code), MMC and wordclock from the Studio 64XTC. You can use any MIDI sequencer with MMC commands to send messages for play, record, pause, stop, fast forward, rewind and track record-enable to MMC-compatible hardware connected to the Studio 64XTC. On the Mac, MOTU's *Performer*, Emagic's *Logic*, Steinberg's *Cubase* and Opcode's *Vision* all now support MMC, as does the recent *Pro Tools* v4.1 software.

The Studio 64XTC can also function as a standalone MIDI patchbay, and four user programs are accessible from the front panel to let you recall routings and filter settings, although you can only edit these settings with the included PC or Mac editing software (like its predecessor the 64X, the 64XTC is compatible with both Apple Macs and IBM-compatible PCs). However, seeing as most people will be using the 64XTC with a personal computer anyway (to run their MIDI sequencer), this is no great hardship. You connect the 64XTC to a PC using a PC-compatible 16550 COM port and to a Mac via the standard serial port connector (the appropriate cables are included, as is an adaptor for 25-pin PC serial ports).

A MME-compatible driver for Windows 3.1, Windows 95 and Windows for Workgroups is supplied on a PC floppy disk, along with a setup program that installs the driver for you, as well as installing the other applications on the disk; the XTCDIAG diagnostics software and PC Studio 64XTC program editor. Macintosh users need to have Opcode's Open Music System (OMS) installed in order for the program editing software to work, but fortunately for those who don't have it, the latest version, 2.3.3, is supplied on the Mac floppy disk, along with a specific driver for the Studio 64XTC and an OMS manual in Adobe Acrobat PDF format. A well-written reference manual is also included to explain both the Mac and PC software and the general operation of the hardware.

#### **USER & PRESET PROGRAMS**

The Studio 64XTC has four user programs that specify how it processes MIDI input and output, and how its digital sync options are set up. These user programs are stored in non-volatile (battery-backed up) memory and recalled from the front panel using the Program button. When a user program is selected, its settings are always active whether a MIDI software program is running or even if the Studio 64XTC is not connected to a computer — this allows use of the Studio 64XTC with a stage rig without having the computer connected, provided you've set up the programs you need beforehand.

As supplied from the factory, the Studio 64XTC's User Program 1 routes its inputs and outputs to and from the computer only — the ideal configuration for MIDI sequencing. Program 2 routes each input to all outputs except the corresponding output (so In 1 goes to Out 2, Out 3 and Out 4, for example), while



#### **Opcode Studio 64XTC**

"I could report no problems with it during the period of the review, despite my attempts to confuse it with lengthy SysEx dumps." the source of the SMPTE addresses and the source of the timebase required for synchronising digital audio devices. A SMPTE address specifies a location from which you can start all your devices playing, while a timebase source (such as a blackburst video signal from a house sync device) provides an accurate timing reference. In case you were wondering, a blackburst generator is used in professional studios to provide a master sync reference for all video devices (and an increasing number of audio devices) to ensure that all these devices are locked together and also locked to the video frames produced by the highly accurate blackburst video sync generator. Consumer VCRs don't normally accept separate sync signals like this; instead they use composite video signals which also contain timing information. Fortunately, the Studio 64XTC will accept either blackburst signals or composite video as a timebase reference, so you can use the XTC with both professional and consumer video equipment.

You should be aware that the address source does not necessarily have to be the same as the timebase source, so, for instance, you might use a highly-stable video sync source as the timebase master, while MTC comes from your sequencer as the address source. If you are using any digital audio devices, you will need to feed a wordclock or superclock signal to your audio device to keep this locked to the timebase alongside everything else. The Studio 64XTC's sample rate setting controls the wordclock and superclock generated, and you can choose between 44.1 and 48kHz rates here.

You can also use Pull Up and Pull Down sample rates to compensate for speed changes that occur when transferring between film and video. If you are scoring to film, a video worktape is usually provided to which a copy of the film has been transferred using the Telecine process. In the USA, this transfers

a film running at 24fps (frames per second) to video tape running at 30fps. Recording at 30fps ensures that no frames are lost in the transfer. Unfortunately, playing this on NTSC video decks, which run at 29.97fps, results in a slowed-down playback and consequently a flattened audio pitch. This 'pulleddown' audio is typically referred to as playing at 'tape speed' as opposed to the original 'film speed'. If you need to work with such a tape, you can use the Pull Up mode when recording the tape's audio with your digital audio hardware. After recording, disable the Pull Up mode and the transferred audio will play back at 'film speed'. Once you have a scratch track running at film speed, you can then record additional audio or dialogue as needed. On the other hand, if you are working with digital audio tracks which are running at 'film speed' and you want to synchronise these with a video tape which is playing at 'tape speed', the two will drift out of sync and play back at different pitches - so you use the Pull Down mode here to compensate for these discrepancies.

#### IN USE & CONCLUSION

In use, I am happy to report that the Studio 64XTC behaved flawlessly - exactly as a interface/ synchroniser ought to! I could report no problems with it during the period of the review, despite my attempts to confuse it with lengthy SysEx dumps; it just sat there, sync'ing and interfacing without any problems. In addition to this glowing report, it's worth mentioning another of the Studio 64XTC's plus points — the price. If you want reasonably extensive sync options and multiple-port MIDI interfacing for under £500, this is the only box around that will do the trick. Its nearest competitor is the MOTU MIDI Timepiece AV (reviewed in SOS January 1997), although this costs over £200 more, which might put off owners of home studios on a budget. The great thing about the Studio 64XTC is that it has everything you need to connect your computer-based MIDI sequencer to all the popular audio and video equipment you are likely to encounter — and achieve professional synchronisation between these. Professional users are more likely to go for the MTP AV if they need more MIDI ports, or the Digital Timepiece if they need the wider range of sync options available on this, and Pro Tools users may well choose Digidesign's Universal Slave Driver (at over £1700) which offers varispeed and specialised features for people working with film. Having said this, even professionals will find the Studio 64XTC more than adequate for straightforward sync'ing requirements while doing pre-production work. 1505

#### ALL FRONT (& BACK)

The front panel has a couple of buttons to let you program the unit, along with indicator LEDs for MIDI activity and sync settings and a power on/off switch with an associated LED indicator. Front-panel programming is very straightforward; you simply press the Program button to select from the four user programs and the four preset programs. When you have stepped through these eight choices, further presses of the Program button take you to the three sync functions:

and whether an ADAT is connected or not. When Sync Ref is chosen, the Sync button lets you choose the sources for the address and the timebase. You can do this independently too, so that the SMPTE address information comes from tape while the timebase information is supplied from a blackburst source, for example. Finally, when the chosen function is SMPTE, the LEDs indicate the frame rate of any SMPTE or MTC being received or transmitted.

On the back panel, there are the four MIDI inputs and six MIDI outputs, the 9-pin serial port connector



Sample Rate, Sync Ref and SMPTE. When you choose one of these three, you can edit the settings using the Sync button, by pressing this repeatedly to step through and select the various options. The green Sync Status LEDs let you keep track of what's going on here; when the chosen sync function is Sample Rate, for example, the appropriate LEDs indicate the sample rate of the wordclock and superclock. They also indicate whether the pull up or pull down function is in use

for PCs and 8-pin serial connector for Macs, and a second 8-pin RS422 connector which lets you hook up an Opcode Studio 4 to provide extra MIDI ports. Three BNC connectors are also provided — one each for wordclock and superclock, and a third for blackburst/video sync input. A further 9-pin port provides ADAT sync output, and a pair of quarter-inch jack sockets carry SMPTE signals in and out. Finally, there is the small connector to attach the external power supply.





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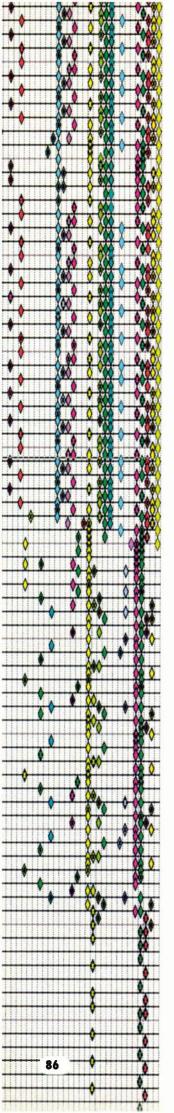
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# Rhythm EFFECTIVE DRUM PROGRAMMING

PART 3: NICHOLAS ROWLAND explains how you can take advantage of your computerised drummer to generate effects that sound anything but human...

ast month we investigated ways of giving our rhythms the human touch by paying careful attention to dynamics, micro-timing and sounds. This month we throw all that lot out of the window and look at some ideas for *in*human rhythm programming. In other words, how can we use the mechanical nature of sequencers and drum machines to develop existing rhythms or to take us in new creative directions?

#### A WIDER SOUNDSCAPE

The first area I want to look at is that of sounds. It's an obvious point, but in these days of the classless rhythm society, the perception of what constitutes a rhythm sound goes far beyond

"To take a rhythm in a new direction, you can always start by loading up a new sound set."

traditional drum kit and percussion voices. This is reflected in the fact that as time has gone by, the palette of sounds on drum machines and drum modules has gradually expanded to include tuned percussion, bass instruments and all manner of weird and wonderful special effects.

The first lesson, then, is to look beyond the conventional drum kit. Even a bog-standard General MIDI module offers a number of voices which can be pressed into service in a rhythmical context. The obvious ones are sounds such as the melodic tom, syntom and reverse cymbal, which can be used to expand the often quite limited repertoire of GM drum kits. And there are others — such as the guitar fret and breath noises — which can also be pressed into service to add authentic background grunge to otherwise standard patterns.

The example patterns elsewhere in this article

give a brief glimpse into what can be achieved with just a handful of these GM sounds. The XG set on my Yamaha CS1x (and, for that matter, the Roland GS sound set) also offer an expanded range of 'special effects', ranging from footsteps and maniacal laughter to the Tokyo metro system during an air raid. Many of these voices are so readily identifiable that they really are only suitable for overdubbing atmosphere to your B-moviestyle home video. But some of them get more interesting at extreme tunings, when their original source is less obvious.

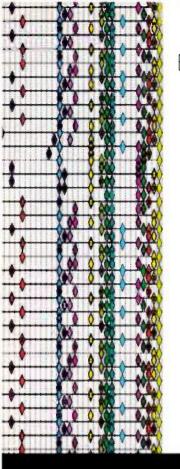
Something else to explore is what happens when you play only the first part of the sound. For example, the attack portion of the Thunder sound in the XG set makes a reasonable substitute for an orchestral stab, while the first section of the Launching sound, tuned low, makes quite a good pseudo-cuica sound. Being able to do this depends on your equipment's ability to control the length of sounds — in other words, to send out MIDI Note Offs as well as Note Ons. This is no problem with sequencers, although some older drum machines only send Note Ons. If in doubt, plug in and see what happens.

#### **INSTRUMENT LISTS**

A number of drum machines and sequencers allow you to create and then save a series of custom 'drum kits' or sound sets separately from any pattern or song data. In essence, these are merely collections of voice-to-MIDI-note-number assignments — just like instrument list patches on keyboards or sound modules. But things can get interesting when you load one drum kit into a pattern which was originally created with a completely different sound set. Imagine your drummer bashing out the same old tired rhythms, but someone's switched all the drums and cymbals around. Suddenly it all sounds very different. It can suddenly sound quite horrible too, but you have to take your chances on that one. With Cubase, for example, there are already a number of drum kit profiles optimised for specific drum machines and sound modules. I've also produced my own instrument lists for my somewhat eccentric collection of long-deleted drum machines.

So, to take a rhythm in a new direction, you can always start by loading up a new sound set — the more inappropriate, the better. If you control your drums from a sequencer, you can also try transposing the rhythm pattern. This has the effect of shifting the beats to new MIDI note numbers,





#### EFFECTIVE DRUM PROGRAMMING

and thus makes the pattern trigger a new set of voices. While the results may not always be immediately to your liking, they can spark off ideas which are then worth developing.

#### **DATA DAY**

One area where sequencers excel is rearranging data very quickly. OK, they're also good at losing your entire afternoon's work faster than you can say "Don't go near that power switch, Eugene", but I guess that's a subject for a separate discussion. In the case of drum programming — as, indeed, with any other aspect of sequenced music — you can use this to your advantage for generating new ideas quickly. As an example, most sequencers will enable you to reverse a group of notes (in other words, play them backwards) at the touch of a button. This is always worth trying with rhythm patterns, though you may have to re-quantise the pattern to get the start points of the notes in the right place.

You can also be more selective in your approach.

For example, I occasionally try reversing just the hi-hat or ride cymbal line, but keep the rest of the rhythm as it was. You can also see what happens when you reverse sections of patterns — say, the second half or the last quarter of a 1-bar rhythm pattern — to create a fill. Another trick is to change the start point of the rhythm loop — that is, shift the perceived first beat from where it was when the rhythm was programmed to a different point. With sequencers this is particularly easy to do — a simple cut and paste job. What's more, by changing the positions of the markers you can try out different loop points to see whether, before you commit yourself, there is really another rhythm trying to get out.

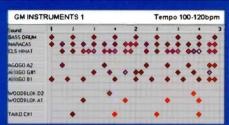
#### **ARPEGGIATOR**

The world's rediscovery of the arpeggiator as part of the return to synths that time forgot is also good news for creative drum programming. Basically, if your master keyboard outputs its arpeggiator information over MIDI, it's simply a matter of setting the right MIDI channel and plugging into whatever

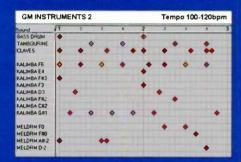
Tempo 120-130bpm

BIG BEAT

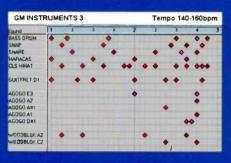
#### THE EXAMPLES

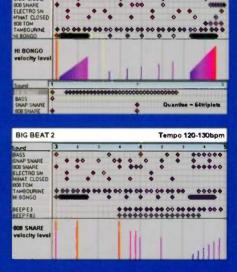


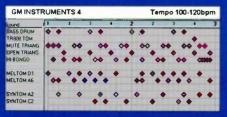
GENERAL MIDI — The four examples (left) all mix conventional drum kit voices with various non-drum sounds from the GM sound set. The purpose is to show what can be achieved even with the fairly limited capabilities of a GM sound module. Obviously, if you're working with a more capable unit, you'll be able to bring in more interesting sounds.



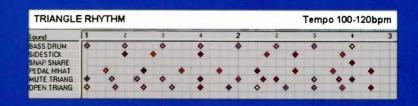
BIGBEAT 1 & 2 — Dance programmers have done much to advance the art of inhuman programming, using a drum machine's inherent mechanical nature for special effects. One example is what used to be known as the machine-gun snare roll. Due to the limited polyphony of early drum machines, if one sample followed too quickly on the heels of another it would just cut it off, leading to a 'staccato' sound which was regarded as highly unnatural. Indeed, compared to the sound of an acoustic drum roll it was. But now such a sound is de rigeur in any slammin' dance track, usually falling at the end of every 16-bar section. Here I've applied the same principle to the bongo part, which is programmed in using a quantise value of 32nd-note triplets. The effect is a bit like a tent zipper being pulled up sharpish. The section below shows MIDI velocity, and as you can see, each group of notes fades in very quickly. For good measure, you could also pan the sound from one side of the stereo spectrum to the other. Or program two bongo sounds and have one panning left to right, while the other pans right to left. The area below shows the bongo notes on a slightly bigger scale. In the second half of the rhythm, I've chosen to show the MIDI velocity values of the snare.







TRIANGLE — In this example, (below) the triangle part has been programmed as a triplet rhythm running against the hi-hat, which uses a series of straight 16th notes. The effect is to skew the rhythm, making it slightly disjointed. But with the underpinning of the snare and bass you're not going to have people tripping over themselves as they try to dance to it. As I use Cubase, this kind of effect is easy to achieve by setting the appropriate quantise, 'brushing in' the notes, then going back and deleting certain ones until the rhythm sounds 'right' (or wrong, depending on your point of view).



source you use for your drum sounds. Although my Yamaha CS1x doesn't offer that facility, I can use the arpeggiator with the internal drum kit sounds to generate loops, which I then sample and edit to create highly individual rhythm loops. For those with arpeggiatorly-challenged keyboards, several sequencers, including the latest version of *Cubase*, incorporate a software arpeggiator. Failing this, there are MIDI disks containing loads of arpeggiator patterns as standard MIDI files.

The reason, again, why arpeggiators are useful tools is that they introduce an element of the happy accident into rhythm creation. Quite simply, they create rhythms that you'd never have come up with through programming in the conventional sense. If you want to take this a step further you can investigate *Cubase*'s Interactive Phrase Synthesizer

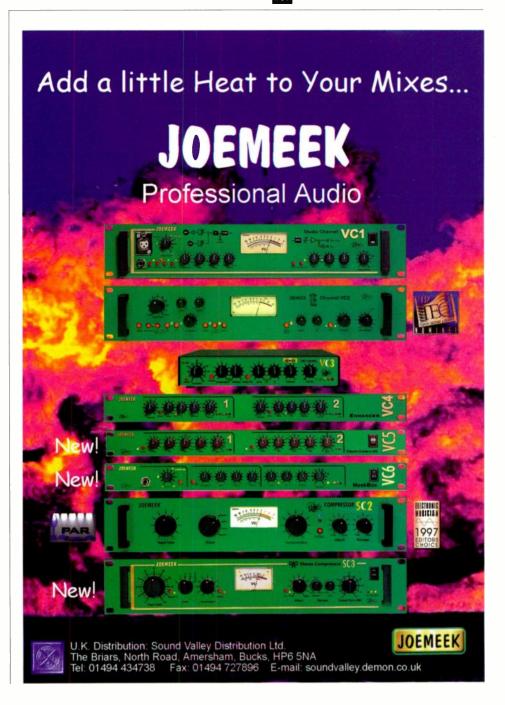
or even random music generators such as Koan. While the use of these devices can lead to some truly outlandish patterns often ones which are unusable in the real world — they can be employed in subtle ways to spice up the life of more mundane rhythms. For example, drum machines and sound modules with tunable drum voices often allow you to select one sound and spread it across several octaves. This means that you could trigger, say, the hi-hat or ride cymbal pattern as an arpeggiated or randomly generated sequence, alongside a conventionally programmed bass and snare pattern. This adds interest to the top line of percussion without necessarily making it a feature of the whole track. Of course, you don't have to use an arpeggiator or random music generator to apply these tricks. You can feed any MIDI sequence or riff that was originally created for a melodic instrument into a bank of percussion instruments, stand back and see what happens. This works the other way round too. A simple technique I employed when most of my music was created just using a drum machine and a sampler was to record a shaker or tambourine sample, then trigger this using the MIDI out notes generated by the drum machine pattern. The result was a line of 'tuned' hand-held percussion which followed the rhythm of the main pattern. Kept fairly low in the overall mix, it gave extra depth to what were otherwise quite straightforward drum parts.

#### **NUMBER CRUNCHING**

In a world dominated by 4/4 rhythms, it's sometimes refreshing — if not always comfortable — to count in odd numbers. I'm not necessarily talking about odd time signatures, here. One 'creative' technique which I've found useful is to abandon any conscious attempt to program according to the laws of even nature. For example, if you're inputting a series of 16th-note

hi-hats, do so according to some arcane number system — groups of three followed by a gap of two, then five more, then a gap of four... and so on. Any sequencer worth its salt will allow you to program the different elements of a rhythm track (bass, snare, hi-hats and so on) on a different track. You could consider programming a 2-bar or 4-bar rhythm then divide it down into its component parts. Now chop up some of these parts into unequal lengths — the conga pattern into a 5-beat pattern and the hi-hats into a 7-beat pattern, say. If you step and repeat these uneven sections you'll then have different parts of the rhythm looping at different points.

Next month, we conclude this journey into rhythm with a look at the application of effect treatments to rhythm patterns.

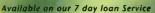




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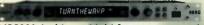
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With his fame and status as a world-class musician and recording artist, Eric Clapton can afford to spend as much time as he thinks necessary honing his next release.

RICHARD BUSKIN talks to engineer Alan Douglas about the lengthy sessions and changes of heart surrounding the recording of the new Clapton album, Pilgrim.

he conventional way of making an album is often to record the backing tracks and then do the overdubs, so you're always cycling through the songs," says engineer Alan Douglas. "On this album, however, we could literally go for six weeks and maybe only touch on four songs. It was incredibly intense."

The album: Pilgrim. The artist: Eric Clapton.

The recording procedure: not exactly the norm.

"We'd work on one song until Eric couldn't stand working on it any more, and then we'd work on another, before returning to the first one," Douglas recalls. "It was certainly a little unusual."

For Alan Douglas, certainly. A man who thrives on live recording, staking his reputation on being able to acquit himself quickly and competently, Douglas was involved at both ends of the recording spectrum on the *Pilgrim* project: the live and the programmed, the improvised and the extensively

reworked. It was, as he puts it, "always evolving, always interesting".

IM-ERIC CLAPTON



Douglas started out as a tape operator at The Manor studios in Oxfordshire in 1976, and when Virgin Records opened The Townhouse in London two years later, he moved there and began engineering for artists ranging from Queen to The Jam. Eventually he progressed to Chief Engineer



status, oversaw the installation of new studios within the Townhouse facility, and, together with Sam Toyoshima, helped redesign Olympic Studios in Barnes. Remaining with Virgin until the EMI buyout in 1991, he then went freelance.

"The period during which I worked on Olympic in the mid-'80s was when sequencers were beginning to make the first inroads, and I just hated it," Douglas recalls, giving a fair indication of where his professional tastes lie. "The problem with working with machines and bad programmers was that nothing ever changed, and of course these were also very poor sequencers that we were using. I can clearly remember doing a session at Townhouse 2 with some act or other; we started at about 11.30 in the morning, they began running this sequencer and quickly got some sounds to work with, and we just worked and worked and worked, and I sat there and basically did nothing all day and all night. Finally, at about 2.30 in the morning, one of the guys said, 'OK, let's just run it one more time before we go to bed.' Now, nothing had been recorded at this stage, the sequence was just running live, and I sat there and thought, 'That sequence is exactly the same as it was when we started this morning!' Nothing had changed, nothing had happened.

"For me, the buzz has always been live musicians — and preferably great live musicians

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#### RECORDING ERIC CLAPTON

— interacting, because there's a spark that happens when you get great people in the room together. So, I just became very disillusioned and basically buried myself in projects, which was a way of keeping working without anyone saying, 'Hang on a second, what does he actually do?' When the Olympic project came along I threw myself into that."

As long as Douglas was involved with design and installation projects he was relatively contented. However, once the projects were finished, tedium set in. "By the time the Olympic project was finished I basically hadn't done much engineering for nearly three years," he says. "That was apart from some sessions with Steve Lillywhite, and I was bored senseless. Also, the other problem with being the Chief Engineer at places like Townhouse and Olympic is that, because of their stature, all of the great clients

worked with Eric Clapton on the Grammy Awardwinning From The Cradle, in addition to a couple of soundtracks. This time around, the venue was Ocean Way recording in Los Angeles, and. initially, Clapton was acting as producer for his own material, which Marcus Miller was producing some songs that he himself brought to the project. whilst also working on the music for a Giorgio Armani fashion show. Such are the demands made on one of the world's great white blues guitarists. Nevertheless, somewhat out of his milieu with the Armani assignment, Clapton had turned to songwriter/producer Simon Climie (formerly of Climie Fisher) for assistance. The two men had worked on the Armani songs at Climie's small Pro Tools-equipped facility in the UK, and Climie had then travelled with Clapton to LA where, it was intended, they could continue their collaboration in conjunction with Alan Douglas. while Douglas, Clapton and Marcus Miller would also be working on Pilgrim. However, as time progressed, Climie became more and more involved with this record as well - a somewhat informal start to what would turn out to be an increasingly convoluted production.

Recording originally took place in the large studio at Ocean Way. There the control room houses a custom 80-input Neve 8078 console which, constructed from two 8078s in a single frame, and courtesy of 32 additional monitor mix inputs and 64-channel metering, is one of the largest desks of its type anywhere in the world. "That room sounds fantastic," asserts Douglas.

"We could literally go for six weeks and maybe only touch on four songs. It was incredibly intense."

"In fact, it's one of the best live rooms I've ever worked in." Sony 48-track digital machines were employed there and elsewhere throughout the project.

Positioned at the far end of the live room was drummer Steve Gadd, who was miked with an AKG D112 on the bass drum, a Shure SM57 or AKG 414 on top of the snare, with a 57 on the bottom, 414s on the four toms, a Neumann KM254 on the ride cymbal, a Schoeps CMC5 on the hi-hat, Neumann U67s for the overheads, an AKG C24 for close ambience, and Neumann M50s for the room. Nathan East was playing bass, and was recorded with a combination of D1 and a valve Neumann U47 on an Eden World Touring Series cabinet. Also D1'd was Greg Phillinganes on



they attract come in with their own engineers, and so you tend to end up just filling in and doing all of the crap."

Clearly, it was time for Alan Douglas to branch out on his own. This he did.

"When EMI bought out the record company and discovered that the studios were all part of the package I found myself with a golden opportunity to be made redundant, get a payoff and go freelance," he says. The fact that he took that opportunity represents a decision he wouldn't regret, and he's now forged a reputation based on live band recordings and an ability to work calmly and efficiently with sometimes complicated situations. "If people are pushed for time, they know that I'm not going to be messing around, taking ages to get sounds," he says. "I'll work quickly to get the drum sound and set everything else up, and then I'll be running tape in 'record'."

#### THE ENGINEER'S TALE

Fast-forward to September 2, 1996, and the start of sessions for *Pilgrim*. Previously, Douglas had

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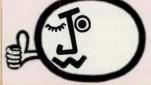
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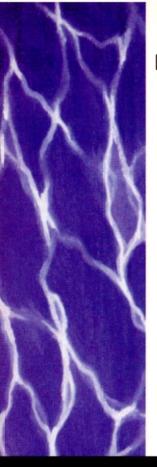
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#### RECORDING ERIC CLAPTON

keyboards, while Eric Clapton's guitar contributions — performed mainly with his signature series custom Fender Strats — were recorded in the way that Alan Douglas prefers to deal with all guitars: a Beyer M88 on the center of one speaker, an Electrovoice RE20 off-centre on the same speaker, and an SM57 on the centre of another speaker of a custom 1950s Fender Tweed Twin. Guitar ambience was recorded with a C24 (in LA) or a Neumann M49 or U67 (in London).

"I've done things that way for years," Douglas says, "because I can get pretty much any guitar sound in the control room just by moving faders. So, in other words, if you want it very middly, you go for more of — or exclusively — the 57; the 88 does the high, bright stuff; and the RE20 gives you the bottom end and the grunge. Ever since I started recording I've always had one microphone in the brightest spot in the center of the cone and another offset, and it's just evolved into three microphones. I invariably use the same microphones — they're also microphones that studios always have — and it's a case of just moving the faders without having to move the actual microphones on the guitar cabinets."

A Beyer M88, going through a Summit dual tube pre-amp, and an AKG C28 were employed for Clapton's vocals, which were recorded at the same time as the band played live together in the studio. As for the main man's guitar playing, according to Alan Douglas there was no difficulty in coaxing a performance out of him. Indeed, it was sometimes almost a case of stopping him when more than enough was already in the can. "Sometimes I'd be mixing or doing whatever and he'd be sitting at the back of the room," Douglas recalls, "and he'd just get bored, so he'd pick up a guitar — like he always does — and start playing, and he'd come up with a part! Not necessarily for the song I was working on, but for another song!"

Out of about 20 numbers that were worked on in various guises as the project progressed, 14 made it onto the finished album, most of them written by Clapton himself. A couple were also cowritten with Simon Climie, while 'Born In Time' is a Bob Dylan composition that was originally offered to Clapton back in 1987. At that time the guitarist was enthusiastic to record it, only to have his nose put slightly out of joint when he discovered that Dylan had just recorded it for an album of his own. Nonetheless, nearly 10 years later Bob had the nerve to send him the original demo of the song once again, and this time his perseverance paid off.

#### **ALL CHANGE**

"Aside from a couple of songs that Eric had already played live, none of the material had been demo'd or rehearsed with a band when we entered the studio," Alan Douglas recalls. "It mostly consisted of ideas, around which Eric could develop guitar or lyrical ideas, so everything kept evolving and nothing was fixed until the record reached the shops. It was all in a constant state of flux until he was absolutely happy with something

#### VOX TO

"His [Eric Clapton's] singing on this album is the best I've ever heard it," says Douglas. "His performances were extraordinary, and in that respect credit is certainly due to Si [Climle] because he's very, very good in terms of the psychology of recording vocalists. That's mainly as a result of him working with a lot of people who can't sing at all, and consequently this album must be heard for Eric's stunning vocal performances... not to mention his blinding guitar work.

"Since we were always in 'record', including a couple of warm-ups we might do six vocal passes, comp them, and then that would be the vocal to try to improve on. So, we could either comp into it or, more often than not, he'd want to take a different approach; he'd sing it softer or harder, or with some other variation, and as a result there would end up being as many as three lead vocals, all taking a different approach."

and we hadn't touched it for a couple of months. Only then could we be fairly sure that the arrangement of the song and the style of the vocal and guitar were here to stay."

Note that Douglas says "fairly sure," not "totally sure," which is highly significant in the light of how things eventually turned out. More about this in a moment, but suffice to say that, even in the short term, a tune that started out with, say, a funky rhythm could turn into quite the opposite, courtesy of EC adding new and varied guitar parts. Then, at an even later stage, the funk element might well reappear. There was no way of knowing what direction the material — or, indeed, the album — would be going in from one month to the next.

"After we'd returned to England, 95% of the material that we'd recorded in LA was basically scrapped," says Douglas. "Let's just say that Eric didn't feel it was 'different' or current enough. I mean, as a band recording it sounded fantastic, but he just decided that it wasn't what he wanted the record to be. I think he considered it to be too ordinary and, since he really loves contemporary American R&B and hip hop records, he wanted to get that type of feeling on the record... As time went on it became much more of an Eric album, with his own compositions largely replacing those of other people."

Fortunately, since this was the middle of November 1996 and June of 1997 had been mentioned only as a rough delivery date to the record company, there still wasn't too much pressure on Clapton to come up with the finished goods. It was just as well. Work on a film soundtrack and the much-touted TDF project (more on this shortly) had to take place before sessions could resume in mid-January 1997 for the *Pilgrim* album. These took place in Olympic's Studio 1, which was newly equipped with a 72-channel SSL J-Series console that Douglas asserts is "sonically brilliant. I think it's the best sounding analogue console I've ever heard. I just love it."

Meanwhile, Olympic 2, with its 56-channel G-Series, Townhouse 1, with its 72-channel G-Plus, and a Focusrite-equipped room at Metropolis also came into play."We'd originally intended to do the whole album in Olympic 1," Douglas points out, "but it was booked, so we went to LA."

"In terms of songwriting, arrangements, guitar parts, styles of singing and styles of guitar playing, every single avenue was explored on every song."

## A clear front runner

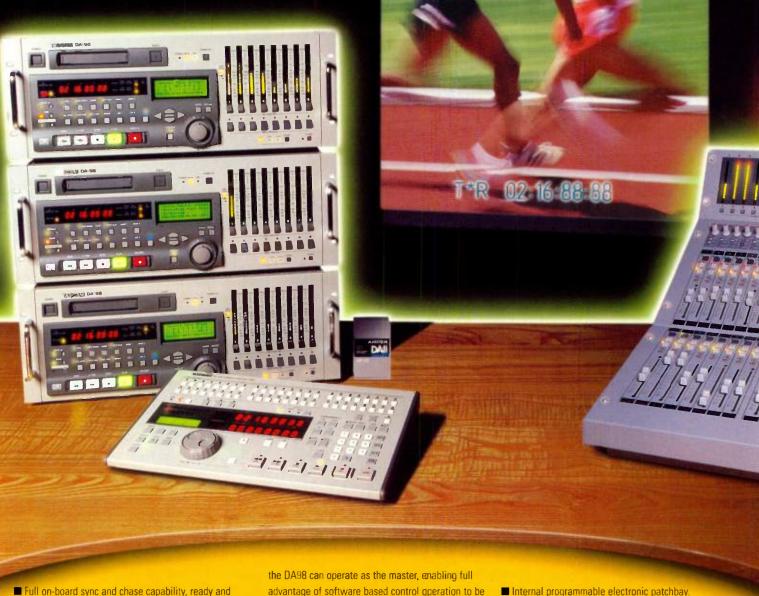
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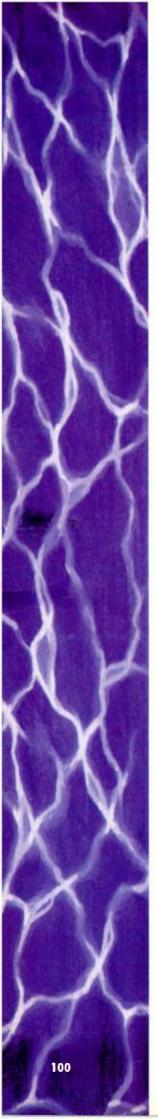
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#### RECORDING ERIC CLAPTON

#### REMAKE, REMODEL

The subsequent re-recordings (and re-rerecordings) would eventually last until November of '97: "For the new sessions the initial idea was to keep the tracks and simply add programmed drums. Almost everything had been recorded to a click, so there was a tempo. However, it rapidly became apparent that, for a variety of reasons, this alone wasn't going to be enough to make it work. All of the keyboards and bass were programmed, although, apart from one song, the bass was replayed by Nathan [East], Pino Palladino and Dave Bronze. Chris Stainton also played some piano. Paul Carrack played Hammond and Luis Jardim was on percussion, while Tony Rich, Kenny Edmonds and an English singer named Chyna added backing vocals. Then there were the strings - 24 to 30 pieces — arranged by Nick Ingman and played by the London Session Orchestra.

"In essence, the programmed bass and keyboards were really intended to kick-start things, but in many cases they stayed, while in others we ended up with the real thing."

'Broken Hearted' is the only one of the live band tracks to have survived, and to have made it onto the finished album, albeit with the addition of programmed drums. Still, in charting the development of particular songs on Pilgrim, a number entitled 'River Of Tears' encapsulates the mayhem that normally surrounded the evolutionary process. Initially, Clapton came up with a song idea based on a pair of contrapuntal guitar parts. These were duly recorded, while Simon Climie produced a fretless bass arpeggio on a Korg Trinity, to the accompaniment of sleigh bells, snare and bass drum samples. Paul Waller — a programmer who is particularly good at finding obscure loops that are perfect for a track — did the programming and Emagic's Logic Audio 2.62 was the sequencer employed. Simplicity was the key here, but then...

"We ended up working on that track for weeks and weeks and weeks," reports Alan Douglas. "I mean, nothing's that simple! We'd had the bones of the song recorded in about four hours and it was in shape - which, on this album, was a completely alien concept — but then we spent several weeks rearranging and editing it, so in that way it joined the rest of the cast... We actually needed to edit it, because it was something like 30 minutes long at one point! Pino ended up playing roots for the arpeggio - which is probably an octave above where a bass would play - while Eric contributed slide guitar and vocals. Still, the guitars and the original arpeggio never changed, other than any amendments that were necessitated by the changing arrangement.

"This kind of approach really originated with the TDF project. The basic concept for that was simple; Eric had written music for a show with Simon Climie and, since it was far too good to leave hanging around, he decided to do an anonymous record so as not to clash with his own album's release. I did a mix of a short piece for the Armani show during a

lunchbreak at Ocean Way, and, inspired by the Underworld track on the *Trainspotting* album, I had a very close repeat on the bass drum. Then, because I was getting bored, I started to feed it back in a mad dub style and it made this great sound, like a helicopter. I didn't think much more about it, but then a loop of those mad, fed-back drums became the basis for the TDF track 'Sno-God' — this stupid thing that I'd done in half an hour during the lunch break! However, because of that attitude towards working, everything pretty much had to be arranged in Pro Tools or *Logic Audio*.

"There are no words to describe how great it is to be in the engineer's seat when Eric is improvising a solo."

"Anyway, when were mixing one of the TDF tracks, on the second day Eric said, 'You know, I've never liked the way that bit follows that bit. Why don't we try...' At that point everything stopped. It was the second day of the mix and we had to rearrange the entire song. Simon sorted out the new arrangement in Pro Tools and, because we always worked digitally, it was very easy to transfer in and out of Pro Tools digitally and avoid the level and speed problems that you'd normally get with analogue. So the song was rearranged, and then it would be a case of 'I think it needs a guitar.' The capacity within Pro Tools to do something, get it so that you liked it and then say. 'Well, actually, I don't know if I ever did really like it. Why don't we try this...' sort of set the scene for how the Pilgrim album would be done.

"Sonically things were always pretty straightforward — I didn't have to put microphones down toilet pans or anything like that. However, in terms of songwriting, arrangements, guitar parts, styles of singing and styles of guitar playing, every single avenue was explored on every song, giving me the opportunity to work with some of the best musicians on the planet. There are no words to describe how great it is to be in the engineer's seat when Eric is improvising a solo. Still, even though it may sound self-indulgent, with a lot of over-refining. it really wasn't as overblown as you might think; it was much more of a groove thing, where something would feel good and Eric would just keep playing... After all, Eric was enjoying himself and the drum machine would never get tired!"

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The Arrange page and audio Environment give plenty of on-screen information, and the results are impressive, especially with automation.

LOGIC AUDIO 3.0 FOR PC

MARTIN WALKER
peers through the
Windows version
of Emagic's
Logic Audio 3.0
MIDI + audio
sequencer.

egular readers of SOS may have gathered that I normally use Steinberg's Cubase sequencing package, but I have been intrigued by many of the possibilities of Emagic's Logic, so I've been looking forward to this opportunity to examine the latest version for Windows 95, to see just how its new features compare with other sequencers for the Windows platform. Since SOS published a full review of the Mac version of Logic in the January 1998 issue, and the feature set of both Mac and PC versions is very similar, I'll concentrate on the areas where PC owners have a slightly different perspective.

#### THE PACKAGE

As far as the spec of your PC goes, Emagic recommend a minimum of a Pentium 90 and 32Mb RAM, but I suspect that most people would steer you towards a Pentium 166MHz MMX (or preferably faster) processor. The new software comes on

CD-ROM rather than the floppy disks of the past, allowing the luxury of a 53Mb audio-only demo (which is a useful showcase for the new features), as well as some Environments and Score Templates. Finally, in Adobe *Acrobat* format, there's a *Logic Audio* Guidebook (including eight Quicktime movies) and an Environment Tutorial. The Guidebook aims to answer the sort of questions new owners have in the first 30 days, and the Environment Tutorial may answer a lot of people's prayers.

#### **DESIGN ASPECTS**

I do appreciate that loads of people already know and love *Logic* in its many incarnations, but one of the stumbling blocks for new PC users is that Emagic don't abide by many of the Windows conventions. Although this doesn't affect its feature set, it does make initially using *Logic* more difficult than it might be. The first port of call for many people after installing a new application is to browse through the Helpfile.

However, there is still no Help option on the *Logic Audio* 3.0 menu bar—instead, it appears as Info. The reason for this becomes apparent when you take a look, as it's not really a Helpfile at all, but a short (though useful) tutorial. *Cubase* doesn't have a full Helpfile either, but at least there is enough to provide context-sensitive help, so that you can click on a dialogue-box Help button to get a quick description of the function in question. Another idiosyncrasy is that some of the *Logic* windows can be 'Always on Top', with a higher priority than any other window, and I sometimes found these still appearing on screen even when I returned to my word processor to write this review. Occasionally the TaskBar (the horizontal strip showing running applications and providing access to the Start menu) was also obscured.

My first impressions are of a very tasty new graphic design, but on the PC I do feel that the audio Environment colour scheme is a bit lacking in contrast. The majority of the audio Environment is

# "Logic Audio 3.0 for Windows 95 is a powerful and impressive program..."

in dark grey, with a significant amount of the labelling in black, and with my monitor screen I found I had to lean forward and squint closely to read some of it. Also, compared with other applications, many of the indicators were extremely small and not very brightly coloured — it was some time after using a Solo button, for instance, when I noticed that the other channel Mute buttons were flashing. This is surprising, since the Arrange page is a model of clarity, displaying far more information than *Cubase* does.

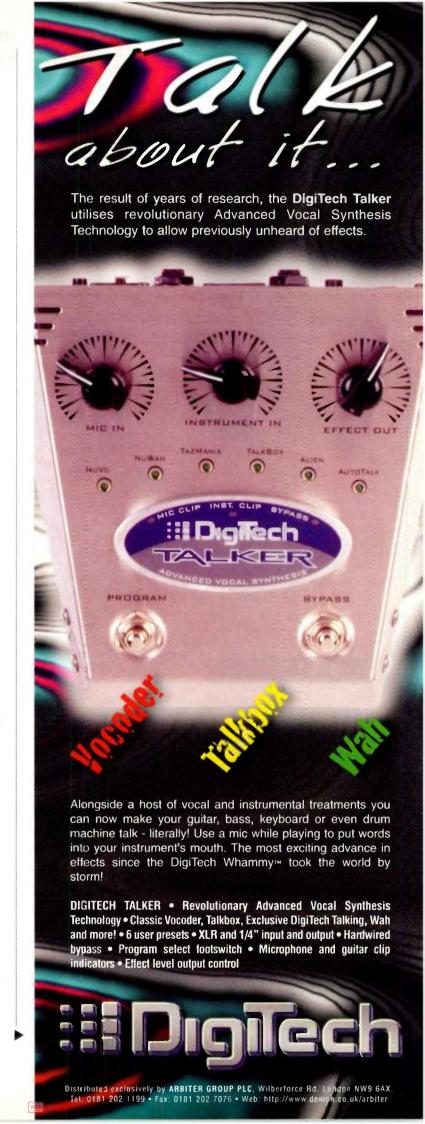
Screen sets do allow you to arrange various combinations of open windows on screen to your liking, and then capture their positions, which, for audio work, is a godsend, as otherwise you're constantly opening and closing windows to concentrate on the matter in hand. This also came in handy after I clicked on the Instrument parameter box for a little too long, and generated 30 or 40 different windows on the screen, each of which would otherwise have needed closing separately.

Many other small improvements are present in this new version. You can now use Hyperdraw in the Arrange page for audio regions, in exactly the same way as for MIDI tracks, which ties things together more neatly. The strobing window redraw which occurred when the length of a note was extended in the Matrix window (reported in Paul White's review of version 2.5) seems to have been cured. However, there is still no colouring of each Matrix note according to velocity value, as in the Mac version, and no coloured icons (with or without drop shadows) in the Arrange page.

#### **SOUNDCARDS**

Logic Audio 3.0 supports four types of audio hardware: PC AV (using Windows 95 standard multimedia drivers); DAE (Digidesign Audiomedia III and Session 8 cards); Emagic's own Audiowerk8; and Soundscape's SSHDR. According to the manual addendum, with the DAE and Soundscape hardware, only the respective manufacturer's DSP-based effects are available, but PC AV and the Audiowerk 8 can use the new Emagic CPU-based real-time effects. According to Emagic, the required extension to run Soundscape supports all versions up to 1.9, and version 2 series hard drives that are formatted as version 1. The manual mentions the Korg 1212 I/O card, though it's not on the list of supported hardware, and when I made enquiries I discovered that the driver for this is not yet complete.

Many people would like to use a MIDI + Audio sequencer with a multi-channel soundcard, to provide extra outputs for patching in external effects. The situation with *Logic Audio* on the PC is still that if you're using the PC AV driver (Windows MME compatible), you



#### LOGIC AUDIO FOR PC



can only access a single stereo pair of inputs or outputs. With my Event Gina soundcard, for instance, the I/O buttons shown in the audio mixer in the SOS review of the Mac version just didn't appear. Unfortunately, this situation seems largely due to internal politics. If you're looking for multichannel hardware to use with Logic Audio, you should either stick to the Audiowerk8 or wait to see if drivers appear for other cards — don't buy blindly or you may not be able to use your new hardware in full.

#### **REAL-TIME AUDIO EFFECTS**

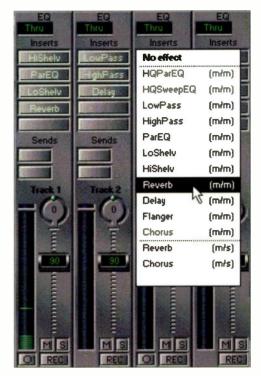
Of course, the most-awaited new feature in version 3.0 has to be the real-time effects. As always, Emagic have done things slightly differently from everyone else on the PC, by ignoring the Microsoft DirectX plug-in standard, although they do imply that this will be supported in the future.

The effects work well, although adjusting parameters can be a bit hit and miss to start with, since many of the settings are from 0-100%, making it difficult to guess the end result. The Delay is a bit basic, with only a single adjustable delay time, but the Flanger and Chorus both make up for this with a lovely rich sound. Reverb algorithms are always processor intensive, but Emagic provide four quality settings for theirs (from 1 to 4, with 4 being the highest), so you can choose for yourself how much of your precious processor time is used up. Quality 1 is more like a flutter echo, with 2 and 3 progressively less jittery, and 4 is very smooth, being quite usable even on exposed sounds such as vocals and drums. There's also a lot of control on offer — Room Size, Decay, Density, HF Damp, and PreDelay can all be adjusted. Sadly, given the wide variety of effects obtainable, there is no way to load and save presets, which could save a considerable amount of time.

I was also pleased with *Logic Audio's* EQ. The low-pass and high-pass filters are implemented rather like those on a synthesizer, with between one and four poles on offer (each pole giving 6dB/octave cutoff slope) — ideal for rolling off those unwanted frequencies.

#### **SUMMARY**

Logic Audio 3.0 for Windows 95 is a powerful and impressive program, and although it always has its own way of doing things, I must give it credit for not crashing on me once during the review period, despite the fact that I was running screen grabbers. the Acrobat Guidebook and my word processor in the background. It did throw up a variety of error messages when it ran out of processor power (which is hardly surprising in these circumstances), but it always recovered gracefully. This is part of the difference between Cubase VST and Logic Audio. While Cubase promises the earth and delivers a huge amount, it does tend to fall over if you push it too hard. Logic Audio ties you down a lot more in hardware terms, and insists on doing things its own way every time, but I suspect that these restrictions are a significant reason for its continued stability. Some people have had problems with sync between



Detail of part of the audio Environment, showing the range of EQ and effects on offer.

MIDI and audio, as they have with VST (see Crosstalk in the February issue of SOS), but it unfortunately seems inevitable that some combinations of PC hardware and software don't seem to work smoothly. Many of these problems are related to the choice of soundcard and its drivers, something over which the sequencer manufacturer has little or no control.

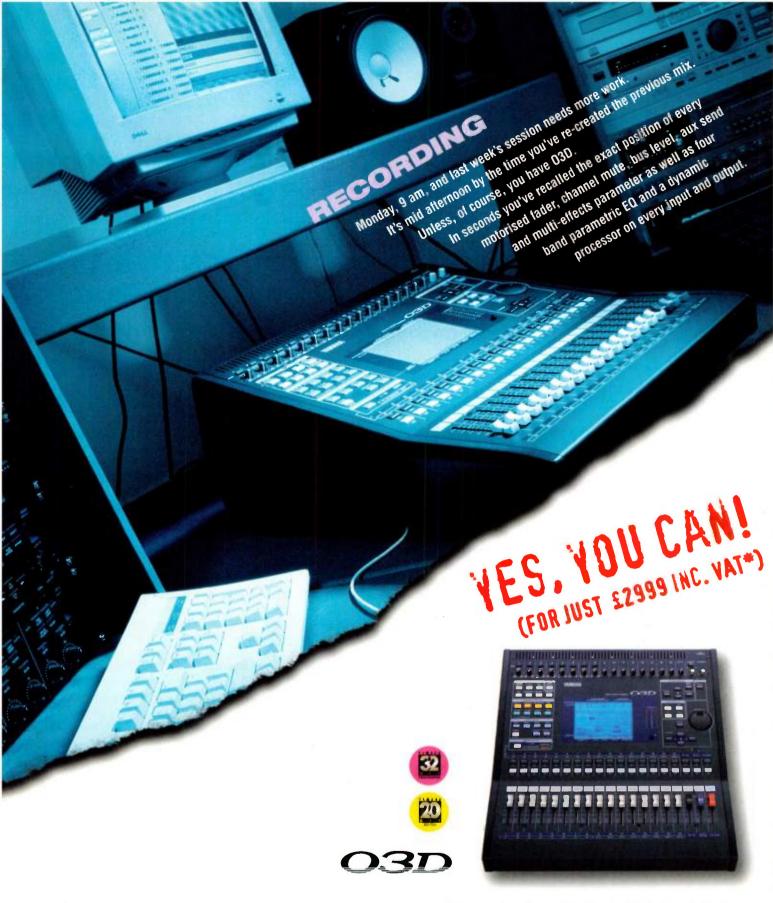
The real-time EQ and effects are well up to scratch, and the question mark hanging over DirectX plug-in support will, I suspect, be resolved in the near future. However, the current limited support for multi-channel soundcards is a different matter. If you like the look of the Audiowerk8 card, *Logic Audio* 3.0 is an obvious companion, since both are made by the same company and there will be no compatibility problems. If you fancy using another card, you may have problems, or at least face limitations. Fortunately, most stereo soundcards seem to work with *Logic Audio* with no problems.

Each new upgrade of any software will please existing users with lots of extra features, but will make the learning curve more difficult for novice users. However, the stability of any application must also be considered an important feature (particularly on the PC, where problems can abound), and on this basis *Logic Audio* must win extra brownie points.



#### STOP PRESS

The Logic product line is currently being revamped, with the basic version, Logic Silver, offering a degree of audio support as standard. Logic Gold is the equivalent of the current Logic Audio, while Logic Platinum includes support for all those devices that previously required the purchase of optional extensions, such as the Yamaha CBX D5.



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# the odd card Odd Card Using a PC as a SELF-CONTAINED

If you're the proud owner of a new PC, and want to make music, there are plenty of ways to get started, and you may be surprised at just how good the results can be. MARTIN WALKER makes sure your shopping list is short but sweet.

pen a copy of most newspapers and weekly magazines and you can't fail to notice just how widely PC systems are being advertised, with the result that more and more people are buying them, for games or accounts, graphics or the Internet, or even specifically for music. If you've got a PC you want to start making music with, you may now be wondering what else you need, and whether you really can turn the PC into a self-contained system — a soundcard studio. Well, musicians are often surprised at the relatively high quality of sound you can get from even the cheapest PC soundcards,

and many new owners find that you can get acceptable results without adding any additional MIDI gear at all.

**MUSIC MAKING SYSTEM** 

### THE SOUNDCARD

The most important item for PC music making is the soundcard, which is a circuit board plugged into a slot inside the computer system case. A soundcard allows you to record both MIDI data and audio and play it back, and nearly all complete PC systems have one included. If there isn't one included with your PC, have a look at the February '98 issue of *SOS*, where a complete roundup of suitable stereo cards can be found. Bear in mind, though, that if you're a PC novice it's much safer to make sure your PC comes complete with a soundcard and sequencer software already installed, to ensure the minimum of problems.

The humble soundcard does guite a few jobs. Nearly all soundcards these days include a GM (General MIDI) compatible MIDI synth capable of 16-channel multitimbral operation, and many are also GS or XG compatible (GS and XG are extended implementations of the General MIDI sound-set standard, from hi-tech manufacturers Roland and Yamaha respectively), giving you an extended set of sounds. The MIDI sounds are normally stored on the soundcard in Read Only Memory (ROM). This means that they cannot be erased accidentally, and are also always available for instant use. The big advantage of having these sounds inside your PC is that you don't need to plug in anything else to make music. Many cards also have on-board RAM (Random Access Memory), and this is used to add your own short sounds to those of the MIDI synth (more on this later).

The other major job done by the soundcard is playback (and recording) of longer segments of sound that are stored in digital form on your hard drive. These are loaded into the main computer RAM when required, and then replayed by the soundcard. Using RAM removes any restriction on the sort of sounds that are available to you, since not only can you record things from the real world, via a microphone, but there are also loads of pre-recorded sounds available to expand your collection, from yet more instruments to complete musical phrases and drum loops. On a PC, the most widely used format for storing these digital





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# WILDCAT CANYON *autoscore pro* audio-to-midi software for the PC

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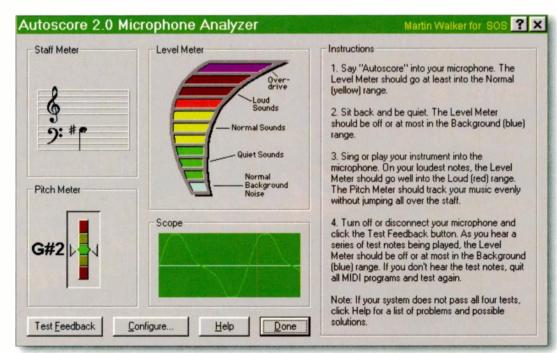
MARTIN WALKER wails, blows and plucks in the interests of non-keyboard players everwhere.

### INSTALLATION

There are two versions of *Autoscore* (Deluxe and Professional), and both are at version 2. Version 1 came out about 18 months ago, and whilst it was fully functional, it had a few bugs that have been eradicated in version 2. The Deluxe version provides basic note tracking, but lacks the full editing and pitch-bend tracking of the Pro version. Both versions are available for Mac and PC, and although I only looked at the PC Pro version, the algorithms used should ensure identical performance on both platforms.

The installation of the software caused me some problems, although I was able to work round them. I think it's tempting providence to have an install

Setting up the mic level is fairly simple — you can see both the waveform and the input level using this supplied utility, and once the pitch-recognition software recognises a note, its pitch is indicated on the Staff meter, and its absolute pitch is indicated (+/- half a semitone) on the Pitch meter.



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# THE SOUNDCARD STUDIO

 'snippets' is the WAV file, and any file that contains such sounds will have a name that ends in WAV, such as GUITAR.WAV.

### **RECORDING YOUR OWN MUSIC**

All you need to start recording your own music is what's known as a MIDI 'sequencer' program. Some PC systems come with one already installed, but there are a large number available fairly cheaply, such as those from the Evolution stable, or from the Steinberg *Cubase* range. Et Cetera also distribute a wide range of music software and hardware products suitable for beginners or

far more pleasurable. You could consider the Quickshot MIDI Composer, which comes complete with the *Cakewalk Home Studio* sequencer package for just £120 (this was reviewed in the August 1997 issue of *SOS*), or the Evolution Music Creator Pro package (reviewed in the January '97 issue).

### MORE ON-BOARD SOUNDS

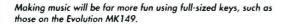
Although nearly all modern soundcards feature a GM-compatible MIDI synth, the realism of the sounds they offer depends on the size of the ROM memory devoted to them, and the cleverness of the programmers. In many cases, solo instruments may sound a bit bland, but will probably still be fine in the context of a complete mix. However, if you want to improve on the quality and realism of these sounds, there are several avenues to explore. If your soundcard already has on-board RAM (see your manual), you will be able to use this to store additional sounds, either in WAV file format, or using a supplied utility program to convert WAV files to any special format demanded by a particular soundcard. Creative Labs' SoundBlaster cards use SoundFonts, which can be complete collections of sounds, although it is perfectly possible to have a SoundFont with just one sound, to add a more expressive solo instrument to the GM set. SOS had a special feature on creating your own SoundFonts in the June '97 issue. Once the sounds have been loaded into the soundcard RAM, you can play them back just like any other MIDI instrument. This is often known as a Sample Synth, and sometimes the Sample Synth will be a completely separate entity, providing you with an additional multitimbral synth to the GM one in ROM, but on most cards the RAM sounds you load will replace one or more of the original ROM sounds.

Your soundcard may also feature a WaveBlaster-compatible daughterboard socket, which allows you to plug in an additional synthesizer which adheres to the WaveBlaster standard. Various manufacturers market these, and the most famous is the DB50XG from Yamaha, which you can now buy for about £90. The instruments and effects on this card are of extremely high quality, and any piece of music is likely to sound significantly better when played back through it than when using the normal soundcard MIDI instruments.

### AN OUT OF PC EXPERIENCE

Eventually, you may find yourself running out of interesting sounds on your soundcard: the time has arrived to consider attaching an external synthesizer. Virtually all soundcards have a MIDI (Musical Instrument Digital Interface) In and Out socket, although this is normally on a 15-way D-type connector, needing an adaptor cable to convert it to the more usual pair of 5-pin DIN connectors used for MIDI. Many soundcards come with this lead, but if yours didn't you can buy one for about £15 from most computer shops.

One thing to watch out for is that most soundcards only have a single MIDI interface to feed both the daughterboard socket and the



professionals. If you have a PC, but no soundcard, nearly all new cards are bundled with some sort of sequencer, and this can save you spending more money, although you shouldn't under-estimate the difficulties that may occur when installing new hardware in any PC.

There are various ways to enter your music into the sequencer. Most budget programs come complete with a keyboard utility, which is a pop-up window with a picture of a keyboard that can be used to enter music by clicking on the appropriate notes with a mouse. While this is useful if you don't already have a proper MIDI music keyboard, most people prefer to enter notes using a musical keyboard with full-sized keys. The cheapest of these can now be bought for a little over £100, making the process

### **HEARING AID: BETTER MONITORING**

If you want to achieve more PC setup, the first things to ditch are the tinny, boomy probably came with the PC. They may be fine for games, and they're handy to pop either side of the monitor screen, but they certainly won't qualify as hi-fi, nd music created with them will probably sound completely unbalanced when you listen to It on other speakers. They do, however, often have the advantage of shielded magnets, which should ensure that your screen display doesn't become distorted at the edges when they are placed nearby. You can speakers for 'desktop' use, and ome even come with subwoofers, which allow a smaller pair of speakers to be placed or the desktop, while a larger one that handles bass frequencies can be put on the floor out of the way.

The obvious solution for hi-fi quality audio playback is to use a hi-fi. Most recording studios use nearfield monitor speakers, so called because you sit near enough to them to hear the sound without the acoustics of the room affecting things too much. Don't get monitor speakers confused with your computer monitor screen, which is something entirely different — in an audio context, monitors are the loudspeakers through which you monitor your music. If you have 'bookshelf' speakers, you can probably place these

either side of your computer screen (about three or four feet apart, with the computer exactly in the middle), and this will give you a good stereo sound when mixing. Make sure that each speaker is at least a foot from the computer screen, or you may suffer picture

All the audio signals will emerge from a single socket on your soundcard (normally a stereo 3.5mm jack socket). To connect it to your hi-fl you'll need a cable that has a stereo 3.5mm jack plug on one end, and the appropriate pair of plugs for your hi-fl amplifier at the other (often of the phono variety). Tandy are an easy source of such converter leads, as well as extension cables if you need to create a much longer lead.

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# THE SOUNDCARD STUDIO



If you want to add more external MIDI sounds to your basic setup, the Yamaha MU10XG module can now be bought for just over £100.

external MIDI sockets. If you've added a DB50XG you will probably find your external synth receiving exactly the same MIDI signals as the daughterboard, and this can cause a bit of headscratching. The solution is to find out if you can selectively disable certain MIDI channels on each synth, so that you can perhaps allocate eight MIDI channels to the daughterboard synth, and the other eight to the external synth. If you fancy the sounds of the DB50XG, but don't have a daughterboard socket, check out the Yamaha MU10, which is a DB50XG in an external case. This can now be bought for £115, and comes complete with Steinberg's Cubasis sequencer, which is handy if your PC didn't come with a sequencer already installed. The MU10 can also be bought as a bundle with the Fatar Studio 37 keyboard for about £170 from some 505 advertisers, giving you a comprehensive package.

# CONTACTS

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- 01483 458877.
- F 01483 458822.
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- F 01706 222989.
- W www.etcetera.co.uk
- www.cakewalk.com
- · EVOLUTION
- (sequencers, MIDI keyboards):
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- T 01525 372621.
- F 01525 383228.
  - sales@evolution.co.uk
- W www.evolution.co.uk

- MIDIMAN
- MIDIMan, Hubberts Bridge House, Hubberts Bridge, Boston, Lincolnshire PE20 3EU.
- 1 01205 290680.
- F 01205 290671.
- 106133.2372@compuserve.com
- W www.midifarm.com/midiman
- . SPIRIT
- A Spirit by Soundcraft, Cranborne House, Cranborne Industrial Estate, Cranborne Road, Potters Bar, Hertfordshire EN6 3JN.
- 01707 665000.
- 01707 665461.
- www.spirit-by-soundcraft.co.uk
- STEINBERG (sequencers):
- Arbiter Pro Audio, Unit 2,
  Borehamwood Industrial Park, Rowley Lane,
  Borehamwood, Herts WD6 5PZ.
- T 0181 207 5050.
- F 0181 207 4572.
- www.steinberg.net
- . YAMAHA
- Yamaha-Kemble Music (UK), Sherbourne
  Drive, Tilbrook, Milton Keynes MK7 8BL.
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### **REAL-WORLD PERFORMANCE**

Human beings, with all their imperfections and foibles, can inject life into any piece of music, and a performance on an acoustic instrument is likely to be far more expressive than most people can manage using a MIDI keyboard. Even budget sequencers often have basic facilities for recording WAV (audio) files alongside MIDI, and this can transform a song. Many soundcards have microphone inputs (and many come complete with a budget mic as well), and you can use these to record a live performance to accompany your MIDI sounds. For many people, this will be a vocal line, or even several. The electret mics that come with some soundcards can work quite well considering how cheap they are, but most 'band'-type mics aren't likely to have a high enough output level to be connected without using an external mixer.

Watch recording levels carefully, as overloading a digital recording sounds far worse than doing the same with a cassette recorder. If you have an audio mixer, always use the mic inputs on this if possible, as the ones on the soundcard are likely to be more noisy, adding hiss (and possibly hum) to your recordings.

Recording a couple of mono or stereo tracks alongside the MIDI ones can be done with most modern PC sequencers, but you'll need full-duplex (simultaneous recording and playback) facilities on your soundcard if you want to listen to (monitor) the previous audio tracks when recording new ones. Once you need more than about half a dozen audio tracks you're likely to require at least a Pentium 166MHz machine, as well as a fast hard drive. If this is what you aspire to, and you have yet to buy your PC, speak to some of the specialist PC music dealers advertising in the pages of SOS. You should then be able to buy a system that has your choice of soundcard and sequencer already installed and properly configured to meet your requirements from day one.

### THE FINAL MIX

Once you finish recording your music, you probably won't want to switch on your computer every time you want to listen to it, so why not do it like the professionals — mix down to tape. Soundcards have internal mixers for setting recording and playback levels. On the output side, this will allow you to set the relative levels of MIDI synth, WAV-file playback, and any other options that are provided, so that you can get the balance right.

If you add external synths to your setup, you will need some means of mixing together the sounds from each synth with the output of your soundcard. Mixing consoles start at about £70, and go up to tens of thousands. There are lots of reviews of small mixers in *SOS*, but a few models to watch out for are the Midiman Multimixer 6 (six channels for £80), the Spirit Folio Notepad (a tiny 10-channel mixer for about £150), the Mackie 1202 (12 channels for about £260), and the Behringer MX1602 (16 channels for £180). Many *SOS* advertisers sell these. Once you have a mixer, you'll

probably also want to start thinking about buying a multi-effects unit (from £100 upwards) which will provide reverb, echo, and many other effects for your audio recordings, and MIDI sources as well. The more comprehensive (and expensive) the mixer, the more facilities will be provided to connect effect units, as well as microphones and synths.

When you have the song mixed so that the individual instruments have their levels balanced to taste, and any effects have been added, you're ready to record your song onto other media. Many people start out by mixing down onto the cassette deck of their hi-fi, and this can give very acceptable results, as long as you're careful to set up suitable recording levels.

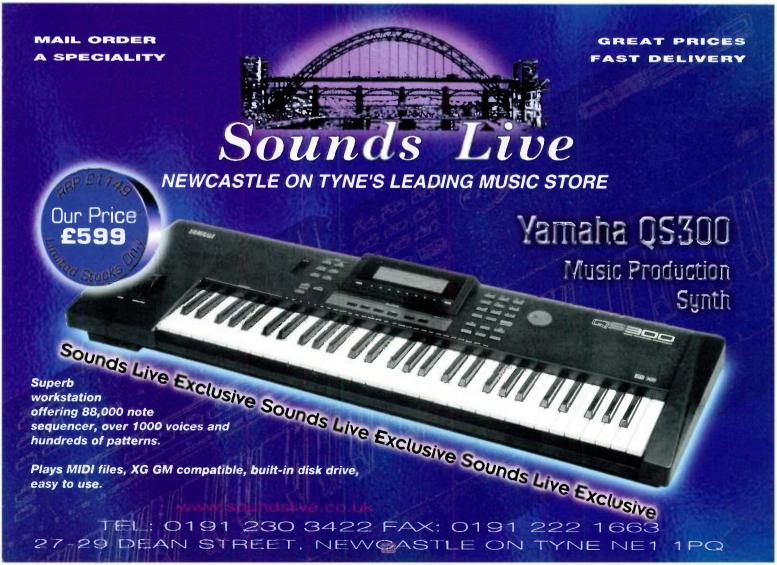
When you get more serious, there are several other formats that will give you higher quality audio results. Sony MiniDisc recorders are becoming very affordable, and will give very clean recordings, almost indistinguishable from the more expensive DAT (Digital Audio Tape) recorders. The main differences are that MiniDisc offers random access (which simply means that you can get to any track instantly without having to fast-forward past the earlier ones) and uses a form of data compression (to cram more songs into a smaller space on the disc). DAT players do not compress your audio data at all, so the sound quality is slightly better, but, just as with audio



### LOOKING TO THE FUTURE

so this is what most musicians use.

Once you've finished a few tracks using just your PC's soundcard, you'll probably know what kind of extra sounds you'd like to add to your setup. If you're on the Internet, this can be a great resource for free sounds, and if it's hardware you're after, check out the retailer ads in SOS for often bargain-priced gear. If you're on a budget, look out for second-hand equipment in the retailer ads and also in our extensive Free Ads section. And keep reading: regular PC Musician articles in SOS will help with the more technical problems you're likely to have as you get more experienced and ambitious.



# bitch chime?

# WILDCAT CANYON *Autoscore pro* Audio-to-midi software for the PC

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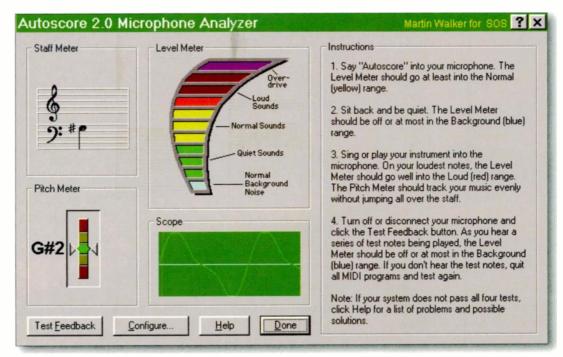
MARTIN WALKER wails, blows and plucks in the interests of non-keyboard players everwhere.

### **INSTALLATION**

There are two versions of *Autoscore* (Deluxe and Professional), and both are at version 2. Version 1 came out about 18 months ago, and whilst it was fully functional, it had a few bugs that have been eradicated in version 2. The Deluxe version provides basic note tracking, but lacks the full editing and pitch-bend tracking of the Pro version. Both versions are available for Mac and PC, and although I only looked at the PC Pro version, the algorithms used should ensure identical performance on both platforms.

The installation of the software caused me some problems, although I was able to work round them. I think it's tempting providence to have an install

Setting up the mic level is fairly simple — you can see both the waveform and the input level using this supplied utility, and once the pitch-recognition software recognises a note, its pitch is indicated on the Staff meter, and its absolute pitch is indicated (+/- half a semitone) on the Pitch meter.



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# **AUTOSCORE PRO**



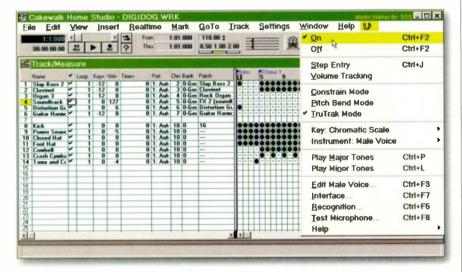
program that plays background WAV music — my Gina soundcard driver crashed at the same point in the music every time, although I used a crash recovery program that allowed me to complete the installation with no background music, and no further problems.

Autoscore comes complete with Cakewalk Home Studio v3.01, although it is also compatible with various US sequencers (including the rest of the more modern Cakewalk range including Pro Audio 6), but unfortunately not with Logic Audio or Cubase VST. However, this is not a major problem, since any recordings made using Cakewalk can be exported as Standard MIDI files, for use with any other sequencer. In Cakewalk, the Autoscore options appear as an extra set of menu options, indicated by a small microphone symbol (see screenshots). Once the option has been selected that switches on the pitch-recognition system, MIDI information is output in response to audio signals entering the mic, and this can be recorded into the sequencer just like any other MIDI signal. And that, in essence, is it. Whatever you blow, pluck and tap into the mic appears as MIDI information.

### ON THE RIGHT TRACK

Of course, real life is never quite as simple, and there are numerous options for optimising the tracking to suit different sorts of instrument and different styles of playing.

There are three tracking Recognition modes, and the first is Constrain mode. This is designed to take account of inaccurate pitching by the player, and constrain the MIDI notes to either a chromatic scale,



Cakewalk Home Studio comes with the Pro package, although various other sequencers are supported, and Autoscore appears as an additional set of menu options within the sequencer, as shown here.

or to any of the 12 major or minor scales. As long as you know what key your song is in, this ensures that the nearest correct note in the scale is chosen, however out of tune your singing. This makes for neat sequenced results, but forces every note to exactly the correct pitch. If you are more accomplished, and want to include expressive pitching as part of the performance, the Pitch Bend Tracking Mode will be more suitable (Pro version of the software only). This uses MIDI pitch-bend to

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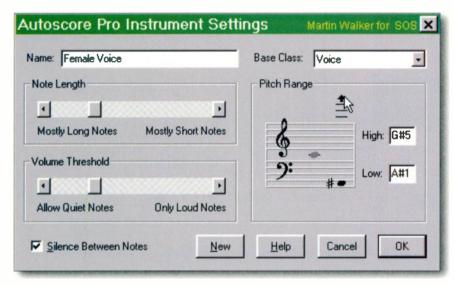
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# *Alituscurf Pro*

accurately track any bends or slides, sending out 20 pitch-bend controller messages per second, and while it will accurately capture the total performance, looking at the results in a sequencer score editor may be confusing, as only the initial note of a slide will be shown.

The newest mode (and the default) is the Tru Trak mode. This constrains the notes to the chosen scale (just like the Constrain mode) but at the



Autoscore offers several 'Base Classes' which are optimised for tracking different types of instrument, and you can fine-tune these for pitch range and note length in the Instrument Settings Window.

beginning of each note it sends out a single MIDI pitch-bend message. This allows the pitch of each note (complete with human imperfections) to be captured exactly, but also leaves any score editor with a nice neat output as well. Volume tracking can be switched on and off separately, to suit your application (depending on whether you're a world-class performer with loads of expression, or desperately trying to hold onto the correct note, and not worried about capturing the correct levels as well).

### A BLOW FOR FREEDOM

Other aspects of a performance that can affect the results obtainable with Autoscore are the type of instrument being played, whether notes are short or long, over what pitch range it's being played, and so

played. This, unfortunately, is why Autoscore will not interface directly with either Logic Audio or Cubase VST: neither of these applications have the ability to and when they receive the MIDI data they ignore the time stamps, with the result that the MIDI data would end up in totally the wrong place in the sequence. Fortunately, though, you can export any Autoscoreproduced solo as a standard

interpret MIDI time stamping,

Autoscore for its pitch content, and this is converted to the nearest MIDI note value. The tracking takes a significant time to process, and relies on looking at previous notes, as well as the current one, to produce accurate notation — and, as anyone using a MIDI + Audio sequencer will already know, there are always significant delays when

recording audio through

The audio signal you play into

your soundcard is analysed by

soundcards. Because of this. real-time MIDI Thru information is not available, so you cannot hear Autoscore's tracking output through a connected MIDI synth while you play.

**HOW DO THEY DO THAT?** 

To ensure that the processed MIDI output is recorded in the sequencer at an identical time to the original performance, Autoscore uses MIDI time stamps, which fix each Note On and Note Off message to the time it was

on. The Instrument section of the program deals with these factors, and a selection of presets are provided. The program analyses sound depending on the 'Base Class' used, and there are five of these — Voice, Guitar, Wind/Brass, String, and Rhythm. The best tracking will be probably be achieved if you choose the Base Class most like your chosen instrument. The Rhythm class is a special case that ignores input pitch information, instead outputting Middle C in response to any percussive noise, so that clapping, tapping or making any similar sort of sound could create rhythm patterns that will trigger

MIDI percussion sounds.

The pitched options allow you to specify the top and bottom of the pitch range to minimise spurious notes (the smaller the pitch range, the faster and more accurate is the response), and Note Length specifies how short a signal will result in a valid note: the shorter the note setting, the more likely it is that spurious notes will be triggered by short, unwanted background sounds. A second Volume Threshold parameter sets the minimum acceptable level for valid note data, and minimises triggering by background noises. Finally, Silence Between Notes determines how the end of a note is set — when this parameter is switched on, the program looks for a silent gap to set the note end point, and when off it waits for a change in pitch or volume. For instance, the on setting would cause a pitch-bend to be interpreted as a single note with pitch-bend, whereas the off setting would dictate that two separate constrained notes would be output (depending on the tracking mode selected).

Since many sequencers have a step-entry mode, Autoscore has yet another switchable option to account for this, ignoring the duration of notes, and concentrating on their pitch. Finally, Reference Tones, which play either a major or minor arpeggio, are provided so that you can hear the notes of the appropriate scale before you start singing or playing (very useful as a reminder).

### IN ACTION

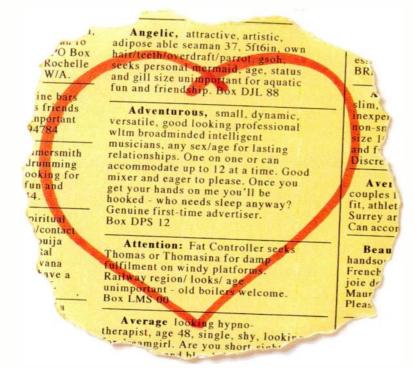
The microphone supplied with the Autoscore package is a low-cost, unidirectional type that should be suitable for use with the mic input of many soundcards (sound quality isn't the most important factor for this application), and it also has an on/off switch, which may come in useful if you are attempting to work without headphones and need to mute the signal when the loudspeakers are turned up. It comes with a 3.5mm jack plug, a guarter-inch jack adaptor, and a desktop support clip.

The first thing to do is to test the supplied microphone with the Autoscore pitch recognition system, and a Test Microphone option is provided to do just this. I got off to a flying start by using an A440 tuning fork, whereupon the pitch meter jumped to A3, which is the correct MIDI note. Since running slightly into clipping generates extra harmonics that can cause mistracking, it seems better to run with lower levels, and the tracking seems clean even with fairly low signal levels. The Staff meter shows the nearest note on the keyboard

MIDI file to import into these

two applications.

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# **AUTOSCORE PRO**

(assuming A440 concert tuning), and the Pitch meter shows any discrepancy in the range of plus or minus half a semitone from the correct pitch.

I got satisfactory results directly through my AWE64 Gold soundcard, although even with my mixer mic level control turned full up I could have done with more signal level. I ended up using a studio mic, through my mixer and straight into the line-level input of my Gina card, simply because

Water for SOS X

Edit Functions View

Patch Bend

Volume

Here's a short guitar phrase that I grabbed in Pitch-Bend mode, with Volume Tracking on. You can clearly see the semitone pitch-bends, as well as the vibrato on the final note. Although MIDI velocity is always constant, the Main Volume (controller 7) also clearly shows the attack and decay of the notes.

I could then use a boom mic stand, (unfortunately, the supplied mic doesn't fit in a standard mic clip). To really test out the tracking, I cheated by using a line-level sine wave signal to see how far the system could go. I managed to get it to track cleanly over a range of four or five octaves, and it was impressive, when using an octave MIDI pitch-bend, to see the pitch meter sequentially read out each semitone and its deviation from concert pitch as it tracked the signal. You could even see vibrato as a regular up/down pitch variation in the pitch meter.

Using real instruments through a mic proved more tricky (as you might expect), especially since you can't hear any mistracking until you finish recording and play back the MIDI sequence. It's important to switch MIDI Thru off in your sequencer, as otherwise you may get all sorts of strange noises. For capturing sung tunes (Wildcat Canyon recommend singing 'dah dah dah...' rather than words, to minimise mistracking) the system works extremely well. The easiest way to use *Autoscore* is with Constrain Mode on and Volume Tracking off. This always generated MIDI notes well for me (apart from occasional glitches of maybe one or two notes per minute, which could probably be eliminated with more careful adjustment).

You don't always need a mic — you could try connecting an electric guitar. I managed to capture a blues guitar solo very closely in Pitch-Bend mode, as long as I didn't try rapid flurries of notes. Volume tracking also works well, but since it uses MIDI controller 7 it's up to you to make sure that your

MIDI device is set up to respond to this. I even managed to get a fair amount of expression from a penny whistle.

Occasionally I got strings of short notes that I didn't expect, but this was normally because either the signal level was too low, or that I was playing exactly on the transition between two tones (ie. sadly out of tune), and the tracking was jumping repeatedly between the two notes. If you do

experience major problems, the Autoscore Control Window has an option to capture the audio it's hearing from your soundcard and save this as a WAV file to narrow down the problem. Like all expressive software applications, you shouldn't expect to master Autoscore in a single session, although once you've set up levels and chosen Constrained mode you could be outputting a set of tuneful MIDI notes within the first few minutes. To capture a total performance, complete with volume and pitch-bend tracking will take more time.

### **SUMMARY**

Autoscore could be the poor man's wind synthesizer, and at £80 the Deluxe version (which comes with Recording Session software rather than Cakewalk Home Studio) will be

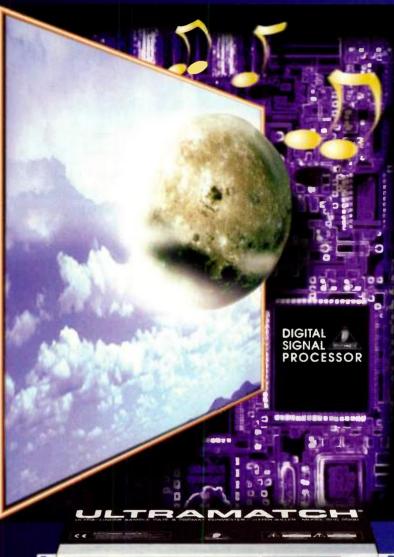
ideal if you just want to sing in basic melodies and is already selling well for home and educational use. The Pro package, at £155, adds the Pitch-Bend mode, Volume Tracking, and Instrument editing, and is a much better bet for the professional musician. Incidentally, these pricings are an introductory offer, and are likely to rise slightly in a month or two.

It's a shame that Autoscore doesn't integrate with either Cubase VST or Logic Audio, but apparently it seems largely up to Steinberg and Emagic to add support. However, if you use Cakewalk Pro Audio 6 you're off to a flying start.

For anyone who wants to make music but can't use a MIDI keyboard this is an attractive program, and I can see why it has been so well received elsewhere. If you don't know the score, you now know a program that does!



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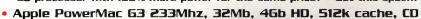
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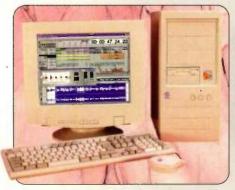
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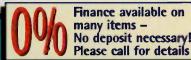
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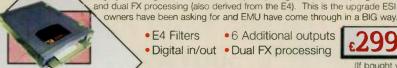
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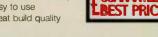
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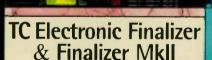
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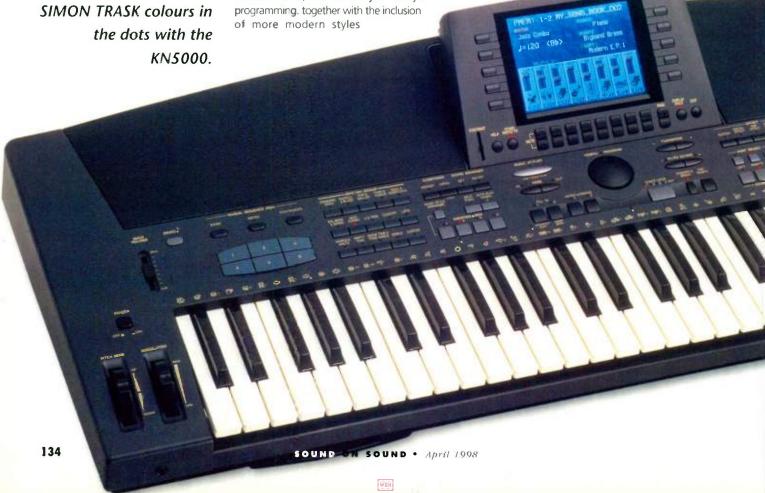
# TECHNICS KN5000 AUTO-ACCOMPANIMENT KEYBOARD

Technics' new flagship keyboard is the company's most sophisticated offering yet — and the first keyboard to provide a full-blown colour LCD screen. But is it really an instrument for today's musician, or has the 'home' keyboard concept had its day? SIMON TRASK colours in the dots with the

echnics have been responsible for at least one defining moment in the history of the keyboard, with the introduction of the KN2000 in 1993. When the instrument debuted at the Frankfurt Music Fair that year, it caused guite a stir with its large white-on-blue backlit LCD screen, which put other 'home' keyboards — not to mention synths — to shame. Home keyboards (which I'll just call 'keyboards' from now on for the sake of brevity) had been trailing synth technologically for so long that the KN2000's innovative display came as quite a shock. Its trailblazing 64-voice polyphony was also impressive, while its introduction of quality sample-based sounds, sonic programmability and a multitrack onboard sequencer put it more on a par with the synth workstation than any previous keyboard. At the same time, the musicality of its style programming, together with the inclusion

alongside the traditional keyboard fare, showed that there was more to the auto-accompaniment section than the keyboard cliché of plinky Viennese waltzes and Latin pops for the *Come Dancing* generation. All in all, then, the introduction of the KN2000 (reviewed in *SOS* August 1993) signalled a new era of keyboard sophistication and confidence.

Ensuing years have seen other manufacturers rise to meet Technics' challenge with ever more sophisticated and contemporary-looking keyboards. The keyboard as a genre has embraced and extended the workstation concept, not least by playing up the traditional keyboard's strength in live pattern-based sequencing (ie. auto-accompaniments), notably with synth/keyboard workstation crossovers such as Yamaha's QS300. This adapted the auto-accompaniment concept to appeal to a younger, more dancefloor-orientated market (and we're not talking ballrooms here). Technics themselves updated the KN series in late 1995 with the KN3000, an evolutionary rather than revolutionary keyboard which enhanced the 2000's sample-based subtractive synthesis architecture and introduced full sonic programmability. Two years later Technics are introducing a new flagship model to replace the 3000 — and in a KN2000-style display of technological one-upmanship, the company have gone for another first: a large full-colour LCD screen. So have Technics revolutionised the keyboard again, or is the KN5000 all colour and no substance?



### **SIGHT AND SOUND**

The KN5000 adopts the 'don't-try-too-hard-to-look-like-a-home-keyboard' approach increasingly in favour these days at the upper end of the market — black casing, low-profile black speaker grilles which blend in with the rest of the front panel, lots of black buttons, and, oh, did I mention black? The only really unusual thing about the front panel is the colour display (see 'A Clearer View' box). Ironically, this emphasis on a sober 'synth-like' appearance comes at a time when synths are becoming more colourful and adventurous in design. Still, for those put off by traditional keyboard aesthetics the KN5000 is reassuringly heavyweight in appearance.

For its size, Technics' new keyboard is also fairly heavyweight in the pounds and ounces department — though it's still carryable under one arm. This extra weight can presumably be put down to the built-in amp and speaker system, which consists of five speakers (four for mid/high, one for bass) together with 66W of onboard amplification (30W of which is for the bass alone). This new system, designed by an ex-RAMSA engineer now working for Technics, is quite possibly the loudest to be implemented on a keyboard, and certainly one of the best. The speakers produce a sound which is crisp, spacious, well detailed and well balanced, and they're able to handle high amplification levels without breaking into a sweat. The bass end has a

### A CLEARER VIEW: THE COLOUR DISPLAY

From the moment you power up Technics' new keyboard, its LCD screen becomes the centrepiece in more ways than one. The screen is contained within a front-hinged central section of the front panel which can be raised manually to sit at one of several viewing angles; the raised section is held firmly in place by a rear metal support arm which slots into a series of notches at both ends of the section. Also provided in this central section is a slider which lets you quickly adjust LCD



contrast to retain clear readability at different viewing angles, together with parameter select and adjust buttons below and to the left and right of the display.

The new colour LCD is akin to those found on laptop computers, though at 4.75 x 3.6 inches (6 inches diagonal) and 320 x 240 pixels it's smaller in both size and resolution than today's laptop offerings. The display is crisp and clear, yet not too sharp, making it comfortable to read and easy on the eyes during extended periods of use. Computer users note that you can load in your own background images off disk as BMP files: just remember that readability is desirable too!

satisfyingly visceral punch to it at higher volume levels, and in fact the KN5000 is proof positive that built-in speakers don't have to be wimpy and uncool. At the same time, of course, there are standard L & R audio out jacks so that you can route the final stereo signal direct to external amplification or a mixing desk instead. Additionally, the KN5000 has a plug-in 1Gb hard drive option, which also provides a stereo jack that can be used to output stereo drums or mono bass and mono drums separately from the main output.

### FRONT-PANEL ACTION

While synth manufacturers have been busy rediscovering the value of plenty of front-panel knobs and sliders for sound editing, keyboard manufacturers have never given up their own version of the controller-rich front panel, which typically entails providing real-time control over auto-accompaniment features. The KN5000 is no exception here, which is great if you're into live pattern-based sequencing. In typical modern-day keyboard fashion, the 5000 lets you Technics create your own style sections × KN5000 (patterns) and call them up live from dedicated front-panel buttons. The keyboard gives you Intro, Ending, Fill-in 1, Fill-in 2 and four Variation sections to play with. You can also store 'snapshots' of all current sound, style, effect and keyboard-part (Left, Right 1

and Right 2) settings into 80 Panel memories for instant recall from the front panel, providing even more scope for live sequence-based performance. What's more, you can alter the part mix, and drop individual parts in and out live, using the eight pairs of buttons below the LCD, with a graphical mixing desk in the display showing levels and mute status for eight parts at a time. The KN5000 also has six

### pros & cons

### TECHNICS KN5000 £2000

### pros

- Crisp, clean, dynamic overall sound, with powerful amplification and speaker system.
- Varied collection of quality sampled sounds, plus full sound editing.
- Colour LCD screen easy on the eyes.
- Live pattern-based sequencing.
- User Style creation with copy from sequencer tracks.

### cons

- Can't convert auto-accompaniment parts to MIDI notes in the sequencer.
- Can't store part mutes per pattern.

### summary

A mature, sophisticated yet exciting keyboard workstation, the KN5000 is a solid all-rounder which updates the KN series to good effect.

SOUND ON SOUND



▶ Manual Sequence Pads which can be used for live triggering of Phrases, or for triggering actions such as incrementing and decrementing Panel memories. Along with 13 preset Phrase banks, there are two Compile banks which you can use for combining Phrase selections yourself, and two User banks for recording your own Phrases. When you trigger a Phrase, it automatically conforms to the tempo and harmony of the active auto-accompaniment pattern; some preset Phrases loop as well. Only one Phrase can be active at a time, which is a shame.

### **SOUNDS AND STYLES**

The KN5000 has a large collection of preset sounds and Styles for you to use. There are 13 Sound Groups, most consisting of 20 sounds ('Pads' has 40, and 'Strings & Vocal' has 30 — in response, apparently, to demands from KN-series users for more of these sounds). Also provided are an organ drawbars page and an accordion page, dedicated to live creation of these instrument sounds (the

disk, from other manufacturers' style libraries, or you can create your own. The quality, musicality and, for the most part, accuracy of the preset Styles are excellent, making them eminently usable. However, the modern dancefloor styles are the least impressive — which isn't to say that the keyboard isn't capable of being effective in this area.

### **SOUND AND EFFECTS EDITING**

Sound editing on the KN5000 gives you full access to a sample-based subtractive synthesis architecture which can hold its own against many a dedicated synthesizer. For a start, each sound can consist of up to four Tones, and each Tone can velocity-switch between up to four Waveforms (ie. the raw sample material of the keyboard), with user-settable velocity ranges. The four Tones can, in turn, be both key and velocity split/layered, with crossfading between ranges if required. Each Tone has its own pitch, filter and amplifier sections, with associated envelopes, while each section has its own four assignable LFOs which are common to all four Tones. Each LFO can be assigned to any of the Tones, so, for instance, you could use LFO1 to modulate filter cutoff on all four Tones: however, one Tone within a section can't be assigned more than one LFO. A graphical 'patchcord' layout in the LCD makes these assignments clear.

The filter is a pleasant multi-mode resonant type, with a choice of low-pass 24dB, high-pass 24dB, band-pass, low-pass 12dB + EQ, and high-pass 12dB + EQ; the EQ is single-band with user-settable range (low or high), frequency and gain. You can also assign and program a Digital Effect

SOUND RIGHT1
PIANO
Piano E.Piano 1

Bright Piano Suitcase E.P.

Piano 1 Octave Modern E.P.1

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The KN5000 offers 13 Sound Groups, most consisting of 20 sounds.

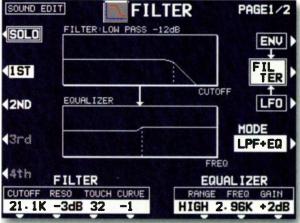
"Technics have provided

a well-rounded collection of high-quality patches."

drawbars page has virtual onscreen stops that you can pull out — virtually, of course). Technics have provided a well-rounded collection of high-quality patches, based on a set of impressive sampled sounds. Overall the sonic character is clear and sparkling — probably too clean and polite for some people's liking, but pleasingly rich and dynamic.

Styles are divided into 14 preset groups and one user group. The presets cover the usual range of traditional

and modern musics found on keyboards, but with the emphasis more on the former than the latter. The Styles are, in effect, extended through the Music Stylist section, which basically provides a huge number of preset Panel memory combinations of Style, sound and effect settings. These are organised into stylistic categories, sub-categories and individual memories for convenience (for example, Gospel/Blues/R&B: King of Soul: Feelin' Good). You can also load additional Styles into 20 Custom memories, either from Technics Style Library disks, or, using the supplied Style Converter

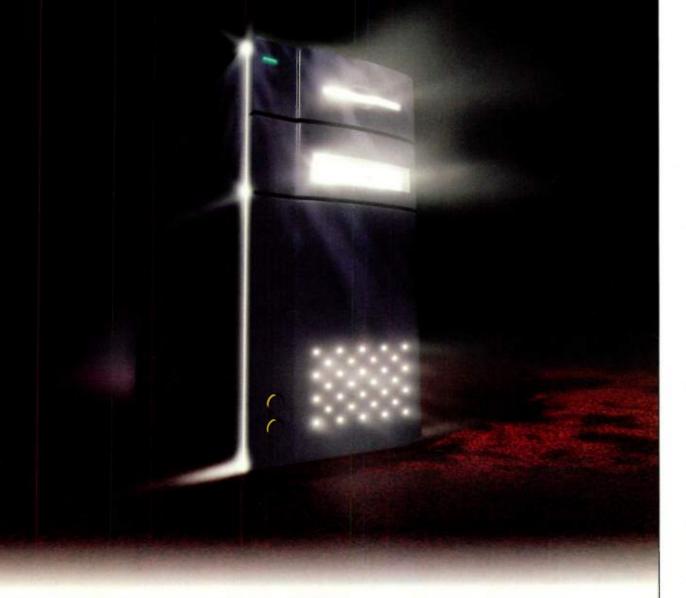


The comprehensive Filter and EQ options.

for each sound, selecting from a small number of chorus, tremolo, delay and ensemble effects.

The KN5000 has 40 onboard sound memories into which you can store your edited sounds. The keyboard also has several effects processors which are common to all the parts, offering very competent effects. DSP Effect is a modulation effect processor with a collection of 32 modulation effect types, including chorus, flanger, distortion, auto wah, ring modulator and rotary speaker, plus combinations of these effects with single delay or parametric EQ; all are programmable,

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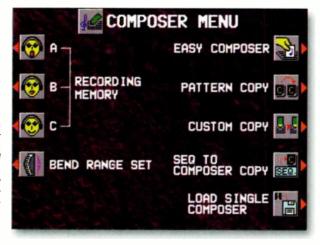


with anywhere from four to 17 parameters each, including reverb send level. Inevitably there's also a separate reverb processor, offering a choice of 14 reverb and delay effects. Individual keyboard and accompaniment parts can be given their own DSP and Reverb send levels, which can be stored along with the actual effects settings into the

the Composer's real-time and step-time recording capabilities to customise copied-in patterns. Another copy mode, Sequencer To Composer Copy, allows you to use any material which you record yourself into the KN5000's onboard multitrack sequencer or load into the sequencer off disk. The 5000's ability to load Standard MIDI Files into its sequencer opens up a vast range of MIDI song file source material (not to mention possible legal ramifications if you re-use any of it commercially), and also makes it possible for you to draw on the pre-recorded instrumental phrases supplied by MIDI 'song construction kit' disks.

An Easy Composer option allows you to quickly create patterns by mixing and matching individual 'phrases'. You get eight parts, as the drum part is broken down into three sub-parts: bass drum and snare, hi-hat and cymbal, and percussion. Easy Composer lets you select a Style type for each part (for example, 8beat, Dance Pop, Jazz Fusion) and then call up any one of a number of instrumental phrases in that style. Anybody who has used a Yamaha QY-series walkstation or QS300 workstation will be familiar with this approach

workstation will be familiar with this approach. Of course, the KN5000 also gives you the option to record the five auto-accompaniment parts of every pattern yourself from scratch, in real and/or step time. The real-time Composer sequencer works in loop overdub record mode, and lets you select different parts without having to stop the sequencer, making it very easy to build up a multi-part pattern live. Patterns can be from 1-8 bars long, with a time signature of from 1/4-8/4. You also need to select a root key, chord type (major or minor), bass type (normal or seventh) and accompaniment type (normal or seventh); these settings define which root note and chord type for left-hand chord triggering will play back the actual recorded pattern notes. Auto-accompaniment on keyboards works by taking the selected Style pattern and adjusting its bass and harmony parts live, to harmonise with the trigger chords you're playing on the keyboard. For this method to work, the patterns themselves shouldn't contain chord changes — rather, you play any chord changes yourself live on the keyboard during performance and the backing follows you. However, there's no reason why you couldn't record a pattern as you wanted to hear it, chord changes and all, and then simply trigger it live on the keyboard by playing only the 'source' chord that you've defined. Switching between Custom memories live is a seamless process, so you can treat multiple memories as parts of a single song. You can also use the Panel 'snapshot' memories mentioned earlier to extend the possibilities — for instance, changing the keyboard sound and effects settings, or muting selected parts. Part mute settings can be stored per Panel memory, but not, it seems, for individual Variation patterns, which is a shame. You can also mute parts live (realistically, only two parts at a time) by pressing the relevant pair(s) of up/down buttons below the LCD screen. Part levels (again, storable per Panel memory) can be adjusted



The KN5000's Composer section allows you to mix and match Patterns from different Styles, import MIDI files, or create you own Styles.

Panel memories. Also included is a new global effect, Acoustic Illusion, which seems to be a cross between an ensemble effect and a 3D 'expanded stereo' effect. It's an interesting addition, but I found myself using it selectively.

### **COMPOSE YOURSELF IN STYLE**

The KN5000's Composer section lets you customise existing Styles or create your own, and then write the results into the 20 Custom memories mentioned earlier. One option is to simply copy in individual patterns from any preset Style memories. You can simply mix and match patterns from different Styles, or, more ambitiously, go on to use

### **SPECIFICATION**

- Keyboard: 61 keys, with attack velocity and channel aftertouch.
- · Synthesis method: sample-based subtractive.
- · Sample ROM: 16Mb.
- · Polyphony: 64 voices.
- Sounds: 290 preset Sounds; 15 preset Drum Kits; digital drawbars; 2 accordion registers; 40 programmable Sounds; 1 programmable Drum Kit.
- Sound editing: up to 4 Tones with key and velocity split/layering; pitch envelope, resonant multimode filter + envelope, amplifier + envelope per Tone; four freely assignable LFOs; Digital Effect; controller assignments.
- Effects: Digital Effect; DSP Effect; Digital Reverb; Acoustic Illusion.
- Styles: 200; 2 Intro, 2 Ending, 2 fill-in and 4 Variation patterns per Style; 14 preset Groups + one Custom Group.
- Panel Memories: 80 (10 Groups of 8).
- Composer: 5-part Style pattern sequencer with approximately 10,000-note capacity, three record modes (easy, real-time and step) and copy functions; 3 Memory banks;
   Custom Memories.

- Sequencer: 16 tracks; around 40,000-note capacity; 10 Songs; 96ppqn resolution; three record modes (easy, real-time and step); bar-level and graphical event editing.
- Display: 320- x 240-dot colour LCD with 192-colour palette and user-settable contrast.
- Disk drive: 3.5-inch DD/HD floppy disk; optional internally fitted hard disk.
- Connections: L and R/R+L stereo audio outputs; L and R/L+R auxiliary audio inputs; microphone input; computer serial port connection (PC/Mac); MIDI (In, Out, Thru); 2 footswitch jacks; expression pedal jack; 4-way foot controller socket; stereo headphones jack.
- Speakers: 12cm x 2; 6.5cm x 2 for mid/high;
   14cm x 1 for bass.
- Amplifier output: 66W (18W x 2 for mid/high, 30W x 1 for bass).
- Options: HD-AE5000 1Gb fixed hard drive plus additional stereo output: £549; HD TechManager5000 hard disk backup software.
- Weight: 15.1 kg (33.3lbs).
- Dimensions: 106.2cm x 17.4cm x 41.4cm (W x H x D).

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### Instructor Profile:

All ACM instructors are world class performers, composers, arrangers and technologists. Our Music Production & Technology instructors and consultants have experience working for the BBC, Top Studios, Commercial Radio, Theatres, The Music Press and have worked on numerous Top 10 albums and Top 40 singles. In addition to this instructors from our Guitar, Bass, Drum and Vocal schools have toured & recorded with top professionals including: George Michael, Gabrielle, Lisa Stansfield, Jools Holland, Bryan Adams, Chris Rea, Guns & Roses, Bon Jovi and Aerosmith giving our music technology students unique insight into high end studio and live production.

### **Full Time Study:**

The school offers full time study at two levels, the Diploma in Comtemporary Music and the Higher Diploma in Contemporary Music. Both programmes have been written by some of the countries top producers, writers and session players to formalise a study path for students wanting a realisitic and intense training which will prepare them for a professional career in the Music Industry. Students studying at ACM are able to form a strategic approach to their career drawing on advice from our course consultants including Kevin Nixon (Manager, Kula Shaker), Wes (Mushroom Records - Garbage, Ash) & Steve Harris (Producer, The Bluetones, Longpigs). These programmes are fully accredited and are run in collaboration with Guildford College of Further & Higher Education.

### Free Consultation:

All students applying to study at the school are entitled to a 'Free Consultation Session' to evaluate their musicianship skills and career objectives ensuring that they select the most appropriate course.



live by pressing the up or down buttons as appropriate, for as many as eight parts at once, if your fingers can manage it.

### **MULTITRACKING**

The KN5000's multitrack sequencer lets you record up to 10 songs; each has its own dedicated Panel memory, so you can completely customise its keyboard setup, including all mixer and effects settings. Recording can be in real time (with loop and punch-in/punch-out options) or step time. There's also an Easy Record option, which lets you record an



"The KN5000 is Technics' best keyboard yet, and one of the most sophisticated on the market..."

'auto-accompaniment plus melody' keyboard performance, complete with live front-panel changes. Easy Record lets you get away from having to build up all your sequencer parts from scratch — though once you've recorded an auto-accompaniment performance you can also record additional tracks in the usual manner, if you want.

The 5000 provides both note and drum gridstyle editing pages, of the sort that will be familiar to users of computer-based sequencers (only with a smaller grid). Also included is a very respectable range of bar- and track-level editing functions: song/track copy; track clear; track merge; quantise; transpose; vélocity change; note change; track advance/delay; and bar copy, erase, delete and insert.

When you record an auto-accompaniment performance using Easy Record, the sequencer only records the trigger notes you play on the keyboard, not the actual notes of the accompaniment parts. While this saves on memory, it does mean you can't edit the parts, or save your performance as a usable MIDI file. Disappointingly, there's no convertto-notes feature either, although you can work around this by setting the accompaniment parts to transmit via MIDI on separate channels, hooking the 5000's MIDI Out to its MIDI In, and setting five tracks to record the MIDI data received on those channels. Sequences can be saved to floppy disk in MIDI-file type '0' or Technics file formats, and the KN5000 can also play MIDI files direct from disk, automatically switching into General MIDI sound mode to play back MIDI song files. The keyboard has the ability to display song file lyrics onscreen as

the song plays, and lets you mute any single MIDI channel (useful for dropping out the melody part). make mixer changes, adjust input level for the rear-panel microphone socket, and make associated settings for the dedicated onboard mic reverb. Also included on the keyboard are software pages for setting up MIDI-controlled harmonisation for an external vocal harmoniser, whose output you can then plug into the 5000's auxiliary audio inputs. Incidentally, the optional 1Gb hard drive mentioned earlier, which plugs into a bay on the keyboard's rear panel and can store up to 1920 data files, can apparently only store and read song files in Technics format. The drive can also be hooked up to a Windows 95 PC via a parallel port connection for backup purposes (requiring special software and additional expense), but if you copy a MIDI file onto the drive from a PC the KN5000 won't read it; instead you'll have to copy the file onto a floppy disk and load it into the 5000 that way.

### CONCLUSION

The KN5000 is Technics' best keyboard yet, and one of the most sophisticated on the market, a thoroughly professional instrument which offers more than enough, both technologically and musically, to satisfy the traditional keyboard buyer. Meanwhile its large colour LCD should be a hit, both practically and aesthetically, with everyone. Musically speaking, Technics' new flagship errs on the side of the traditional keyboard market. While perhaps not surprising, this does seem a shame when the 5000 has so much to offer the more modern user — not least its live sequencing capabilities. Then again, musically there does seem to be something of the Jekyll and Hyde about keyboards in general these days, as manufacturers try to keep in with the traditional market while, in varying degrees, seeking to cater for the tastes of younger buyers. Of course, which part is Jekyll and which is Hyde depends on your musical preferences! Custom Style programming does mean you can 'roll your own' on the 5000, but still I can see a younger market being somewhat put off by the more traditional musical fare on offer here, if not by the sophisticated technology.

The KN5000, then, will appeal greatly to traditional keyboard performers, should be seriously considered by composers and arrangers, and may yet find a place in the more adventurous (and stylistically forgiving) dance studio as a live production tool.



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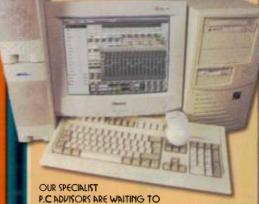
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### PART 7: TRANSITIONAL SYNTHESIS

Between the extremes of the broad brushstrokes of subtractive synthesis and the painstaking detail of additive, there have existed many hybrid styles of synthesis combining the speed of the former with the precision of the latter. PAUL WIFFEN traces the development of this middle ground through its successes and heroic failures.

hroughout much of the last 20 years, there has been a strain of synthesis which, although it has never challenged the dominant variety at any point, has always provided a worthy alternative for the synthesist looking for that little bit extra control over the timbre of the source waveform without having to go to all the effort of specifying the shifting level of each harmonic individually, as in additive synthesis. While individual manufacturers have coined many terms for their variation on the theme — Wavetable Synthesis, Vector Synthesis, Wave Sequencing, and so on — the overall term which seems to best fit this broad category is Transitional synthesis, because the sound, broadly speaking, starts with the specific harmonic content of one or more waveforms, and evolves, through various means, to end with a different harmonic spectrum (rather than decaying to fundamentals, as with a closing analogue-style filter). How this is achieved varies from one implementation to another, but what all the forms of this type of synthesis have in common is that they offer the user greater control of the harmonic content of the sound as time passes, by allowing him/her to specify the waveform at given moments in the sound's development.

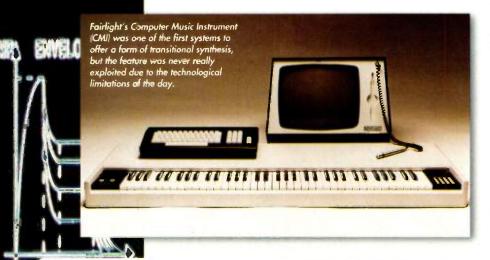
In this they are very different from analogue synthesis, where the fundamental nature of the timbre throughout its development is determined by the basic waveform selected. All that can happen is that some or most of the frequencies this waveform contains can be removed by the filter cutoff or exaggerated by resonance; no radical shift in harmonic content can be achieved. In PCM-based synthesis, the harmonic content of the sound is dictated by the frequencies present when the recording was made. Although these can also be modified by cutoff and resonance, new frequencies, again, cannot be introduced.

### TIMBRAL EVOLUTION IN A FAIR LIGHT

Perhaps the earliest manifestation of the kind of Transitional synthesis I'm talking about this month was on the original CMI (Computer Music Instrument) from the innovative Australian company Fairlight. Press and media coverage of the instrument made much of its light pen and the facility to draw single-cycle waveforms that it offered. Those who tried this method, however, soon found that, without analogue filters to run through the harmonic content of waveforms, picking out and exaggerating their differing compositions, most hand-drawn waveforms sounded rather ordinary and often bland, despite the revolutionary way in which they were created. The simple fact of the matter is that the human ear is sensitive to change in harmonic content, and tends to be unimpressed by a static harmonic content, however complex. The secret of the success of the enveloped filter, as a mainstay of synthesis over the years, is that it's an exceptionally quick and easy way to vary this harmonic content.

Lacking any such filtering capability, the Fairlight engineers had to look for another way to make harmonic content change. Obviously, the samples the Fairlight made could contain timbral changes but only if they were present in the source being recorded. Introducing timbral change on the machine itself would be a tougher job. The system they eventually came up with was perhaps the only function on the CMI which really made use of its computational power, all its other facilities being simple RAM storage and replay tasks, whether of sample data or sequences.

Having created two waveforms, the user could place one at the beginning of the available sound memory and the other at the end. The computer would then calculate a waveform for every other memory location in between, by interpolating between all the corresponding points on the two





### SYNTH PROGRAMMING

"...if you can get your hands on a PPG. Prophet VS or Yamaha SY22. you'll discover a style of synthesis which is perhaps the most powerful

of all the

styles."

non-imitative

waveforms (this process was known, a little inaccurately, as a Merge). As a result, each waveform played back in the course of a sound made in this way was similar to the one which preceded it but with subtle changes as the waveform was slowly altered to evolve towards the final result. The important thing was that these changes were entirely different to those which a filter would give, as they were produced by a mathematical method which was not in any way restricted by how sound behaves in the real world. Exciting new timbres emerged which had never been heard before. These could be radical (if two completely dissimilar waveforms were specified as start and end points) or subtle (if the two waveforms were closer together in appearance). There were changes for the ear to pick up on, and these changes were also unpredictable and different.

Unfortunately, although the CMI's method might sound like a sound designer's dream, the technology of the time had some major limitations which restricted its usefulness in mainstream musical applications. Firstly, memory size was limited, so the transition from one waveform to the other happened fairly quickly at the nominal original pitch. This meant that it was no good for sustaining sounds, where a gradual change in timbre works wonders; the sound was always of finite length. Secondly, the memory into which the transitional sound was loaded achieved pitch changes in exactly the same way as a sampler by replaying at different rates. So the higher up the keyboard you triggered the sound, the shorter

limitations, at least in part because the CMI had nowhere near enough computional power to perform its operations in real time (which is why the computations had to be stored in memory and played back just like samples). As a result, they would stick to the (at the time) unique sampling and rhythm-sequencing capabilities of the Fairlight.

Very little use of the CMI's Merge facility was recorded for posterity, and I have never heard a sound on record which I could positively identify as having been created in this way. I live in hope that, since today's computational power could create the interpolated waveforms needed on the fly, without even breathing hard, someone will do a real-time implementation of this exciting feature of the grandaddy of all digital systems, since, if the calculations were done in real time, the speed change needed to vary the pitch would disappear. The bright, metallic sounds I found the CMI created would suit current musical styles, like techno, down to the ground.

### **WAVE GOODBYE** TO PITCH LIMITATIONS

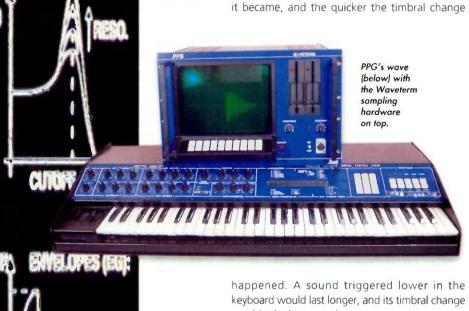
The next digital instruments to venture into the territory of harmonic transition were the PPG Wave series. Happily, this system, invented by Wolfgang Palm, did not rely on computation in real time, so the Wave synthesizers did not suffer the problem of the evolution of the sound being linked to its replay pitch. As a result, our old friend the envelope generator could be used to control the speed and direction of the movement between waveforms.

This was possible because the waveforms were created at the factory and loaded, in 'family' groupings, into so-called 'wavetables', sets of digital memory locations exactly like single-cycle sampled waveforms. These wavetables allowed a style of harmonic transition which was very similar to the Merge facility on the Fairlight, in that each waveform was only slightly different to the one on either side of it — but over the 32 locations within each wavetable, wide timbral changes were possible.

Of course, those wavetable groupings were decided by the manufacturer, removing the element of serendipity available on the user-defined Fairlight implementation. But this was more than made up for by the fact that the results were usable in a real-time mainstream format.

The synthesist was able to specify the wavetable used by each oscillator, and the starting waveform. However, there was then no obligation to make use of the wavetable's harmonic flexibility. The specified waveform could be used through the sound's duration, complete with normal amplifier and filter enveloping, exactly as on an analogue synth (although the waveform was generated digitally). In fact, one of the PPG's wavetables contained the standard sine, sawtooth, square and pulse waveforms, so that you could make sounds in exactly the same way as with analogue synths. although they never sounded guite the same.

However, nobody bought PPG Wave synths for their ability to duplicate the analogue synthesis



would take longer to happen.

Of course, there were times when this unalterable relationship was fortuitous. Occasionally the short high notes would have enough punch and character to stand out well over a pad sound, which made up for their brevity. More often, the longer, slower notes worked well as sustained lowend sounds, with the timbral change accentuated because the higher harmonics were more audible.

But most Fairlight users lost patience with these

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### SYNTH PROGRAMMING

process, but rather for the fact that they could supersede it. Once you had specified the initial harmonic content with the starting waveform, an envelope or LFO could be used to change that harmonic content, by moving around inside the wavetable in much the same way that envelopes and LFOs can change the filter cutoff from its initial harmonic-content setting in analogue synthesis. The greater the envelope depth or LFO amount, the further away it was possible to move from the original waveform in the wavetable. The speed of that movement was determined by the attack, decay and release times of the envelope, or the frequency of the LFO.

Despite the fact that the wavetables were factory-preset, this gave the PPG Wave synthesizers a much broader timbral range than standard analogue synths, especially as enveloped analogue filters could also be brought to bear on the sound after the wavetable synthesis had done its unique job. The closest analogy for those of you who have only heard analogue synthesizers is Pulse Width Modulation (PWM): the timbre changes without any movement on the part of the filter as the waveform moves between different variations of the basic waveshape. It was when I first heard Pulse Width Modulation that synthesis came alive for me, and the PPG system offered this same kind of movement, but with a host of different timbral groups in the various wavetables.

Just as with PWM, you could choose to set a constant timbral motion, with an LFO moving the wave readout evenly on each side of the starter waveform, or set up a more tailored single harmonic movement using the attack, decay, sustain and release phases of an envelope. You could use the

attack to move quickly from the initial waveform to another further along the wavetable, move back a portion of that distance using the decay, hold on one particular waveform for the sustain segment, and then move slowly back to the original waveform during the release phase.

#### MORE POWER TO THE USER

As stated earlier, the PPG system was considerably more musically useful than the Merge function of the Fairlight, but was restricted to the waveforms provided by PPG in the Wave synthesizer. PPG's Waveterm changed all this, by providing the computational power for users to create their own waveforms (and, incidentally, make samples) and download these into the Wave 2.2 synth for use just like the factory-preset wavetables. On the Wave 2.3, the whole memory could be used to download and play back 12-bit samples linearly.

There were two versions of the Waveterm (A & B), easily distinguished externally by the fact that most 'A's had 8-inch floppy drives, while the 'B's used the newer 5.25-inch disks. More importantly, the 'B's were improved internally by 16-bit resolution and better A/D conversion for the sampling side. Of course, sample playback through the analogue filters of the Wave 2.3 drew most attention (not surprisingly, as it pre-dated PCM-based synthesis by seven or eight years) but more creative users latched onto the fact that with the Waveterm they could build their own wavetables and turn them into custom sounds on the 2.3 synth.

Of course, time eventually catches up with any technological innovation, and PPG's fortunes faltered with the arrival of cheap samplers from Ensoniq, Sequential and Akai. Ironically, these never attempted

### THOROUGHLY MODERN WAVE

Fortunately, when PPG ceased to be, its Wave technology was not lost forever. Wolfgang Düren, who had masterminded worldwide sales for PPG in their heyday, decided, at the end of the '80s, to recruit designer Wolfgang Palm. The aim was to use the new LSI (Large Scale Integrated) circuit technology to produce a MIDI-controllable rackmount version of the Wave system. In a Inspired moment they decided to call it the Microwave, and this instrument is still available in an updated form today -the Microwave and the Microwave II boast the original wavetables from the

PPG instruments. Rumour has it that the new company spent over a year trying to make digital filtering sound as good as the original analogue filters of the 2, 2,2 and 2,3, but, in a move reflecting the original Wave keyboard's design years before, they were forced to go with analogue filters to keep the sound authentic. Distinguished visually by a large, bright-red parameter value dial (reminiscent of Comic Relief's Red Nose), these instruments have brought the price of wavetable technology down to around the £1000 mark, without sonic compromise,





The mighty Waldorf Wave.

thanks to the modern economy of single-parameter access.

A few years later the same team followed the Microwave with the impressive Waldorf Wave keyboard, boasting a front panel which can be raised up, Minimoog style, for ease of use when programming. In addition to the trademark big red dial, there are scores of smaller red knobs and switches to make programming as quick and easy as possible. Unfortunately, all this instantaneous parameter access has its downside: the price. The Waldorf Wave is one of the most expensive synthesizers on the market, but this

hasn't stopped the production being pre-sold for years in advance.

As a result of Waldorf's efforts, if this piece has whetted your appetite for wavetable synthesis, you're not obliged to brave the second- (and third-) hand marketplace. You can purchase a current Wave synth in either a very affordable (Microwave) or very expensive (Waldorf Wave) form depending on your budget, but either way you will have perhaps the most authentic recreation of a vintage technology on the market. If you do go, instead, for an original PPG, make sure you know a good service engineer.

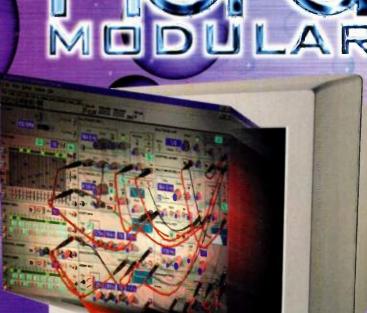
Q: If you took the best elements and sounds from your favourite 'Classic' analog synthesisers and combined them in a product for the 21st Century, what would you have?

### A: Nord Modular

An anecdote about Patch synthesisers.

Remember old analog modular patch synthesisers when you would make up one patch after hours of tedious patching? When you created a sound to your taste, ohh it sounded so good, but you needed to totally re-arrange your patch cords and knob settings to create new sounds. The process would have to start all over again and that great mono sound might never be heard again (unless you took the time to draw a comprehensive diagram of your settings and patches). To sample a patch is not the solution. Sampling is static and cannot reproduce random nuances.



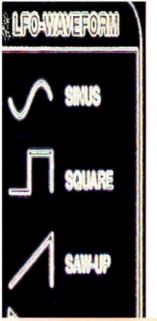


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### SYNTH PROGRAMMING

➤ to cover wavetable synthesis, but nevertheless the writing was on the wall for the Wave system. Despite ground-breaking new product designs, which were the first attempts anywhere in the world at stand-alone hard disk recording and virtual synthesis (called the HDR and the Realizer), PPG finally went bankrupt in 1987 (see the 'Thoroughly Modern Wave' box for what happened next).

### FOLLOWING THE SEQUENTIAL VECTOR

The next company to go in for a system which allowed you to change the harmonic content of the source sound in real time, before the filter section. was Sequential Circuits. However, instead of changing the waveform that an oscillator was generating, their system allowed you to set up four different waveforms on four different oscillators and then mix between them by means of a joystick. This was clearly a much cheaper system: the Prophet VS, the synth which used this technology, was released with a price tag of around £2000 instead of the £3-4000 price tag the PPG Waves had carried. Of course, the resulting sound was not quite as smooth as that produced by the PPG, where the harmonic content of every waveform was closely related to that of the one either side in the wavetable. On the VS you could choose to mix between waveforms with vastly different harmonic contents, which made many of the resulting sounds a little harsh to the average ear.

Sequential dubbed this technology Vector Synthesis, which was perhaps a bit of a misnomer. A vector is a straight line between two points, but the VS's joystick allowed you to take any indirect path between the starting and end positions of the oscillator mix. No doubt Sequential thought that

this was done by stepping through the various harmonics and specifying a level for each. What's more, you could actually hear the resulting change in real time (unlike with the Waveterm, which had to compute when all harmonic levels had been set).

Once you'd created your waveforms, or just selected the factory-preset ones you wanted to use, you could place two pairs of them on the X and Y axes of the joystick. This meant that left/right movement would control the mix between one pair and up/down movement would simultaneously do the same for the other pair. Any position of the joystick thus gave a unique mix of the four oscillators, and as a result, extremely complex timbral changes could be produced as part of a real-time performance. This was something the PPG could only achieve through programming. Of course, there were envelopes on the VS, to allow this mix to be altered automatically during the playback of a note, but to make life even easier the VS could record a manual joystick movement, and use this as the model for automatic change in the mix.

The beauty of Vector Synthesis was that it was very 'hands on' (to use the modern jargon) and simple to grasp (figuratively and literally). There were no difficult concepts to get your head round. Everyone understands the concept of 'mixing', and a couple of minutes with the joystick made it very easy to understand the possibilities for unique sound creation.

So if it was such a great idea, why was the Prophet VS the last synth Sequential made, before going bankrupt and being taken over by Yamaha? Well, it was the usual combination of poor mechanical reliability and other developments in the industry with more mass-market appeal. Sequential had their problems with quality control: one particular quirk with the case design made aftertouch stop working if you put the keyboard at an angle on an A-frame stand. The joystick on the first VS I used to reacquaint myself with Vector Synthesis for this piece had partially dropped inside the case and was held in place by tape.

The other reason the VS remained a specialist taste was what I refer to as the 'Piano, Strings and Brass Effect'. The VS couldn't do any of these at all authentically. Unfortunately, it came out at around the same time as the D50, which had the rudiments of PCM-based synthesis, so it could get close, and it had built-in digital effects to boot. The fact that it was also cheaper than the VS was the final clincher. Sequential returned to sampling technology in the Prophet 3000, the first 16-bit sampler to hit the market, but this came to market too late to save them.

### THE JAPANESE PICK UP THE BATON

Fortunately, the design talents at Sequential were not scattered to the four winds, as Yamaha stepped in and kept Dave Smith and his team together. They took over Sequential's building in San José, and although little was seen from the team in the year after the takeover, they were put to work on a more commercial implementation of Vector Synthesis.

"The beauty of Vector Synthesis was that it was very 'hands on' (to use the modern jargon) and simple to grasp (figuratively and literally)."



Vector Synthesis sounded better than Cartesian Synthesis, or any other more accurate name.

Apart from the waveforms supplied as standard (which included sine, sawtooth, square and various widths of pulse, so you could produce standard analogue timbres through the filter), the VS also allowed you to create your own waveforms, through a basic form of additive synthesis (which had only been available in the PPG system if you could afford a Waveterm to go with your keyboard). On the VS,

This eventually emerged a couple of years later as the Yamaha SY22, its ancestry clear from the joystick on the front panel. The synth included some PCM source waveforms (to take care of the Piano, Strings and Brass Effect) but lost out on the ability to build custom waveforms through additive synthesis, as this was felt to be too marginal.

But the main advantage the SY22 had was that it was built by Yamaha. The case design was much more solid and the reliability a thousand times better. In addition, Japanese manufacturing techniques had brought the price down to well under £1000. As a result, the SY22 sold in much greater numbers, and if you find one on the second-hand market, the chances are that it will be in much better condition than a VS and will continue to work properly for many years to come (even if there are those, like myself, who would argue that the Yamaha version misses out on much of the uniqueness and character of the original VS).

Curiously, by the time the SY22 hit the market, Yamaha had already been without the Sequential team for almost a year — inscrutably, they had parted company with the ex-Sequential personnel almost as quickly as they had moved to keep them together. However, another Japanese manufacturer, Korg, stepped in to preserve the unity of the design team, and Korg have continued to use their talents

"Curiously, by the time the SY22 hit the market, Yamaha had already been without the Sequential design team for almost a year."

as an R&D facility ever since (two current Korg products which owe their existence to this facility are the 1212 I/O PCI card and the Z1 synth). Ironically, the first product they presented to Korg, another implementation of some of the concepts first introduced in the Prophet VS, was developed so quickly that it was launched at the same NAMM show which saw the introduction of the Yamaha SY22. We'll look at this instrument, the Korg Wavestation (perhaps the most successful of all the transitional synthesizers), in the next instalment of Synth School, as well as the most powerful implementation yet from Emu Systems, in the form of the Morpheus.

In the meantime, if you can get your hands on a PPG, Prophet VS or Yamaha SY22, you'll discover a style of synthesis which is perhaps the most powerful of all the non-imitative styles — no use at all if you want authentic piano, strings and brass sounds, but all the better for that if you want to come up with truly unique and personalised synth timbres.





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I am greatly impressed with the quality & useability of all the DUY plug ins, Shape being my current favourite.



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If you like your music production tools hip, knob-laden and all in one box, you're probably drooling over the MC505.

DEREK JOHNSON gets into the Groove.

t's now over 18 months since the launch of Roland's pioneering retro-style MC303 Groovebox synth/sequencer combo (reviewed in August 1996). It apparently sold in bucketloads, and Roland, no doubt encouraged by the 303's success, are testing the water again, with the heavyweight MC505. MC303 owners shouldn't worry that their purchase is now obsolete — the 303 is still on the Roland catalogue, giving us the beginnings, perhaps, of a small Groovebox family.

The MC505 is bigger and more substantial looking than the 303, with a top side littered with even more knobs, buttons and sliders, polyphony increased to 64 voices (from 28), the pattern-based 8-part sequencer now offering a total of 714 preset Patterns (with room on board for 200 user Patterns rather than the 303's 50), 512 on-board synth patches and 26 Rhythm Sets, and

space for 256 user Patches. The MC303, you may recall, had 448 on-board sounds and 12 drum kits, and *no* space for user Patches! The MC505's 8-part multitimbrality, though, is unchanged from the 303.

Other facts and figures to fix in your mind are that there are 50 Songs (chains of Patterns) on board, three effects processors (to the 303's two), an enhanced arpeggiator, a RAM card slot, and a novel zero-contact infra-red controller. Read on...

### **PUMP IT UP**

On the looks front, the MC505 has similarities to the MC303 — it looks a bit like a 303 pumped up on steroids. Central to the new Groovebox are the display area, which is a 6-digit alphanumeric LED display plus a new 2-line x 16-character backlit LCD, and the fader-heavy Part Mixer area, situated just below it. The display keeps you informed of Pattern names and numbers, editing



parameters, mixer parameters, tempo, and more.

The Part Mixer provides each of the MC505's eight sequence parts — that's seven melodic parts plus rhythm — with a fader and a backlit mute/select switch. The fader provides control over level, pan, keyshift (+/-48 semitones), and effects send. Another row of back-lit switches beneath the first row allows a selection of individual drum sounds to be muted. The buttons in this row also double as Tone switch and Tone select buttons when you're editing Patches.

To the right of the display area are the synth realtime controls. Use these to tweak the Patch (or Rhythm Set) assigned to the currently selected Part in the current Pattern; control is offered over filter, envelope, LFO and basic waveform. A big alpha wheel and some related editing buttons take up some more space to the right, along with the sequencer transport controls and tap tempo button.

At the bottom of the top panel is a row of 16 square key buttons, which function as a (nonvelocity sensitive) keyboard for entering notes and rhythm data. Octave switch buttons give an effective range of over nine octaves, although drum sounds only occupy a range of just over five octaves. Most of these keys, in traditional Roland style, do one or more extra jobs; press the Edit button to make them switch to various editing functions for Patterns, Songs and Patches, and hit Shift to access a range of global functions, such as arpeggiator, quantise, effect and system settings. Different sets of legending help you figure out which functions will be active at any time. Just to confuse you

further, there's also a Function button which behaves as a kind of shift key for all the front-panel knobs, effectively providing a whole extra panel's worth of controls.

Look up to the left, and you'll find dedicated, quick-tweak controls for quantising, the arpeggiator. and the 505's three effects processors. A volume control is at the top, and the MC303's Low Boost control has moved from the back panel to a place next to the volume knob on the 505. It has also gained an 'Octave' button that really does add a severe kick to rhythm and bass parts. Be warned: this bass is dangerous. Between these knobs and the display is the D-Beam controller (see 'Beam Me Up' box for details). I'll also point out the Undo/Redo button, which is very welcome.

At the back, a headphone socket and RAM card slot are joined by no less than six outputs, which you can use as three stereo pairs or, with careful panning, six individual outs. On the MIDI front you get the standard In and Out, with the Out configurable as a Thru. There's also a single, but programmable, pedal socket. Power comes from an internal PSU. Great!

### **SYNTH**

Architecturally, the MC505 is superficially simple. vet the way in which synth and sequencer are integrated means that it is sometimes hard to pull the two apart. Let's start with the synth section.

There's no new technology behind the soundgeneration system of the MC505: it's based firmly on samples, with 505 on board. The collection consists of raw basic synth and classic drum machine waveforms, many from Roland's own units, plus traditional instruments, sound effects and percussion

Now you might not be getting a JV2080 when you buy an MC505, but the synth engine of the Groovebox is definitely from the same family, with a corresponding improvement in editability over the 303. Up to four elements (Tones) are available per Patch (the more Tones used, the less polyphony), with a choice of Tone structures where pairs of Tones interact with each other, frequency cross-modulation (FXM) and ring modulation. Each Tone benefits from a familar Roland collection of envelope generators (amplitude, filter and pitch), filters and LFOs. Patches can be fully polyphonic or monophonic (you change from one to the other using the Solo button on the front panel), and portamento is also available. Your final, edited Patches can be named; there is space for 16 characters, but names are limited to 12.

The 512 preset Patches, arranged in four banks, are a dizzyingly diverse collection, though biased towards analogue synth and dance-oriented sounds. In fact, the first 21 Patches are aggressively TB303-based. The traditional sounds — basses, pianos, brass, saxes, strings, and so on — are clearly from the Roland family (ie. good), and worth having, but there isn't the variety you'd find on a dedicated modern synth.

One of the MC303's negative points was its lack of real user memories for customised Patches. This shortcoming has been remedied on the 505, which offers 256. Edited Patches were saved with Patterns on the 303, and you can, if you like,

### pros & cons

### ROLAND MC505 £949

### pros

- · Great 'analogue' feel.
- Good quality, properly editable sounds.
- · Six outputs.
- Internal PSU.
- . D-Beam controller

#### cons

- · Manual not great.
- · Real-time tweaks can't be overdubbed on Songs, only on the Patterns that make up Songs.
- · Pricev.

#### summary

A fun and powerful music production and stage tool that really could be your only instrument. It's expensive, but it does an awful lot.



### ON THE CARDS

Though the MC505's memory allocation is quite healthy, users always want more. You can save data via MIDI System Exclusive, or use 2Mb or 4Mb SmartMedia cards, which are amazingly tiny and slide into the unobtrusive slot at the rear. Roland even supply a screw-on cover to keep the card from slipping out. The card can be treated simply as another bank of memory, adding loads of extra sequencer capacity (200 Patterns - up to 480,000 notes on a 4Mb card), plus 512 Patches and 26 more Rhythm Sets. You could actually back up the entire MC505 memory contents as a single file, but this takes over 1Mb, so a 2Mb card is good for only one such dump.

SmartMedia cards are used by the new generation of digital cameras. which means that they're readily available from camera shops and the like. Our local branch of Tecno, the camera chain, guoted £35 for 2Mb and £45 for 4Mb, but as digital cameras become more common. prices are likely to drop, and stock should be available for the foreseeable future. Try buying an off-the-shelf RAM card for your Yamaha DX7 or Roland D50 10 years after their heyday.

### Roland MC505



"For hands-on, immediate synth-music production and spontaneous live work the MC505 is the business."

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and could make the 505 a cult item in future. For

a little background on the capabilities of this

review of the fully featured Interactive Light

particular zero-contact controller, check out our

Dimension Beam in SOS June 1997, Needless to

say, the implementation here is a little simpler.

upwards from the 505, and thereby control one

filter cutoff frequency and resonance, pan, and

but all the core features are provided. You wave a

hand, or anything else, in the beam which spreads

parameter at a time (from modulation, pitch-bend,

more), all of which can be recorded into a Pattern.

Of particular interest is the Turntable option: place

your hand in the beam, and the pitch and tempo of

 do the same on the new Groovebox: any tweaks you make while a Pattern is recording can be saved with the Pattern, extending the sonic palette of the MC505 even further.

Rhythm Sets can also be comprehensively customised: each drum voice has access to pretty much the full range of synth parameters, though they don't respond to pitch-bend from an external keyboard, which is a bit strange for a Roland product. Also worth noting is that individual drum sounds can be routed to any of the three pairs of audio outputs

#### **ARPEGGIATOR**

The arpeggiator is a beefed-up descendant of the MC303's. You can easily manage simple arpeggiations, whereby you hold a chord and each note is played in turn, in time with the current Pattern. But there's much more: first, choose a Style from the 43 available (plus 10 user Styles). These vary from normal note divisions — quarter-note to 32nd-note, with triplets — to a selection of pattern types (glissando, strumming guitar, bossanova, and more). More variety is provided by 38 Motifs, which specify the order of note playback. Traditional combinations

a Pattern drop, as if you had physically stopped a turntable — a great trick for DJs, and quite convincing. Of course, you can also play notes simply by waving your hands in the air (amaze your friends). To control the predicted chaos, you can select a scale type and define a key so that your wavings have a better chance of making some musical sense. Once you've got the hang of it, the Chromatic option might work for you, but until then the 21 preset scales are very useful. A good selection of familiar types is provided (major, minor, whole tone, major pentatonic and so on), and there are some more exotic ones too.

A button by the controller itself cycles through three beam options, labelled Turntable (explained earlier), Cut + Reso (filter cutoff frequency and resonance) and Ad Lib (note play). Note that the D-Beam doesn't like too much light, and may not function well if your surrounding area is too bright. of up, down, up/down and so on are augmented by chord and bass/chord options. Further sophistication is offered by a huge collection of Beat Patterns (which vary the accent location and note length within an arpeggiation), a variable shuffle rate, accent, and a range of up to three octaves up or down. Note that certain Beat Patterns can only be selected for certain Styles.

The more sophisticated arpeggiations can produce some convincing, instant results, but they do come perilously close to the single-finger auto-accompaniment patterns found on home keyboards. Fed the right notes in the right context, however, they might be just the thing to give your track a little boost. Note that you can also record arpeggiations into an MC505 Pattern.

#### **EFFECTS**

As I said earlier, the 505 has three effects processors. The reverb is fairly simple, though it sounds good, and offers two choices each of Room, Stage and Hall; variable reverb time (with a range of 1-127, not absolute time); high-frequency damping; and reverb level.

The delay is also simple, but first Roland make you choose between short delay (0.1 to 275ms) and long delay (200 to 1000ms), which is a bit odd. The long delay gives you instant access to timed delays, which sync to the tempo of the current Pattern or Song, with a range of note values from half-note down to 16th-note, plus dotted and triplet options. You can also control feedback, high-frequency damping and delay level.

Now to the third effects processor, EFX, which offers an eccentric collection of effects, some of which are quite ordinary — 4-band EQ, enhancer, compressor, overdrive, phaser, tremolo, chorus and flanger —and some of which are quite unexpected. These include Radio, which simulates the sound of a radio being tuned; Phono, which adds vinyl disc noise to your music, for that instant rare groove feel (with 33, 45 and 78rpm options); and Slicer, which rhythmically cuts the sound up, in the manner of a triggered noise gate.

Each effect section also has some extra routing options; the EFX and delay sections can be routed through the reverb, for example, and the EFX pages hide something more interesting: how to route each Part to any of the three pairs of outputs. Turn to page 104 of the Owner's Manual for instructions. I've just saved you from hunting around for this information; it's referenced in the index as 'Part EFX/output assign', which wouldn't have been my first choice either.

#### **SEQUENCER**

This is essentially an 8-track, pattern-based device, which comes with 714 preset Patterns and plenty of room for your own work (200 Patterns, with a maximum of 95,000 notes overall). We could argue the validity of preset Patterns all day, but the bottom line is that people are going to use them, and these are actually pretty good (a credit to Roland's composers, who are all named, biog'd and pictured

in the Quick Start guide): if you heard some of them on a record, you'd buy it. They can also be quite educational, covering the range of all contemporary dance styles, with reggae, Latin and jazz Patterns also available.

Let's have a closer look at how the sequencer works:

#### PATTERNS

Patterns, which can be up to 32 bars long, can be recorded in real time or step time. You're free to select a time signature (2/4 to 9/16) and input quantise value. You're also free to leave the Pattern running, changing parts as you like, and erasing burn notes on the fly (press the Real Time Erase button and select a note, or range of notes, to be erased). Notes can be input from the MC505's little keyboard, the D-Beam controller (see 'Beam Me Up' box) or an external MIDI controller. Most front-panel knob movements can be recorded as part of a Pattern as well, and that includes fader movements. A tempo (of between 20bpm and 240bpm) can be saved with a Pattern too. Interestingly, a new Pattern isn't automatically recorded into a user memory location: it resides in a temporary buffer until you save it. The same goes for any edit you make. The downside is that once you've gone to the temporary buffer, getting back to your original Pattern can be

tricky: press the User Pattern button, and you find yourself back at Pattern 001.

Step recording is pretty simple: using the LCD, choose a note length, velocity (eight preset values, selected with the Part select/mute buttons), gate time, and the note (or even a chord) itself. A second step-time option uses a grid analogy, and is rather like programming a Roland TR909 drum machine. Select a drum sound, or note, and place it on a grid, the grid being the 16 buttons of the keyboard. In standard 4/4 with 16th-note resolution, the grid would represent one bar, but you can scroll though multiple bars in a Pattern and also change resolution, so that 32nd notes and triplets can be input. As you might imagine, inputting one note at a time for non-drum parts can be a bit long-winded, but it is also very precise and yields some interesting results.

Global editing — copying, erasing, deleting, inserting bars and Patterns, changing velocity and transposition — is done by pressing Edit and one of the keypad buttons. It's also possible to thin out controller data, move Pattern data backwards or forwards in time, and fix a quantise value. The re-clock option is pretty nifty: this halves or doubles the timing of a Pattern, such that four bars at 120bpm becomes two bars at 60bpm. Actual MIDI data editing follows Roland's familiar 'microscope'

### MANUAL

Although the English and information in the Quick Start and Owner's Manuals are pretty good, the organisation and index could be rather better. What is useful is an A4 sheet dubbed Turbo Start, which lays out the bare facts and tells you how to drive the MC505 in the shortest time possible. Wisely, Roland have realised that users (or shop demo staff) will want to get to the fun stuff as quickly as possible. Make this your first stop when you get the MC505 out of the box. The back page of the Owner's Manual is also home to a handy Easy Operation List.



### Roland MC505

### BRIEF FEATURE LIST

- · 64-voice polyphony.
- . 8-part multitimbrality.
- 512 preset Patches, 26 rhythm sets.
- 256 user Patches 26 rhythm sets.
- . Three effects processors.
- 714 Patterns (248 full Patterns, 466 RPS Patterns).
- 200 user Patterns.
- 50 Songs, 50 steps each.
- 95,0000 note capcity.
- · Arpeggiator.
- · D-Beam controller.
- . Six audio outs.
- · Full MIDI spec.

"The D-Beam infra-red controller is a unique selling point and could make the 505 a cult item in future."

### MIDI

One disappointing thing about the MC303 was that all its front-panel knob and button movements weren't transmitted over MIDI, for recording into an external sequencer. That's now changed for the 505: virtually all controllers on its front panel transmit MIDI Controller or System Exclusive data. When playing the 505 over MIDI, you don't have to worry about what MIDI channel your external keyboard is on: whichever Part is selected in a Pattern is what you play. All sounds respond to velocity, pitch-bend, mod wheel and aftertouch; drums only respond to velocity.

The MC505 can sync to or be sync'd from MIDI clock; timing sounds tight to me, although the Play button can feel a little sluggish at times. The sequencer can also play external sound sources (as well as or instead of internal sounds), and the internal sounds can be played from an external source. Song Position Pointers are transmitted and recognised.

 system, whereby a list of events is scrolled by on the LCD, and you change, move or delete events as necessary

The quantise and groove quantise options on the MC505 rival those found on software sequencers. Quantising can be used to simply tidy up a sloppy performance or to drastically alter the feel of your work, through the use of groove templates.

### PATTERN SETS

Selecting Patterns for real-time playback can be a real-time drag using the alpha dial, so Roland have provided 30 Pattern Sets, collections of 16 Patterns assigned to the keyboard, which is then used to trigger the Patterns. You can even modify a Pattern — change levels or Part mute status — before saving it in a Set. Pattern Sets would be good for live work, as you can do real-time tweaks over the top of Patterns, whilst you can't over the top of a Song (see next section).

#### SONG

Song mode is a doddle: you simply chain Patterns together and go. There's a limit of 50 steps per Song, but remember that Patterns can be up to 32 bars long (that makes 1600 bars in total). Each step can have its own mix and effects settings, so one Pattern could be repeated and varied for an entire Song. Note that you can't overlay real-time tweaks on a Song — you really have to do your tweaking at Pattern level. Some sort of 'master track' would have been useful, so that mix settings and synth tweaks could be recorded over the top of a Song. This technique is used successfully on Quasimidi's 309 Rave-O-Lution, and is perhaps more in sympathy with the way in which many musicians prefer to produce a finished Song.

### • REAL-TIME PHRASE SEQUENCE

RPS offers a similar function to Pattern Sets, except that you're triggering individual parts of Patterns (phrases): one key could trigger a drum pattern, another a bassline, and another an arpeggiated lead sound. You have the option of creating Patterns on the fly with just these elements, or using them as 'fill-ins' over existing Patterns. There are 60 RPS Sets, and you can assign any Part from any Pattern to any of 16 keys in a Set. In fact, the vast majority of the Preset Patterns (249 to 714) are designed for RPS use.

#### MEGAMIX

Megamix is a new real-time feature vaguely similar to RPS. When a given Pattern is playing back, rather than selecting new Parts from the keyboard, you use the Part Mixer's faders to select Parts. Pressing the Megamix button on the front panel automatically assigns to the faders the Parts from Patterns 10 positions either side of the current pattern. If you were using Pattern 127, for example, you could access Parts from Patterns 117-137 with the faders. Moving the faders, even randomly, easily produces unique mixes of Parts, and if you find a mix you like, you can save it as a new Pattern. This

### WOT, NO GM?

After reading this review, you might be asking yourself "where's the General MIDI?" It's not often these days that any kind of hi-tech product, especially from Roland, is released without at least basic GM compatibility. How pleasing that the MC505 is one of these rarities: no GM, no GS, no XG. While Rhythm Sets have a vague GM feel — kick drum on C, snare on D, hi hats on F#, G# and A# — the full GM drum map is not adhered to. The MC505 is a stand-alone production tool — for musicians, DJs, whoever — and no software or hardware is wasted on trying to make it compatible with playing endless cover versions.

feature is mainly intended for use with the preset Patterns, but you could use it with your own Patterns — although you'd have to make sure you had grouped them according to length, key, and voice assignment (always put your bass parts on Part 1, chords on 2, lead on 3, for example) if you wanted to produce consistent results.

#### **VERDICT**

In operation, I didn't find much to dislike about the 505: saving Patterns and Songs seems to take forever, and some edits take a while to confirm as well. I'm also not too keen on the fact that switching from the temporary Pattern buffer back to a preset or user Pattern causes a reset to position 001. There are a couple of other anomalies like this: for example, there's no way of telling if the Pattern you're trying to write to already has something in it. Newcomers to music technology might also find the front panel a little daunting, but these are relatively minor points unlikely to put off potential purchasers.

What is likely to put some people off is the price, and I must admit to difficulty with this myself. I think it's a bit steep — many a feature-packed workstation synth is within hailing distance of the £949 price tag. Of course, you can still pay almost this much for a vintage TB303, which doesn't do nearly as much, and the D-Beam and six audio outs also help balance the value equation. All I can recommend is that you try it out — it will impress you — and perhaps haggle for all you're worth. Cast your net wide, and shop around.

For hands on, immediate synth-music production and spontaneous live work the MC505 is the business, and anyone who has a feel for the way electronic music gear used to work will also appreciate the MC505's sound and interface. Whenever I review an instrument such as this, I invariably have a really good time. I come up with stuff that probably wouldn't have occurred to me with a software sequencer. I love working in this way, and although I do have the occasional nostalgic pang for older gear, I prefer '90s stability. So why don't I buy an MC303 or an MC505? I'm asking myself the same question...

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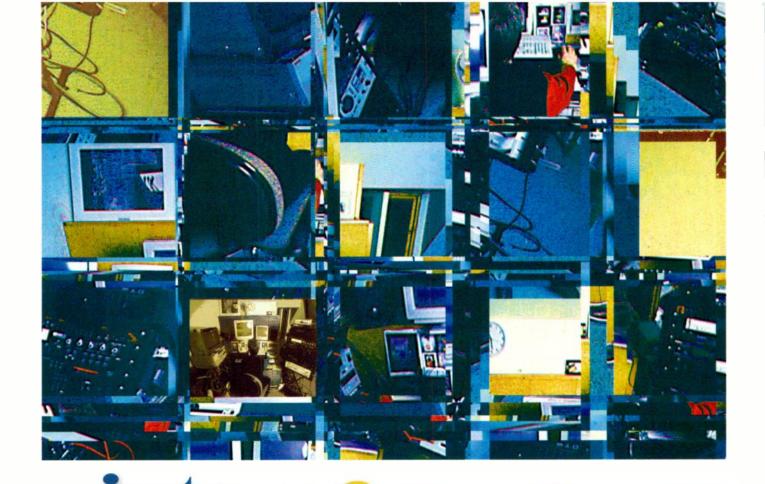
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### PART 3: It's quite possible to equip a home studio without going anywhere near a computer and software. DAVID MELLOR takes the hard line.

EQUIPPING A HOME STUDIO

ast month I wrote about the idea of basing an entire studio around a computer. It is now possible to use a computer to generate sounds, record them (together with vocals and acoustic instruments), mix, and even master your recording onto CD. So why do people still have bulky and expensive mixing consoles, multitrack recorders, and rack and racks of effects units when it can all be done with a computer, an appropriate soundcard and the right software? One answer is that the fully computerised studio is still very much a new concept and a lot of potential buyers are not fully aware of how much is now possible. A better answer is that the 'traditional' equipment that exists already can do a damn fine job in the right hands, and there are still very valid reasons why the old ways are sometimes the best. The computer is unbeatable as a MIDI sequencer, but for many people it takes its place alongside dedicated hardware rather than replacing it completely. Since I started this series with microphones and other sound sources, let me now progress straight away to...

### THE MIXING CONSOLE

The centrepiece of the traditional studio is always the mixing console, and it's primarily the type of studio you operate that will determine the level of your requirements. Studios fall into three basic classes:

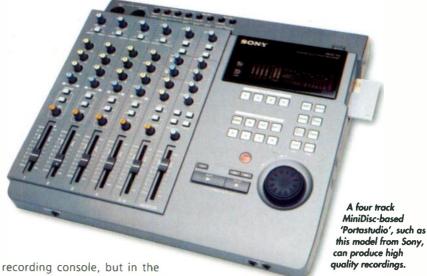
- Commercial studios, where the studio owner or engineer must be adequately equipped to deal with the preferred working methods of the paying customer.
- Project studios, owned by producers or musicians for use on their own recordings and rarely, if ever, made available to others, perhaps only as a favour or as part of a barter agreement in return for other musical services.
- 'Bedroom' studios, which don't actually make any money for the owner, who is practising his musical and recording skills. Many people have project studios in a bedroom of a house or flat, and indeed there's a large grey area here, where people are just starting to make money out of recording but are not yet making enough to have their own dedicated premises.

Let me start with the true bedroom studio first, the equivalent of what I had when I first started out in home recording. At the stage in life when most

people first start recording, money is in short supply and the equipment is necessarily basic. The least expensive way of getting into recording is to buy a cassette multitrack recorder, commonly known as a Portastudio (my apologies to Tascam for using their trade name as a generic term). A Portastudio is basically a small mixing console with a built in 4-track recorder (though 8-track versions are available these days too). They come in two significantly different varieties. One is a bit like a professional mixing console in miniature, with four or more mixer channels, and routing and monitoring very much like you would have on a much more expensive console. The other, at the cheaper end of the market, has a trimmed-down feature set which is just about adequate for the purpose but which doesn't really teach you much about mixing in the way the pros would do it. I'm not against inexpensive Portastudios, since they can be very handy as a musician's 'notebook', but I don't think they are the right starting point for a career in recording. More sophisticated Portastudios are available at higher price levels that have mixing sections with more channels, and multitrack recorders which use MiniDisc or hard disk as their storage medium. More on this shortly.

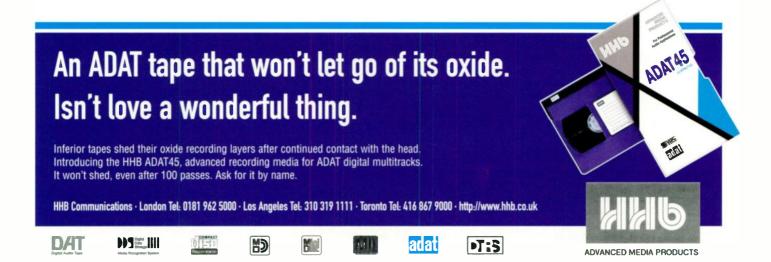
Although the Portastudio is a valuable tool for those with modest bank balances, as soon as you move to the next level up, you really are looking at a separate mixer and recorder setup, with a console whose basic operating principles remain the same as those of the biggest recording studio desks on the market.

Mixing consoles come in a variety of guises suited to particular applications such as PA, theatre, radio broadcast, and so on. For multitrack recording, fairly obviously, it helps if you have a multitrack



home/project studio, it is perfectly possible to get by with one of the other types if you know what you're doing. In fact, almost any reasonable sized console can be used for multitrack recording, but it still helps to be able to recognise a dedicated multitrack desk at 20 paces. All mixing consoles have a number of channels which process the main inputs to the console. This number varies between eight and 32 in the project studio (you'd decide how many channels you wanted depending on how many sound sources you need to mix into a finished recording), and can be 72 or more in top pro studios. All mixing consoles have outputs too. known as groups or subgroups (so called because they can control a group of signals at the same time) and master outputs.

The groups are the outputs to the multitrack recorder and, traditionally, one would have as many as there are tracks on the recorder, or at least as many as the maximum number of tracks you might want to record simultaneously. For many people





### equipping a **home studio**

working alone, however, this could be as few as two if they never record more than a single stereo signal at a time. Many multitrack recorders these days will automatically parallel the inputs to all the tracks in odd-/even-numbered pairs, provided that the other input sockets remain unconnected. This means that a simple stereo-output desk can actually access all the tracks on even a 24-track recorder, simply by using the record select switches on the recorder to determine which channels are recorded (the input signal still goes to all the other tracks but is ignored unless the track is in Record Ready mode). If you have an older multitrack without this feature, a special splitter cable can be made up which feeds all your inputs from a stereo output, giving you the same facility.

If you can afford both the space and the cost, however, undoubtedly multitrack recording is more fun with a multi-group mixer. Eight is a very practical number, for the sake of versatility and convenience, and there is a wide selection of 8-group, or '8-buss' consoles on the market. For those who might occasionally want to simultaneously record more than eight tracks, many consoles augment the group outputs with direct channel outputs, which means that you can record as many tracks as you like — as many as the console has channels. The only drawback is that you can't mix signals into direct channel outputs as you can into groups, but there are really only a few occasions when this would be a problem, especially when you have some groups to play with as well.

So far, what I have said can actually be applied to any type of console, but dedicated multitrack recording consoles differ from every other type in that they always incorporate a 'mixer within a mixer' — the tape monitor mixer section. The multitrack recorder is a sound source in its own right — in fact, eight, 16, 24 or more sound sources. In a compact setup it is often impractical to have input channels dedicated to all these tracks at the same time as having a set of channels devoted to the source signals. A basic 'tape return' stereo mixer (perhaps just level and pan and a couple of auxes) is therefore incorporated into

"there is nothing intrinsically wonderful about a digital console — analogue consoles are capable of results that are just as good!"

the desk to take care of these signals during basic track-laying and overdubbing. When recording is finished, the multitrack can be switched into the 'proper' channels for mixing. Often the controls of the 'monitor mixer' are positioned within (or 'inline' with — hence the term 'in-line console') the channel strip, or on older, larger consoles they will be sited on a separate 'monitor mix' panel (this is referred to as a 'split' configuration).

An 8-buss mixing console with 24 channels will see you through several years of recording and is a good starting point for the well-equipped bedroom studio. It's quite possible to start off with very few channels, perhaps as few as eight, just to get get you going, but you'll want to change the console for a bigger one sooner!

In the project studio class, 8-buss consoles are common, although the number of input channels might rise to 32. Project studios might also consider digital mixing consoles, of which a number are coming onto the market at reasonable prices. Some of the lowest cost digital consoles are not really configured as proper multitrack recording consoles at all, so make sure you have a proper monitoring section, otherwise you will struggle to cope. I have to say that there is nothing intrinsically wonderful about a digital console in my opinion — analogue consoles are capable of results that are just as good, and some would say better. So what are the advantages of digital mixing consoles? To my mind there are three:

- A digital console can give you more 'bang for the buck'. Digital technology has matured to the stage where it is possible to put more facilities into a digital console than an analogue console of the same price. This applies both to equalisation — there may be a full parametric equaliser on each channel, which you wouldn't get on an analogue console unless you paid a lot more — and to dynamics, with compression and gating in every channel. To get this in an analogue console you'd probably have to pay tens of thousands of pounds.
- The second advantage of digital consoles in the project and home studio environment is that, however many facilities they cram in, they can still remain smaller than analogue consoles. I know that a large console looks impressive, but it has a significant acoustic impact on the control room and that is inherently undesirable.

### DEVIL'S AVOCADO

WHY TRADITIONAL STUDIO GEAR IS BEST:

- On analogue or digital tape, the relative timing of the tracks is given by their physical position on the tape. On disk, it's down to the software to ensure that timing is constant. Can you be sure it always will be?
- Almost every multitrack recorder, tape or disk, can be used with a footswitch for drop-ins.
   Where do you plug the drop-in footswitch on a computer?
- If you make a bad purchase decision, you can sell hardware. Who buys second-hand software?
- Pick up your ADAT, pack a small mixer, throw them in the car with a few mics and go and record somewhere on location. Now try it with a computer and a 17-inch monitor.
- Just listen to the music. Or... slide the mouse across the desk, grab the hand icon in the top

- left corner of the screen, drag it down to the playback Icon and click. Look to make sure the cursor is actually moving. Oh damn, the tracks are not playback enabled. Now tear your eyes away from the screen and listen. Stop looking back at the screen!
- You buy hardware, you use it. You buy software, you install it, you try to sort out driver/extension conflicts, you re-initialise the hard disk, you tear your hair out, you read the manual, you get it almost working, you find a few bugs, you wait for an update, you wait for an update, you wait for an update...

OK, I'm exaggerating a bit, but tell me there's no truth at all in what I'm saying!

WHY YOU SHOULD USE A COMPUTER AFTER ALL: Just look back at the last instalment of this series (February 1998 issue) — it's all in there! • The third advantage of digital consoles is perhaps the most important. In digital equipment there is no mechanical link between the controls and the digital processing circuits that perform all the functions of the console. Everything is linked by digital electronics. This means that technically it's very straightforward to automate all of the controls, not just the faders, and thereby allow the complete recall of all the console's settings in an instant. Automation, I believe, is a vital aid to mixing since it allows the engineer to consider each change in level (and whatever other functions are automated) separately. Having recorded a move, he can then let the automation system recreate that change every time while he moves on to think about the next tweak. It has to be said that it seems to be easier for manufacturers to provide the technical features of automation than it is for them to design the human interface. Sometimes automation is controlled via a MIDI sequencer, but few sequencers have the ability to modify, or update, data in the way that it would be done on, say, a console with a professional automation system. This is an important part of the process of automated mixing, but given the will on the part of the manufacturers and informed demand from users, I don't think that project studio automation that works in this way is far from becoming a universal reality.

A major consideration with automation is whether the system has motorised faders, and whether the knobs are actually 'rotary encoders' which use a ring of LED indicators to show their positions. If this is so, when the controls are driven by the automation system you'll see what the settings are instantly, and you'll be able to adjust them immediately. If the faders are not motorised, and if the knobs are not of the shaft encoder

type, they will nearly always be in a different position to where the automation system thinks they are. You'll have to 'null' (or positionally match) them manually before you make a change. I find this fiddly and inconvenient, and wouldn't be inclined to use such a system when there are hetter alternatives

At the commercial studio level, the type of console is determined more by the nature and needs of your clientele than by your own desires. For professional music recording, the paying client will expect the full flexibility of having a group output for every track on the recorder and won't



If you are considering a secondhand ADAT, be sure to check the head drum hours before buying.

take kindly to be held up while extensive repatching takes place. Producers and non-technical musicians are also usually impressed by a large console — if they're paying to hire a studio, they like to see equipment of a scale that they couldn't possibly have at home!

#### WHICH MULTITRACK?

Multitrack recorders come in three types; 'prehistoric' analogue, 'old-fashioned' digital and 'cutting-edge' hard disk. At least, that's what you might think if you take too much notice of the ads. All of these types of multitrack have their applications and none are about to go out of use in



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### equipping a **home studio**

### IF I HAD TO START OVER

Tascam 564.

ostex DMT8VL

If I had to re-equip from scratch, what equipment would I choose? This isn't a comprehensive listing, just a personal selection from what I consider to be the most significant products around. Prices are list, including VAT, except where indicated. Dealer prices should be lower, but the margin will allow for acoustic treatment and cabling in your studio.

If my studio were to burn down, and for some ghastly reason I had forgotten to renew my insurance, I really would have to start again from square one with something affordable but effective. Some of the cheaper Portastudios are good as musician's notebooks, but I prefer the up-market variety that really is a recording studio in miniature. The big names in this market are still Tascam, who invented the concept, and Fostex, who have given Tascam some stiff competition over the years. In the medium price range I might consider the Fostex XR5 or XR7 at

£379 and £499 respectively, or the Tascam near-equivalents. For better sound quality and flexibility the Tascam 564 Minidisc Portastudio (£1099) has to be a very serious contender.

Performing a similar role to Portastudios are the new hard disk all-in-one recorders. Fostex made a significant impact with their DMT8, although the more recent DMT8VL offers better backup and expansion facilities and must be the one to go for at £999. Hot news is the Akal DPS12 Digital Personal Studio (£1299) which I reviewed last month in SOS, offering 12 tracks direct to a internal removable-cartridge Jaz drive. Jaz cartridges are certainly not as cheap as tape, at around £60 to £70 per Gigabyte (enough for 15 minutes of 12-track recording at the 48kHz sampling rate), but it's certainly a sign of things to come. I really like Akai's up-market hard disk recorders, the DR8 and DR16 too, although for me the lack of a simple, inexpensive remote control is a drawback

Looking outside the Portastudio price bracket, I would of course need a separate mixing console and multitrack. Price-wise, the sky's the limit when it comes to consoles. Starting at the lower end, there is one absolute bargain around at the moment, but you will have to be quick off the mark.

Certain dealers are offering the Soundcraft Spirit Studio in its

16, 24 and 32-channel versions at prices that are a fraction (almost a vulgar fraction!) of the original recommended retail price. This was Soundcraft's first 'affordable' console and they really did put together a professional piece of kit at the right price. Now it is a 'bin end', it's a steal.

There are drawbacks, such as the top-mounted connectors, no meter bridge option, and no EQ on/off switch, but otherwise the

layout and sound quality are terrific. When this option becomes unavailable, there's a wide range of high-quality consoles from manufacturers such as Allen and Heath, Mackie, Soundtracs, Behringer, Studiomaster and Soundcraft. You could say that we're spoilt for choice but I have a feeling, hard to justify rationally, that the 'classic' sub-£4000 8-buss console has yet to be designed. For me, it would have the connectors on the back, a meter bridge that looks as though it's part of the console rather than a bolt-on extra, an EQ off switch, on/off and solo buttons for the monitors, solo-in-place with solo safe for the auxiliary returns, a clear fader area with no fiddly routing buttons nearby, together with all the usual features and good sound quality, naturally. It would also help if it could be nice and chunky with lots of space around the controls. So who's up to the task?

In this flight of fancy I can, of course, look at consoles that I can't really afford. One of the two that have caught my eye is the Oram Sonics BEQ Series 8 console, which has an unusual appearance and, unfortunately a, bolt-on meter bridge. However, designer John Oram's credits over many years with major manufacturers speaks volumes. This is a console you could buy and keep forever, but you'd probably have to to see a return on your Investment at £15,750 for the 24-channel version with meter bridge and aluminium knobs option. As it costs four to five times the price of other 8-buss consoles, perhaps it doesn't figure highly in the 'bang for the buck' stakes, but in my daydreams I see it as the perfect centrepiece for my studio.

The last analogue console I'll mention is the Soundtracs Jade-S. This is the console I'll buy when I finally get that elusive chart hit. It's a big boys' console with 24 group outputs, moving fader automation, dynamics and up to 56 channels. There's even a digital output! It costs £43,000 for the 24-channel version — not counting the VAT, since you really have to be in business to afford a console of this stature.

When it comes to digital consoles, I'm personally only lukewarm. If I had a need to work on several

▶ the foreseeable future. As a bedroom studio owner, your best bet might be to avoid analogue open-reel recorders, since there are very few still in production and a second-hand machine might require a lot of maintenance. The choice is therefore between digital tape and digital hard disk recorders. Let's look at the pros and cons of each.

For musicians, the digital multitrack tape format of choice, in my opinion, is undoubtedly ADAT. The rival DTRS format (from Tascam and Sony) is very strong in video post-production, where ADAT remains almost unheard of, but for music recording ADAT is king. ADAT comes in three flavours, mostly from Alesis but occasionally from other manufacturers too, including Fostex: firstly there is the original 'black face' ADAT. This is the classic Alesis ADAT that was superseded by the Alesis ADAI XT. Now there's also the 20-bit ADAT Type II format, as embodied in the new Alesis M20, LX20 and XT20. ADAT machines record eight tracks onto a standard S-VHS cassette. Up to 16 machines can be linked, for a total of 128 tracks (!), so systems of this type are often referred to as 'modular digital multitracks' or MDMs.

The original ADAT is now only available on the

second-hand market, so if this is your choice you need to know what potential problems to look out for. Firstly, check the software revision, to be sure that the unit is up to date. You can do this by holding the Set Locate button and pressing Fast Forward. The display should indicate 4.03, which is the latest version. If the machine is earlier than 3.06, a hardware modification is required, as well as a software update, to bring it up to the latest spec. Also be aware that some machines were apparently improperly updated to 3.06 without the hardware modification. Serial numbers later than AD2525000 are, according to Alesis, probably OK.

You should also check how much wear and tear the machine has had. To do this, hold down the Set Locate button and press Stop. This will show you the time, in hours, for which the head drum has run (not simply how many hours the unit has spent switched on). This procedure works with an ADAT XT too Alesis estimate the average head life of an ADAT as 1500 to 5000 hours, so you should judge the number of hours 'on the clock' against a head replacement cost of several hundred pounds.

SOUND ON SOUND . April 1998



projects concurrently, or go back to mixes and modify them, I'd be red hot for one, because you only get full instant reset facilities on a digital console (or an analogue console that's digitally controlled). As a recording console, the Yamaha 02R is simply amazing in terms of what it can do for the money (£7049). Compared to the other Yamaha digital consoles, I like the fact that It has assignable controls so that you can simply twist a knob to change the EQ. For my own use I'm sure I could get on with it very well; the only problem might be if I wanted other engineers to be able to use my studio. It's far from being a conventional console in layout, and there is a significant learning curve. The soon-to-arrive Mackle digital console looks very promising, since it seems to combine the layout of an analogue console with the advantages of digital. I'll be keeping a lookout for this one and the (sub-£3000) Spirit 328 announced at the recent NAMM show.

When it's time to choose a recorder, for me there are three options: analogue tape, digital tape and hard disk. I could quite easily go retro, if I had the cash available, and buy a secondhand 2-inch multitrack. They are simple in concept, the better models will run forever with appropriate maintenance, analogue can sound great, and I could record 24 tracks on one single reel of tape with no fiddly synchronisation worries. The tape may be expensive, at over £100 for a 30-minute reel (just over 15 minutes at 30 inches per second!) but I think I could live with that — just.

A more practical alternative is the Alesis ADAT XT which has recently had its price cut to £1999. We can thank the manufacturers of hard disk systems for that. The ADAT XT is to the point, with essential features and few frills. Unfortunately it doesn't output MIDI Timecode (MTC), so a sync convertor such as the Steinberg ACI or JL Cooper DataSync 2 is necessary. to avoid losing a track to timecode when synchronising a sequencer to tape. Two ADATs would give me 16 tracks to play with, and three would give 24. I don't think, somehow, that I would need to go all the way to the maximum of eight synced together. Tascam's DTRS system is also worth looking at, since it offers features almost identical to the ADAT, and with a smaller tape cassette multiple machines can synchronise faster. I like to be able to exchange tapes with other musicians or take my project elsewhere, and since ADAT is more common in the music recording world, that's the one I'll go for.

Hard disk recorders are the future and will probably oust digital tape when disk storage is cheaper, but at the moment a stand-alone disk recorder is only a good buy if you have a pressing need to make use of the benefits that tape can't provide — hard disk multitrack recorders can be cheaper to buy than tape-based multitracks, track for track, and if the reliability figures for hard drives can be believed, they will

£3000 mark

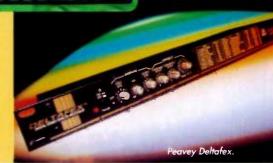
There are so many outboard units around that it is really difficult to make a choice. When it comes to compressors and equalisers, the Focusrite Red and Green ranges have a lot to offer but come with serious price tags (£2579 for the Red 3, £1056 for the Green 4 - both dual compressor/limiters). Still, if you buy the best it will remain useful for literally decades and continue producing excellent sounds. So Focusrite it is for me. For my main digital reverb unit I think I'll go for a Lexicon PCM90. Lexicon, once again, is expensive (£2583 In this case) but a high-quality reverb is important so, however painful it is, I will really have to shell out. In a lower price range, the soon to be phased out (at bargain-basement prices, perhaps) Alesis Quadraverb 2 is an excellent performer at a listed £699, and it can handle all kinds of multi-effects as well. I currently have two of these and they are kept busy.

I don't want you to think I'm some kind of gear snob, quoting all these high prices. Something I came across at a much lower price (a bargain £155) is the Peavey Deltafex. As a reverb it may be basic, but as a wonderful bonus it handles delays better than almost anything I have come across. Simple delay units are always useful and I could easily keep two of these units hard at work in my rack.



Focusrite Green 4 dual compressor/limiter.

require a lot less maintenance than tape-based multitracks. In addition, editing is easier and more flexible on disk, access is quick, and synchronisation is almost instant. If I pondered over these points long enough and decided that hard disk multitrack was indeed for me, the Fostex D160 would vie with the Akai DR16, since they both come in at just under the



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### home studio

A simple trick which will help you assess whether a second-hand ADAT has been properly looked after is asking to see the current owner's head-cleaning cassette. If it isn't either of the recommended safe types (3M VHSHC Black Watch or 3M ASD HC), or the owner doesn't have one, just walk away...

The ADAT XT is really just an update of the original ADAT rather than a major change. The ADAT Type II is a very major change, also using S-VHS cassettes but recording at 20-bit rather than 16-bit resolution, for even better sound quality.

### **HARD DISK**

Hard disk recording is flavour of the month at the

moment, and a lot of people seem to think that it will supersede digital tape. Well, it won't, at least not in the immediate future, for three very good reasons.

- It's expensive to run. A hard disk that is capable of storing 40 minutes of 8-track digital audio costs well over £100. An S-VHS tape of the same capacity costs around a tenner.
- Since the media costs are so high, it's necessary to transfer material to a different format for archiving. This takes a considerable amount of time, and if it's simply a backup to digital audio tape it doesn't have the benefit of any form of verification to ensure that it is accurate and identical to the original.
- There's very little standardisation in hard disk recording, so your disk will probably only be playable on an identical system. ADAT machines, in comparison, are available on just about every street corner.

Other than these three points, I have nothing against hard disks, and I'm certain that disk recording is the future — it just isn't the present, unless you have a pressing need for the specific advantages it has over tape. So what are the advantages of hard disk systems? (I'm thinking primarily of stand-alone hard disk recording systems here, since I covered computer-based disk recording last month.)

- Since the hard disks themselves are sourced from the computer industry, and they are the only mechanical part of the recorder, hard disk recorders can be cheaper than digital tape recorders, track for track.
- Editing is quicker and more flexible than digital tape — although with multiple MDMs it is possible to edit, with a little bit of know-how and patience.
- For a bedroom studio, a hard disk 'Portastudio' might be an excellent idea, and you'll still be

able to find a use for it after you invest in a 'proper' mixing console and multitrack.

Hard disk Portastudios offer eight, 12 or (in one case) 16 tracks at full 16-bit digital sound quality (although some models use digital data reduction, which, in my view, is less than ideal), and if you can use a removable cartridge you don't have to worry about backing up onto tape. Unfortunately, removable disk cartridges are still pretty expensive compared to tape. Multitrack hard disk recorders are less prevalent in commercial studios, since clients usually want to take their finished multitrack recordings away with them, and hard disk systems really don't lend themselves to this.

In top-end commercial studios, three formats are used which are worthy of mention here:

- Analogue 24-track on 2-inch tape is still a class act, and you'll find a pair of these machines (for 46-track work) in every top studio around the world. There are now very few analogue machines available to purchase new (they're chiefly at the very top and bottom ends of the market) so you'd have to look for something second-hand. Prices are probably at rock-bottom now, so if you take someone knowledgeable to a second-hand audio dealer (as you might when buying a second-hand car) you could pick up a bargain that might increase in value over the years, as classic mics and compressors have.
- Digital multitracks, in the Sony DASH format, are certainly very good performers, and they can be bought occasionally for 'incredibly low prices' (at least, compared to what they cost new!). Unfortunately, head replacement is diabolically expensive, and you can't check head wear just by visual inspection, as you can with an analogue machine — probably best avoided unless you are an expert.
- The third truly pro format is the Otari RADAR. These hard disk recorders are increasingly being talked of as the natural replacement for 2-inch tape. Of course, they are expensive compared to MDMs and 'consumer' hard disk, but with relatively convenient backup to digital data cartridge RADAR is something to consider when you strike lucky in the lottery of the music business.

### **OUTBOARD**

In any multitrack studio, the motto for the outboard or effects rack should be 'small but classic'. A few really good units will help you achieve far more than a 20U cabinet full of cheapies, in my opinion. Certain types of unit are always essential. Every studio needs a decent compressor — not just a compressor that works and lives up to its specification, but a compressor that lives and breathes life and soul into the music. A good compressor can actually add some magic, while an adequate compressor merely compresses.



ADAT45

'Breathing' is also the term given to one of the problems associated with compression. It's in the nature of the compression process that any noise contained in the signal is modulated in level and one's attention is drawn to it. There are some compressors on the market that breathe like an obscene phone-caller, making the compression process very obvious. Even so, there are times when you want 'transparent' compression, and other times when you want to use compression as an obvious effect. Perhaps a pair of stereo compressors, one from each of the opposing standpoints, would be appropriate.

Almost every mix needs a little (or sometimes a lot) of reverberation, and digital reverb units vary from the cheap and awful to kind of processor that could put the Albert Hall to shame. As a general guide, I think it's best to look at the most expensive unit in a manufacturer's range. Usually that will incorporate the best of their technology and cheaper units will be intentionally given an inferior sound. A good reverb should enhance a signal when the reverb is at a low level — you shouldn't have to pile on bucket-loads of it to get a result.

Other types of outboard and effects units you might consider include EQ (if you have one really good EQ unit, this can be used to supplement a "No matter how developed

mixing console that only has average EQ facilities), noise gates (for creative effects, as well as for cutting noise), a voice channel with a mic preamp and a selection of processes often used for vocal recording, something that does pitch-shifting and, finally, perhaps a multi-effects unit with loads of preset programs for when you're looking for something 'off-the-shelf' to set your creative juices flowing.

To summarise my thoughts on 'traditional' studio equipment, all the types of hardware mentioned here still have a lot of life left in them. No matter how developed computer-based recording becomes, and how many software plugins there are, some people will always prefer a dedicated unit to do a specific task. At the end of the day, the equipment is a means to an end, and creative people will use the vast range of hardware and software solutions that are available to create their own individual style of music

Next month — mastering.



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### CLAVIA NORD MODULAR VIRTUAL ANALOGUE MODULAR SYNTHESIZER

Clavia's latest product is something else; an affordable modular hardware synth whose selection of modules and signal routing is user-definable in software, offering the synthesist staggering scope for sound design. In the first of this two-part review, PAUL NAGLE cross-modulates his Joy input with a Rapture envelope and goes into self-oscillating ecstasy...

he preview of Clavia's Nord Modular in February's SOS generated a surprising level of interest; before I had even received a copy of the finished mag, somebody had scanned my article and circulated it around the Internet! Why has this instrument generated such a buzz? Well, I think it's fair to say that it's a landmark in synthesis; a modular synthesizer whose constituent parts and signal routing are defined in PC-based graphical patch editing software — and defined not by the manufacturer, but the end-user. The Nord Modular's 100 onboard patch locations can therefore store any potential synthesizer configurations you can dream up, and since this gives you more scope for synthesis than almost any synthesizer ever manufactured, you might find it proves to be the only analogue-style synth you'll ever need. (If all this talk of modular synths has completely lost you, check out the 'Spaghetti Junction' box on page 176.)

### LET'S HAVE THAT ONE MORE TIME...

The signal processing architecture of the Nord Modular is essentially up to you; you are limited only by the capabilities of the modules Clavia supply with the instrument (one thing you can't define on the Nord Modular is the basic capabilities of the modules themselves). However, even this can scarcely be construed as a limitation, as new modules are being planned by Clavia all the time. Consequently, it's difficult to review the Nord Modular like any other

synth, as so much is flexible or user-definable. What you therefore have here is the first instalment of a two-part review; this part examines the basic structure of the Nord Modular, the way the patch creation software works, and explains the function of the most useful modules. Next month, I'll give you a practical example of how to actually go about constructing a synth patch with the Nord Modular, look at some of the more involved features and modules in detail, and draw my conclusions about the instrument.

When reading this review, it's worth keeping a copy of my February preview handy, as it sums up much of what constitutes the Nord Modular in compact form, but for those who don't have this, a quick recap of the Modular's basic voice architecture is in order before I launch into a description of the synth's physical appearance.

Clavia's previous virtual analogue tour de force was the Nord Lead synthesizer (see reviews in SOS May '95 and September '97), and one of the great strengths of this instrument was the way that patches could be layered or used multitimbrally. The Nord Modular borrows from this architecture, featuring four so-called Slots. Far from being physical holes in the synth, these are simply memory locations into which you load the patches you want to play. The Slots are accessed via the four Patch Group buttons labelled A to D on the Nord Modular's front panel (Patch Group is a term used interchangeably by Clavia for Slot).

Together, the Slots can play a maximum of four patches at once (on different MIDI channels if required). Loading a Slot with a patch is as simple as hitting the desired Slot location button and selecting a patch from one of the 100 onboard memories. Once the Slots are loaded, you can select which one is active on the front panel using the Patch Group buttons.

As I mentioned in my preview, polyphony is not dynamically assigned; instead, at patch creation time, you request a certain number of notes for that patch via the software. Whether you get all these depends on both the number and the complexity of the patches in other Slots on the synth. Helpfully, the current polyphony is shown underneath the patch name on the synth's hardware LCD, and as you activate new Slots, you will see the polyphony figure update for each patch as the synth divides up the resources available to it.

It is important to understand the way polyphony and patch complexity are irrevocably bound together: an unexpanded Nord Modular contains four DSP 'engines' and the rule is that no patch can exceed 100% of a DSP (the editing software shows the DSP load on a meter to help you keep track). All the modules you employ in building a patch use up a specific amount of the synth's total DSP resources, according to the module's functionality: for example, a fairly complex type of oscillator might use 11%, and a much more basic oscillator only 3.1%. Therefore you are always guaranteed a minimum of either 4-note polyphony (in a single Slot, with the other Slots deactivated) or four monophonic patches, running in four Slots. You soon adjust to the fact that simpler patches use less resources, and that, in practical terms, maximum polyphony is anywhere between 4 and 32 notes. An optional internal DSP expansion card doubles the available polyphony, but does not permit individual patches of any greater complexity.

### **RED BOX**

Outwardly, the Modular is an unassuming red box with 18 freely-assignable knobs (plus one dedicated to master volume), an LCD, rotary data wheel and navigational controls. The keyboard version (reviewed and pictured here) has a 2-octave keyboard and transpose switches, but no additional performance controls. The rear of the synth sports twin MIDI In and Out sockets (no Thrus); one pair is intended for normal MIDI use and the second pair is used only by the PC patch editing software. The other rear sockets include four audio outputs, two audio inputs, a headphone output and connectors for a footpedal and sustain pedal. Construction is solid throughout; mains power is internal and supplied by a permanently-attached lead.

The 18 knobs may be assigned to any of the parameters that you choose for each patch (which is why they aren't labelled with function names, only numbers; the function of each knob is decided by you!). To me, it initially seemed illogical to number them in downward columns of three rather than from left to right, but there's a reason. As up to four patches may be active (in four Slots) at once, Clavia decided it would be useful to be able to tweak key parameters of each one simultaneously, and to this end, they created a Panel Split mode. If you glance at the panel layout, you'll see that the knobs are divided into four areas. When Panel Split mode is active, these areas correspond to patch Slots A to D, such that the first six parameters of Slots A and B, plus the first three parameters of C and

D, can be edited from the knobs in the corresponding front-panel sections, no matter which Slot is currently selected. When not in Panel Split mode, all 18 knobs allow you access to the first 18 parameters of the patch in the currently active Slot.

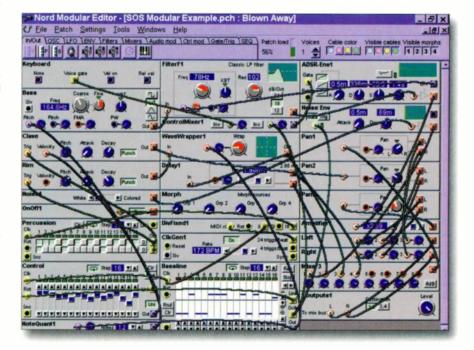
To make best use of Panel Split mode, you need to be organised and ensure when designing patches that the most important parameters are assigned to the first six (for patches in Slots A and B) or first three (for patches in Slots C and D) knobs in each patch. I'll explain exactly how you go about assigning the knobs next month.

#### **PATCH EDITING**

I was initially sceptical about the idea of a synthesizer that tied me to a PC screen for editing until I actually loaded the supplied software; from that moment, I was a convert. The software is elegant, deserving the much over-used tag 'intuitive'. All actual audio processing (and subsequent storage of finished patches) is handled by the synth hardware, not the attached computer, so demands on your PC are light; essentially, if your machine can run Windows 95, you should have no trouble. Grab the demo version of the software from Clavia's web page (see address at the end of this article) if you are interested in trying it.

As well as for creating new patches, the editor provides a friendly front-end for other aspects of the synth's setup: MIDI channels, note and velocity ranges

"Why has this instrument generated such a buzz? Well, I think it's fair to say that it's a landmark in synthesis."



for the four Slots and the control of the System Clock which can be sync'ed internally or via MIDI (the Modular sends MIDI Clock if set to INT) More on MIDI and the Modular next month.

So, how does it work? Take a look at Figure 1 above. The various categories of module are selected via menus accessed from the tabs you can see in the top left corner of the editing window. Clicking on the tabs brings up a row of icons in the line below; each icon denotes a different module. Holding the mouse over a module icon produces a hint box which tells you the amount of DSP resources that module will use up. You add a module to a patch by simply dragging its icon onto the work area with the mouse.

Figure 1 — A typical patch in the Nord Modular's editing software. The tabs for module type selection are at the top on the left, while the actual modules are in the line beneath. On the right, you can see the DSP load meter, cable colour view selector switches, and morph view selector buttons (more on morphing next month!). If this patch looks complex, bear in mind that it still only uses up 56% of the available DSP resources.

### CLAVIA NORD MODULAR

As an example, Clavia currently offer three types of Oscillator: OscA, OscB and OscC (each with slightly different attributes). OscA has the most features and therefore requires the most resources (11%). When first dragged onto the work area, it appears as OscA1; if you need another OscA module for your planned patch, it will be assigned the name OscA2, and so on. Once in the main work area, modules can be moved around, removed again or renamed with a simple right-click (perhaps with a title that's more meaningful

to you). After the modules you want are assembled, you must cable them together before you can hear any audio output, just as on an old hardware modular. Cabling is as simple as dragging the mouse from any module's output jack (square connectors) to any input jack (round connectors). Cables stretch (seemingly forever), and can be plugged, replugged, removed entirely or coloured for ease of recognition. The current version of the software (v1.10) even assigns a cable colour for you automatically according to function,

### **MODULE MADNESS**

The Nord Modular currently offers over 80 modules to choose from, with more on the way: here's a list of them all. The different sections of the list relate to the tab headings under which the modules are grouped in the patch editor. As you can see, I haven't added notes on all of them, to prevent this review turning into a novel, but I will be looking at some of the more esoteric ones in part two of this review, in next month's SOS.

#### IN/OUT MODULES

Keyboard Voice

This module allows access to MIDI note. velocity and gate information for use as control values elsewhere.

Keyboard Patch

As above, but information is taken just from the last note played.

Global

The global clock sync module. You use this if you need to run several patches in sync.

- Audio In
- 1 Output
- · 2 Outputs
- 4 Outputs
- Morph

More on this next month.

Note Detect

This module outputs a gate signal if the designated note is received via the keyboard or MIDI input; it's good for performing actions based on a certain key. If several are ganged together, they can be used to react only on certain notes of the scale.

### **OSCILLATORS**

· Oscillator A

This oscillator has waveform selectors. coarse and fine tuning, variable keyboard tracking, adjustable pulse width with modulation input, two pitch modulation Inputs, an FM input and a sync input.

· Oscillator B

This is almost the same as Oscilator A above, but has no pulse width control and no sync input, which makes a DSP resources saving of almost 3%.

· Oscillator C

This is a simple sine-wave oscillator, with a frequency modulation input. Cable together a few of these in a DX7 algorithm-style arrangement, and boom! your Nord Modular becomes an FM synth (only a much more flexible one)!

Oscillator Slave A-E

As mentioned elsewhere these are simpler oscillators which need to be linked to one of the three main oscillators, but which have their own intervals and modulation inputs.

- Noise Generator
- Percussion Oscillator

This is quite a flexible little module. which produces a range of basic percussion voices, from bass drums to toms and right up to claves.

#### **ENVELOPES**

ADSR Envelope Generator

This is a standard Attack, Decay. Sustain, Release type, complete with a graphic display of the envelope shape. The envelope may be either logarithmic, linear or exponential in its response, and times range from a snappy 0.5 milliseconds to 45 seconds. Its output can be inverted at a push of a button.

AD Envelope Generator

A much simplified Attack/Decay envelope.

Envelope Follower

This module extracts an envelope from an audio signal.

### LFOs

· LFO A

A basic LFO module with its frequency shown in Hertz and a graphic waveform display. An enormous range of speeds is available, from a glacial one cycle every 699 seconds to 392Hz, and since the rate is modulatable, one LFO can affect another, speeding it up and slowing it down.

- . I FO B
- . LFO C
- . LFO Slave A-F
- Clock Generator Clocked Random Step Generator

This outputs a new random value for each gate input it receives at the Clk input. The Col setting produces smoother changes between adjacent values.

- · Random sten generator
- Random Pulse generator

### **FILTERS**

- Filter A
- Filter B • Filter C
- Filter D

This is a filter with a 12dB-per-octave rolloff, with simultaneous high-, bandand low-pass outputs.

• Filter E

A switchable 12- or 24dB-per-octave affair which sounds much like the Nord Lead's

filter. In addition to low- hand- and high-pass modes, it has a band-reject setting, complete with a display of the filter shape. Both cutoff frequency and resonance have modulation inputs.

. Filter F

Described as a Classic filter, this sounds as if it might be modelled on the filter Roland used in their modular systems. It is bright and switchable to 12-, 18- and 24dB-per-octave rolloffs. High resonance settings create a self-oscillation effect. This is a very cool filter indeed.

#### MIXERS

- 3-input Mixer
- · 8-input Mixer
- Gain Controller Multiplier
- Crossfade Controller
- Pan Controller

This allows you to place a signal anywhere in the stereo field; the position may then be modulated by a control

- · On/Off switch
- · 4-1 switch · 1-4 switch
- Amplifier

### **AUDIO MODULATORS**

· Ctin

This is an onboard processing module which adds distortion to any signal passed through it. It really dirties up a signal; the precise amount of clipping can be modulated, and the Sym switch allows only the positive peaks of a signal to be clipped.

- Overdrive
- Wavewrap

More on this next month.

- Quantiser
- · Delay line
- · Sample and hold
- Diode Processing

This module can convert bi-polar signals to unipolar. Imagine, for example, an LFO which modulates pitch up and down; you would like to arrange matters so that It only bends pitch upwards. This is the module you'd pass your LFO modulation signal through to achieve your alm.

· Chorus

A pleasing stereo chorus effect with variable detune.

- Inverter
- · Level shifter
- · Signal shaper

### **CONTROL MODULATORS**

Constant

This produces a constant signal — you choose the value.

- Smooth
- . Portamento A
- Portamento B
- Note Scaler
- Note Quantiser

This module enables continuous control signals to be converted to discrete steps. A smooth pitch sweep from an LFO could be converted to a glissando.

Control Signal mixer

#### LOGIC PROCESSORS

- · Positive edge delay
- Negative edge delay
- Pulse

• Delay

With a maximum delay time of 2.65 milliseconds, this can produce subtle phase-shift effects. Longer times can be achieved by patching several delays in series.

- Inverter
- Logic Processor

Allows you to transmit a gate signal when two incoming signals meet a condition you specify.

- Compare level
- · Compare A/B
- Clock Divider

Splits a pulse into a number of subdivisions by a factor which you determine. For example, you can run a sequencer at exactly twice the speed of another by inserting a divider.

Clock Divider Fixed

#### SEQUENCERS

Event Sequencer

A trigger sequencer. Each step has a switch which, if depressed, sends a gate signal. Each step can send two trigger pulses at two separate outputs.

- Control Sequencer
- Note Sequencer A
- Note Sequencer B

The sequencer modules are one area of the Nord Modular that deserve real attention; for me, almost by themselves, they thrust the Nord Modular to the top of my personal shopping list. As with sequencers in old hardware modulars. these can be used to sequence notes, filter settings or create any number of weird and wonderful effects. I'd love to spend an entire SOS review talking about these but sadly, space precludes me from doing so this month. Rest assured, however, that they will be examined in detail in part two of this review.

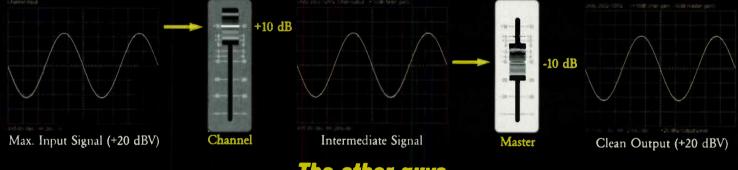


Most people think that all compact mixers are the same. The Unity 1002 RQ and 2002 RQ "Reference Quality" Series Mixers are classic examples of how huge benefits can be realized from small changes in how you connect the dots.

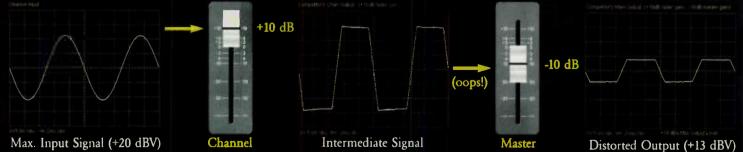
the same total gain between their microphone input and final output, or else they wouldn't work. The Unity RQ Series provides 10 dB more headroom in the channel and at the fader by shifting the fader's voltage gain to "post" summing bus. In conventional gain structures, any fader setting above 0 dB will

reduce headroom. At 10 dB of gain, a conventional fader gain stage suffers from electrical overload 10 dB before the channel. The Unity RQ's "High Headroom Bus" structure allows you to use the channel's full dynamic range and all the fader's available gain, while maintaining a distortion-free signal path. Clean is good.





# The other guys (actual scope images from competing "high headroom" mixer).



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#### CLAVIA NORD MODULAR



The Nord Modular's hardware front panel, with its 18 freely assignable knobs. The four Patch Group buttons for selecting the Slots are at the bottom right.

although you can always recolour later if you wish. You can pick screen views which hide some or all of the cables with the aid of the Cable Color view selectors (in the top right corner of the patch editor window), or 'shake' your cables, so that they fall in different positions — handy if your creation has become an unruly rat's nest and you've forgotten what's underneath.

Audio routing to and from the outside world is achieved via the on-screen representations of the Nord Modular's four hardware outputs and two audio inputs. As the list of available audio processing modules makes clear (see the 'Module Madness' box elsewhere in this article), the Nord Modular already offers some degree of internal effects processing, but Clavia's trump card is that if you want to patch out for a bit of reverb or a favourite effects patch, you can send the signal via a couple of the outputs, and return the processed signal via the audio input — and you can do this at any stage in the signal chain. Too often, synthesizer effects comprise just a little reverb or chorus at the output stage, but this needn't be the case with the Nord Modular.

Four types of signal can flow between the modules that make up a patch. You can tell at a glance which kind of signal is emerging from or entering a particular connector from the colour of the connector (it is this that determines the signal type, not the colour of the cable plugged into it). The signal types are as follows:

- Audio (red junctions)
- Control (blue junctions)
- Logic (yellow junctions)
- Slave (grey junctions).

**Audio** signals, as the name suggests, are (to take three examples) the output from oscillators, noise generators, or any external audio signals being fed in. Audio is given priority in the system, and runs at four times the bandwidth of other signals (incidentally, internal processing is 24-bit at all times, so everything sounds clean and shiny).

**Control** signals are the equivalent of control signals sent by traditional modulars (see the 'Spaghetti Junction' box). This includes the signals from envelope generators, LFOs, sequencer modules, and so on.

**Logic** signals are basically on or off pulses used to trigger envelopes, drive sequencers, and so on.

Finally, **Slave** signals run down a special kind of connection used as a means of maximising processing power. Some oscillators are defined as Slaves; these are cut-down oscillators which must be connected to a Master oscillator in order to respond to keyboard pitch changes. The reason you would employ slaves is that they use up far less DSP resources than a Master oscillator.

The Nord lets you cable any output to any input, so that the types of signal, as on a traditional modular, are fairly interchangeable (see the 'Spaghetti Junction' box for more on this). For example, an Oscillator audio signal can be used as a control input for a filter or other oscillator, LFOs can be patched to an audio out or used as trigger inputs for envelopes, and so on, and so on. Just as on hardware modulars, you can experiment at your leisure!

Personally, I'd go so far as to say that this system would make a superb educational tool for the teaching of basic analogue synthesis principles and techniques. A particularly nice touch is the software's graphical representation of envelope shapes, LFO waveforms, and filter peaks (which change as you adjust the parameters of the filters, envelopes, oscillators and so on); this shows the degree of care Clavia have taken in making this more than just an imitation of a hardware modular synth.

Look out for the concluding part of this review in next month's SOS.

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- W www.clavia.se/nordmodular/

#### SPAGHETTI JUNCTION — TRADITIONAL MODULARS

The original, analogue modular synths of the '60s and '70s are voltage-controlled affairs comprising a series of synthesizer modules (oscillators, filters, elopes, sequencers, and so on) with no hardwired signal path. Connections are made by cabling (or patching — whence the word patch in modern synth terminology) together the different modules using wires with jacks at either end (patch cables). Understanding the different types of signals present is important — for example, a note might be formed out of a gate signal (trigger) and a control voltage signal (pitch). The gate is typically used to trigger envelopes which control the duration of a note and the control voltage is routed to an oscillator to set the pitch of a note. However, the voltage-controlled nature of the old modulars gives them one advantage over digital synths — because all the signals buzzing around a modular system are just voltages of varying strengths, you can simply add any sort of signal to any other sort of signal to produce or modify a sound so if you want to see what sort of musical note the voltage coming out of the sequencer module's clock produces, you can treat it as another oscillator by just patching it accordingly. This is not the case in a normal digital or MIDI-controlled synth setup, because controller information, such as MIDI volume, is different to note information.

In order to get around this problem in the Nord Modular, Clavia have separated the components of a MIDI note, extracting note, note length (gate) information, key and release velocity, and made them available in the patch editor via the Keyboard Patch and Keyboard Voice modules (see the 'Module Madness' box elsewhere in this article). The information may come from either the last key that was played or from every key, and you are free to route these values to whichever parts of the synth you wish.

Modular synths provide almost unlimited opportunities for signal routing and processing. This approach to sound design has its pitfalls, however; it's all too easy to set up a fantasticlooking routing that produces no audible sound whatsoever, which can, over time, lead to great frustration! Furthermore, reprogramming (ie repatching) a modular can involve a lot of recabling, which can be a time-consuming process, and an impossibility when playing live, such that many traditional modular users have had their on-stage musical direction imposed on them by their instrument. For the same reason, it's also impossible to effect instant patch changes, or store modular patches by any other means than actually writing down the necessary connections.

For more detailed information on modular synths, check out Steve Howell's Exploring Analogue series, which ran in SOS from May to July 1994.

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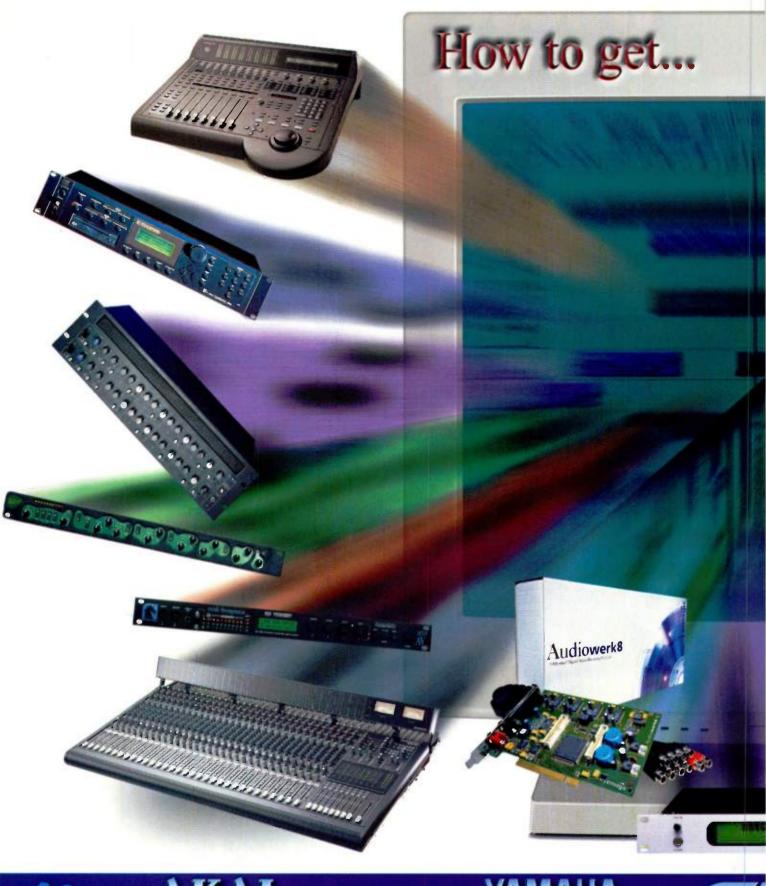
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# STUDIO AUDIO AND VIDEO SADIE VERSION 3 DIGITAL WORKSTATION Any Digital Audio Workstation that was first introduced in 1993

that was first introduced in 1992, and which is still not only going strong today, but benefiting from major software updates, must be doing something right. MARTIN WALKER takes a long hard look at SADiE.

> hose of us using PC MIDI + Audio sequencers are almost certain to have experienced a crash or two during normal use of our chosen application, and accepted it as par for the course. Some of us may be suffering regular problems, and be hoping that a software update will sort the problem out. However, if you rely on a Digital Audio Workstation on a day-to-day basis and earn your living using it, as many people do, stability and reliability are of paramount importance. One of the best ways to get increased reliability is to ask less of the PC concerned, by rnoving more of the functions to dedicated hardware. This is the approach taken by the Soundscape system (reviewed in the November '97 issue) which only uses the PC to run the graphic interface, relying on a stand-alone hardware box to do the bulk of the work. The SADIE system, made by Studio Audio and Video, takes a slightly different approach, in that the additional hardware still sits inside the PC case, but to call it a soundcard would be rather misleading.

SADIE is, in essence, a 2-input, 4-output Digital Audio Workstation based around two PC ISA expansion cards. It was previously reviewed way back in the June 1993 SOS, but has recently had a major update to its software, which is now at version 3, so this seems a good time to revisit the package and see what it now offers.

#### **BACKGROUND**

SADiE has a large professional user base, with many systems employed in radio stations for programme production, music and speech editing. Nearly 500 systems have been purchased by the BBC, which says something about its audio quality and reliability. SADIE systems are also used extensively for music recording and editing, CD audio mastering (either to CD-R disc or Exabyte tape), as well as track-laying and sound sync'ing to picture (using the optional Portia random access video system). Portable versions of the system are available for location recording, and there's also a more powerful SADiE variant called Octavia, which is intended for multitrack audio applications. It offers 96kHz/24-bit editing, with up to 24 outputs, but still features the same user interface as the version 3 software of the SADiE system.

Undoubtedly, one of the attractions of these systems is that they are easy to get into (particularly if you come from a analogue tape background). This makes them ideal in an environment where

many individuals may use them on an irregular basis. In this situation people need a rapid learning curve and quick results every time — for radio production, in particular, there are often only a few hours to turn round a small audio editing task before transmission.

#### **HARDWARE**

The basic SADiE hardware consists of two ISA expansion cards. The first, the X-S card, provides the digital processing, as well as a SCSI interface which links directly with an entirely separate SCSI hard drive used solely by SADiE. To allow quick changes between projects, the drives are supplied as plug-in cartridges, so that you can exchange the drive at any time, log onto the new one via software, and carry on with a completely different drive's worth of data. This is an ideal solution for any system where multiple projects or users are involved. The X-S card has a 25-way female D-type connector which attaches to an analogue/digital breakout box, and a pair of additional phono sockets provide S/PDIF Input and Output.

The second card is known as X-ACT (Analogue Converter & Timecode), and this is where the analogue conversion is carried out, as well as MIDI and timecode interfacing. It also has a 25-way D-type connector (male this time), while a pair of phono sockets provides unbalanced analogue outputs from channels 1 and 2. An additional 9-way D-type connector is provided for the MIDI interface.

All three D-type connectors from the two cards attach to the breakout box, which is a 1U rackmounting case. This gives one digital input and two digital outputs on AES/EBU XLRs, as well as two analogue inputs and four analogue outputs, all on balanced XLRs. Synchronisation is catered for by LTC (Longitudinal TimeCode) In and Out, Video In, and MIDI In, Out and Thru. Since the typical customer will be using their own choice of converters (more on this in a moment), SADiE only comes with 16-bit converters in its breakout box, for

basic recording and monitoring.

As I said earlier, SADiE is a 2-input, 4-output system, but it shouldn't be pre-judged solely on the basis of the number of channels it provides. Recording and editing can be carried out on 16-, 20- and 24-bit audio files, and all internal processing takes place at 32-bit resolution. For those who need to exceed the restrictions of 'CD-quality' audio, it is also possible to use external converters that operate at sample rates of up to 96kHz. As always (or so it seems), one of the new features of the latest software is the real-time processing plug-ins, but as befits the pedigree of this product, the UV22 dithering plug-in comes from Apogee, and the De-Noise noise-removal plug-in was written by CEDAR Audio. Other new features in version 3 include background recording (more on this later), more overall playback tracks, more 24-bit playback tracks, real-time EQ and compression, graphic automation, and enhancements to the mastering and PQ tools.

#### **INSTALLATION**

Since the review system was supplied as a complete PC package, rather than a set of components to be assembled into my own PC, I could relax in the knowledge that configuration problems would for once not be a concern. Studio Audio and Video did assure me that if a customer wants to install a SADiE system into their own PC, they are still happy to support them, but that most people buy complete systems. I can see why — the two ISA expansion cards are both about 14 inches long, and the DIY approach is not for the faint-hearted.

It was a bit disconcerting for me to enter such a highly specified audio environment in a machine that, according to Device Manager, had no audio or MIDI components installed at all, but then that's the beauty of SADiE — you bypass the heavy-handed approach of Windows 95, leaving the dedicated audio hardware to its own devices (literally). There are no IRQ or DMA settings to make, and if you do install



SOUND ON SOUND

There's a lot to take in when you first enter SADIE, but everything is laid out in a very straightforward manner, and the clear graphics of the icons make many things self-explanatory.



#### SAVL SADiE v3

With each of the five sections of the Transport Window opened, there's a lot of control on offer, but if you buy the optional hardware Master Control panel which duplicates these features, you may rarely need to touch the mouse.



 your own hardware, the only setting required is the choice of a single base I/O address.

The first release of the software ran quite happily on a 386 processor, but version 3 needs Windows 95, and a Pentium is recommended. The review PC contained a Pentium 166MMX processor, which is more than sufficient for the job, and the 1.2Gb EIDE hard drive still had 960Mb free space, since it was only being used for Windows 95 and the SADiE software. I was a bit surprised that no special measures seemed to have been taken to keep fan noise down, but many people are using extension leads to keep the PC well out of the way of the audio environment, which does neatly bypass this problem.

The SADIE PC needed none of the operating system tweaks that soundcard owners have to indulge in — no extra lines in obscure Windows .INI files to optimise the hard drive, and no disabling of

go-faster features that hamper audio operation. This is entirely due to the fact that the SCSI hard drive used by SADiE is run from a dedicated SCSI interface on one of the two SADiE expansion cards, and the drive is in no way connected to Windows 95 (although it is possible to import/export audio to the EIDE drive if you really want to). In all, it seems that this is a system that will co-exist perfectly happily alongside the normal PC environment.

#### THE SOFTWARE

Fifteen man-years of development time have gone into the version 3 software, which entailed a complete rewrite from machine code sub-routines upwards (not just a cosmetic face-lift and a few bells and whistles). After this amount of effort, you would certainly expect something impressive, but for existing owners the most impressive thing will be that this is still a free upgrade. The rewrite took far longer to perfect than expected, but many of Studio Audio and Video's existing customer base were consulted to find out what features were really needed, and various of their suggestions incorporated. This attitude does make a refreshing change. Extra features are still being added to version 3 on an on-going basis, and new releases will continue to appear on the SADiE web site regularly once they have been thoroughly bug-tested.

The first thing that users see is the SADiE3 Log In window, complete with password, and this is to allow multiple users to work on different projects. Since the hard drives supplied are mounted in removable cartridges, each project can exist on a different drive, so that individual users plug in their own drive before starting work. Version 3 also has the Project Manager, which allows individual desktop configurations and settings for each user. Whilst this customisation can be useful, many organisations with multiple users still prefer to stick to the default desktop first available in version 2, which gives every user the same familiar preferred user interface.

Once you've logged in, you arrive at the Project Startup window, which has the basic housekeeping functions for creating a New project, or Restoring an existing one — most users will opt for the default 'Open the current Project' option to continue where they left off last time. Assuming you have the correct hard drive in place, you then arrive at the main display window (see screenshot on page 181). This has a familiar appearance, with the Playlist toolbar beneath the Menu Bar, the graphic playlist itself occupying the top half of the screen, the Mixer at bottom left (with its own toolbar at the left hand side), and the Transport controls at bottom right. The Transport controls are permanently active, and there are five sections: Transport, Edit, L&R (for looping purposes), Locators, and Record. You can open as many or as few sections as you need. The Edit section provides nudge buttons, and a scrub wheel that is duplicated on the optional hardware controls (see 'The Return of the Knob' box). Apart from the well-written ring-bound manual, there is a comprehensive Windows help

#### SADIE AUDIO SPECIFICATION

DIGITAL X-S CARD

Sample rates

Bit resolution Internal processing

ANALOGUE X-ACT CARD

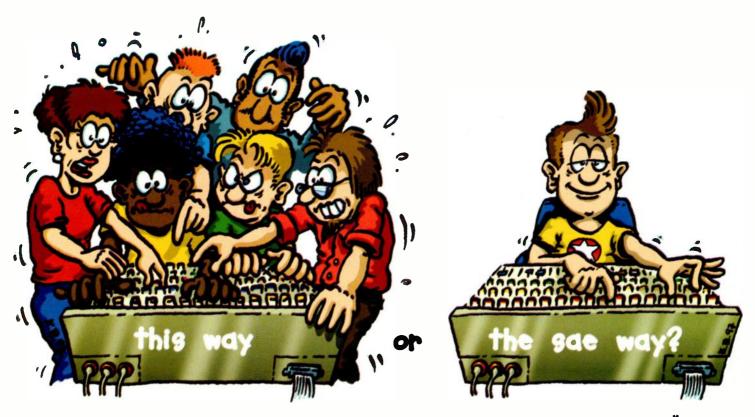
A/D conversion
D/A conversion
Frequency Response

Distortion
Noise and Distortion

32, 44.056, 44.1, 47.952, 48, 64, 88.112, 88.2, 95.904, and 96kHz with +/-10% varispeed 16-, 18-, 20- or 24-bit for input and output 32-bit

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### SAVL SADiE v3



The Setup Window selections are vast, and provide comprehensive adjustment for all parts of the system. Here we see the options for recording and playback — the number of bits being used for both input and output, the sample rate (including Varispeed), and the choice of input socket.

file, along with tooltips (those little boxes that pop up when your cursor hovers over an unfamiliar icon), which give more extensive explanations on the status bar at the bottom of the screen. Rightclicking on most objects also brings up further option menus.

#### **EDITING**

The main screen follows the familiar EDL (Edit Decision List) format, but with a full graphics display. The contents of the EDL are in the form of Clips, and these are simply instructions to play a section of audio from the hard drive, along with any level and pan treatments. You can view the clips either as blocks (to mimic lengths of tape), or as profiles, which show the waveforms themselves. Any fade-ins or fade-outs are shown as slopes on the waveforms, and automation (see later) can be viewed as lines overlaying the waveforms. All edits are non-destructive, since they only apply to the instruction list, and the audio data itself stays untouched on the hard drive unless you really want to alter it.

EDL entries in the playlist are placed on horizontal graphic 'streams', and each of these is

then routed to a channel of the Mixer. You can have unlimited streams, each with real-time processing, subject to available DSP power. Once again it's worth pointing out that this is not a function of the PC processor speed, since SADIE uses a dedicated Digital Signal Processor on the X-S card, which is entirely separate.

Clicking on any clip in a stream selects it (turning it red), and for basic editing, those used to tape machines will find using the scrub wheel of the Transport bar a very familiar process to rapidly locate suitable edit points. The same goes for using the razor tool to make a cut, which simply creates an additional entry in the EDL. If you prefer not to use the scrub wheel, you can use the scissors tool, and directly position the cursor at the point required. Standard Windows cut, copy and paste facilities are provided to delete or add sections to any audio stream. To avoid the introduction of possible clicks, each cut is actually a short fade-in or -out, and splice-cut mode butts adjacent clips together to form a perfect crossfade if required.

The Slip function lets you attach other sections (either to the left or to the right of the selected one) and move them as a single unit. This is ideal when you need to close up a gap, or create one, and want the rest of the entries in the EDL to adjust themselves accordingly. If you are sync'ing to picture, leaving Slip off will ensure that your audio remains in sync.

The range of other options is huge. There are fades and crossfades (along with a choice of curves), or you can open up the Trim Editor for some top and tailing. If you prefer, you can edit the EDL in the form of text entries in the Text EDL Window, and if you want to permanently group some of the audio streams, the Bounce-Down options re-record them internally, and you can also Bounce to the EIDE PC hard drive, for exporting to other applications. If you have a CD-R recorder, PQ editing can also be carried out with the same choice of graphical or text entry options, and PQ lists can even be generated automatically from the EDL entries if desired.

#### THE MIXER

This is one area where there are very significant differences between SADiE v2 and the new v3. In v2 the mixer was a monitoring mixer only allowing the balance between the four streams and outputs to be adjusted. In v3 all inputs and outputs pass

#### TYPICAL USES

There is never such a thing as a typical customer, but Studio Audio and Video Limited do have two areas in which they are particularly successful — radio and CD mastering. Most radio programmes face extremely tight time restraints, especially where interviews are concerned, and this is where SADIE comes into her own. For many people, the most exciting thing about the version 3 software is not the real-time EQ and plug-ins, but the background processing. Being able to edit material

that is still being recorded or restored from Exabyte tape in the background can save an awful lot of time, and those on the tightest of schedules can even be editing the audio recorded a few seconds ago while they carry on recording in the background. The SADIE v3 software has PQ Editing as standard, and the Master Series models are supplied complete with a CD-R recorder (normally the Yamaha CRW-4260 drive), or an Exabyte Eliant 820 DDP tape drive.

The film and TV industries are also beginning to adopt SADIE, especially for sync'ing sound effects. To this end, Studio Audio and Video have developed Portia, a JPEG expansion card that allows you to digitise and compress video footage of up to several hours onto a single 9Gb hard drive. Unlike some other systems, the video image is not a small window on the PC screen—a breakout box provides full component video output which is connected to another full-sized monitor screen. It can be retrofitted to existing SADIE systems, and fully integrates

sound and picture. Not only do you lose the picture problems that many people suffer when using sync'ed video copies of film footage, but, far more importantly, you immédiately have the ability to random access the picture content just as fast as the sound — no more time lost during fast-forward and rewind operations. Any subsequent re-cutting of the picture can often mean a nightmare task for dialogue replacement or sound effects — with Portia, it's easy to adjust the location points to bring everything back into sync.

through the mixer and all signal processing is now performed in real-time (in v2 EQ and other signal processing were off-line processes).

Each audio stream is routed to its own mixer channel and fader, and there is a comprehensive Routing Toolbar available, not only to physical inputs and outputs (for recording and monitoring), but also to internal busses to create output mixer channels and aux sends. Each mixer channel has a fader and a fader bypass button (which resets fader position to OdB and defeats further movement). The faders can be grabbed and pulled, as you might expect, but there are also useful nudge up and down buttons alongside, which change the current position in 0.1dB increments. You can group a number of faders by enabling the group fader button to the left of the mixer, and then selecting any combination of channel buttons, after which grabbing any of them enables them to be dragged as one combined unit.

Each channel also features a pan control, mute and solo buttons, and there is a PPM level display, which can be configured from a choice of three ranges (20, 52 or 60dB from top to bottom), as well as a BBC-style 0-7 PPM scale. Finally, there's also a digital readout of the maximum peak level so far (this changes to fader position in dBs when the fader is being moved).

To insert one of the new real-time processing

(compression, expansion and gating) have been based on their analogue equivalents, with traditional controls such as attack, decay, threshold, ratio, and release. A slightly soft-knee characteristic has been built in as well, to give a more natural effect.

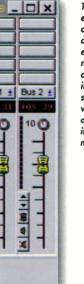
Once you've designed your perfect mixer, a click on any of the channel EQ sections opens up a small additional window showing the entire EQ for that channel, along with a bypass button for each section. Clicking on any of the rotary controls on the mixer opens a larger moving fader (either vertical or horizontal as appropriate) and this makes adjustment far easier than squinting at the tiny rotary control itself.

Although the total size of the mixer can change dramatically after adding lots of options, many of these can be hidden or shown by toggling one of the left-hand strip of mixer buttons, which makes things more manageable. One of these buttons opens the Process Window, which shows any additional plugin options in a graphic 'rackmounting' display (see screenshot on page 186) — you can adjust the dither options, and a basic reverb and stereo width enhancer are provided. Further modules are being developed by famous names.

One of the major features of the new version 3 software is Dynamic Reallocation of DSP (or DRD). Rather then tying up DSP power permanently as soon as any option is selected, the new strategy

#### THE RETURN OF THE KNOB

For an even faster approach to editing, SADiE's makers offer two hardware control units, which provide mixing and transport functions, and which operate using an RS422 link. The Master Control panel duplicates the transport controls, and includes a weighted jog/shuttle wheel, editing, locating and programmable function keys, a motorised master fader, and timecode displays. The Fader Control panel provides eight moving faders that are constantly updated by the software (and vice versa), function keys for channel assignment, mute and solo buttons, as well as six assignable rotary controls (using optical encoders) for use with the EQ and plug-in functions. Both panels are designed to sit alongside a standard computer keyboard (see main picture at the start of this article).



MARTIN.MSU [Modified] C0> | C0> EQ > C0.>-EQ -0 C03 C0 > EQ > E0 0 EXP GATE / AUX C 93 EQ + CS1 ± CS2 ± CS3 ± CS4 CS 8 + Bus 1 + Bus 2 + EQ / GATE CMP / AUX SEND LOWPASS LOSHELF BANDPASS 1 100 10 高へ 一事の A O B 1 0 | 第一人 8 車の車 温温温温

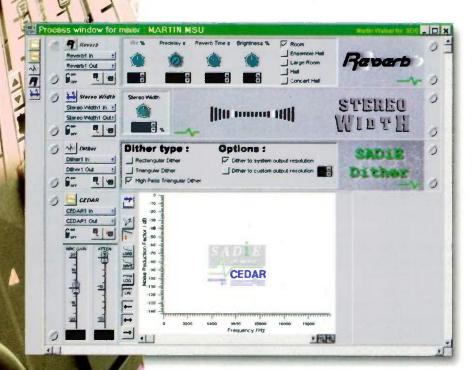
options into a mixer channel, you click on the Process Palette button, which brings up a vertical strip of the available treatments (see screenshot above). These include an Expander, Gate, Auxiliary send, Compressor, and MS Decoder, along with five EQ options — high-pass, high-shelf, bandpass, low-shelf and low-pass. All the EQ types have variable turnover frequency, and the bandpass has an additional Q control. Usefully, the response curves for all of these are given in an appendix at the back of the manual. To add a process to a mixer channel, you simply click on the desired one, and drag it across and drop it on a Mixer strip. The dynamics processors

cleverly ties up DSP resources only so long as audio is actually being processed — it is reclaimed as soon as data is not being replayed in that channel, which gives the user a lot more flexibility.

#### **AUTOMATION**

Extensive automation options are provided, and SADiE can record the positions and movements of fader, mute, pan and all mixer strip processes such as EO and dynamics. Clicking on the Enable Automation button adds an additional horizontal strip of buttons beneath the faders on the mixer, and these provide comprehensive options. Each of the The Mixer Window is entirely user-configurable, and you can add as many or as few EQ sections to each channel as you need. When you click on any EQ button for an individual channel, this smaller window pops up with more detailed options, to save the mixer itself from taking up too much screen space.

#### SAVL SADiE v3



The Process Window is the home of your rackmounting 'goodies', and several of these are supplied with all systems as standard. Once a plug-in has been dragged into the Process Window, additional internal stereo busses are created for use by any mixer channel.

- sections added to an individual channel strip has a defeat button to selectively disable automation for that feature, so that you can tweak without affecting anything. There are several automation modes:
  - · Overwrite allows previously written data to be replayed until you touch a control — fresh data is then written until you stop or change modes.
  - Disconnect mode also replays existing automation data until you touch a control, then it alters the mix being monitored, but doesn't write additional data
  - Auto-Return mode applies to fader and pan settings only, and overwrites existing data when a control is touched, but jumps back to previously recorded automation data as soon as you release the control (the time taken to return to the previous position is determined by an additional rotary knob, from 1 to 10 seconds).
  - Trim applies to faders only, and returns all faders to the default middle position, while still replaying automation data. Any movements of the fader are then recorded as offsets to the previous values, which is useful for quickly tweaking levels when the mix is almost complete. The Group Faders option mentioned earlier is useful here, as each individual control in the group will have its positions recorded.

The integration of the recording and mixing processes within this type of unit allows the automation data to effectively 'belong' to the clip to which it pertains. Thus, if an edit is made to a clip that has already had automation data written — an edit which perhaps moves or copies that clip elsewhere — the automation remains with it. Very powerful.

#### SUMMARY

Many people think that ISA-based audio systems are being superseded by PCI ones. This is because the ISA buss cannot shift as much audio data to and from the hard drive — a limitation, however, which doesn't apply to SADiE, since it has its own internal SCSI buss. The main attraction of the system must be the exemplary audio quality, with up to 24-bit recording at 96kHz when plugged into suitable A/D and D/A converters, and the comprehensive working environment, with so many tasks capable of operation in the background. Multi-tasking is something that many systems aspire to, but SADiE takes it further than most. In a highly pressurised commercial setting, being able to start editing the programme material which is currently being recorded in the background is a godsend. This particularly explains its popularity in radio. For CD mastering, the ability to record at 24-bit resolution is a large bonus, and putting these two features together would seem to explain why so many of these systems have been purchased by the BBC.

For some applications, two physical ins and four outs will be a limitation, but the more upmarket Octavia system should accommodate these, with up to 80 analogue and digital inputs and outputs. However, for those needing fewer individual channels, the SADiE system can be bought in a variety of configurations suitable for different applications. The Broadcast series is suitable for radio programme production, as well as music and speech editing, while the Mastering Series (faster PC, additional plug-ins and internal CD-R recorder) is more suitable for CD-R mastering. The Post Series (with hardware control panels) is designed more for post-production duties such as tracklaying, telecine sound syncing, auto-conforming and dubbing. The Portable Series uses a customised portable Pentium PC, and there is even a mobile disk recorder co-developed by Rolec Limited (powered by dry or rechargeable cells), which records directly onto the same removable hard drive that is used with the other SADiE systems.

With systems starting at over £5000, SADiE is not going to appeal to anyone on a tight budget, but life-long free software updates are part of the package, as is a technical helpline which is available from 9am to 11pm, 364 days every year. If music is your livelihood, reliability and support are key issues, and this level of support is worth a great deal. If you're interested but still wavering, just consider the large number of professionals already using SADiE for a wide variety of applications; I think this really speaks for itself!

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#### PRICING

There is a large range of complete systems, starting with the Broadcast Series (prices include VAT):

SADIE Broadcast One (£5869)

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- X-ACT analogue conversion and timecode reader/generator card.
- · 2-in/4-out analogue and digital breakout box
- 2.1Gb internal SCSI audio drive,
- SADIE 3 software and manual.

The Master Control panel and Fader Control panel are £1757 each, or £2932 if bought together.



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PAUL WHITE tests an integrated 8-track digital studio package, no larger than a drum machine, that comes complete with just about everything you'll need to make high-quality recordings.

he last year or so has seen a proliferation of digital 'studio in a box' packages building on the convenience aspect of the cassette multitracker, but with the inherently cleaner sound of digital recording. At the same time, just about every piece of MIDI sequencing software includes multitrack hard disk recording and editing, so you might reasonably ask where these digital studios sit in the current marketplace. Obviously, if you want to make music recordings that don't involve MIDI sequencers, a digital integrated studio provides a compact, portable and affordable means of making very high-quality recordings, but those thousands of people still using Atari sequencers (and let's face it, the Atari is just about the only mechanically quiet music computer left out there!) can also benefit. Using MTC or MIDI Clock, an Atari (or hardware sequencer) can be locked to a digital multitracker angle, provides the usual text information, as well as metering, and the mixer itself has controls for six mono channels and one stereo channel, plus a master fader. Each channel also has a dedicated pan/balance control.

This unit is priced to appeal to the entry-level user, and in some ways is rather simpler than its competitors, but its audio credentials are good: digital mixer, built-in effects, and up to eight tracks of uncompressed 16-bit recording, at 44.1kHz, direct to a 1.4Gb internal drive. This provides a maximum of 34 minutes across eight tracks, though recording time is dynamically allocated, so if you only recorded four tracks you would get twice as much time. However, you can can only record up to two tracks simultaneously, which rules out most live recording applications. A SCSI connector also comes as standard, so you can record directly to external drives, and for backing up you can save

# D-light

#### KORG D8 8-TRACK DIGITAL RECORDING STUDIO

pros & cons

#### **KORG D8 £849**

#### pros

- Good sounding 16-bit, 44.1kHz recording system without data compression.
- Clear, compact layout.
- Easy to use.
- Integral guitar DI and assortment of guitar-related effects, as well as the more usual studio effects.
- Inbuilt drum patterns and comprehensive tempo map facilities.
- Integral SCSI interface, S/PDIF digital I/O and the ability to back up onto DAT or an external SCSI device.
- Snapshot mix automation.

#### cons

- Only two tracks may be recorded at any one time.
- Channel EQ a little basic.
- Internal effects don't match the potential of the rest of the unit.
- Fixed media means that some form of backup is needed.

#### summary

This is truly a studio in a box that requires very little additional equipment to make very high-quality recordings. It does, however, face a number of worthy competitors in the same price range, while the two-track record limitation makes it unsuitable for most live recording applications.

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So, what's inside a digital 'studio in a box'? Well, digital recording, obviously, which can be data-compressed or uncompressed (see 'Easy Peasy Data Squeezy' box for more details), and may be stored on a fixed hard drive, MiniDisc, or some other removable format, such as a Zip disk.

The other main component of a digital studio is the mixer, which can either be analogue or digital. Digital mixers have the advantage of being able to offer more EQ, plus features such as snapshot automation, while analogue mixers are, in general, rather easier to use but less flexible. Though there may be some spare mixer inputs over and above what's needed to mix down the multitrack recording, you'll probably still need a separate line mixer to handle all your MIDI stuff unless you have a very simple setup.

Finally, today's studio in a box tends to come complete with digital effects, so with nothing more than a pair of headphones, a mic, and a stereo machine to mix onto, you can start making serious recordings that, with care, will be good enough for independent CD release.

#### KORG'S D8

Having put the digital multitracker into context, it's time to see where Korg's D8 fits into the picture. My first impression was how small and solidly built it looks — it's more like a big drum machine than a small studio, and, like most drum machines, it's powered by an external PSU. An LCD window, which isn't backlit but has a variable viewing



data to DAT via the digital output, or to an external drive via SCSI. DAT backup is rather slow, at two hours to back up and two more hours to reload, and is limited to the amount of data you can get onto a 120-minute DAT tape (around 30 minutes of 8-track audio), but it works and it's cheap.

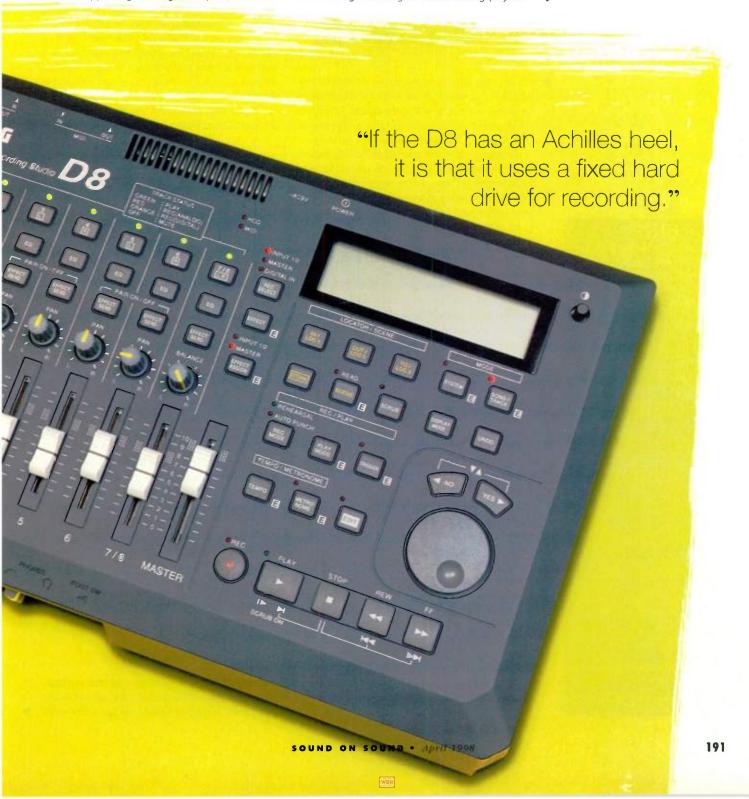
#### DIGITAL MIXER

Apart from the input amps and the analogue monitor outputs, the mixer section is entirely digital and features 12 inputs (eight from the recorder, two analogue mic/line ins and a stereo digital input with sample rate conversion), a stereo buss, an internal effects send and an external Aux send. Having a digital input with sample rate conversion means that you can feed any stereo digital signal in without having to worry about sample rate compatibility, and as many budget effects units are now appearing with digital outputs, this could

be really useful. It also allows existing backing tracks from DAT or CD to be recorded onto the D8 without leaving the digital domain.

In mic/line mode, the analogue inputs function as low-noise, balanced preamps capable of handling anything from mic level to +16dBu line signals. However, because these inputs are balanced jacks, there's no phantom power, and conventional XLR mic leads will require an adaptor. The left-hand input also has a guitar DI switch position, which increases the input impedance to 1MOhm.

Korg have tried to keep the D8 both simple and affordable, so instead of a multi-band parametric EQ with a tedious menu access procedure, you simply get high and low controls. If these aren't enough, the effects section does have some parametric EQ options and, like all the effects, they can either be used during recording or added during playback.





► It's also possible to apply stereo effects to the whole mix, or even to monitor via the effects while recording, without recording the effects. Setting up these various options necessitates a little menu cruising but it's something you'd soon get used to.

Obviously you're not going to get full automation on a machine of this price, but you can still save up to 20 Scenes per song, with a Scene holding all the information relating to level, pan, effects type and send levels. These Scenes may be recalled manually, or made to change automatically at the appropriate point in the song.

#### **EDITING**

Where digital recorders differ greatly from their analogue predecessors is in the flexibility of their editing facilities, and those offered by the D8 are impressive for such a low-cost machine. For a start, there's one level of Undo which can be applied to recordings and edits, and edits are also saved automatically, without the need to make manual saves all the time. If you're working with a sequencer, the D8 can store tempo maps of up to 10 points per song, and I'm glad to say that it also has the facility to create a tempo map automatically if you play a sequence directly into its MIDI In port. Tap tempo is also supported. To help you play along to the tempo map you've created, there's an internal metronome, but rather than clicking away monotonously this one has a library of 131 different rhythm patterns to choose from. It's not quite a state-of-the art drum machine, but it's a lot better than four beeps to the bar.

Recordings can be punched in and out manually with the transport controls, just like a tape recorder, or you can use an optional footswitch, to keep your hands free for choking the drummer! There's also an auto punch-in/out option, again much like the tape equivalent, though I have to admit that I've always preferred the immediacy of doing the job manually. Another nice feature, more often associated with samplers, is a trigger record mode that starts recording automatically once the input signal level exceeds a threshold.

Once recordings have been made, edit points can be located using a scrub function, and three locate points can be set up for each song (for editing), as well as up to 100 marker points. These are useful to identify points you may wish to use for later editing, or points that you want to return to later. What's more, if you've finished a few songs and want to mix them to DAT in the right order, you can program the machine to mix and play all your songs in any order you choose.

The D8 can output MTC and MIDI Clock for sync purposes, but it's also MMC (MIDI Machine Control) compatible so you can control the transport from a sequencer if you wish. Finished mixes can be output via the analogue phono sockets or via the digital optical sockets (why don't designers include digital phono connections, as they're still the most commonly used in studio DAT machines?), and, as mentioned earlier, the digital input doubles as a digital aux input and a means of restoring data backed up to DAT. These connectors are located on the right-hand end of the machine, along with the Aux Out phono and the two Aux In phonos. The 25-way SCSI connector also shares this panel.

#### **CONTROL SURFACE**

At first glance, the control surface appears rather simpler than that of a conventional cassette multitracker, probably because of the small number of knobs in the mixer section. Each channel has one fader, one knob and just three buttons. The top button sets the track record/play status (shown via a three-coloured red/orange/green LED — red for analogue recording, orange for digital), and the next button toggles between high and low EQ, so that adjustments can be made using the Value dial in the master section. Button three is used to adjust aux send levels, and to toggle between the internal effects and the aux send buss. Three more buttons above the stereo master fader select the record source, the effect type and the effect assignment.

Moving to the master section, there's the display window, a large Value dial, tape-style transport buttons, and 18 additional buttons that deal with setting locators, auto punch-in/out, scene storing, song selection, and so on. The names on most of the buttons give a fair clue as to what they do, with the exception being the System key. This hides a number of functions, including selecting which volume levels will show up on the meters and which sound will be monitored during recording, as well as changing the footswitch status. In conjunction with the Edit button, the System key also allows you to change the sync setup, pair channel parameters for stereo operations, and select the destinations for signals on the two input jacks. The arrow keys above the Value dial double as Yes/No keys for confirming or cancelling operations.

#### **OPERATION**

With a cassette multitracker, you just stick in a tape, route your input to the desired track, set a level and blast away, but digital systems ask just a little more

#### EFFECTS

Internal effects come from an on-board processor based on Korg's Pandora chip, providing 64 multi-effect presets, plus room to store 64 more of your own edits. In addition to the usual effects, there are also dynamics and EQ treatments, as well as guitar amp and speaker simulators. The D8's analogue inputs have a switchable high-impedance guitar mode, so you don't even need to use a DI box when recording guitar.

In total there are 50 effects types, and an effects patch can comprise a chain of up to four effects. There are 11 categories of preset:

- · Reverb/Delay
- Modulation
- Dynamics
- Equaliser
- Electric Guitar
- Acoustic Guitar
- Electric Bass
- Vocal
- Drums
- Keyboard
- Special

Some effects are mono in/stereo out, while others are stereo in and out, which is useful when processing stereo mixes. When effects are recorded to single tracks along with the instrument, they will, of course, be mono.



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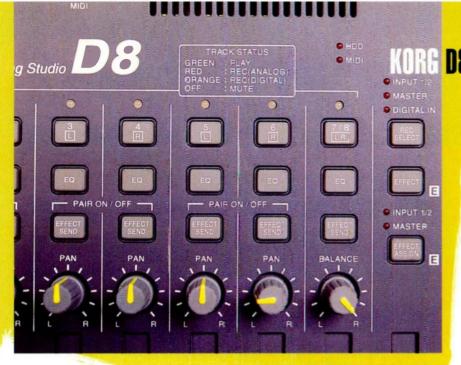
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#### EASY-PEASY DATA SQUEEZY

Data compression is a system for reducing the amount of data being recorded, in order to maximise recording time. Digital data compression means you can cram up to eight tracks onto a removable MiniDisc or Zip disk and still end up with a reasonable recording time. If you're recording to a fixed hard drive you don't have to use data compression.

Although data compression has far less severe side effects than, say, most analogue noise reduction, it's still better to avoid it if you intend to do a lot of track bouncing, as some deterioration will eventually become evident. Having said that, unless you want to bounce more than twice, there probably isn't a lot to worry about.

▶ of your patience before you can make a start. The interna' drive comes ready formatted, but if you connect an external drive, this must be formatted before you can use it. As with other tapeless devices we've looked at, the first thing you do when recording is create a Song, a 'virtual' pigeonhole for your audio data. This effectively safeguards you from accidentally overwriting parts of a Song you want to keep sate when you're working on a different Song. It also makes it easy to jump directly to the start of any Song, because with hard disk there's no waiting for tape to rewind. Songs can be named with up to seven characters.

Selecting a Song is achieved by holding down Stop, then pressing either the fast forward or rewind key to step through the available options. Holding Play and either of the forward or rewind buttons performs a type of fast cue/wind function, while selecting Scrub enables the Value wheel to be used to scrub the audio to find precise locations. The scrub quality isn't great, but it's fine for navigational purposes.

For one musician working alone, recording by overdubbing couldn't be simpler — you just leave your instrument or mic plugged into Input 1, select record ready on the track you want to record onto, then use the transport buttons exactly as you would with a tape recorder. Holding Stop and Rewind at the same time gets you right back

to the start of the Song. Just as with a tape machine, you can perform multiple punch-ins and outs without having to stop the transport each time, and you only need to use a single transport button to get into and out of record. The Record button can be used to toggle between record and safe modes, but if you feel more comfortable using Play to exit record mode, that works too.

When punching out, the monitoring seems to be delayed by around half a second at the punch-out point, which might lead you to believe the timing of the punch-out is wrong. However, on playback, the punch-out invariably occurs at the point where you hit the Play button, so this 'feature' seemingly affects only monitoring. Edits made in this way appear to be seamless and gapless.

The three locate markers are used to set the in and out points for editing or auto record events, while the third sets the location to which material defined by the first two markers can be copied. Unwanted material may also be cut, or material exchanged between tracks. The transport tape position can either be in time or beats/bars — the latter is obviously easiest for editing. Pressing Save followed by Locate stores the current time point, whether the transport is stopped or playing. When you're pasting information to a new destination, you can specify the number of copies you want, so if you have a few bars of dance groove that are working well, for example, you can copy them throughout the whole song.

Effects can be added during recording, useful when you want different effects on different tracks, and if you need to record something in stereo, tracks can be linked in pairs using the Aux Send buttons, or you can use tracks 7/8. Bouncing to any unused track or track pair is possible, and more effects can be added at this time, either via the channel effects sends or by processing the whole mix through one stereo effect. To be honest, the effect quality is pretty variable — the reverbs are somewhat perfunctory, some of the guitar overdrive effects are fizzy, and the pitchshifter patches are so lumpy they remind me of school custard. However, the chorus and delay effects work OK, and used sparingly they can be useful in making a recording sound more sophisticated than it really is.

Mixes can be automated to some extent via the Scene feature I mentioned earlier. This is easy to use, and simply stores the state of the mix and effects selection at a particular time location; up to 20 Scenes per Song are available. When Scene Read is switched on and the mix is played back, levels, aux sends, pan positions and effects will switch to their new values at each new Scene. Scenes may also be edited if they're not quite right.

I checked out the MTC facility, which only offers 30fps (frames per second), but otherwise works perfectly well. The output values coincide with those shown in the display window, and my Mac version of *Logic Audio* locked perfectly on my first try, via the Unitor8 interface.

#### SPECIFICATIONS

SPECIFICATIONS		
Number of Tracks:	8	
Simultaneous Recording:	2 tracks	
Recording Time:	34 minutes of 8-track recording (time dynamically allocated) using internal 1.4Gb drive	
<b>External Drives:</b>	up to seven external drives may be fitted, with a capacity of up to 4Gb.	
MIDI Sync:	MTC and MIDI Clock transmitted, MMC received	
Mixer:	Digital, 12 channels, with stereo mix buss plus two aux busses, one feeding the internal effects processor	
Automation:	20 Scenes (snapshots) per song	
Effects:	24-bit, 44.1kHz with 65 presets, 65 user memories,	
	50 effects types and 38 effects chains	
Frequency Response:	10kHz-21kHz, +/- 1dB	
S/N Ratio:	92dB or better @ IHF-A	
THD:	Less than 0.03% (20Hz to 20kHz)	
Converters:	18-bit/44.1kHz	

#### IMPRESSION

This is a very powerful and decent-sounding little machine. If it has an Achilles heel, it is that it uses a fixed hard drive for recording, so you either have to back up to DAT or to an external SCSI drive. This is less convenient than either MiniDisc or Zip as used in Yamaha's MD8 and Roland's VS840, though both these formats use data compression. Also, being able to record on no more than two tracks at once is limiting if you want to record real drums or other complex sources. There's also no virtual track feature, as offered by some of the competition.

Physical noise is a lot lower than you'd expect from a computer doing hard disk recording, but the hard disk can still be heard ticking as it runs. Computer and hard drive noise is becoming a real problem for

many home studio owners striving to make clean acoustic recordings in the same room as their computer equipment, and it's something to which manufacturers should be paying a lot more attention.

The D8 has the benefit of being quite simple to use, but the EQ can be a little inflexible when you're working on middly sounds, such as electric guitars. The Hi control adds a nice glassy top to most things, but it's pitched rather too high to do much good with something like an electric guitar. There's also no varispeed facility that I could find.

On the plus side, the D8 allows you to make very high-quality recordings with relatively little effort — the only lo-fi side of the D8 is the effects section, which, frankly, I found rather disappointing. All the basic recording functions are as easy to use as those on a tape-based system, with the advantage of instant rewind, and though I initially thought that the more in-depth editing functions might be rather complicated, most were actually pretty straightforward to access. You'll need the manual first time around, but after a few hours you should be able to put it

back on the shelf and leave it there.

Being able to use MTC sync without having to waste an audio track on timecode is something we now take for granted, but nevertheless it makes locking up a sequencer very easy. The fixed 30fps mode might make life awkward for those working to picture (other than film), but for musiconly applications it presents no problems. What's more, MMC support means the D8 can be driven from a software sequencer, which will then control play, locate and fast-wind functions. I also like the idea of having a selection of preset drum patterns in the metronome menu, and though the drum sounds are sometimes a bit cheesy, most of them are quite good enough to use for demos. And, finally, Korg must be commended for a taking notice of all our requests for the ability to read tempochange information directly from a MIDI sequencer, rather than always having to input tempo map information by hand.

#### VERDICT

Ultimately, the D8 is going to face stiff competition from the Roland VS840 and the Yamaha MD8, both of which approach the same concept from a slightly different direction. Of the three newcomers, the D8 is the only one that doesn't use some form of data compression (though there are a number of existing Fostex models that also shun data compression), but, as I've said, most people would be hard pushed to notice the difference, so compression isn't the problem some people perceive it to be.

The D8 offers a compact and friendly solution for those people who like the convenience of a cassette multitracker but demand digital quality, built-in effects and some degree of mix automation. It's a very nicely presented, clearly organised little unit that really does give you everything in one box (bar the mastering machine) and features such frills as digital stereo input/output, an integral SCSI interface and the guitar DI facility.

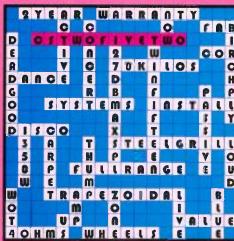
I had a lot of fun using the D8, and its immediacy meant I did quite a lot of recording in a very short space of time. In fact it was only the lack of an affordable, removable recording medium that kept me from diving for my credit card.



SOUND ON SOUND . April 1998







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# PAUL HEARD • M PEOPLE PONTO PEO



Sound On Sound caught up with M People's Paul Heard, before the band headed off on their European tour. CHRISTOPHER HOLDER puts aside his preconceptions to learn more about songwriting, production, musicianship and family sedans.

arlier this decade the M People were hailed as groovy messiahs. A Mercury Award and a Brit Award confirmed their critical acclaim — what Roni Size in '97 was to drum and bass, M People were to house. They were the cutting edge of chic... but times change. Already this year a Jools Holland special dedicated to the group and a guest appearance on Cilla's Surprise Surprise look to have condemned the M People to the realms of staid middle-aged, middle-class mainstream pop fodder. What's going on?

I'm grappling with these questions while trying to negotiate the labyrinthine halls of the band's Kings Cross rehearsal warehouse, when there, in the cafeteria, I come across Paul Heard, sitting solitary and zen-like in what appears to be his own personal pool of sunlight, a coffee-drinking,

shaven-headed, Silk Cut-smoking oracle. Cool? This guy's mug of Gold Blend had turned to frappé before he had time to stir it.

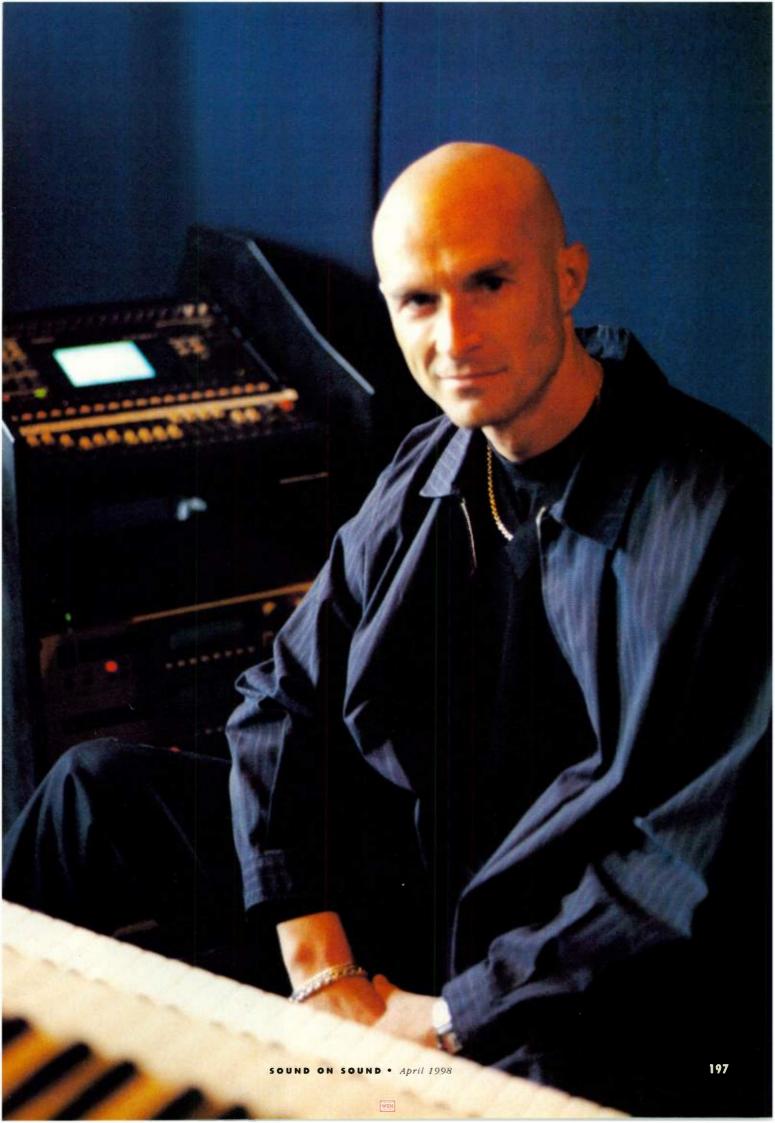
"I don't think the essence of the M People has changed at all over the years," Paul muses. "We're first and foremost about songs. If we were considered underground early on, that's only because we weren't popular. We've always aimed to write songs that would stand the test of time—for instance, 'How Can I Love You More?' on our first album, Northern Soul, does that, in my opinion. Sure, as we've become more popular, it's been exciting playing to huge audiences around the world, but when you sit down in your bedroom with a keyboard or a guitar writing songs, you realise that nothing's really changed."

Eh? With reports of six-month lock-ins at the Strongroom and slicker production values than *Jurassic Park IV*, I had the M People down as squillion-pound-an-hour studio junkies, and not bedroom noodlers like the rest of us mere mortals. Maybe it's time we got the whole story...

#### **MIKE STAND**

We've got to turn the clock all the way back to 1990 to trace the inception of the M People. At the time Mike ('putting the M in M People') Pickering was enjoying a high-profile residency at the legendary Hacienda Club in Manchester, and was one of the UK's house DJ heavyweights. Pete Harcourt, one of the founders of the band's label, DeConstruction Records, was on the lookout for production partners for Mike and his nascent M People project. Harcourt's good pal, Paul Heard, was approached and so began the start of a long and fruitful partnership. As far as band histories go, that's pretty potted. I'll let Paul fill in some of the gaps.

"I remember that it was during the 1990 World Cup in Italy that I was first contacted by Mike (Pickering's) manager of the time, Pete Harcourt. Mike and I got in touch and began working on M People tracks. Early on we used two or three different singers for the first album, Northern Soul, and hadn't necessarily intended having a permanent vocalist as a band member. But even at that stage we were big fans of Heather's band, Hot! House. We had previously heard Heather sing at the Albert Hall when her band was playing support to Barry White. I remember that she was this tiny, quite timid girl on



#### PAUL HEARD • M PEOPLE

#### DAT'S THE WAY I (DON'T) LIKE IT

The M People have always taken their touring and live work very seriously, and have never allowed their gigs to degenerate into glorified PAs, where everyone plays to a DAT backing.

"At the time we started there were a lot of club bands playing along to DATs, but not too many dance bands like us. Everybody thought that we wouldn't translate live, but first and foremost we've always been musicians. I've played bass in a number of bands, Mike's a sax player, and the attitude seemed strange to us, because when you look at the dance bands over the years — James Brown, for instance - they've always translated their studio recordings into a live situation with live musicians. At the time, people were saying, 'isn't it great!', but we were just thinking 'that's the way it's meant to be.' Early on we played at this big awards ceremony in San Francisco. All the other bands plugged in their DAT machines and got on with it, but when we were on, we came on stage one by one playing live. Everyone was pretty gobsmacked. But people have got into it, especially in The States. We went on to do a college tour after that date, then arenas, and now in the last couple of years we've been playing stadiums."

▶ stage, who kept her eyes closed, and hardly moved a muscle — this was absolutely years ago. We loved her voice, and asked her to sing for us on Northern Soul. Halfway through making that album we decided to make M People a threesome, effectively crystallising the band." [Subsequently, percussionist Shovell swelled the ranks to four.]

"Northern Soul was an experiment; we didn't know what the results might be. As far as the songwriting went, Mike and I hadn't discovered what each other's tastes were, but I think that from a very early stage we realised that the strongest point of the band was Heather's voice. So from then on we began writing songs that were geared to her personality. It took the recording of Northern Soul and two or three different singers to figure out what M People was about and what we wanted to do."

#### HOME IS WHERE THE ART IS

OK: Mike, Paul and Heather have discovered what they're about and what they want to do. But how do they do it?

"The way we get our songs together when we first started and the way we do it now hasn't changed. We try to keep it as low-tech as possible; we try and steer away from accumulating loads of gear. I think people would be surprised at how little gear we actually have. We write most of our songs from my home studio. I work on an Akai MPC3000 [sampler/sequencer], along with an Akai S3000 sampler and a few synths. I'm not into computerbased sequencers and hard disk recorders. I think that the danger with computers is that people get lost in layers of pages and the thousands of options. You can see and edit things on a computer that might actually sound alright, but look a bit dodgy! I think you can lose sight of what you're trying to achieve. For us it's important to keep things simple and get the parts and the arrangements right, without getting too wound up in the details of the sound that comes later in production.

"For the first few months of songwriting it's just about the basics — the melodies and some arranging. Mike's got a dictaphone which he keeps with him all the time. If he's at an airport or on a train he's always got that in his bag, and he can surreptitiously sing away to himself. There isn't really any one particular way we write a song. It might start with a melody, or, for instance, with [their recent hit] 'Just For You'. I was trying to capture the mood and atmosphere of some of the soul music I was listening to at the time. So I messed around with a riff I'd had for years, got a few chords together, and we decided to write a song with that sort of feel. It ended up coming together really quickly. 'Moving On Up' began with the rhythm track, Mike took it away and wrote the verse, while the hook came right at the end. Every single song's different."

#### STILL SMALL VOICE

"As soon as we start writing a song we start to record it, and we do most of the vocals at home. We record onto Tascam DA88s. We've got five of them, actually. That way we can take them on tour and use them to record our shows. The first time we record the vocal is often the best, and I think that it's crucial to capture that initial attitude. I know that many bands spend a lot of time in the studio trying to capture the vitality that's on their demos. It's easy to lose. Even if a song is only half written we always record Heather's vocals, and very often they're the ones we end up using. Often the structure of the song can also be influenced by those early vocal takes.

"For the latest album we tried three or four vocal mics and settled on a Neumann U67, which we hired for four months, and we used a Focusrite Red preamp so we could record straight to tape. Our Spirit 8-buss mixer is good, but basic, so recording direct to tape through good outboard gets us better results.

"Heather has become a lot more comfortable in the studio over the years. She's a very private person and part of the reason that we used not to get great performances out of Heather in a commercial studio was that there would be loads of technical people hanging around, which would affect her.

"When you've got a singer like Heather you

"When you sit down in your bedroom with a keyboard or a guitar, writing songs, you realise that nothing's changed."





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#### PAUL HEARD • M PEOPLE

"Part of the beauty of working at home is that if Heather's not in the mood to sing that day, you're not worrying about the studio costs."

have to be a bit of a psychologist to help her get the best performance. When Heather sings a song she has to become that character. I think you see that on *Fresco* especially — there's a lot more variety in the way she sings there, a lot more light and shade, more changes in mood. There are songs that become very hard for her to sing because they are very emotional for her; sometimes she'll be on the verge of tears.

"From experience we've found that she's at her best when it's just Heather, Mike and myself in my flat. Then it's very private, very intimate, and she can feel comfortable about trying things she might not normally attempt if there was an engineer or tape op there. That's the most important thing for her, to be totally relaxed. To prepare, she'll take her jewellery off, and has the room blackened out — she doesn't like being seen when she's singing in the studio.

"Part of the beauty of working at home is that if Heather's not in the mood to sing that day you're not worrying about the studio costs — although normally you can tell if she's in the mood, because she'll be singing away to herself downstairs in the kitchen before the session, and you can just tell."

#### **RECORDING AL FRESCO**

"For Fresco I recorded most of the vocals, the basic drums, bass and piano lines at home. But I don't get too technical about the process because I really enjoy, especially now, getting musicians in and having them embellish what I've done. After the initial recordings we've got a programmer who comes in, Steve Sidelnyk, and he takes my drum parts and puts them into his lap top. He's into sampling his own kit, so he's got a extensive library of drum sounds. He and I will spend a



couple of days working on sounds. For some of the parts we'll use my original sound, while for others we'll use his, so by the time we hit the studio the drum tracks and the groove of the song will be rock solid and will pretty much sound like the finished product."

After all this careful pre-production M People did further work on *Fresco* at a residential studio called Ridge Farm in Surrey, The Strongroom in East London and Chung King in New York.

"We've always done our recording in The Strongroom; it was the nearest studio to where I was living at the time we first made a booking. We've tried other studios since, but we keep going back there. For instance, at Ridge Farm it's great for food, swimming and putting on weight but we found that we lost the immediacy of recording.

#### SEARCHING FOR THE HERO

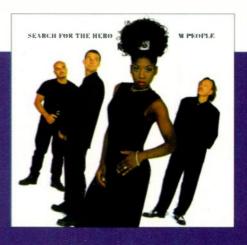
The M People have undoubtedly been one of the UK's great dance music crossover successes of the '90s. Since Italia '90 the band have sold over five million records, and their stellar careers show no sign of waning, with their latest LP, Fresco, already having sold over a million copies worldwide. For many, the single 'Search For The Hero' epitomises the spirit of the M People. The single is essentially a ballad given the M People treatment. Key dance elements such as TR909 rhythms, burbling TB303 line and lush strings are married in classic M People fashion to acoustic elements such as interjections from a soprano sax. The lyrics are also typically honest and soul-searching, with the delicious huskiness of Heather Small's voice taking centre stage. Amazingly it took a family sedan to bring the song, and consequently the band, into true public consciousness. Yes, that Peugeot advert — you know, the one where the be-suited bloke manages to save a little girl who seems blissfully unaware of a rogue petrol tanker bearing down on her, sideways. The ad tapped into the very heart of the young middle class: the idea of the preciousness of life and the family, the realisation that I can be someone more remarkable than an estate agent, and all I need is a Peugeot 406 to do it. M People's Bizarre Fruit LP, from which the single was taken, was henceforth given heavy rotation on the Sony mini-stacking systems of 30-something dinner parties all across the country!

"When we wrote 'Search For The Hero', Mike and I were working on a certain groove that we'd heard off another record, which eventually turned out to be 'Search For The Hero'. I remember that at the time we had a real problem in getting the song structure right. There were sections of 5/4 bars, and the way that Mike was singing it and the way I was trying to interpret it made it difficult to bring it together. It took us a few weeks before we were both happy with the way the song moved and developed. The bridge section came early on, while the melody, the lyrics and the verse came next. But it was one of those tunes which we had to rework a few times. We nearly even started from scratch to try and get it to flow properly.

"It was also difficult finding the right vocal range for Heather to sing in. Heather hasn't got a massive range and for each song there's normally only one key that will suit her, and finding that key wasn't so easy for 'Search For The Hero'. We recorded the vocals with an AKG 414 mic in my home studio, as well as a lot of the original drum tracks, which I programmed on my Akai MPC3000.

"The bass drum on 'Hero' was a mixture of a TR909 kick drum and a sampled acoustic bass drum. It's like having a real bass drum but the 909 adds that solidity that can unify the kick. A real kick can be a little flabby otherwise.

"I programmed the bassline on the sequencer and when it was time to record I gave it to our



programmer at that time. He was a boffin who liked his synths and he had this old French-made [RSF] Kobol synth — a lot of our bass sounds came from that. It was very temperamental and hard to keep in tune, but we used that sound in combination with a Nord Lead — the Nord supplying the sub element, with the Kobol giving the bass that warmth.

"We devoted a lot of tracks to the pad sounds — at least six. There's one pad sound that goes all the way through, while others were layered on top as the song developed. A bit like on 'Last Night 10,000' off Fresco; as the song shifts up into different keys and into different moods, a new pad comes in and sits on top of the other ones. We ended up with three or four pads that change the texture. It's actually very subtle

Time would just pass, and I said to the band that maybe we need that urban edge of recording in the city."

For the recording of a number of the Fresco tracks, Paul and Mike headed to New York to collaborate with engineering luminaries such as Warren Riker (The Fugees) and David Sussman (Mariah Carey).

"The main thing about the studios in the US is that there's very little comfort level. They go there to work. We were massively impressed with the commitment of the people working with us. When singers come down to the studio in the UK, you sit around and after a while you offer them a cup of tea just to smooth things over. In New York it's, 'no no, we're here to work, we want to do at least two hours before we take a break'. Impressive."

#### PERFECT POP?

Whatever your opinion of the M People, it's hard to think of another more influential dance combo this decade. They've spawned a raft of wannabes and lookalikes, and they've written some of the most perfectly formed, radio-friendly songs around. Now was my chance to find out how it was done. Here I was sitting at the feet of the master — all I had to do was convince him to impart the secret of the dark art of writing the perfect pop song. After all, there's got to be some sort of formula for pulling on the listener's heartstrings while keeping the end-product tight and punchy.

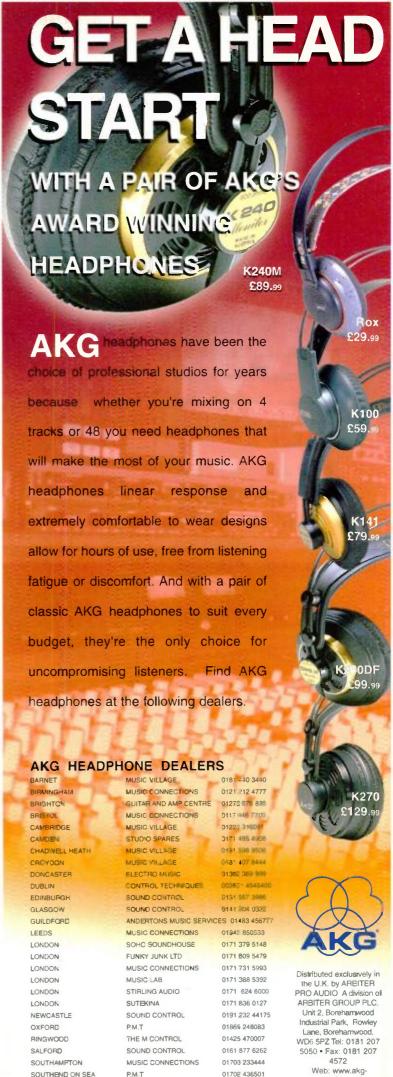
"Writing any song is a very personal thing. It's got to move me. If it moves me, analysing what the song is composed of seems unimportant — it's more the overall feeling the track gives you. What I mean is that it's more than just the melody, more than just the lyrics, more than just the vocals — it's the overall mood it evokes. Music can have so many different effects on you. It can lift you up or it can make you think, and if you've captured a moment in time then you can stand by that. We get people writing to us telling us what a song means to them, and very often it's different to what we were actually getting at, but that doesn't matter. If you can move someone, or make a difference to just one person, then it's achieved something. That's the perfect pop song."

but it does make a big difference. When it came to mixing we did a lot of riding of the faders as well, changing the balance of the pads, to after the textures, making the sound more muted or fizzy. It's hard to hear semetimes behind the vocal, but it does change the mood.

"As an album track it wasn't considered to be the first single—that was going to be 'Sight For Sore Eyes', but we always wanted it to be a single at some stage on that album. We weren't overjoyed with the first mix, even though it was the one on the album, so when it came to releasing it as a single we went back into the studio to give it a fresh edge. We'd been playing the song live by that stage, so we went back to the DA88 tapes we had of the live versions, to lift some of the nice plano and soprano sax parts. So along with those and some extra backing vocals, we came up with the single version of 'Search For The Hem'

In retrospect, the Peugeot advertisement gave the M People the sort of mass exposure that a lifetime of touring could never bring, but I wondcred whether the idea was immediately greeted with enthusiasm.

We were touring in Brazil at the time and we were about to do a concert in Rio. We had about an hour free between press and TV interviews and this fax came through, saying we'd been given an offer for this Peugeot ad. We get quite a few offers for ads, and a lot of them we just turned down flat, because they're not the right thing. But the Peugeot ad was different. The ad was based on the song rather than the other way around. It's almost an ad for the song, with great visuals. What's more, it's a cool ad, and if it reached more people and gave more people the op-ortunity to hear our music then all the better. I remember seeing it for the first time after News at 10 and Peugeot filled the whole break. It wasn't just a 30-second slot, it was the full four minutes — unbellevable. Like a really expensive pop video. Far more than we've ever spent on a video, I can tell you."



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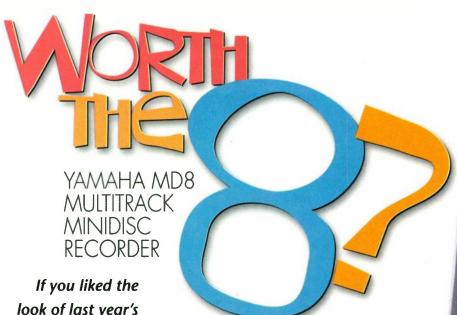
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If you liked the look of last year's Minidisc-based digital 4-track machines, but need more tracks, look no further. The Yamaha MD8 manages 8-track recording and playback, but is still priced at just under a thousand pounds. MARTIN WALKER suddenly finds less need to bounce.

he Minidisc format has had a rough ride in this country, with minimal success (so far) in hi-fi circles, despite being huge in Japan, where almost every complete hi-fi system sold features a Minidisc recorder as standard. Mainstream consumer attitudes are beginning to change in the UK, partly because of heavy TV advertising by Sony themselves, but it still seems to be an uphill struggle. For musicians, though, it's a slightly different story, since Minidiscs have significant advantages over other digital audio recording formats. Firstly (and unlike DAT), the format offers random access, so that you can quickly retrieve information from any part of the disc. From the Autumn of 1996 onwards, the format had an additional advantage; you could multitrack-record with the aid of the 4-track Mınidisc recorders that became available from around that time (for example Tascam's 564, Sony's MDMX4, and Yamaha's MD4).

The 4-track audio cassette multitracker has always been popular for producing demos, and with care can produce very acceptable results, but however fast the tape speed, cramming four tracks side-by-side onto eighth-inch cassette tape will always limit audio quality, however clever manufacturers are with built-in noise reduction. The attraction of the 4-track Minidisc recorders lay in their digital recording technology, which offered immeasurably low wow and flutter, distortion down in the 0.02% region, and a signal-to-noise ratio approaching 96dB. These machines not only attracted those who wanted to upgrade their existing multitrackers, but also put the Minidisc into competition with stand-alone hard disk recorders, which also have random access play and record. However, compared with hard disk, the beauty of the Minidisc format is its portability — each disc is less than three inches square, and far more robust than any hard disk cartridge. This makes it far easier to change projects quickly, and swap discs with other musicians, even through the post.

If the 4-track Minidisc machines were popular, there's now another reason to look at the format; the onward march of technology has just produced the new Yamaha MD8 recorder, which makes *eight* tracks of simultaneous recording or playback possible on the MD-Data Minidisc (the same discs used by the 4-track machines — see the 'Looking Blank' box elsewhere in this article). Better still, the MD8 retails at a similar price (£999) to the 4-track machines when they first came out.

#### THE GUIDED TOUR

First impressions of the MD8 are all very positive, as many of its features have been expanded compared with its predecessor, the 4-track Yamaha MD4 Minidisc recorder (reviewed SOS September 1996). The MD8's moulded case measures 484 by 102 by 412mm, and the controls make good use of spot colour to highlight the different functions. Two-thirds of the case width is taken up by the mixer and output channels, with the remaining third occupied by the flip-up Minidisc compartment, the fluorescent display and the transport controls.

There is now a total of 12 input channels; the first eight are provided with full mixer facilities, and channels 9-10 and 11-12 with basic stereo level and routing controls. Of the first eight, channels 1 and 2 have more extensive input options, with a







choice of both XLR or quarter-inch jack sockets (either can be used balanced or unbalanced). These channels also feature an extra TRS insert socket (post-EQ, pre-fader) to add outboard processing such as a compressor or noise gate if required. A single switch (located on the back panel, of which more in a moment) is also provided on these channels for 48V phantom power. Channels 3 to 8 have unbalanced quarter-inch jack sockets.

At the top of the channel strip for each of the first eight channels is a rotary gain control, but no pad is provided, so the sensitivity varies from 'line' at the lower end to 'mic' at the other. The sensitivity of all inputs is quoted as -10dB to -50dB (referenced to 0.775V RMS, or 0dBu). Moving down the channel strip, we find an in/out switch labelled Flip. When this switch is in the Mic/Line position, the channel input is routed through the main EQ and aux send controls, while the equivalently numbered Minidisc channel is passed through a pair of rotary controls— Cue Pan and Cue Level. With the Flip switch in the PB position, this routing is reversed, which is normally more suitable at mixdown. The EQ provides three bands, each with a range of +/-15dB,

comprising a high shelving EQ at 12kHz, a sweepable mid EQ between 250Hz and 5kHz, and a low shelving control at 80Hz. There are two aux send controls, and they are both post-fader, which is more useful for effects than for foldback use.

Beneath the aux send controls are two in/out buttons (1/2 and 3/4) for assigning channels to the four available groups, and then come the usual rotary Pan control and a fader with a 45mm travel. Despite having such a short length, the faders feel very smooth and controllable, and better in operation than some 60mm ones that I've used on other small mixing desks. They also have a self-sealing dust-excluding strip — a nice touch which should help prevent crackles developing in the future. Level marking on the faders is from 0 to 10, rather than infinity through 0db (nominal) to +10dB, so that the nominal position (indicated by a clutch of five lines) ends up somewhere between 7 and 8.

Good use is made of different coloured controls to highlight each area of the channel, and thankfully the knob edge markings are very clear and extend all the way down the side. The only slight niggles I had were that the knobs have no



"After being used to a computer-based hard disk recording system, I found the tiny murmur of the Minidisc mechanics an absolute joy."

point, so you don't hear any material in reverse or at a different pitch, just chunks played back at the normal speed in the normal direction.

You can insert up to 10 markers in a song during recording or playback, and these can be adjusted or erased later. Pressing the Mark button inserts one at any time, but when you've finished by pressing the Stop button, you have to press it again to update the TOC (Table Of Contents). I know that some people find this a pain, but it doesn't take long. Punching in and out of existing recordings can be done manually, using the Record and Play buttons during playback, or using any of the Rec Select buttons at the appropriate point and then the Play button again to punch out. A footswitch can also be used — the first press starts playback, the second punches in, the third punches out, and the fourth enters pause mode.

There is also an Auto Punch In/Out function you can set the in and out points with the Rehearse and Play buttons during playback, or use the Set button in conjunction with the Last Record Search In and Out buttons. Once you have set your In and Out points, pressing the Auto Punch I/O button allows you to select either a single take, or a multi take. If you decide to opt for multiple takes, you get the option to try again after each version (up to 99 are catered for, disc space allowing), but you can't permanently save all of the takes - once you have decided which is the best, you have to choose one to paste into your song, using the Fix Take selections. Pre-roll and post-roll times can be adjusted from 0 to 9 seconds, to give you enough time to get yourself ready before a take. The Adjust button takes you to a different set of selections, where you can audition and change the current value of any marker or punch in/out point.

Ping-pong recording (ie. bouncing down) is possible from any combination of tracks to any other, and you can overdub additional signals at the same time. Once again, the rehearse function can prove invaluable in setting up levels here. If you want to cycle round a particular song (or songs) you use the Repeat button, and this can be extended to Cue List Playback (with up to 26 steps), using a set of Markers within a song.

The Cue List is reached by pressing the Utility button, from which several of the MD8's more specialised functions are accessed; when you press this button, various options become available to you, which you can step through using the Data dial. This is where you choose Recording Mode (8-track, 4-track, 2-track, or mono), adjust pre-/post-roll time settings, prepare the Cue List, or alter Program Play order (ie. the sequence in which a set of songs plays back, like on most CD players). You can also adjust the Display Dimmer (5 levels of brightness), enable/disable Peak Hold (which displays the highest level attained by each channel meter indefinitely until the Display button is pressed), or look at Disc Info (to see how your Minidisc contents are arranged, for moving, copying and renumbering songs.) One thing the MD8 does lack, however, is a dedicated bounce forward function. This is a feature included on Tascam's 564 Minidisc 4-track recorder, whereby you carry out a real-time mixdown of all the 564's four tracks to two tracks in the next Song location on the Minidisc, leaving the original 4-track Song intact for you to mix down again if you're unhappy with your bounce. You can still achieve something like this on the MD8, but the procedure is more involved. It's possible to bounce down all eight of the MD8's tracks to a pair within the same Song (the MD8 is capable of reading track information from, say, tracks one and two, while actually recording a composite bounced mix onto those same tracks), but in so doing, you erase the two tracks that end up carrying the stereo mix. The only way to preserve all eight tracks individually (in order to be able to bounce down again if you're unhappy with your mix) is to make a copy of your 8-track Song before you bounce down — a time-consuming process. Despite the lack of this function, there are other extensive disc housekeeping functions to Copy (backup) and Move (re-order) songs, convert them from one track format to another, renumber them, and even divide and combine them for use by the Program Playback list.

The final four options in the Utility menu are MIDI Sync, MMC Receive, MMC Device ID, and Frame Display, and these all relate to MIDI operation. The MD8 can only transmit MIDI, so you must slave a MIDI sequencer package to it, rather than the other way around, using either MTC or MIDI Clock information, but you can then use MIDI Machine Control (MMC) to remotely control the transport functions. For use with MIDI Clock, there is a 26-step Tempo Map available for each song you record. I soon had the MD8 and *Cubase VST* locked together with MIDI Time Code, and was able to stop and start from *Cubase* using MMC.

#### **IN USE**

Following the clearly written manual, I was soon in business, and despite plugging inputs into the wrong sockets a couple of times (they don't line up with the channel strips of the mixer), I had a one-minute song recorded onto eight channels within half an hour. As most of my equipment runs at the +4dBu level, I did find the MD8's minimum gain settings a bit sensitive, but I didn't run into any clipping problems. Conversely, whacking the gain controls up to maximum gave me more than enough recording level with the mics I tried, while still keeping background noise levels acceptable low.

The one lingering doubt for some people with any Minidisc device is its 5:1 ATRAC (Adaptive Transform Acoustic Coding) data compression system, used to cram the same amount of audio data present on a CD onto a 140Mb MD-Data Minidisc. ATRAC works by splitting the audio into many frequency bands, and analysing each one to find low-level information that will be masked by much louder signals at nearby frequencies. This masked information is then discarded, and the process continues until a 5:1 compression has been achieved. Although it sounds brutal on paper, the entire process has been refined in the latest version of ATRAC to the point where many professionals cannot reliably tell the difference

#### **BRIEF SPECIFICATION**

RECORDER

Sampling Frequency: 44.1kh

Frequency Response: 20Hz to 20kHz, +1, -3dB THD + Noise: < 0.02% at 1kHz

Signal-to-Noise ratio: 96dB typical

Maximum recording times: 18 minutes with 8 tracks, 37 minutes

with four tracks, 74 minutes with stereo,

148 minutes of mono

MIXER

EQ:

Input sensitivity: -50dBu to -10dBu

+/-15dB LF 80Hz shelving, Mid peaking

(250Hz to 5kHz), 12kHz HF shelving

Output levels: -10dBu

Frequency Response: 20Hz to 20kHz +1, -3dB

between DAT and MD recordings. I hope I can put your minds at rest by saying that the sound quality was excellent, and although I could (just) tell which recording was which when I carried out an A/B comparison with the original source material, the difference was extremely subtle.

To test the inevitable degradation caused by repeating track bouncing through the analogue mixer, I followed the instructions for ping-pong recording (re-recording any combination of existing tracks to a different track destination). Third-generation copies were audibly different, with a slight lack of transparency and a hint of grittiness, but the difference was still very small, so I kept ponging (so to speak). By the sixth generation, the stereo image was beginning to sound rather smeared as well, but the recording was still very usable for things like background pads and washes. Since I was bouncing a stereo track, I actually had more problems keeping the two channels balanced accurately, due to the lack of precision in fader markings. If you want to record more than eight tracks, the results should be very acceptable, as long as you don't attempt to add EQ at every bouncing stage.

#### CONCLUSION

Compared with the 4-track MD4, the MD8 offers far more than double the number of record/playback tracks — you get additional sweep mid EQ, two aux sends rather than one, MIDI Machine Control, and a total of 20 inputs at mixdown, rather than the 12 of the MD4. At £999, it is only a hundred pounds more than the MD4 was on its launch, and so must be seen as good value for money, even though the MD4 has just come down in price to £699.

If the MD8 had been launched six months ago it would probably have leapt immediately to stardom, but there are now other contenders for those in search of more than four tracks of digital recording in a convenient, cassette-multitracker-style package, so the choice is less clear. Other new models to look at are the Korg D8 (hard disk 8-track, reviewed on page 190 of this issue), the new Roland VS840 (an 8-track which records to lomega Zip cartridge), and the Akai DPS12 (a 12-track Jaz recorder, reviewed in last month's SOS). One thing that may steer potential purchasers towards a Minidisc solution is its lack of mechanical noise — after being used to a computer-based hard disk recording system, I found the tiny murmur of the Minidisc mechanics an absolute joy. If you want a high-quality integrated 8-track digital recording solution, and favour the convenient nature of the Minidisc medium, this could be just the thing for you.

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Mic/Line Shifts

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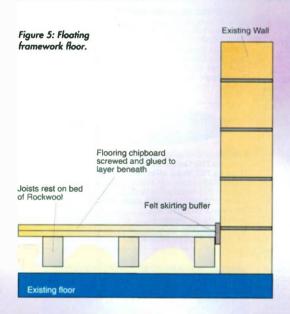
Flooring chipboard screwed and glued to Lamella flooring showing bristle' backing

Existing Wall

Flooring chipboard screwed and glued to Lamella

Felt skirting buffer

Lamella flooring showing bristle' backing



several feet deep, the weight being borne by springs or machine-rubber mountings, but clearly this is impractical for most bedrooms!

There are less massive floor designs based on studding and chipboard, or you can even buy a specially made floating floor material comprising chipboard with Rockwool bonded to the underside. This type of structure won't be too heavy for a typical domestic floor to support, and though it won't work as well as six inches of concrete on springs, it will make a very noticeable difference.

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#### **CEILINGS**

Ceilings have all the problems associated with floors, but you don't have the benefit of gravity to help you keep your sound isolation treatments in place. Acoustic foam tiles stuck to the ceiling might look good, but in practice they'll keep out very little sound. A professional studio designer would probably specify a false ceiling, probably quite a heavy one, but in the home studio you have to be a little more pragmatic. As mentioned in last month's instalment, your first step should be to fit underfelt to the room above your studio. Even if this room belongs to someone else, offer to pay to have it fitted.

If you're serious about going further, you need to know whether the floor above consists of floorboards or chipboard. Chipboard floors are reasonably airtight, but floorboards may well have gaps, in which case you'll need to remove the ceiling plaster or plasterboard to expose the joists (don't do this if it isn't your property!). This will give you access to the floorboards of the room above, whereupon you can set about filling all the gaps with mastic. A more thorough approach is to fit barrier mat between the joists, as shown in Figure 6. Barrier mat is a material that has many uses in studio construction, but you're unlikely to find it anywhere other than at a studio materials suppliers — they don't have it at the usual DIY superstores! Barrier mat is a mineral-loaded plastic material that looks rather like a black, flexible lino and is very heavy. It may be fixed in place using a powered staple gun, but you'll need somebody to help you take the weight until you've got enough staples in to hold the material up.

Once the barrier mat is in place, the gaps between the joists can be stuffed with loft insulation-grade Rockwool and the underside of the joists covered with at least two layers of 12mm plasterboard. Get a plasterer to skim the plasterboard for you and you have a smooth new ceiling, as well as reduced sound leakage.

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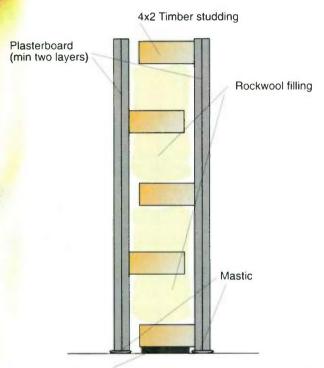
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#### PRACTICAL STUDIO SOUNDPROOFING



Neoprene pad Figure 2: Double studding wall.

absorb any energy trying to pass through the void. The diagrams only show the timber fitted in one direction, but in practice, studding walls comprise both vertical studs and horizontal noggins.

#### IMPROVING AN EXISTING WALL

Of course, you may have an existing wall which doesn't provide enough isolation, either because it's too thin, or because it's made from a

lightweight building material such as breeze block. Such walls can be lined with studding and plasterboard, using similar constructional techniques to the free-standing studding wall just described, except that you only need to cover one side of the frame. Ideally, you should leave a small gap between the frame and the existing wall, and, again, this is best achieved with the use of neoprene spacers. The cavity can be filled with Rockwool before the plasterboard skin is nailed into place.

Two or more layers of plasterboard are required to build up a worthwhile mass, and a fibreboard middle layer may also help. Layering different materials creates an acoustic mismatch, reducing transmitted vibrational energy and damping out resonances. Figure 3 shows an existing wall uprated by the addition of a studding/plasterboard layer. In all multi-layer walls, where two or more layers of board are being used, it helps to seal the gaps between boards using a flexible mastic or frame sealer before fixing the next layer. It also helps to use

dabs of plasterboard adhesive between adjacent layers of plasterboard, to prevent the panels resonating independently, and if you can afford the space to add even more layers of plasterboard, that's all to the good, providing your floor can take the weight.

Unless you use many layers of plasterboard to create a very heavy wall, the attenuation offered by this type of wall at low frequencies will probably be less than that offered by a solid brick or concrete wall, but the improvement should still be significant.

If you do need to build an internal wall, look at the ratio of the height, width and length of your newly created rooms to see if you might be inviting acoustic problems. As a rule, having equal dimensions for width, height and depth is the worst possible case, as you'll end up with strong room resonances at specific frequencies, and you should also avoid one dimension being an exact multiple of either of the other two, for the same reason. Keep the ratios as random as possible, and if you can slope one wall slightly to avoid having parallel surfaces in the room, this will help minimise flutter echo. However, don't worry if you can't avoid parallel walls, as the acoustic treatment needed to kill flutter echoes is fairly simple.

#### **FLOORS**

If you have a concrete floor, you're probably starting from a reasonably good position, but if the studio is in a bedroom with a wooden floor, you're going to have problems. Not only is a typical domestic floor a relatively poor sound isolator, most of the noisy gear, not to mention tapping feet, will be in contact with the floor, which only makes things worse. Because of this latter

Figure 3:
Uprating an existing wall.

Plasterboard (min two layers)

Reckwool Filling

Existing wall

Neoprene pad

Mastic

212

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#### PRACTICAL STUDIO SOUNDPROOFING

#### FLOATING FLOORS

Professional floating floors can be massive and complex affairs, but for the smaller studio you can build your own quite simply. A floating floor is just a false floor mounted on acoustic isolators above your existing floor, with resilient material around the edge so that it doesn't come into direct contact with the walls. A commercial floating floor may be cast from reinforced concrete, several inches thick, and may be supported over a void

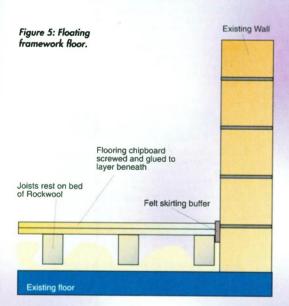
Flooring chipboard screwed and glued to Lamella flooring showing 'bristle' backing

Existing Wall

Flooring chipboard screwed and glued to Lamella

Felt skirting buffer

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#### **CEILINGS**

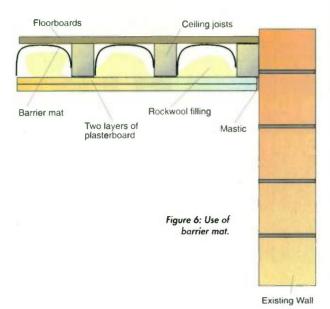
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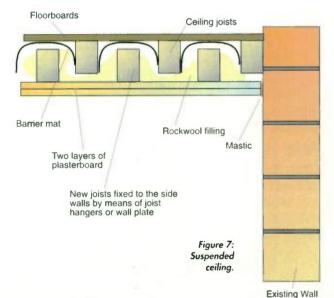
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ceiling and the suspended ceiling should again be stuffed with Rockwool, otherwise it may resonate.

The suspended ceiling is built from joists and plasterboard, in much the same way as a studding partition wall, but here it rests on wooden wall plates fixed to the original walls. Obviously, the original walls must be of solid construction. The heavier the false ceiling, the better the isolation, but you can introduce a layer of lightweight insulation board between the plasterboard layers without incurring much of a weight penalty. Whether or not you isolate the edges of the ceiling from the existing wall is up to you, but as there is no sound-producing equipment in direct contact with the ceiling, the difference will not be nearly so significant as it is with a floor. For the best isolation, you need to build a complete room within a room, and that will be discussed next month.

**WARNING!** Commercial studios may have up to four inches of plasterboard and chipboard screwed to the ceiling, but don't go to extremes without proper architectural advice.



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Oram are not a company to do things by halves; their Octasonic, as the name suggests, features a whopping eight channels of professional-quality mic amplification.

DAVID MELLOR finds it's eight times a preamp...

utboard microphone preamps are common in the pages of Sound On Sound these days, and despite the fact that anyone with a mixing console already possesses as many mic amps as he or she could possibly use -without buying a bigger console — these products seem to be selling, and selling well. There has to be a good reason for this, and in fact there are at least three. Firstly, although the mic preamps in modern mixing consoles are usually good, there is still scope for wondering whether they are actually great. Secondly, even though the mic amps in some consoles may be excellent, for the producer or engineer moving from studio to studio, consistency is vitally important. A third reason for having an outboard preamp is to make recordings on location without having the burden of a mixing console to carry around.

#### **PHYSICALLY**

The Oram Octasonic is an 8-channel mic preamp designed by the "Father of British EQ", John Oram. I'm tempted to wonder whether, if this is designed by the father of British EQ, it's going to be the mother of all mic preamps, but we'll see about that shortly. John Oram, in fact, has a long history of success in the audio industry, although it's comparatively recently that he's built products under

his own name. The old Trident mixing consoles on which Oram worked are regarded almost in the same league as old Neve consoles, so we should be able to expect something rather special.

Physically, the Octasonic's 1U rackmount case has a solid, chunky feel. The power supply is built in, as you would expect from a unit in this price range, and the mains inlet is prominently marked '230V' to remind us of the new nominal UK mains voltage. It works fine with the 240V we still actually get. The inputs are all on XLR connectors, while the outputs are on balanced jacks. Inputs and outputs are very clearly numbered, as they should be, since the channels are reversed when you look at the unit from the rear. The top plate of the unit is held in place in part by some curious plastic fasteners which have to be prised off to release them - not that you'd have to, since there are, fortunately, no irritating internal fuses to worry about. Still, I'm the type who always has to take the lid off and have a look.

Inside the Octasonic there's a lot of fresh air, actually quite warm air once the unit has been running for some time. I wondered at first where all the circuitry was and then, with the aid of my magnifying glass, I found a number of surface-mount components. Surface mounting is a relatively new method of electronic construction, where the size of

ORAM OCTASONIC PRECISION OCTAL MIC PREAMP



the components is minimised and lead-out wires are absent. As a manufacturing technique it has advantages in speed of construction, cost and, of course, size. Sonically, I can't see any drawbacks, but if the unit develops a fault, repairing a surface-mount board is a job for a specialist. Fortunately, Oram's service department offers 24-hour board swap-out in all the countries where their equipment is sold.

Conventionally packaged components are used as well, the active ones being a custom-designed Analog Devices integrated mic preamp chip, and one dual op-amp per channel, socket mounted. Technically, this is about as far away as you can get from the current craze for valves with everything. I could be tempted to speculate that if you already had a valve preamp, you should have one of these too, so that you have an example of both ends of the technological spectrum. Everything inside the Octasonic is very tidy, and the high-voltage components are shrouded.

#### **AESTHETICALLY**

The Octasonic is an interesting piece of equipment in terms of its cosmetic design. The blue colour is tasteful enough, and the knurled aluminium knobs give a solid, no-nonsense feel, as does the fact that they lack skirts and the nuts holding the potentiometers in place are visible. The pots are 41-position detented, which is a feature that some people like and some people hate. The detents in themselves mean nothing, as the track around which the signal flows is continuous, but it does mean that you won't move a pot accidentally as you press a button. The calibrations are small and not too easy to read under dim illumination, and towards the higher gain ranges small movements of the knob result in large changes in gain.

The two buttons in each channel are for phase and phantom power. The phantom power button is recessed, so you have to push quite hard to operate it. This is a good idea, since accidental operation of the phantom power switch during recording would be disastrous. I have said in the past that I don't see much point in having switchable phantom power, since any dynamic mic of professional quality doesn't care whether or not it is present (and dynamic mics don't need it), but as we shall see later, the Octasonic is a little bit more versatile than common-or-garden mic preamps, and you could,





#### ORAM OCTASONIC MIC PREAMP



indeed, find a need to switch phantom power off. Beneath the two buttons in each channel are a couple of red LEDs, one indicating peaks, the other indicating phantom power.

#### **OPERATIONALLY**

The Octasonic has two unusual features. Firstly, the inputs will accept very high-level signals, as well as normal mic levels. Secondly, two of the channels are so-called 'hot' channels, and can accept even higher levels. Apparently, Michael Jackson's engineer was consulted on just how hot a signal can get. Hotter than you could possibly imagine, it seems. A microphone may produce a signal level of up to around OdBu (just under a volt) in response to a very loud sound at close range. The Octasonic's inputs will handle signals up to +22dBu, which is as high as you would get from most line-level equipment, so you can plug in pretty much what you like and there won't be any distortion. On the hot channels, the maximum input is a whopping +34dBu. To put this into some lind of perspective, if a power amplifier produced an output of this voltage, into a  $4\Omega$  loudspeaker the power would be over 375 Watts! This is what I call hot.

high output level. I think it might have been useful for the hot channels to be visually differentiated in some way, since without actually knowing what was going on, a user could easily think that channels 7 and 8 were faulty. Currently the only difference is in the calibrations, which, as I said earlier, are not that easy to read.

#### **FINALLY**

The Octasonic, like all Oram products, has a feature known as Oram Sonics, in which low frequencies are delayed slightly, as explained in the 'Oram Sonics' box. This means that the Octasonic is not transparent but has its own character. Valves are known for giving warmth to a signal, and Oram Sonics adds warmth too, in a different way. The only way to appreciate it is to experience it, but it's certainly audible and, to my ears, has no negative side effects. As well as being a very good mic preamp, the Octasonic is apparently being used by a number of engineers in conjunction with the Alesis ADAT, to boost the ADAT's low-level outputs to standard professional levels — even though the ADAT has pro-level outputs built in. Strange but true.



#### **ORAM SONICS**

Oram Sonics originated by accident back in the days when John Oram was designing for Vox and Trident. By a series of coincidences the circuit designs employed featured 'group delay', where low frequencies are delayed slightly with respect to mid and high frequencies by something in the region of 1ms at 20Hz. This is thought to account, in part, for the high

reputation for sound quality
these companies enjoyed. After
leaving Trident, Oram did some
investigation into what was
causing this phenomenon and
how it could best be applied in a
controlled manner.

In many electronic circuit designs there are a number of capacitors placed in the signal path for practical reasons. These block very low frequencies and can introduce phase shifts, with audible effects. Where most designers would use arbitrarily large capacitors to ensure that only sub-audio frequencies were affected, Oram carefully calculates the time constants involved throughout the signal path, to add precisely the effect he requires. It's simple, it's not voodoo or black magic, and it isn't merely advertising hype. Oram Sonics has a subtle warming effect that many users will appreciate.

The fact that two of the eight channels have a different gain structure is interesting. Channels 1-6 have a range of gain from 0dB up to +70dB, while channels 7 and 8 range from -12dB to +35dB. My first thought was that I would have preferred all channels to be identical, as in other octal processing units, but on reflection I realised that there is actually no need for this to be so. In any real-life recording setup, microphones with widely differing characteristics are used. The manner in which the mics are used will produce signals of vastly different levels, and it's perfectly appropriate for the Octasonic to make allowance for this. The hot channels will obviously be used for very loud sources — bass drums and operatic sopranos come to mind — and for mics that have a particularly

I don't know whether it's a side effect of Oram Sonics, but one curious feature of the sound of the Octasonic is that the difference between correct and inverted phase is clearly audible even on a single channel (if one of a stereo pair of channels is inverted, you'll hear a massive difference with any equipment). Most people are virtually insensitive to absolute phase, but for some strange reason I found it remarkably easy to hear on this preamp, using a mic as the input and monitoring on headphones. Apparently I'm not the only one to comment on this either. Technical parameters such as frequency response (better than 18Hz to 73kHz), noise (equivalent input noise -127.8dBu @ 70dB gain) and distortion (less than 0.005%) are beyond reproach.

To sum up, I'd be very happy to own an Oram Octasonic. Its performance is excellent, the build quality professional, and the price per channel, compared to other outboard mic preamps, makes it very good value.



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- ✓ Studio 5
- ✓ Studio 4 MIDI Translator II
- ✓ Translator Pro

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#### For Windows PC

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- 8 Port/SE MIDI Translator PC
- ✓ 2 Port/SE



- ★ 8 in 8 out, 128 channel PC interface

  \*\*The state of the state
- Included Windows Patchbay software set-up & control of front panel pacthbay operation, even independent from computer
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- Windows NT compatible (call SCV London for ovailability)

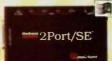
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- Innovative modular architecture add multiple Translater PCs together for up to 128 MIDI channels
- Expand as your needs grow

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#### THE INS AND OUTS OF GAIN STRUCTURE

Setting up your gear for low noise and minimum distortion needn't be a nightmare.

MARTIN WALKER guides you through the process, and shows you how to stand tall, even without much headroom.

ost people understand that if they want to get the best audio performance out of their studio equipment, input levels from sound sources must be high enough to ensure that noise levels remain very low by comparison, but not so high that they overload the equipment and cause distortion. However, for the best results, this optimisation process must be carried out at each stage of the amplifying chain, and this is where the concept of gain 'structure' comes from — the tweaks are carried out from the very first input, all the way

thrown.

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along the signal path, right to the end of the chain, whether the signal is being recorded onto DAT, or emerging from a loudspeaker.

#### MAKING A START

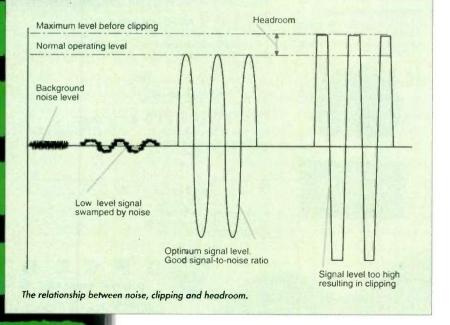
If you record with acoustic instruments, the first stage for you will be to ensure that the input gain of your mixer's microphone input (or one of the fashionable stand-alone mic preamps) is set correctly for the levels coming out of the mic itself. Most mixers, even tiny ones, provide PFL (Pre-Fade Listen), and this allows you to monitor the level of a particular mixer channel after any EO, but before the main channel fader. This is extremely useful when you want to listen to any sound in isolation, and also for initially setting up the input gain controls. When you press the PFL button, the signal will normally also be routed to one of the mixer meters, so that you can see its level. Even without PFL facilities you can achieve the same thing by first pulling all the channel faders right down. setting the master faders to unity (OdB), and then raising each channel fader in turn to the OdB position.

Once you have some typical signal levels going through the mixer, you adjust a channel's gain control until the meter is hovering around the 0dB level (for a reasonably steady signal), or a bit higher (+6dB or so) if there are a lot of transients in the signal, since its average level will then be somewhat lower. If you're dealing with closely miked drums, some input levels may be so high that even with minimum mixer input gain you still have too much signal level; in this case you may have to switch in a pad, or use a less sensitive mic. Plugging the mic into a line input is not recommended, since the impedance values will be wrong.

Most stereo mixer inputs, the ones often used for electronic instruments such as synths and samplers, only provide a switch labelled +4/-10, instead of a fully variable gain control, and the best position of this switch can be determined in exactly the same way, using the channel PFL button. In most cases, if you can turn up the output level of your synth or effects unit to maximum, so that the switch can be set to the less sensitive '+4' position, you're likely to get slightly lower noise overall. Once all your inputs have been set up in this way, the channel faders are then used, with starting positions somewhere near the OdB mark, to mix everything so that the final combined levels again peak at about the +6/+9dB mark on your output meters.

#### **GETTING TWEAKY**

So far, so good — I'm sure most of you know about the above techniques already (although it's surprising how often I spot peoples' mixer output meters with only a couple of LEDs twitching near the bottom, or flashing red at the top of the range). What's a little more confusing is where different manufacturers choose to place the first red LED in their meter displays, and why. Many mixers have green LEDs up to 0dB, amber from 0dB to +6dB, and red for +9 and +12dB (the highest indicator). The idea is that if you see very occasional flashes of the +9dB LED on peaks, you'll be OK, but if the second red LED flashes as well (+12dB) you're approaching the point of distortion. In fact, all mixer manufacturers will have designed in a bit more headroom than this.



# too hot to be printed





internet: http://www.thomann.de

see what everybody is talking about...

#### THE INS AND OUTS OF GAIN STRUCTURE

▶ Headroom is exactly what its name implies — a bit more space over the metered limit before things overload — and is traditionally the difference between average level and clip point.

This is where we find the huge difference between analogue and digital circuitry. If your mixer meter does occasionally go a little 'over the top', the mixer itself is unlikely to sound distorted, but if your mixer is feeding a digital recorder you'll almost certainly have to do another take. In a mixer, typically there will be at least another 6dB of output level available above the top LED before amplifier clipping occurs. Most mixers standardise on an output level of +4dBu (1.23V RMS) when the meters read OdB VU. So when the top LED is just lit at +12dB VU, the actual output level emerging from the sockets will be +16dBu (4.9 volts RMS). If you look at your mixer spec to see its output level, it will give a figure of something like +22dBu maximum (9.76 volts RMS). This is 6dB higher than the top LED on the meter, and the extra headroom should ensure that your signals always emerge cleanly.

I say 'should' assuming that an amplifier will sound perfect right up to the clipping point, but this isn't always the case. Those with golden ears say that solid-state (transistor or FET) amplifiers start to sound 'edgy' in the final few dBs before clipping sets in. If you have the impression that some of your gear doesn't sound quite as good as it should when you drive it close to the clip point, you may be right. Fortunately most modern gear is quiet enough to be

"Those with golden ears say that solid-state amplifiers start to sound 'edgy' in the final few dBs before clipping sets in."

calibrated to run at slightly lower levels, to give a cleaner sound. Effects units, however, which are often the noisiest devices in the studio, are sometimes temperamental about overload, even for a few milliseconds, and so benefit from special treatment (see 'The Effects of Noise' box).

#### DAT'S THE WAY TO DO IT

With digital recording it's absolutely vital to avoid any overload at all. To be honest, although the mixer line-up procedure already discussed will optimise the gain structure of your analogue electronics, once a digital recorder is involved, most people will religiously watch the meter on that like a hawk, rather than relying on a mixer's meters. This is because most digital recorders have a Margin indicator as well, which shows the highest peak level recorded since recording began, and which holds this value until the Margin Reset button is pressed. In addition, since digital electronics are so sensitive to overload, these meters normally have a much faster response than the meters on a mixer, and may therefore show different readings as well. So now that the mixer is lined up so well, to complete the chain you have to calibrate your DAT machine to your mixer.

The digital meter on the DAT is calibrated in a rather different way, with the top of the scale reading OdB, rather than 0VU appearing about two-thirds of the way up the mixer meter. You will often see a special mark on a DAT meter on or about the -12dB position. If you set up a 1kHz line-up oscillator on your mixer and adjust its level to exactly 0VU on the

mixer output meters, you can go into Record Monitor mode on your DAT machine, and then slowly increase its input level control until this -12dB mark is reached. (Due to the large gaps between calibration marks on a DAT. looking at the Margin readout is a far more accurate way to do this, as it normally changes in much smaller increments, such as 0.5dB.) At this point, where 0dB VU as indicated by the mixer is equal to -12dB relative to Full Scale on the DAT meter (OVU = -12dBFS), you've calibrated your DAT machine so that mixer meters just touch the top red +12dB VU LED as the DAT machine reaches OdB

This -12dB reference level is fine for those recordings where every level is

DISTORTION: NICE OR NASTY?

When you send audio equipment a signal large enough to overload its circuitry, each device will respond in a different way. Many people do overload their equipment for creative reasons, because the signal emerges with a different sound, and much development work is going on to produce computer software plug-ins which mimic the 'softer' overload characteristics of tube circuitry. Whereas a guitar amp normally benefits in a musical way from being overdriven, lew people enjoy the sound of digital overload, and this is because of the nature of the distortion produced. The singing sound of guitar overdrive tonds to be predominantly second harmonic, and the human ear finds this

**FURTHER READING** 

A Concise Guide to Compression &

Minimising Mixer and Effects Noise:

. Setting the right DAT recording

level: SOS January 1995.

· Noise and how to avoid it:

Limiting: SOS April 1996.

The Mysteries of Metering:

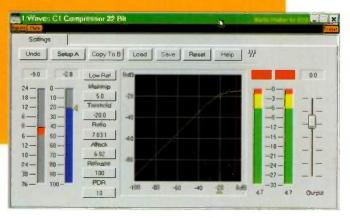
SOS May 1995.

SOS May 1996.

505 July 1996.

fairly pirasurable. For a start, it's only an octave away from the input signal and therefore easy for the ear to 'attach' to the overall sound. As digital circuitry becomes overloaded, it neatly clips off the top of the waveform, generating lots of third-harmonic distortion (not as nice as second, but still passable), but also lots of higher harmonics as well.

extending to very high frequencies. Although the human ear can only pick up second-harmonic distortion when it reaches around 0.5%, eighth-harmonic distortion at as low a percontage as 0.01% is audible to humans — which could be part of the reason why valve amps with high measured values of THD (Total Harmonic Distortion) often sound far better than transistor amps with THD values of 0.01%.



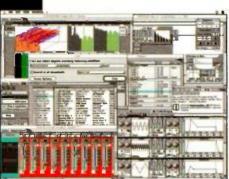
The graph within Waves' C1 Compressor imitates what happens with most tube circuitry: as the input level rises, the output level slowly begins to move away from a straight line response. The gentle curve here is known as 'soft' limiting, and sounds more natural.



## Soundiver

Universal MIDI Editor/Librarian for Windows95 and MacOS





SoundDiver is emagic's premiere Universal MIDI Editor and Librarian program. It is expertly designed to create a virtual representation of every detail of your MIDI system, allowing you to access and change parameters with just a few mouse clicks.

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As an integral part of the Logic system, SoundDiver features 90 user definable Sceensets whilst the AutoLink system automatically updates instruments and multi-instruments used in Logic/Logic Audio.

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The Unitor8 is a powerful 8 in 8 out MIDI interface with versatile synchronization features that is compatible with MacOS and Windows computers. The Unitor8 is particularly impressive with its outstanding MIDI timing and its extremely short lock-times while in sync mode. In addition to its ultra

fast response capabilities, the Unitor8 allows for the stacking of up to 8 units to create one complete system with up to 1024 MIDI channels. The Unitor8 reads and generates SMPTE for LTC and VITC for perfect sychronization to a video source.

## Audiowerk8

#### HOME STUDIO KIT

The new Audiowerk8 Home Studio Kit features the Audiowerk8 PCI Digital Audio Recording card giving exceptional sound quality with 8 analogue outputs. 2 analogue inputs and stereo SPDIF I/O. The kit includes Logic Audio Discovery featuring the same unsurpassed timing resolution of Logic Audio, up to 16 digital audio tracks, 1000 MIDI tracks, MIDI Scoring, built-in DSP including EQ and reverb, built-in sample editor with Time and Pitch shifting and continuous synchronisation to MTC which allows perfect synchronisation of MIDI and Audio. For PC users, Syntrillium's Cool Edit Pro LE is also included which can be launched from within Logic as an external sample editor. Cool Edit Pro LE allows the use of Active Movie 3rd Party Plugins. For Mac users, emagic's ZAP Zero-loss Audio Packer data compression software is included.

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#### THE INS AND OUTS OF GAIN STRUCTURE

 of the programme material, since low-level signals will be brought up by exactly the same amount as high-level ones, and neither does it ensure that every track destined for an album will end up at the same perceived loudness, since this depends on average levels, and not peak ones. Many recordings OdB, and the average level can nearly always be compressing these short transients, without having

will only have a few occasional peaks approaching brought up by at least 3 or 4dB, simply by [preset2e]16 bit Final Master highest resolutio Cancel Undo Setup A Copy To B Load Save ∐elp Save A 40 \$ 10 00 -16.96 -1000 --3---100 --<u>\_9</u> \_ F Bypasi -12-**₽-10-4** ₹ Realtime -15--18-

> If you're using a hard disk recording system on a Mac or PC, the Waves L1 Ultramaximiser will allow you achieve maximum digital levels without ever going into overload. Notice that the maximum output level has been set to -0.3dB (see main text).

> > an obvious audible effect. You can do this with a limiter, or using the software approach of plug-ins like Waves' L1 Ultramaximiser, and Steinberg's Loudness Maximiser.

31 % (24-bit processing) ♥ Create undo

If you're trying to make your recordings sound as 'loud' as commercial releases, it's best to monitor all digital signals through one high-quality digital/analogue converter — listen to your CDs, hard disk recordings, and so on, and then you can compare them directly.

THE DIGITAL 'OVER'

Waves L1-Ultramaximizer+

Analog Domain

-12-

--15-

Selection 0.0000000 to 2.809932 (2.809955)

-21 -

-010-

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ation on replay. Other machines which do

"Ultimately, being thorough in your approach to gain structure will ensure that you only hear distortion when it's part of your music, and that quiet passages remain free of unwanted background hisses and hums."

Normalisation does ensure that on cheaper playback systems, where system background noise is more of a problem, your recordings will make use of the top end of the dynamic range. It should always be carried out as the final operation, after any other digital editing, since you're asking for trouble if you tweak the digital signal any more once it contains peaks at the maximum theoretical level. Also, since both of the above plug-ins can take advantage of noise-shaped dithering (for better lowlevel resolution), this can also raise levels, particularly at higher frequencies. For this reason, many people play safe, and normalise to a figure just below 0dB - Waves recommend -0.3dB when using their L1 Ultramaximiser during mastering for CD.

#### THE FINAL TOUCHES

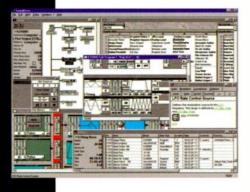
Ultimately, being thorough in your approach to gain structure will ensure that you only hear distortion when it's part of your music, and that quiet passages remain free of unwanted background hisses and hums. Noise gates and muting can remove all the background grunge once it falls beneath a threshold level, but with attention to detail and careful wiring (preferably with balanced lines) your music will sound more transparent even at normal levels if the noise floor is as low as possible. Sadly, digital artefacts often sound more objectionable than analogue ones, because rather than being random in nature (a steady background hiss that the ear tends to ignore if low in level), they tend to be tied into the signal itself, and are therefore more noticeable. At low levels, where the converters run out of resolution, smooth waveforms begin to resemble a staircase, which gives a gritty sound. known as quantisation noise.

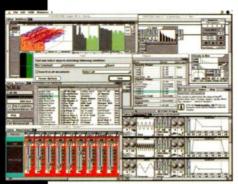
The last year has seen many more affordable digital converters appearing in mid-price to budget equipment, and these have lower noise floors than equivalently priced equipment that is a couple of years old. Now, more than ever, it's worth giving your studio the once-over to optimise everything in the audio chain.



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#### THE INS AND OUTS OF GAIN STRUCTURE

extremely well behaved, such as MIDI or sample playback, but live instruments recording is rarely so predictable. Since you still have headroom on your mixer beyond its Full Scale reading, you could reduce the DAT reference level to -18dBFS with 0dB VU on the mixer, to allow for unexpected transients. Now that more 20-bit converters are appearing, even on budget equipment, noise levels are also dropping, and there is a school of thought which says that using a reference level such as -18dBFS doesn't compromise noise levels significantly, whatever the dynamic range of your music, and at least it lets you return to looking at your mixer meters, without having to worry so much about the odd extra dB ruining a digital recording.

One thing to watch out for here: you may come across digital recorders that try to mimic their analogue counterparts by setting their internal reference level to typical mixer output levels. When your mixer reads 0dB VU (normally emerging at +4dBu), an Alesis ADAT may still only be reading about -15dB on its own meter.

The TC Electronics Finaliser provides a comprehensive approach to gain control for final mastering, including multi-band compression and limiting, and allows the final digital signal to peak at any value in 0.01dB increments below digital maximum.

Although this gives you plenty of headroom, to reach 0dB on the ADAT meter will need +19dBu output from the mixer, which is getting perilously close to the clipping point of many small mixers — and, as already mentioned, your mixer may not sound quite so clean in the final few dBs before clipping. If you find this is a problem, you might try using the digital recorder at its -10dBV input sensitivity, which will let you 'go all the way' without risking output clipping of your mixer.

For both live and studio work it's also common

#### THE EFFECTS OF NOISE

Probably the easiest way for most people to achieve quieter mixes is to optimise the gain structure of their effect sends and returns, since effects units do tend to be the noisiest items in many studios. Try to ensure that most aux sends end up at about the 7 to 8 position, since this is normally the optimum position as far as mixer noise is concerned. However, since it's the output noise from the effect that can prove troublesome you should try to drive it as hard as possible at the input end. Many effects units have a 'Clip' or 'Overload' LED that comes on 5 or 6dB below clip point, but different units tend to react differently some sound horrendous even if this is exceeded for a few milliseconds, while others are more tolerant. If you can increase the input level control on the effects unit by a few dB, the Return fader on your mixer can be reduced by the same amount, leaving effects levels identical, but with correspondingly lower noise levels. Once you've performed these tweaks you'll probably notice a big improvement in the most obvious places - at the beginning and end of tracks.

to patch in a compressor at the mixer buss insert point, and in some cases an additional 'brick-wall' limiter set to a level just below the digital clip point, to ensure that *nothing* gets through to overload the digital side. High-end processors such as the TC Electronic Finaliser even include a fine level adjuster for the limiter, calibrated in 0.01dB increments below 0dBFS, and since many digital recorders don't have proper 'Over' indicators (see The Digital 'Over'), this ensures that you never get erroneous readings, since the record signal will never actually reach 0dB.

#### HARD OR SOFT?

Now that digital recording is so much a part of the modern studio, a completely mathematical approach can be adopted. Since the digital signals are simply a stream of '1's and '0's, gain can be adjusted by multiplying or dividing digital values, and this is equivalent to amplification or gain reduction in the analogue domain. However, digital processes have one big advantage — by looking ahead in the waveform, compression/limiting algorithms can anticipate transients, rather than having to react to them as quickly as possible after they happen, as in the case of the analogue compressor.

Normalisation is another gain adjustment, but this time it's carried out after recording, by bringing the maximum peak level to the maximum allowable digital level, to make sure that the signal is as 'hot' as possible. It does not increase the dynamic range

#### NOISE AND DYNAMIC RANGE

There is still much confusion between signal-to-noise ratio and dynamic range, especially where digital signals are concerned. Signal-to-noise ratio is the RMS level of the noise with no signal applied, expressed in dB bolow maximum level. Dynamic range is defined as the ratio of the loudest (undistorted) signal to that of the quietest (discernible) signal in a unit or system, as expressed in decibels (dB). Dynamic range is often said to be a subjective judgement more than a measurement — you can compare the dynamic range of two systems empirically with identical listening tests, by applying a

1MZ tone, and see how low you can make it before it is undetectable.

recording is 96dB, since each bit contributes 6dB to the total. If you leave 6dB of headroom on your digital recording, to prevent any unexpected peaks from causing clipping, you immediately reduce this to 90dB. The background noise level will depend on the converters, as well as the design of the rest of the circuitry. Due to the confusions, even between manufacturers, on how these figures should be measured, Crystal Semiconductor (the well-known designers of A/D and D/A converter chips, as used by many companies worldwide) have suggested a

standard method for the following measurement procedure. They define Dynamic range (DR) as the ratio of the full signal level to the RMS noise floor, in the presence of signal, expressed in dB FS. The addition of a low-level signal (a suggested InHz sinewave at a level of -60dB FS) ensures that any noise-gate circuitry is bypassed, but of course this signal must be notched out before the actual measurement is taken. The final figure quoted is also likely to be A-weighted, which takes account of the characteristics of the ear, which is more sensitive to frequencies between 2k z and 4kHz. 'A-weighted' figures tend to make comparing figures between different hardware components easier.

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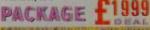








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#### THE INS AND OUTS OF GAIN STRUCTURE

▶ of the programme material, since low-level signals will be brought up by exactly the same amount as high-level ones, and neither does it ensure that every track destined for an album will end up at the same perceived loudness, since this depends on average levels, and not peak ones. Many recordings will only have a few occasional peaks approaching OdB, and the average level can nearly always be brought up by at least 3 or 4dB, simply by compressing these short transients, without having

Waves L1-Ultramaximizer OK Cancel Undo Setup A Copy To B Load Help Analog Domain Threshold Release Save As -03 -16 96 -40 10.00 -1000 -401 3 D -3--100 -Stop F Bypas -12-12--12-**₽-10 4** Realtime -15--15-15 --18--18-18-Type 1 -21 --21 --24--0.10 --24--27 -27 --0 01 -30 --30 --0.0 -0.4 -0.3 31 % (24-bit processing) ♥ Create undo Selection 0 0000000 to 2 #09932 (2 809955) Channels Roth Selection

If you're using a hard disk recording system on a Mac or PC, the Waves L1 Ultramaximiser will allow you achieve maximum digital levels without ever going into overload. Notice that the maximum output level has been set to -0.3dB (see main text).

an obvious audible effect. You can do this with a limiter, or using the software approach of plug-ins like Waves' *L1 Ultramaximiser*, and Steinberg's *Loudness Maximiser*.

If you're trying to make your recordings sound as 'loud' as commercial releases, it's best to monitor all digital signals through one high-quality digital/analogue converter — listen to your CDs, hard disk recordings, and so on, and then you can compare them directly.

#### THE DIGITAL 'OVER'

When dealing with digital recorders, any signal that flashes the Over indicator on the input level meter of the digital recorder will sound dreadful on playback — there is no headroom with a digital meter. In fact, very few digital recorders actually have a proper digital 'over' indicator — if you think about it, once the signal gets to OdB, it just can't get any higher. Many so-called Over indicators are actually measuring analogue levels, so that they can indicate a level which exceeded the calibrated digital peak level. This is why you can overload the inputs of some digital machines and the tape you've just recorded never shows any overload indication on replay. Other machines which do flash an overload may well be reading OdB and

The ciever machines use a different method to determine whether or not a real overload has occurred. Just as the highest peak of a signal touches the OdB mark, a single sample will be recorded with a value of OdB. If the input level goes any higher, several samples in a row will be at this OdB point, and this is likely to be because of overload. So some manufacturers count consecutive OdB values — the Over indicator on a Sony 1630 machine will indicate an overload if three samples in a row are detected at OdB. However, at 44.1kRz three samples lasts only a few tens of microseconds, which is generally regarded as insudible — other manufacturers use four, five or six samples in a row. The beauty of the sample-counting Over indicator is that it will also work with a digital input, and pick up recordings that have arreviously been operioaded.

"Ultimately, being thorough in your approach to gain structure will ensure that you only hear distortion when it's part of your music, and that quiet passages remain free of unwanted background hisses and hums."

Normalisation does ensure that on cheaper playback systems, where system background noise is more of a problem, your recordings will make use of the top end of the dynamic range. It should always be carried out as the final operation, after any other digital editing, since you're asking for trouble if you tweak the digital signal any more once it contains peaks at the maximum theoretical level. Also, since both of the above plug-ins can take advantage of noise-shaped dithering (for better low-level resolution), this can also raise levels, particularly at higher frequencies. For this reason, many people play safe, and normalise to a figure just below 0dB — Waves recommend -0.3dB when using their *L1 Ultramaximiser* during mastering for CD.

#### THE FINAL TOUCHES

Ultimately, being thorough in your approach to gain structure will ensure that you only hear distortion when it's part of your music, and that quiet passages remain free of unwanted background hisses and hums. Noise gates and muting can remove all the background grunge once it falls beneath a threshold level, but with attention to detail and careful wiring (preferably with balanced lines) your music will sound more transparent even at normal levels if the noise floor is as low as possible. Sadly, digital artefacts often sound more objectionable than analogue ones, because rather than being random in nature (a steady background hiss that the ear tends to ignore if low in level), they tend to be tied into the signal itself, and are therefore more noticeable. At low levels, where the converters run out of resolution, smooth waveforms begin to resemble a staircase, which gives a gritty sound, known as quantisation noise.

The last year has seen many more affordable digital converters appearing in mid-price to budget equipment, and these have lower noise floors than equivalently priced equipment that is a couple of years old. Now, more than ever, it's worth giving your studio the once-over to optimise everything in the audio chain.

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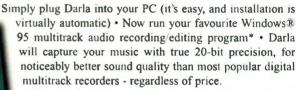
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As well as providing eight independent sets of MIDI connections, the Unitor8 features comprehensive synchronisation facilities and even supports video timecode. PAUL WHITE explores the Ins and Outs of it.

he Unitor8 is a multi-port MIDI interface designed for use with either Macintosh or PC computers and combining an 8-In, 8-Out format with MIDI merging and patching capabilities, plus SMPTE reading and generation (both the usual LTC Linear Time Code and VITC Vertical Interval Time Code). There's also a Click input that allows the user to input tempo information or send MIDI messages using a footswitch. Multiple Unitor8s may be connected to a single port when more Ins and Outs are needed, and Mac users can connect up to eight units via the modem socket at any one time, and eight more via the printer socket if required. PC users are currently less fortunate, as Windows 95 can only address up to 11 MIDI ports, but a fix is promised for this bug in Windows 98. Windows NT support is also expected later in the year.

#### **CONNECTIONS**

Housed in a 1U rack case powered by an external adaptor, the Unitor8 has seven of its MIDI In and MIDI Out sockets on its back panel, with in and Out

MIDI, so future upgrades will be possible without having to send the unit away.

If you're a Mac owner, you can use the Unitor8 in its most basic way without any additional software — all that's necessary is to connect it to the modem or printer port via the supplied RS422 cable. PC users will need to install the MME driver that comes on disk with the Unitor8 package. A 9-way RS232 cable is provided to connect the Unitor8 to the PC's COM port, though a 9-pin to 25-pin adaptor may be needed for some computers.

#### **SOFTWARE**

To use the more sophisticated features of the Unitor8, including the routing options, you have to install the *Unitor8 Control* software that's provided (in both Mac and PC formats) on the enclosed disk. Installation is straightforward and is clearly explained for both platforms. Unitor8 emulates a MOTU MIDI Time Piece as far as most music software is concerned, but there's the option to use Opcode's OMS (Open Music System) if that's what you'd prefer. The Windows driver

## MIDI CENTRAL?



#### EMAGIC UNITOR8 CROSS-PLATFORM MIDI INTERFACE

Pros Cons

EMAGIC UNITOR8 £575

Pros

Good range of sync facilities.

Operates without fuss.
Support software generally clear and easy to use.

8 MIDI Ins and Outs

CONS

Slightly more expensive than some other 8-In, 8-Out devices, though it does have a professional feature set.

Summary

A fully featured MIDI interface with the added benefit of variable flywheel sync and VITC support.

number 8 located on the front panel. This is a practical arrangement meaning that there's always an In and Out you can get to easily whenever you want to patch something in on a temporary basis. All other connections, apart from the abovementioned Click input, are also on the rear panel.

Eight LEDs show MIDI In activity, with a further eight registering MIDI Out activity, and both the Panic/Patch button and the Mac Thru button have associated LEDs, as does the Power switch. Pressing the Panic/Patch button kills stuck notes. whereas pressing and holding it puts the unit into patch mode, where up to 32 different patch setups can be accessed via MIDI Program Change messages, even when no computer is connected. Mac Thru allows a Mac peripheral, such as a modem, to be chained in via a rear-panel connector, so that it can be used without the need to repatch when the Unitor8 is not in use. There are fewer physical controls and buttons than you might expect to find, but that's because most of the clever stuff is handled by the unit's support software. Interestingly, the operating software of the Unitor8 itself can be updated via

supplied is multi-client compatible, so it's possible to run *Unitor8 Control* at the same time as another MIDI application, such as a sequencer or editor.

With the supplied software the Unitor8 can be used as an 8 x 8 MIDI patchbay, where selecting the appropriate point on an 8 x 8 matrix establishes a MIDI connection. If several Unitor8s are being used at once, similarly numbered input ports are merged, so there are never more than eight independently addressable inputs, though all outputs remain independent.

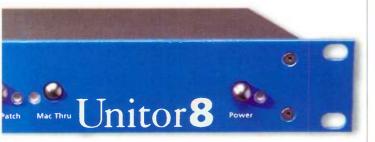
#### **SYNC**

A Unitor8 patch contains not only routing information, but also the sync status of each device, and in the software's SMPTE menu it's possible to select the type of timecode format to be recognised. There's a choice of LTC SMPTE (30 frames per second, or fps), LTC AES/EBU (25fps), VITC or Off. The frame rate can be selected via a flip menu, and various options are available for burning the VITC reference into picture. For audio-only projects it doesn't really matter what frame rate you choose, as long as you stick with it. VITC can only be used with a video recorder, as this particular timecode format is an integral part of the picture data, whereas conventional LTC SMPTE can also be used

to stripe audio tapes. A Refresh option is also available to generate a new timecode from the timecode input, so that weak or marginal signals can be restored to their former glory.

A potential problem with timecode is the occasional unreadable section caused by tape dropout or some similar gremlin. If this goes on for long enough, the sync'ed-up sequencer may stop. Unitor8 allows you to set a 'freewheel' period that will cause the system to carry on regardless at the present rate for a preset period of time, in the event of a code-read error. The hope is that you'll soon pick up good code again. Freewheel time can be set to any value, but if it's too long it will become annoying — for example, a five-second freewheel time means that the sequencer will carry on running for five seconds after you've stopped the timecode source.

Those not needing to work to picture can often get by with MIDI Time Code (MTC) or even MIDI Clock, and the Unitor8 lets you specify which output ports should carry the MTC signal. If systems such as Digidesign's ProTools are to work properly with MTC, they need a 'Full Frame' message from time to time, due to the fact that MTC is transmitted only with quarter-frame messages, and several consecutive chunks of MTC data are required before the full timecode location can be deduced. If this seems overtechnical, don't let it bother you - just look in your software manual, and if Full Frame messages are required, it will tell you the information you need to enter in this section. In order to avoid MIDI congestion, it's also possible to selectively filter MTC, SysEx, Active Sensing, Tune Request, Real-time, System Reset and Song Select messages from any MIDI In or Out port. Finally, you can select on which MIDI In port and channel Program Change messages will be recognised, for switching the Unitor8's patches.



The software initially opens in Memory Manager mode, where different patching setups created in Patch mode may be stored and later recalled via MIDI Program Change command. A front-panel Panic button sends an All Notes Off message to kill stuck notes, and this is followed by discrete Note Off messages on all channels, just to make sure the job is done. In Computer Mode, the Unitor8 can also generate timecode for striping tapes, and the timecode can be set to start at any time reference. Other options are provided specifically for VITC sync striping.

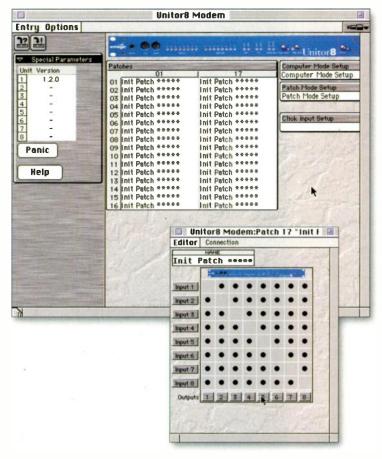
No digital wordclock facilities are provided, but, rather cheekily, the manual uses this as an opportunity to push the Emagic AudioWerk8 PCI card, which can continuously resync audio to a fluctuating timecode without relying on wordclock. The digital output of the AudioWerk8 card may then be used to sync other pieces of digital equipment.

#### IN USE

Unitor8 is easy to connect up, and the software installed without fuss on my Macintosh Centris 650. Once the software is installed, you have to decide what you want to do with the interface. Most of the time you'll probably be using one MIDI input from your master keyboard, and the MIDI Outs to feed your sound modules, and if this is all you want to do you needn't even bother with the software. However, the additional MIDI Ins will come into play when you want to edit your synths or use SysEx dumps for saving and restoring patches (the Unitor8 package is designed to integrate closely with Emagic's *Sound Diver* editor/librarian, but there's no reason it



#### **EMAGIC UNITOR8**



shouldn't work perfectly well with other systems). You may also want to have the option of switching between two or more MIDI controller devices.

For use with a separate audio recorder, LTC (SMPTE/EBU) will enable you to stripe an analogue or digital track so that your sequencer can be made

#### CLICKING INTO PLACE

To the left of the front panel is the Click In jack, which can be used with a footswitch or with an audio input such as a regular sound from a drum machine. Both normally open and normally closed switches may be used (plug them in before powering up and the Unitor8 will recognise them automatically). The Click In may be used to input tempo information — to create tempo maps in a sequencer, for example — though the footswitch option may also be programmed to send a choice of up to four MIDI commands on successive presses and releases. When audio signals such as drum sounds are being received, there's the facility to set an Analogue Hold Off Time, to allow beats occurring between the wanted beats to be ignored.

MIDI interface that takes in ADAT 9-pin sync to generate an MTC lock without the need for a BRC or third-party converter. One of the biggest gripes I hear from ADAT users is that they have to buy extra hardware to use MIDI sync, and while you can record SMPTE to a spare track using the Unitor8, you can't sync directly. With so many ADATs around, you'd think the first manufacturers to build an interface with this capability would be on to a winner.

#### **SUMMARY**

Though it's not the cheapest multi-port MIDI interface around, the Unitor8 has a very comprehensive feature set. The utility software is simple to install and use, and the front-panel displays leave you in no doubt as to which input or output is active. The variable Freewheel function is useful if you're dealing with a dodgy timecode source, as is the ability to generate fresh timecode from the timecode input, and the ability to stack multiple units also adds to the Unitor8's flexibility for Mac users. Sadly, PC users don't yet get the same benefit, thanks to the 11-device limit in Windows 95. Furthermore, if you have a soundcard, its MIDI



#### FURTHER READING

For more information on the Mac and PC MIDI interfaces on the market, see our recent roundup of interfaces for the Mac in SOS July 1997, and the PC interfaces roundup in the following month. In the meantime, here are a few of the other cross-platform devices available with at least 8 MIDI Ins and Outs:

- MOTU MIDI Express XT: £399.
- MOTU MIDI Timepiece AV: £649.
- Opcode Studio 4: £389.
- Opcode Studio 5LX (15 independent Ins and Outs): £975. Debbie Poyser

to run in sync with the recorder, but if you have one of the more modern digital disk-based recorders, or something like an Alesis ADAT with a BRC (Big Remote Control) which outputs MTC, you can use that for synchronisation without having to tie up a valuable track of tape (or disk). VITC is only going to be of use to those people working with video, and its main advantage over LTC is that it can be read at any speed, even when the video machine is in pause.

The supplied software provides a clear interface for the Unitor8, and even though a number of features that might appear as hardware switches on competing products are in software only, that usually isn't a problem, as you're going to be using the Unitor8 with a Mac or PC anyway, and it's often easier to pull down a window than to move over to a rack. Once I had set up the unit and the software, everything worked boringly well, with no stuck notes and no obvious MIDI delays.

I'm still intrigued as to why nobody has built a

ports (presumably both real and virtual?) are counted towards the maximum, so you could end up reaching the limit with just one Unitor8.

If you're an Emagic software owner, the Unitor8 makes a lot of sense, as it also integrates well with Sound Diver, but there's no reason not to use it with other sequencer packages if you want to, especially if you need the extra sync facilities the Unitor8 offers.



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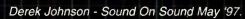
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# Tony Taverner Sense And Sensibility

Tony Taverner's career spans four decades and encompasses a huge list of top-drawer credits. CHRISTOPHER HOLDER heads to Sensible Studios, where Tony acts as manager, to extract a few pearls of wisdom.

s I take my seat in Sensible Studios' main control room, it's difficult not to be overawed. All about me is a bewildering array of knobs and buttons, plus Tony Taverner beavering away on the studio's Euphonix CS2000. When it comes to relaxing into interview mode, though, he finds the ergonomically overspecified furniture rather more difficult to manage than the state-ofthe-art control surface of the Euphonix console. After a few stymied attempts to force the chair into the desired configuration. Tony resigns himself to the idea that the furnishings know who's boss.

"I can never get these chairs to work — too many things to adjust." It's like hearing Jean Luc Picard complain about the complexity of his trouser press. The irony obviously hasn't escaped Tony either: "I'm hopeless with our VCR as well. Way too complicated!"

That's the essence of Tony Taverner the producer. He's generally unimpressed with fiddly intricacies and anal attention to the inconsequential, and keener to nail the essence of a performance. He constantly impresses that this kind of work isn't a process of painting by numbers: it's a day-by-day proposition, and your methods for coaxing a perfomance should be as varied as the range of musical artists you work with.

A career spanning four decades and a CV as long as Mr Tickle's arm bears testament to his success. In his producer capacity, Tony has worked with East 17, Duran Duran, The Jam, The Hollies. London Beat, Gary Glitter, The Gypsy Kings and Motorhead, while as an engineer he's applied his talents to the recordings of Wham!, Bill Wyman, Sex Pistols, Robert Palmer, New York Dolls, Level 42. Nazareth and Black Sabbath.

#### **ENGINEER? WHAT'S THAT THEN?**

Tony started his career in the days when you could count the number of commercial studios on the fingers of two hands.

"It was in 1969 that I landed my first job at the Marquee, the original Marquee studio, that is. I started off like everbody else, really. I wrote letters to the studios. I didn't actually know what an engineer was, but I knew I wanted to make records. I saw the title 'engineer' on a couple of album sleeves and thought, 'I'll be one of those'. We had a 4-track studio at that time, with an old Sound Techniques desk. I stayed there for three years before moving on to a residential studio in Kent, called Escape studios. It was a great place on a farm, owned by two real characters, the Ruffi brothers. When I arrived they had a Studer 16-track and another Sound Techniques desk, and we put it all together in a converted barn.

"The great thing about Escape studios was that I was completely in control. At the Marquee I'd only engineered a few sessions, and to be dropped in the deep end like that was great. While I was there I did a lot of work with Jeff Beck, who just happened to be living in the same village, as well as with Nazareth, including their Hair of the Dog album. They came down to rehearse for a week. Two of them subsequently went to Scotland for a wedding, and I went down to the pub with the drummer and guitarist, had a drink or two, went back to the studio, decided to put a couple of mics up to see what sort of drum sound I could get, and recorded 'Love Hurts' with them, just on the drums and guitar, with overdubs later. It ended up being a million-selling single in the States — and we were just mucking about after the pub! I left Escape in 1976, and I've been working freelance ever since.

"I say freelance, but I did spend 11 years at Maison Rouge. I even spent five of those years as studio manager. It was the same sort of arrangement I have here at Sensible Studios; it leaves me free to go



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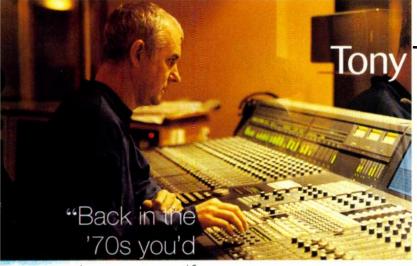
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give yourself three hours to knock out a single mix." Tony Taverner

#### SOME KIND OF RECORD

You might expect Tony Taverner to have strong opinions on what makes a good recording — and, indeed, he does.

"My definition of a good recording is the good performance of a great song. I've probably made a lot of records that are technically near-perfect, but if the song is rubbish it's not a good recording. Equally there might be some fantastic performances that technically have a few glitches, but I'll let it go because you can't beat a good performance.

"I sometimes listen to one of my old records and think, 'mmm, that's a bloody good recording' but the trouble is that I don't know how I got it — I suppose that's the trouble with never working to a formula. I literally just sit down and everything will be different depending on how I approach it that day. Everything: mics, effects, processors... it's whatever I fancy at the time; there are no hard and fast rules. Sometimes I'll just pick up the nearest mic and give it a go.

"I'm a very quick worker. If I take a long time over anything in the studio, I start to think that something is wrong. Nowadays I'd probably spend one day on a mix, which to my mind is a long time. Back in the '70s you'd give yourself three hours to knock out a single.

"These days you've got more tools available to you, but they often don't speed up the process. For instance, look at how far automation has progressed, but that can actually slow you down; you can find yourself fiddling about with things you didn't really need to, simply because you can."

#### **RANK AND PHILE**

As Tony comments, times and technology have changed, and not always for the better, so I ask whether the situation for a young engineer is very different to what it was when he was coming up through the ranks, and whether he finds standards of training have changed for the worse.

"Not so much now, but a couple of years ago I probably would have said yes to that last question. Bands are back and hopefully always will be. A few years ago when I was going from studio to studio as a freelance, I was horrified to find these quite experienced assistants who had never even set up a microphone, except possibly in front of someone's mouth — which is quite sad, but that's how the recording business was going at that time.

"My advice to would-be producers out there would be to enjoy it and to work hard. I've had loads of assistants over the years, and sure, no-one really knows what the job's like until you start, but I've seen so many of these young guys get disheartened. Being a tape-op or a tea-boy must be one of the worst jobs in the world, but then tomorrow your luck might change: the engineer falls sick, you've only been there two months, you've never engineered a session before, but you've got to sit down and do it — that'll be your moment. It's a hackneyed old story, but it happens."

elsewhere if a project comes along that I can't do here. Having a successful producer and a hit album under your belt doesn't do a studio any harm."

#### **CAREERING UNDER CONTROL**

As Tony has already explained how he became a successful engineer, I ask how he made the transition to record production.

"Everything in my career has happened organically, a natural evolution. An artist would do a couple of songs with me as engineer, then the next time it would just be them, and me as producer. I've always tried to continue to do engineering as well — I've never gone one way or the other.

"I've always approached production with the end product in mind; the technical side of things has never interested me too much. As a musician I was probably the worst bass player that ever lived, playing in bands at school, so the playing wasn't what brought me into it. It's just being in the middle of it all that's been the main motivation."

Someone as successful as Tony is in a good position to know what makes an outstanding producer. But he doesn't think there's any special formula:

"It's simply someone who gets a good end result. The way you approach it is entirely up to you. If you don't make good records you're not a good producer, simple as that. Whether you're a brilliant musician, or a brilliant engineer, or whether you sit at the back of the room and say six words during the whole session doesn't matter --- you've got to get the result. Theory doesn't count for anything if you don't have the talent or the personality to do the job. In an engineering capacity I've worked with some unbelievable producers. Sometimes I'd be thinking, 'they're not putting much in', but at the end of the day you'd sit and listen and it would be a great record. That's the skill. I consider my job to be about leading artists down the right path, whatever that might be for them. Whether it's the playing, the arranging or just day-to-day organisation, I'm there to keep them focused and feeling relaxed about what they're doing. With every record you make with a band, experienced or not, you have to remember that at that moment the session is the most important thing in their lives. Because it's so important it's very easy for them to become unfocused about their job.

"To me, recording is about keeping everything as simple as possible. I've never had a set of rules, or imposed a way of working on anyone. I just aim to go down the path of least resistance."

#### WHAM! BAM Thankyou ma'am

Tony undertook engineering duties for Wham's first album, Fantastic, and has strong memories of the experience

From the moment the two of them walked through the door, I thought George Michael was a genius. When he first recorded with Wham! George was, what, 19? He walked in, and it was like he was born in the studio. He knew every single thing he wanted, in every single aspect of his career. By Wham's first session he had already written wouldn't record it for that album, he'd save it for his first solo project. Unbelievable. In fact, a lot of that first um was written in the studio including 'Young Guns'. Now there's one recording that I look back on quite proudly. Its sound was very much of its time but I think It was a classic pop record."

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#### Our regular look at the hottest new sample CDs and CD-ROMs.



VINYLISTICS VOL.3

(AUDIO CD)

Not having heard the previous two volumes in this series of hip-hop and funk loop collections, the most charitable thing I can say about this final disc in the series is that the best stuff must have gone on volumes one and two. This is truly a motley assortment of weak, thin loops which have only one thing in common: they're all pretty naff. Or maybe they're the bee's knees and I'm just not tuned into nastily EQ'ed, distant-sounding loops with output levels which go up and down like a rollercoaster. They don't even sound full of crackles and other surface noise like rare groove samples ought to; they're just dull.

Most, but not all, of the loops include the various drums from within the loop as single isolated samples. The problem is, though, that the sound quality of the majority of the loops here is so appalling that the individual drum samples sound more like radio interference or digital distortion than the potential rhythmic backbone to your killer new track. About the only sign of intelligence on this entire CD is that all the loops have been tempo-mapped, which basically means they can easily be tuned between the assigned bpms, namely: 84, 89, 94.5, 100, 106, 112, and 119bpm. This allows you to mix and match any of the loops by off-setting them up or down in half-tone steps.

In short, it's hard to believe that this CD comes from the Swedish sonic wizards at e-lab, but it does. Of course, a skilled studio scientist would probably find it the work of a couple oif minutes to cook up a monster beat with this

CD; but then again any half-decent technologist could make a reasonable backbeat by sampling up a load of rusty old pots and pans. Of all the CDs available for spicing up hip-hop and funk tracks, this would not be my first choice. Big George Webley

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#### STRICTLY R&B

(AUDIO CD)



Programming a drum part quite often causes all sorts of headaches. I remember when working with a rapper once, I spent about three hours programming and tweaking a rhythm so that the timing was absolutely spot-on and it sounded really hip and fashionable for the time, particularly the snare pattern. Then we spent three-quarters of an hour failing to get the bass part right. Try as we might, we couldn't get it to work, and then, at the end of this fruitless exercise, the rapper turned to me and said "yeah, well, the snare pattern is out of date". After 45 minutes! How fast modern music fashions change.

If only I'd had a copy of this excellent e-lab CD at the time — it's packed full of beats and percussion sounds. Of course, it probably will date (although it'll take a lot longer than three-quarters of an hour to be yesterday's news), but then, what goes around comes around; trends seem to fall out of favour and then come back into fashion on a monthly basis these days. What makes this a really worthwhile purchase (apart from the fact that it has what seems like every conceivable kick/snare combination in modern music — well, a couple of hundred different ones anyway) is that it serves as an excellent library of easy-to-apply beats covering many styles, including swingbeat, hip-hop and modern R&B.

There are no hidden surprises on this disc; just perfectly programmed, sonically clear drum loops. They will work perfectly as they are, but the superb quality means you could doctor them



with absurd amounts of compression, timestretching, overdrive and any other flavour of studio trickery if you wish.

The tempos range predominantly from 70 to 106bpm, but there are a couple of slower loops as well. It's just a shame the producers at e-lab didn't keep the tempos grouped together, instead of dotting them across the 97 tracks in a random order (there are 99 tracks on the disc in total, but track one is "a bunch of breaks" and track 99 is a test tone at 1kHz, 0dB)

All in all, e-lab have compiled this CD beautifully - it's immensely (and instantaneously) usable. The track listing on the sleeve tells you everything you need to know: it gives (in this order) the track number, name, tempo (in bpm), the number of loop variations, how many bars the pattern lasts, the number of isolated sounds included after the main pattern (these, incidentally, are played in time, which is a very neat touch), and any additional loops that have been included. Every track has been programmed from scratch using mainly drum machines, a few live instruments and the occasional sampled beat. All the rhythmic sounds you could possibly want for modern dance-based tunes are here, clean as a whistle. In fact, I'd go as far as to say there's enough ammunition here for a whole swathe of hit records. Big George Webley

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#### MALICE IN WONDERLAND



(AKAI-, ROLAND- & EMU-FORMAT CD-ROM/AUDIO CD)

Malice in Wonderland is the latest contribution to the samplist's art from Ian Boddy, Akai employee, independent electronic music artist and occasional SOS writer — and the CD's title gives a fairly strong clue to what it's all about. You won't find many conventional loops or

string pads here — instead, there are rhythmic loops created from heavily processed synth and acoustic sounds, tortured bells, weird drones and evolving pads that are almost tracks in their own right. If this kind of thing appeals to you, read on.

All the loops have their tempos carefully annotated in bpm on the sleeve, and many are designed to be overlaid onto other loops — for example, Phasing Hip-Hop, Fizzy Hats and Jungle Filters. There are also effects loops featuring heavily filtered, vocoded and distorted sounds, suitable for ambient trance at one end of the scale and ambulance dance at the other! Ian has also created a number of synth percussion loops, and the influence of the arpeggiator can be heard creeping into various examples. For those who prefer to make up their own rhythms, there's also a selection of one-shot percussion sounds designed to claw their way to the front of any mix by brute force alone.

The Synth effects section melds sci-fi with techno, while the Ambiences section is the only



part of the collection that could be described as in any way relaxing. Some of these are quite superb and are reminiscent of the Wavestation's style of evolving patch, but after a few examples, angst and edgy weirdness start creeping back. Ian also obviously has a proclivity for bells, because there's a section devoted entirely to them, though nearly all are synthetic or heavily processed to wring the maximum peculiarity out of them. It's a bit like having flanged tinnitus! We also have numerous drones, ranging from the eerily resonant to the looped chainsaw, then the collection winds up with Weird Voices. The titles (for example 'Worms in my Brain' and 'Nutter in a Tank') convey the content of these samples more accurately than you might imagine!

Produced in Akai format, but also compatible with Roland and Emu machines, the CD-ROM comes with an additional audio CD, though the audio disc is also available separately for those too impoverished to buy the CD-ROM! The quality of sound design and programming is very high, and it's inevitable

that comparisons will be made between Malice in Wonderland and Eric Persing's quite wonderful Distorted Reality (see SOS April 1996). I like both, and although they are both impressionistic works, I find them quite different, with lan's collection being perhaps harder and more confrontational. If you like odd with attitude, then you'll like Malice in Wonderland. Paul White

- Akai-format CD-ROM £119; audio CD £59.95.

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### DENNY JAEGER PRIVATE COLLECTION VOL. 1

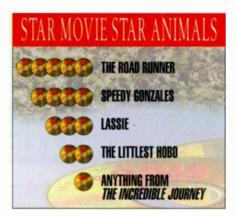


(ROLAND-, AKAI-, EMU-, SAMPLECELL- & KURZWEIL-FORMAT CD-ROM)

Denny Jaeger has a reputation as a serious sound designer, and though many of the samples in this Q Up Arts collection started life as real instruments, they're often processed beyond recognition. For example, he'll use the sound of someone tapping a lampshade, then process it to create powerful percussion or haunting marimba-like sounds. Similarly, he may take a conventional kick drum and then record the result of rubbing his hand over the head before filtering the result.

On the other hand, several conventional sample clichés are approached from a different direction, the first being orchestral stabs. By providing what are in effect single-note stabs, the user is able to build up his own chords rather than relying on the full-chord samples normally provided. There are also a few orchestral wind samples.

In a more electronic vein, there are rich, textural keyboard pads and bass sounds with incredible levels of low-level power, clay ghatams, voices forced down a tube (sounds



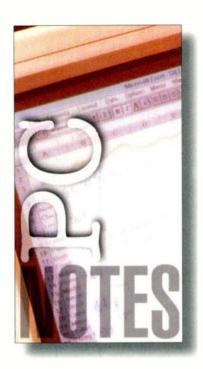


like a vacuum cleaner hose or similar!) and a whole host of hard-to-define atmospheric sounds created by coaxing racket from everyday objects and then processing them in unusual ways. In fact the double bass section playing backwards through a whole load of DSP effects sounds reassuringly normal after some of the examples.

The collection concludes with a large selection of drum hits and kicks, but even these have been approached differently, as each drum is sampled with several hits, all subtly different, and some are presented as the same sound but fed in from different mics, for example, close and overhead. By combining these sounds, it's possible to create a very realistic-sounding acoustic kit, and to reduce the amount of work needed to do this, the samples are organised into 'modules' so that you can mix and match to make your own kits. A feature of these drum sounds is the Canyon Mic option, created by putting the mics in the rafters of a very large room.

While this album is a masterpiece of sound design, a large number of the sounds fall into the 'But would I use it?' category, and good though the drums are, it's easy to be tempted by the convenience of the ready-made kits provided on other sample CD-ROMs. The approach to the more abstract samples is different to other 'impressionist' sample libraries, like Distorted Reality and Malice in Wonderland, and because this is a collection rather than a themed selection, drums and synth stacks sit alongside orchestral sounds and rock drums. Consequently, it sometimes seem you don't get enough choice within each category, but when you add it all up, there's really guite a lot of material overall. This is one collection that dares to be different, and combined with the overall quality of work. merits a score of four. Paul White

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It seems that the future is in the cards. MARTIN WALKER reports on a significant announcement that may herald a new trend in PC soundcard design.

fter testing a huge batch of DirectX plug-in software for the March issue, I received a press release from Yamaha that sheds rather a different light on the whole business of adding real-time effects to PC audio recordings. The product that made me think again is the SW1000XG, a new half-length PCI soundcard, destined for release around May, that started life as the innards of an MU100 module (reviewed in the November '97 SOS), but with added hard disk recording capabilities. It provides XG MIDI sounds, plus VL-compatible physical modelling, with 64-note polyphony, 32-part multitimbrality, and 20Mb of ROM sounds. It also has six independent 24-bit effect busses, offering reverbs, compressors, limiters, delays, distortion, filters, and even a licensed Aphex Aural Exciter.

A daughterboard socket allows you to plug in either the PLG100VL, for 256 additional physical modelling voices, or the PLG100VH multi-part vocal harmoniser. Using one of these daughterboards, priced at around £100 each, provides yet another effect buss, bringing the total to seven. To access all this power via MIDI you need a total of 48 channels (for the two internal synths, each 16-part multitimbral, and an additional 16 parts if the daughterboard option is used). As usual with Yamaha cards, installation should prove fairly easy, since it only takes a single IRQ (no DMA or I/O address is required).

On the VO side, the soundcard's audio quality is kept as high as possible with the provision of

an S/PDIF digital output as well as an analogue one. There's also a stereo analogue input, and any signal plugged into this can be recorded directly to your hard drive, either with the benefit of any of the internal effects, or monitored with effects but recorded dry. An onboard connector provides an internal link to the DS2416 digital recording card mentioned in last month's PC Notes. The DS2416 forms the heart of the DSP Factory multitrack audio system, but if you link the SW1000XG to it, you can access its entire effects structure for DSP processing.

However, for people who are interested in buying the SW1000XG by itself, the most intriguing possibility is that it apparently appears as six stereo WAV drivers to Windows 95. Selecting any of these drivers for WAV playback in an application such as Cakewalk Pro Audio or Cubase VST will allow you to route your audio tracks indedendently through the soundcard's on-board effects. The Aux routing system can send these individual internal driver channels either through the soundcard's effects system, or directly to the physical outputs if you've already added some DirectX plug-in effects. The sound quality of Yamaha's effects is always good, but if you can access these during hard disk recording you don't use up those vast amounts of processor power normally required for the more advanced effects, such as reverb. If you don't want to use 50% or more of your processor's power running Waves' Trueverb or the TC Native Reverb, just patch the appropriate playback channels through to the SW1000XG effects instead, and save this processor power for more playback channels or other DirectX effects.

One of the reasons why many people are interested in soundcards with multiple outputs is that they provide additional aux sends for outboard processors; the beauty of the SW1000XG is that, despite only having a single

physical stereo output, it adds multiple buss effects to any MIDI + Audio sequencer. This sounds like just the helping hand that many people need. With a projected price that Yamaha assure us will astonish, many people will be looking forward to May a bit more than usual this year.

#### **CUBASE VST 3.55**

I've just downloaded the new version 3.55 update of Cubase VST (a hefty 4.8Mb), and although I haven't had a chance to investigate all the new tweaks yet, I can report that the annoying bug that only allowed a certain number of plug-ins to appear in the drop-down menu before they ran off the bottom of the screen (depending on screen resolution and font size) has been cured. You can now also selectively disable any DirectX plug-in (not the VST-specific ones) that you don't want to appear in the VST list. This leaves the list of plug-ins inside VST a lot easier to navigate. Sadly, the bug I reported in the December 1997 PC Notes is still there — there are no coloured part backgrounds when 'Show Events' is being used, and muted parts are still impossible to see when viewing arrangements in this mode.

The most obvious new feature in version 3.55 is the provision of up to four different insert effects for each channel of the mixer, which makes setting up compressors, limiters, noise gates or enhancers a lot easier (subject to processor power, of course). Apart from the extra insert button on each channel, stereo audio channels now have sky-blue fader caps, rather than the silver ones that the mono channels have, which does make things clearer on screen.

Any users with sync problems will also be pleased to see a new option in the ASIO Control panel to 'Check Buffers and Sync'. This checks the sync between MIDI and Audio, and checks

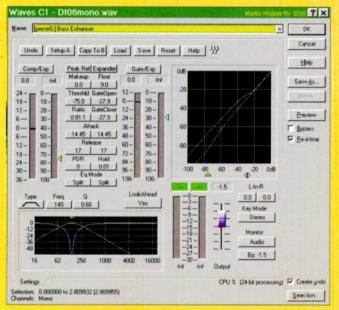


An updated version of XGedit (to version 2.5) should be available by mid-March, featuring support for the new Yamaha SW1000XG (see main text), as well as the MU90R and MU100R. Of course, there are also a multitude of other enhancements. Check out http://www.cybertheque.fr/galerie/GGregson (watch out for those capital G's).

#### PLUGGING FREEBIES

Yet another free update is available to registered users of the Waves Native Power Pack — a new enhanced version of the C1 compressor. Version 2.3.1 needs more CPU time (a 166MHz Pentium is now the minimum

recommended processor for real-time previews), but adds an EQ side-chain for de-essing and de-popping, as well as other frequency-sensitive compression options. The C1 now appears in five versions in your plug-in list, with



The updated Waves C1 compressor is now more comprehensive than ever, with a frequency-sensitive side-chain.



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various combinations of modules, and comes with a new bank of presets which includes De-essers, Bass Enhancer, and HF Noise Reduction. Point your browser at www.waves.com.

If you fancy a free VST plug-in, and are on the Internet, Steinberg are offering the TranceMitter in exchange for your email details (so that they can send you all the latest information regarding updates and new releases). Once you submit your email address, they email back a password, which you can then use to get access to the download page. I duly filled in my details, and the password was emailed to me within a few seconds. I'm now the proud owner of a new 274Kb

plug-in. The TranceMitter is a VCF with resonance, built-in LFO and tracking (see screenshot). It certainly works well enough, although screen updates become very sluggish at times when its edit screen is on show - still, it's free! The only slightly worrying thing was the wording of the agreement: "By using the password for downloading the free plug-in, you entitle us to send you news and other information regarding our products via email". I hope this doesn't cause my email service to become sluggish as well! However, I later received an email from Steinberg confirming that it's quite easy to remove your email address from their mailing list if you want to.

audio recording and playback for dropouts. You select a test period between 1 and 300 seconds. and then click on the Start button. If any problems occur during the test period, a message will pop up suggesting changes to the number or size of the Audio Buffers. Although Steinberg admit that during actual recording and playback there will be additional processes on the go, this is nevertheless a useful way to check that your settings are in the right ballpark. If you're really struggling, a new Disable Audio option on the audio menu deactivates the audio engine, or you can disable it on startup by holding down the Shift key when launching VST. If you're working on a MIDI-only track, this will release processing power from features that you're not using, and this should help those people I talked about last month who upgraded prematurely.

#### **COMPILATION BLUES**

In the long-running debate concerning the relative merits of the Intel Pentium MMX and AMD K6 processors for music applications, yet another factor has come to light. As I said in a Crosstalk letter reply in the March '98 issue "all music software is written for Intel processors, and most figures published to date indicate that the AMD K6 range will probably work well, but will sometimes work significantly slower than the

Pentium range." Apparently, one reason for this is that when code is written and then compiled into its final form, some compiler programs have options to optimise their final code for any special features present in Intel processors. I'm not saying that these features make Intel better

#### PC SNIPPFTS

#### • TO 400MHZ AND BEYOND!

Intel released a 333MHz version of their Pentium II processor at the end of January, for those of you with bottomiess wallets. This is the start of a new 0.25-micron technology, since the individual transistors on the chip are closer together than previous Pentium II chips, which used a 0.35-micron process. This new CPU uses less power and consequently generates less heat, and looks to be the start of a whole new range of even higher speed processors, to 400MHz and beyond.

#### . TESTING, TESTING...

If you want some impartial figures for soundcard performance, take a look at Arny Kruger's website (http://www.rockpark.com/soundcards/). Here you will find a growing set of results, mostly from tests carried out by Arny himself, for a wide variety of soundcards, including models from Creative Labs, Ensoniq, Event, Turtle Beach and others. Although "for entertainment purposes only", the graphs provide a fascinating look at how different soundcards compare in this particular set of tests.

SOUND ON SOUND . April 1998

— indeed, in many cases the K6 runs significantly faster — but this sort of selective coding will tend to magnify performance differences when running the same piece of software with different processors.

If only all manufacturers would publish figures showing the performance of their software with a selection of processors, our choices would be easier. As it is, you're unlikely to get much better than a non-committal "Other processors may work but performance cannot be guaranteed", and this leads you to the conclusion that buying "other processors" may be a bit of a gamble. Overall performance of any PC is a result of many components acting (with any luck) in harmony. Any bottleneck may limit overall performance — even the way the soundcard drivers have been written can have a significant impact, as some people find when they buy a new soundcard. The recent emphasis in the pages of SOS on the processor used has been largely due to the rising popularity of realtime EQ and effects, which tend to demand a disproportionate amount of processor power. If you don't plan to duplicate a rack full of effects inside your PC, the balance of power shifts significantly, and the AMD K6 will probably run faster. Mind you, I've noticed several developers starting to recommend a Pentium II processor to achieve best results. Off we go again. sos



Merging audio, video and computer formats are changing the way Apple users work. MARTIN RUSS looks at how the tools are changing.

nly 10 years ago, a typical music-orientated MacOS computer owner would have been using a single-port MIDI interface and a MIDI sequencer to control a collection of synthesizers. Since then, that MIDI interface has probably become a multi-port MIDI patchbay with sync capability, and the MIDI sequencer has evolved into something much more sophisticated, with audio tracks, sound sampler support, synthesizer sound librarian and editing features, DSP audio facilities, and more.

Over the same period, the way data files are stored has changed as well. MIDI Files have become a well-established standard for music outside the hi-tech music industry — the computer industry has adopted them as a compact way of generating music, albeit using the General MIDI 'paint-by-numbers' approach. Video is no longer the exclusive domain of expensive broadcast editing suites, but has been incorporated into the computer's armoury of multimedia tools. Apple's QuickTime technology has evolved from a simple way of putting moving images on a screen into a comprehensive multimedia delivery tool that covers audio, MIDI, animations and video. It's worth remembering the 'animated GIF'-like beginnings of QuickTime 1.0 back in 1991 to see just how far things have come!

And the users have changed too. As the MIDI sequencer has acquired patch-editing and then sound-editing features, so the focus of the

#### APPLE NEWS IN BRIEF

#### · APPLE G3

After all the talk about the G3
PowerMacs being mid-range
machines, the new G3 minitower
provides the high-end storage and
graphics performance that some
power users have been eagerly
awaiting. The Ultrafast and Wide
SCSI I/O, coupled with a 7200rpm
(what, not 10,000!) 4Gb hard
drive, means that this is going to
be one for the graphics fraternity.
Still no sign of the top-end, six
PCI-slot machine, though...

#### · RHAPSODY

The first developer release of Apple's Rhapsody NeXT/MacOS reworked Operating System could be even more special than was initially thought. It seems that its future is now looking increasingly uncertain as subtle repositioning seems to be making it a server-only technology. MacOS 8.1 however, will be here soon, and includes the ability to play DVD videos and ROMs — but wait for the UK

version, as the US updater could upset a UK MacOS 8.0.

CLARIS CHANGE
Claris, home of my kids' favourite
Amazing Animation and my
workhorse, ClarisWorks, is
handing back the MacOS and all
the rest of the Claris-branded
software except for FileMaker,
and is changing its name to
FileMaker Inc. It seems that
FileMaker is so successful on the
Windows PC platform that Apple
is freeing it to concentrate on
flying even higher.

working environment has become increasingly screen-based. It's no accident that the blackand-white 9-inch Mac screen of 10 years ago has been replaced by 17-inch or 21-inch colour monitors — the demands of dealing with larger amounts of more complex information have forced this development. Nowadays, a musician could be working on music for a music CD, for a computer game, background music for a CD-ROM, or for use on a web-page. Or they might be producing sound effects, working to video or animation, or editing samples or audio files. As a working tool, the computer can now be the mainstay of a hi-tech working environment, and for some people it has become almost the only essential item. The tape recorder, mixing desk, synthesizer, editing block and many other items of studio hardware are now also available as software.

As examples of where software is now, I'll look at three very different but related instances: the recently launched QuickTime 3, RMF and Down-Loadable Sounds. You've almost certainly heard of QuickTime, but RMF and DLS are probably slightly more unfamiliar abbreviations.

#### QUICKTIME 3

I'd like to thank Apple UK for inviting me to the UK Launch of QuickTime 3.0, and I'd like to apologise for not being able to attend. Here's a flavour of what you and me both missed.

QuickTime is actually three separate things—the QuickTime Movie file format, the QuickTime Media Abstraction Layer, and a diverse set of built-in QuickTime file formats.

• The QuickTime Movie file format: This is a standardised way of storing digital media

compositions — video frames, audio samples — and the meta-data connecting them into the final 'movie'.

- The QuickTime Media Abstraction Layer: This is a comprehensive software architecture which specifies how software tools and applications can access QuickTime's rich set of file formats (media support services) and any hardware acceleration.
- Broad file-format support: The Media Abstraction Layer lets developers extend the capabilities of QuickTime in a controlled way rather like creating plug-ins for specific purposes which means that QuickTime has acquired much format compatibility over a wide range of app ications: for example, video, audio, text, timecode, music/MIDI, sprite/animation and VR. Formats supported include: Open Media Framework (OMF), MPEG1, MPEG 2, MPEG Layer III audio, DVD-Video, DVC, AVI, MIDI, AIFF, SDII, AU, WAV, FLIC, QuickDraw, BMP, GIF, JPEG, AVR, Cinepak, and Macintosh Sound Resources.

The QuickTime Music Architecture



"If this gives you the impression that QuickTime has made the transition from being a minor extension to the MacOS to a cross-platform media powerhouse, you'd be exactly right. Apple are justly proud of how QuickTime has become perhaps their second most well-known product name."



This complete album is downloadable via QuickTime 3 from www.apple.com/quicktime/

incorporates many features common to RMF and DLS (see below), and various bandwidth-specific music (QDesign Music Codec) and voice (Qualcomm's PureVoice) streaming technologies. Examples of music 'movies' optimised for 14.4kbps modems, 33.6kpbs modems, and 56k modems or ISDN can be found on Apple's QuickTime web site — in fact, there's a complete album, and more...

If this gives you the impression that QuickTime has made the transition from being a minor extension to the MacOS to a cross-platform media powerhouse, you'd be exactly right. Apple are justly proud of how QuickTime has become perhaps their second most well-known product name, and I encourage you all to download and use QuickTime in your next project — it's on my forthcoming CD-ROM!

#### **RICH MUSIC FORMAT**

RMF is a hugely simple idea, and so very effective. Take a MIDI File and a sample file and bind them together in a wrapper which allows you to map the sample sound to the relevant track in the MIDI File, and you have a single file which is transportable from one computer to another, via CD-ROM, floppy or Internet, and which will still be usable as long as it arrives in one piece.

Add to this a web-browser plug-in which reads RMF files and plays them, and you have the beginnings of a very neat way of extending MIDI Files with digitised audio, while retaining small file sizes. Just a few short but high-quality audio samples, plus the MIDI note information, can equal lots and lots of minutes of music! You can find out more at Headspace's web site — see 'On The Net' box for the URL.

#### **DOWNLOADABLES**

Taking part of the RMF concept a little deeper, the MIDI Manufacturer's Association (the professional MIDI organisation) recently released details of the Down-Loadable Sounds MIDI Extension (Level 1). This provides a common standard for audio samples which can be downloaded into a GM soundcard or module (or even RAM in a computer!) and then replayed using software (or hardware) to provide enveloping, LFO and other modulation.

#### TIP OF THE MONTH: MERCUTIO

I'll resist the temptation to include a Romeo & Juliet pun here, and instead I'll point you in the direction of two tiny little bits of software which could help to prevent those mysterious Mac crashes which sometimes happen for no apparent reason...

Deep within the MacOS, there's a little piece of add-on software called Mercutio MDEF, which is used by many Mac programmers to customise the menus in their programs. Late in 1997, it was discovered that under some circumstances a minor bug could cause stability problems. There are now two freeware bug-fixes which cure it — MercutioGuard by Jorg 'jbx' Brown, and Mercutio Bug by Jim Reekes. Either of these will fix things until the updated Mercutio MDEF itself starts to filter through.

Installing the fixes is simple and very quick, and they should be available now via all the usual MacOS software distribution routes (cover CD-ROMs, the Internet, your nearest Mac fanatic...)

In case you were wondering just who these programmers who use Mercutio are, here's a few pieces of software which use it: Adobe Photoshop, MOTU Digital Performer, Netscape Navigator, BIAS Peak digital audio tools and Deck II from MacroMedia.



Mercutio Bug



MercutioGuard

The Interactive Audio Working Group (an affiliate of the MMA) is working now on Level 2 of the DLS specification, and this will cover more professional sample-oriented features. If this doesn't show the convergence between computers, music and samplers, nothing does. Perhaps QuickTime 3.5 will boast compatibility with DLS Levels 1 & 2!

#### ON THE NET

You can use the obvious browser search strings for 'QuickTime', 'ECD', 'RMF' and 'DLS', but I'll also list some more direct URLs to visit (including some not mentioned elsewhere in this column):

- http://www.cgdc.com/
- http://home.earthlink.net/~mma/iasig/abtiasig.htm
- http://www.musicfan.com/ecd/
- http://home.earthlink.net/~mma/
- http://www.amp.apple.com/imt/imt.html
- http://www.netaxs.com/~jayfar/live.desk.html
- http://www.headspace.com/beatnik/

Computer Games Developers Conference Interactive Audio Special Interest Group Enhanced CD

MMA: DLS

Apple's Interactive Music

The Virtual Macintosh

RMF at Headspace



When is an Atari not an Atari? When it's playing at being an analogue sequencer! DEREK JOHNSON takes a look at a neat piece of shareware, and brings news of a virtual MIDI synth module for the Falcon, and the latest issue of a dedicated Atari mag.

f there's one thing the Atari might have too many of, it's analogue sequencer and arpeggiator emulators. I've covered quite a few in this column in the past, and now I've found another one. As it happens, Neil Wakeling's *Pulsar* is one of the better examples and definitely worth your attention. Neil was apparently inspired by Tim Wright's *Groove Analogue Sequencer Simulator*, but chose to write his software in C, rather than STOS. The result is rather smoother, with a handful of novel features lacking in the competition.

Pulsar is a three-row sequencer, with each row having between one and 16 steps. Note

#### ATARI IN A RACK

If you're looking for something new in the way of an Atari-compatible computer, check out Keychange Music Services' ST MkII, which has been developed specifically for stage and studio music use. It comes in a 2U rackmount package, with built-in IDE interface and hard disk drive, 2Mb RAM (expandable), large, quiet fan, and a MegaST keyboard. Options include a MIDI merge, three extra MIDI outs, TOS 2.06 with switcher, and a SCSI interface. Prices start at around £150. Contact Keychange Music Services on 01925 266120 (email barrie@atamusic.u-net.com), or check out the web site at www.atamusic.u-net.com/.

values for each step can be input via mouse, or entered from an attached MIDI keyboard. A velocity level can also be assigned to each step; off — ie. no velocity — turns that step into a rest. All three rows are completely independent of each other, and playback options include forward, backward, shuttle (backward then forward) and random. A row can be turned off, if you like, and

MIDI channel, transpose value and program change number can all be assigned. Perhaps the most interesting feature of *Pulsar* is that each row can have its own tempo, a feature I've seen on virtually no other software, let alone shareware.

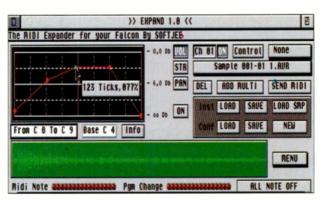
Also nice is the way that the various parameters can be altered while a sequence is playing. Certain features are rugimentary at the moment — file handling, for example but the author is squeezing development in between having a life. While Pulsar is technically shareware, the author asks that you drop him a postcard to show your support if you download the program and like it. Perhaps then Neil will get around to developing v2, which may have multiple sequences, chaining and "interaction" between rows/sequences in musically interesting ways. He's also looking into enhancing the MIDI side of the program, depending on user feedback. Point your browser at www.tuva.demon.co.uk/atari.htm.

#### **NET SOLUTIONS**

The new System Solutions web site is finally coming on line: as we go to press it's still under construction, but there's a bit of info up there, plus a price list. Although they're moving into Mac and PC products, they remain supportive of the ST in a big way. Mainly, there's news of the new *Texel* spreadsheet (£79.95, optimised to work with alternative desktops such as *NVDI*, and a special offer on Toshiba CD-ROM drives, which are available bare or as external packages for Falcon, TT, and ST, with connecting cables and software. Have a look at www.system-solutions.co.uk/cafe; the net-free can call 01753 832212.

#### **EXPAND YOUR FALCON**

Softjee, the French software house behind the *Digital Home Studio* software for Falcon and the *Midplay* MIDI file player software, have more tricks up their sleeves. *Expand* is restricted to Falcons (and clones), but there's a reason: it turns your computer into a virtual MIDI sound module or playback sampler, which can be run alongside Steinberg's *Cubase* v2.04. The latest version of *Expand* uses AVR-format samples (or sound files from the *D2D* digital



Softjee's Expand MIDI expander for Falcon.

recording/editing program), with sampling rates of up to 50kHz. You create your own instruments from multi-samples, and have control over volume and panning. Most MIDI messages are recognised, including velocity and pitch-bend. The two-disk package includes a 40-page manual, and costs 390 francs — that's about £40. For full details contact Softjee at F-47200 Longueville, France. They can be emailed at softjee@hol.fr, and their web site has a strange URL: www.perso.hol.fr/~softjee/.

#### **BETWEEN THE SHEETS**

We've just received the latest issue — number 8 — of Atari Computing, the subscription-only ST mag. There's a full review of Copson Data's Zero-X, a sample-editing package for all STs, plus plenty of non-musical Atari news and reviews. As usual, the mag is available with or without reader disk: it's £3 without or £5 with. Subscription details can be obtained from Atari Computing Subs, 73 Bentinck Drive, Troon, Ayrshire KA10 6HZ; the web site is at www.ataricomputing.com. Subs can be bought in three- or six-issue chunks (just multiply the cover price by the number of issues you'd like your sub to run). There's also a sub option that includes a CD-ROM. The complete issue is on the disc in HTML format, along with all reader disk software; also included is the current issue of French STraTOS, with that magazine's collection of international shareware. A sample issue, with CD-ROM, costs £7 in the UK. Contact Atari Computing for overseas subscription rates.



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absolute must for the professional house producer. Audio CD £59 95. Akai CD-ROM- £99.00



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this brilliant collection. All of the loops are exactly tuned and sorted into bpm groups. You also get another 150 bonus sounds: synths, chords, basses, pads, organs, etc. for all current inusical styles (rap, hip-hop, dance, house, jungle, drum in bass, rave). Each sound on the audio CD has an individual index number to make it easy to find any sample during a track. All of the drumloops are looped and arranged in programmes, presets, patches or instruments up to BMB. Audio CD: £59,95. Akai, Roland, or SampleCell CD-ROM. £99,00

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#### ( A.M.G. (England)



TONY MASON - STEAMIN'
(AMG). Tony Mason's sequel to his extremely popular "Smokin" CD is equally funky! - however this time it features not only live drums but triggered loops with sampted sounds, hat and brush loops, fills and a selection of hits. This time

however the grooves are generally much shorter so many more are included, often with several alternate versions. REVIEW: The sounds of the drums are second to none - these are live drums at their best. You can tell why he's such a sought-after session drummer for dance music... He's responsible for wicked drumming on famous tracks by Incognito. Fine Young Cannibals and George Michael' (The Knowledge, UN. Audio CD. 157.95

#### Zero-G (England)



Latest in the "Altered States" series from Zero-6, produced by IAM BODDY \*Rhythm Loops \*FX Loops \*Synth Percussion Loops & Arpeggios \*One-shot Percussion FX \*Synth FX \*Ambrences & Ethereal Textures . Rell FX . Orones . Weird Voices, Lats of great unique loops! They're weird & interesting. 8 the 'lighter' ones provide great

backdrops to put main drum sounds around. Many loops have the Cuckooland organic quality about them but sound cleaner. Textures range from menacing low drones & Spacey FX, to really beautiful ambiences & Irom menacing low drines & Spacey P.K. to really readurally ambiences at apregions. All points & keys are provided where appropriate Reviews "A very impressive source of creative loops. Clearly & logically grouped... Excellent for the aff-beat samplist... Loops are generally highly usable... Well programmed patterns... Superb PX loops... The use of effects is interesting & imaginative... Plenty of moody arpeggios. Perfect atmospheric ambient layers. [Future Music. UKMadio CD 159 95 Akai CD-RDM (out now) . ETI9 00

#### Zero-6 (England)



Audio 3-disc set: £79.95
Akai S-Series CD-ROM £249.00

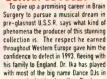
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- Vocals - Instruments - Orchestras & Ensemb

despair - from hauntingly beautiful vocals, through countless joyous orchestral ensembles to authentic indian instrumental phrases. It took ZERO-6's indian producers two years to record this collection, and there's never been anything quite like if available before - anywhere in the world, At true masterpiace made for musicians and composers who seek out and appreciate only the very highest standard in professional sample libraries. None will be disappointed!

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the U.K. This CD captures the essence of what he does live. The Loops illustrate his effortless speed 8 accuracy. Also sustained chards and FX.

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possibilities are endless. For each sample the Style, F.X/Amp used. 8.P.M. and Key are given. Audio CD: £59.95

#### Spectrasonics (USA)



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Synaphone

SYMPHONY OF VOICES
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production - the most extensive
produced by Fric Persing includes a
produced by Fric Persing includes a
producer, I designed to most produced by
prosers and producer, I designed to be inspiring for
years to come. Disc I is devoted to
richly-detailed samples of the 80voice London Chorale. recorded in
a large catheral in England - the
lifest sampled choirs ever
presented without heavy vibrato
mursical contexts). Performance
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high & low chord voicings, thick clusters. 12-Tone & Ligeti FX. natural
resemblide-creacendos, whispering, murming, whistling accents,
falls, Avante garde glides, Vertigo Ir., octaves, moving vowels. Swoops,
chattering, guttural groans, shouls, ethereal phrases and more! Disc 2
brings the beauly and power of Classical Soloists - a wide variety of
license-free Operatic Fenor & Soprano phrases hoth with words and
multisample and mean choir Many of the sounds on this disc have never
before been available to the electronic musician. The Boys Choir features
multisampled phrases (Myric, Aldelijah, Amen, Agnus Set, etc.) plus the soft
and loud Oils, Myms, Es, Fifth Ornes, Intervals (Malf and Whold Step
Upilbown), and ancient Gregorian Chanist Disc & offers an overwhelming
variety of Lush, Myms, Es, Fifth Ornes, Intervals (Malf and Whold Step
Upilbown), and ancient Gregorian Chanist Dis



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This product got a 5 star review in every magazine in UK. US & Germany! The most comprehensive collection of Asian instruments & phrases. This remarkable 2-disc set includes

including instruments, phrases, opera divas, chants, speech, gamelan orchestra, monks. Perfect for your next film score. album or remix project. A treasure chest of lovingly sampled performances" (Keyboard, USA). The range and subtlety is faultless. You won't find a better collection of ethnic sounds anywhere else." (Future Music, UK) Audio 2-CD set: £79.95. CD-ROM 2CD set: £249.00



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funk, progressive soul, rock n'roll and grungehead loops in a wide variety of tempos put this collection in a class by itself. Each groove has a unique mix ledge, ambient, distorted to-fi. etc) and some have Hi-fi and Lo-fi re-mixes. Grooves also played without kick/snare for flexibility in customizing loops. CD-ROM version includes the Audio CD for instant auditioning plus the incredible SMOKIN KITS drum library. Attitude! Audio CD: £59.95. CD-ROM (includes the audio CD): £119.00

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has collected the all time
funkiest breaks - from classics to all-new - on one

royalty-free audio CD. along with every hit from every loop. Breakbeat is packed with nothing but 4/4 beats with punchy kicks, crunchy snares and sizzling hi-hats. These are the type of extended beats that work great as a complete rhythm section, but can also be augmented or edited into numerous stylistic variants. The beats to beat for 98 are all on BreakBeat. Audio CD: £69.95.

# Keith LeBianc Vol. 4: FRESH KILLED MEAT 2 - DRUM'N'BASS CARNAGE



hard - there are even some that utilise effect sounds. The CD also includes a voucher entitling you to a free copy of Keith LeBlanc Volume 1 when you buy Keith LeBlanc Volume 2. Audio CD: £59 95

#### ▼ Big Fish Audio (USA)



TTTANIUM RHYTHMS
From Big Fish Audio, this great new collection takes percussion to a new level In styles from Ambient to Gabber, with an accent on House, veteran producer Sliver delivers programmed & live loops using sounds from industrial.

factory and junkyard settings. Components of loops also included, so making custom beats is easy. These Loops are perfect for Acid or House Tracks, and for stacking over more conventional break beats or four on the floor drums. Audio CD: £59.95

#### Zero-6 (England)



Vol.3 in 'Altered States Series (Zero-G) is a stunningly innovative CD that utilises raw and organic sources to create rhythms and soundscapes with a creative edge. Loops come with individual components allowing infinite

variation, plus lots of exciting single hits and ambiences. All material is 1007 original. 8 came from theme parks, factories and industrial sites etc. CD-ROM VERSION COMES WITH AUDIO VERSION BUNDLED FREE!! "A truly unique product which takes a brave & successful step towards providing a good fusion of dance and industrial styles the selection of usable sample material will keep even the sampling die hards busy... fantastic range and depth. innovative & unusual... new and exciting sonic sculptures... a rich seam of dance floor and jungle influence... a scorching collection of "happening" dance loops... layout couldn't be more logical... will provide that elusive sparkle to your tracks... In short Pure metallic, steam-driven wonderment. \*\* Five Stars\* (Sound on

Akai S-1000 CD-ROM 2-disc set (includes audio CD): £119.00.

# VOCAL XTC

EXTREMELY HOT dance vocal sample collection from ZERO-G (UK), performed by some of the hottest session singers from the UK! Totally original pro samples for all your music productions: Gospel choir, Ad-Libs, Melodies, Harmonies, and Backing Vocals. Styles featurd include: Dance

R'n'B, Sout, Rock, and Indie. Both Male and Female singers. K n B. Soul, Kock, and Indie. Both Male and Female singers. These unique vocals cover a wide spectrum of application and are destined to appear in many a chart record in the near future. REVIEW. "Interesting an innovative... Impressing the pants off any listener... Accurate & beautifully arrange d harmonies... Truly wonderful. The attention to detail an wide range of styles make this CD pretty damn close to perfection" (Sound on Sound, UK). Audio CD: £59,95



JUNGLE WARFARE
NEW! Volumes 2 & 3! If you need Jungle these 3 CDs from ZERO-G are simply ZERO-G are simply unmissable: Each CD features a MASSIVE set of: . Loops . Rolls & fills • Perc Kits • Pads & Chords • Bass • FX • Vocals. Volume 1 is one of our all time best selling sample CDs. Vols. 2 & 3 are

punch, & variation in feel & sound... there's no serious competition Rated 5 stars out of 5 ជាជាជាជា (Sound on Sound). "Kicking naieu a stars our or 3 MANTATH Bound on Sound). Micking groeves, a wide range of styles, highly useful. AS UP-RONT AS YOU CAN GET. The Mix). "Jungle Warfare gives you just about everything you need to survive in the remix rain forest. (KEYBOARD. USA). CD-Audio. E59 59 each Special offer for imited period only: Get Yols 2 & 3 together for only £99.00 - AVAILABLE NOW!

#### A.M.G. (England)



#### KOMPUTER INSIDE Brand NEW from AMG (UK).

Mute Record's 'Komputer' are just starting to make an impact on both sides of the Atlantic with their brand of Kraftwerk-inspired technopop and the release of their debut LP. Their sample CD features: Hundreds of synth drum and synth percussion loops (nearly all broken down for maximum flexibility), . Synth sequences, . FX and . Loads of single hit noizes . Single fx and drums. Running time: 72:32 minutes. Out NOW. Audio CD: £59.95

## IEW! BLACK II BLACK



Vols. 3 & 4 (AMG).
Steve McIntosh & Joe Charles
have done it again! Four
mindblowing sets of kickin' R+B
samples. All the loops. Vocals.
Brass lines. & Drum hits
specially recorded. The series
features: Reggae, Ragga, Swing,
Jazz house. Euro house, Mad
se. Slo jamz. Rag. Guitar lirks. Bass lines Garane Disron and

#### ▼ Big Fish Audio (USA)



Another huge 2-disc audio CD Set from BIG FISH AUDIO busts out of the cage with 140 minutes of brand new drums. nuitar bass rhodes vocals horns, turntable wizadry and much much more. From mad

hard Hip Hop Funk to silky Hip Hop Soul - it's the quality that makes all the difference. Featuring the veterans of Loopzilla 1 & 2 plus new talent from Boo Ya Tribe and The Dazz Band. REVIEW: Volumes 1 & 2 are legendary... Volume 3 is in finer style than ever and has some seriously lunky rhythms... A damn good source of breaks... many are also perfect for Brum'n'Bass.. Quality is first class... Very very cool Drum'n'Bass... Quality is first class... Very very cool indeed." (DJ Magazine, UK). 2CD-Set. only £69.95

From Rich Mendelson, the five-star producer of Phat & Phunky and Dance Industrial, comes the new standard in construction kits. Rich assembled the East

Coast's premiere session talent and contributed his own

amazing production and programming skills to make this set his best yet. With the included midi-file disk, it's a breeze for the producer to customize the loops and swap sample elements. Exploring the funky side of dance music, Freaky Jazzy Funky is the set to beat for 1997 and with three CDs and a Midi file floppy disk, this collection has to be one of the industry's best value products! The best ears at I+S rate it a total winner. Triple-CD-Set (Audio): Only £79.95

#### Villo Ents. (USA)



FINGERS (USA)

FINGERSTYLES

With from ILIO ENTERTAINMENTS. This approach to creating Accounts Guiden sample libraries is so inventives us under sample libraries is so inventives us under the sample libraries is so inventives us under the sample libraries is so inventives us under the sample libraries is so inventives us under Ladares (Spectrasonics 'Heart of Africa'). Representate consists of Guider Parket of Africa's Reposition of the sample sa



FRETWORKS
NEW from ILID ENTERTAINMENTS. A landmark library leaduring legends of the retroland Fretworks boasts an impressive roster of musicians playing an intriguing variety of the treband Fretworks boasts an impressive roster of musicians playing an intriguing variety of stringed instruments, including string, 12-string, and sidde guitar wintage 6-string libbson. National Steel mandolin. custom bartone guitar etc. This collection is a buses. Appalachian Folk, and the roots of rock, bluegrass, swing and shuffle. The rare performances were recorded in a musical context with all of the raw energy and happy accidents that make a track live and breathe. The phrases are tempo-funded for easy sequencing, and most are provided in several tempos for fleability, hely redivided into 2 of 4 bar patterns and free-style-riffs which can be strewn in countless ways to create your own unique solos. The vest divided into 2 of 4 bar patterns and free-style-riffs which can be strewn in countless ways to create your own unique solos. The vest survival of the provided in the series of the provided in the series of the provided in Series of the Series of the provided in Series of the provid

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#### ( e-Lab (Sweden)



which have crossed over in all styles, from HipHop to House to Tekno & Jungle - Vinylistics 3 is an important source of Groove inspiration. Loops

source of Groove inspiration. Loops (with variations) plus their component (with variations) plus their component (with variations) plus their component (with variations) and valve (with valve) and variations to make them even more varied. Special Filtering gives you that Highlority loop microphone sound which makes the loops even more creatively useful as 'Groove Backrounds'. Use them behind a programmed beat to increase the "Vive feel for Your Rhythm. This CD. like the others in the Vinylistics series, utilise the "LoopPlap1<sup>MM"</sup> system developed by LAB for the "Astac Goldmine series," making the loops easier to use & "intermix" with each other. If you can only afford one Vinylistic CD get this one. Audio CD (plus bonus demo CD). \$59.95



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are in the style and mood of Armand van Helden, Tod Terry, or Deep Dish. These loops & samples will make your Hair Stand Out - pure joy! You won't be able this one. All samples provided with variations so you can create your own deep house tune instantly - perfect for injecting the new York club sound into your music - the sound of people like Master at Work. OVER 1000 PHAT LOOPS AND SAMPLES. Audio CD: £59.95



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From DJ/Producer PHAT FABE (Neneh Cherry, Shaba Ranks, Cherno, Titiyo etc) HOT Loops & samples from Jungle, breakbeat/techno to R&B and hiphop

breakbeat/rechno to K&B and hiphop.
Extended variations of many loops make
this CD great for club DJs, and provide
the opportunity to create smaller custom
loops. The loops have a vinyl quality
about them. An optional floppy disk is also available featuring the MIDIfiles of the loops (specify Afari/PC or Mac). REVIEW: "A real bargain... a CD that any rabl hiphop! soul producer will be pleased to own." (The Max. UK). Audio CD, £59 95. Akai CD-ROM-£99.00



#### X-STATIC GOLDA

The original dance production mega-collection, re-released by popular demand & completely reworked by creator Erik Svahn, FEATURES OVER 4000 SAMPLES & LOOPS! – an unbelievable resource. One of the most raved about & largest collections of dance samples & loops ever released. And the AKAI \$1000 CD-ROM version is the

same pricel REVIEW. One of the most astonishing value-for-money purchases in recent years. This is a great purchase for the first-time sample CD buyer. In the pound per sample is challenge nothing else comes close "ISound



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disk (specify AtaruPC or Mac). REVIEW: "Well chosen, in-your-face dance material, which you would be well advised not to be without... a collection with plenty of attitude which will not dissapornt. (Sound on Sound) Audio CD: £59.95. Aka CD-ROM (Over 3000 samples): £99.00

#### velab (Sweden)



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EXTENDED FILTER SWEEPS' SLIDING SLURS'
ACCENTED PDPS' Here's 1800+ BARS OF
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DJ/Producer PHAT FABE (Neneh Cherry, Shaba Ranks, Cherno, Titryo etc.), Incredible loops and samples in styles ranging from

loops and samples in styles ranging from Jungle, breakheat/techno to R. B. B. and hiphop, Once again, the extended variations of many of the loops make this CD superior to create custom loops by cutting out small portions of the main loop. Phat Fabe has put together another stunning collection. REVIEW. 'A real bargain. the range in kit sounds can't be faulted. everything from squeaky clean to rough and raw. '(The Mix'). Audio CD. \$59.95





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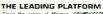
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2.29 5 Through the anaboles selam clouds and the existy street limits, there is a jam goid on. This Mizman Soundisc is packed with multi-tempo-hip-hop-get-up-stor-the-get-downs. West coast disco funik meets up with east coast hard knock loops that set the people swaying Loos of stratchin, freakin, and beat seekin' on this Soundisc with plenty of funity basslims and vecals to smooth out the mix. Street Levels its be soundtrack to a summertime Bar-B-O beat-head jam. Includes the Mizman Studies software engine (LE Version).



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# Digitech Talker



"The Talker may have been conceived as a guitar player's stomp box, but it's also a very creative studio tool and works well with keyboards or other sound sources."

chat. The mic input seems to have a built-in gate so that the effect is not triggered by low-level crosstalk, but this does mean that you have to work close to the mic to guarantee a consistent output.

#### THE PROGRAMS

The first Program is called 'NuVo', and provides the classic Vocoder effect with good intelligibility. Both inputs need to be present to generate an output. Some of the original voice signal appears to be high-pass filtered and added back to the vocoder sound to emphasise sibilant and fricative sounds, and if the mic level is set too high, there may be too much of this in the final signal. For studio use, compressing the mic signal prior to processing might be a good idea. Though designed for guitar use, this program works exceptionally well with any harmonically-rich keyboard sound.

Next up is 'NuWah', a type of guitar auto-wah that doesn't use the vocal input at all. Essentially, this is an envelope-follower system, but because of the highly vocal filter in the Talker, this sounds more humanoid than a typical auto-wah. Once again, any synth sound with a well defined envelope can be used with this setting.

The next Program, 'TazMania', isn't very musical and can either use the mic on its own or combine the mic sound with the instrument sound. This setting uses radical filter settings to produce a harsh, somewhat robotic voice that still manages to be reasonably intelligible, but once you've said, "So Doctor, finally I have you at my mercy!" a few times, it's hard to know what else to do with it. Actually, if you stick the mic down a piece of plastic waste pipe, then wave it in front of the monitors, you get some quite good sci-fi fly-past sounds!

'TalkBox' is another vocoder-type setting, this time optimised to resemble the old voice-box tone, but without the dribble or the exploding teeth! This produces a thinner, more edgy tone, again with excellent intelligibility, so even if you can't sing all that well, you're guaranteed to be able to get your lyrics across in perfect pitch, just so long as you play the right notes on the guitar or keyboard.

'Alien' is the fourth setting, and this generates a type of vocoder effect. The voice character is shifted up in pitch slightly to create a Mickey-Mouse-meets-ET feel — good for Babylon Zoo impressions. As with the preceding vocoder effects, both inputs are needed to generate an output.

The final Program is 'AutoTalk'. This is another vocoder effect, but when you stop singing a gate switches in and allows the instrument sound to come through as normal. This could work very well, but the changeover between the vocoded and straight sound is too abrupt, and the level tends to change too. This is fine if you swap over during a pause in playing, but it's not so good for morphing keyboard sounds into vocoder sounds. To make it really successful, the final filter

"'TalkBox' is a vocoder-type setting, optimised to resemble the old voice-box tone but without the dribble or the exploding teeth!"

setting would need to be held, and then the clean instrument sound faded in over half a second or so while the vocoder sound fades out.

#### CONCLUSION

The Talker may have been conceived as a guitar player's stomp box, but it's also a very creative studio tool and works well with keyboards or other sound sources. In fact, you can design a lot of interesting new sounds by using one of the vocoder modes to modulate one sound with another — for example, synth strings with heavy breathing, or a Wavestation pad articulated by a drum machine pattern or drum sample loop.

If you use the Talker as a vocoder, its intelligibility is better than most I've heard and there's no obvious crosstalk when only one signal is present (due to a type of gating circuit), but the input levels can be a bit on the sensitive side, so compression would be a good idea if you don't have good vocal control. I also like the different modes, though 'NuVo' and 'TalkBox' are arguably the most useful, and the talk box emulation is surprisingly authentic. For a guitar input to work well, it needs to be heavily distorted to provide enough harmonics for the filters to chew on.

If you're looking for this type of device, at around £250 you have a choice between the FAT PCP330 Procoder vocoder (reviewed SOS November 1997) or the Talker, both of which have their own character. The Talker is undoubtedly better for live performance, as it has mic and signal-routing options specifically for that purpose, but I know I could have a lot of fun with it in the studio. And of course you don't have to feed it live vocals — you could use a pre-recorded vocal track and a MIDI instrument track to give repeatable results if you don't like life on the edge. The Talker is fun, affordable and sounds great, which alone is enough to guarantee its success.

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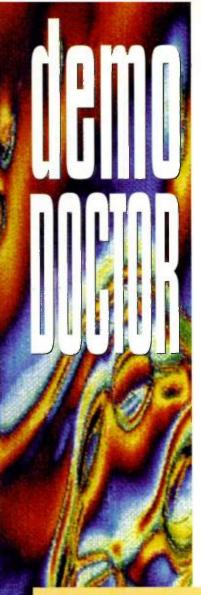
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#### ZOO DI VENERE

Recording Venue: Home.

Recording Equipment: Apple Mac LC630 computer and Steinberg Cubase Score software, Mackie 1604 VLZ mixer, Akai S3000XL sampler, Alesis ADAT digital 8-track, Alesis Midiverb 4 effects and 3630 compressor, Sony DTC790 DAT, Tandy PZM and Shure SM57 microphones, Tannoy System 2 speakers.

Duo Manuela Rosa and Canemacchina have put together a commercial-sounding project which deserves to take off in Italy at least.



The lyrics are in Italian but the music is influenced by the recent influx of American female vocalists over rock/dance backings that we've heard in the charts.

The singing of 20-year-old Manuela has been recorded in the correct style for this type of music, with plenty of close miking and compression, so that every little breathy nuance is captured. It's also been mixed up-front and pretty dry, with a touch of short reverb on the louder choruses. Given that Cannemacchina appears to have used the PZM microphone for recording the vocals, he's managed very well indeed. The dynamic range of the voice — from the screaming vocal of 'Emozioni in Overdose' to the breathy 'Fuoco nelle vene' has been well handled, and there are no problems

with peaks in signal level in the mix.

As you might expect, the duo like to go for the big sound, and occasionally guitars and vocals are double-tracked. This, along with strings and drum loops, creates a sometimes crowded but wide stereo image. I found that some of the sounds could get a

bit crunchy, particularly the drum loops, and this is especially noticeable on the third track where a loop has been slowed down considerably to expose its digital underbelly. There are also times where the sharpness of the overdriven electric guitars exacerbate this crunchy sound, but never to the point of being unpleasant.

#### MOTH

Recording Venne: Home.

Recording Equipment: Tascam 8-track digital recorder, Atari computer running Steinberg Cubase software, Kurzweil K2000 synth/sampler, AKG C1000 mic, Digitech Studio Quad effects.

Moth are vocalist Karen Atkinson and songwriter Craig Beattie, both from Newcastle-upon-Tyrie. It seems that Craig gets all the music programmed up and Karen comes along to add backing and main vocals to the songs.

'Joy' is the title of the first track on the demo, and it's a moody little ballad that avoids the usual slushy treatment with some aggressive little sounds and breaks. For example, the basic electric piano, synth bass and drums halt for a one-bar break before the chorus. Into this break Craig works a higher-pitched, more open snare and almost discordant sine-wave synth melody, with all the other instruments dropped out. It's a small

hook that leads well into the melancholic chorus.

With so little on the track, you'd expect the mix to sound well balanced, as indeed it does. There's remarkable clarity, too, from the metal tape used, and a cold, almost sterile sound that entirely suits this particular song. The choice of reverb on the vocal also adds to this atmosphere with its metallic overtones.

A similar approach is taken for the sound of 'Space Traveller' and again the simple, cold edge of this recording suits the lyrics of the verses. This time the vocal is treated to a warmer reverb with pre-delay and more high frequencies, and I was pleased to hear that Craig was not slavishly following the pattern of the first mix on the demo. In terms of improvements, I'd suggest that the string pads behind the chorus could have been bigger and more stereo shift employed, using effects. Sometimes it's a good idea to apply a swept

phase or flange effect to one side of the stereo pad figure and then re-record with slightly different modulation parameters for the other side of the stereo. What you end up with if you do this is really a double-tracking effect, but with a difference because of the random nature of the modulation on each side of the stereo and its interaction in the mix. You could attempt to do this with a stereo effects unit, but somehow it never sounds quite the same.

The third, and final, song is really more of the same because both tempo and mood are very similar to the first two, and I would have liked to hear Craig attempting something a bit different. Once again, the mix and vocals are good, with some samples and sound effects in the background that emphasise the lyrical content of the song. Now how about trying out Karen's voice on something more up-tempo?

#### BOMBASSA

Recording Venue: Home.

Recording Equipment: Atari ST computer running Steinberg Cubase software, Emu ES132 sampler, Yamaha V50 synth, Roland D110, JX3P and SH101 synths, Alesis Quadraverb and ART FXR effects.

From the opening bars of Bombassa's demo I can tell we're getting into some heavy dance territory. A slow half-time groove leads the way before breaking into drum and bass, almost

Post of Control of Con

creating a false sense of what the track is all about. Yet tension is kept high in these opening bars by the vocal, which has a quite hard sound, treated to a short delay of around 200ms, with plenty of regeneration. I liked how this in-tempo delay

time length was shortened on key phrases, to produce a dub-style effect. At various times the vocal is also treated to a backwards delay, enhancing the tension with a rush into certain words.

Bombassa are not averse to using 3D effects either, and I'm assuming that the swept chord in question is generated by the Emu sampler. This leaps wide of

the stereo speakers in the style of Yello's famous racing car and is therefore very effective within the context of this mix — whether it's a preset or something Bombassa have programmed themselves.

Accenting beats with a subbass kick is a great way to add punch, and the low drum at the start of every fourth bar is the perfect place to put it. The rhythm track basically stands up well on its own, and the minimal sounds that are added are the icing on the cake. Clean guitar stabs with plenty of pre-delayed reverb occasionally stab in, and some sections use simple organ phrases with delay.

Interest is also kept in the mix with some half-time breaks featuring synthesized guitar arpeggios in the style of an old Brit spy thriller — that old augmented fifth works every time! This also lends a touch of humour to the mix. I particularly liked how a ride cymbal was kept going on eights, so that the sense of the faster breaks was never entirely lost.

There are plenty of good ideas in this mix, and the sound is well balanced too. Adding extra drum and bass sounds to an existing rhythm and changing beats can sometimes be difficult, especially on the bass end, but this mix succeeds well. Other sounds are well chosen, as are the effects that go with them.  $\square$ 

#### U-GENE

Recording Venue: Home.

Recording Equipment: DIY Pentium 133 PC with 16Mb RAM, Turtle Beach Tropez Plus, sound card, Cakewalk Audio software, Alesis Nanocompressor, Roland GS6 guitar effects, Pioneer tape deck and amp, Sennheiser HD435 headphones, Grundig LB50 speakers.

Mario D'agostino is the man behind the name U-Gene, and his musical influences are currently Kraftwerk, Steve Reich and Eberhard Weber. This means that he's not afraid to experiment and explore using sound, and the opening few seconds of his tape prove as much, with heavily treated backwards loops across the stereo field. These actually do give the atmosphere of the tape's title, 'Birds', as the looped samples burble and chirp into different harmonics. It's a busy backing over which drums slot easily because of their warmer frequencies, but where piano and sampled oboe struggle to be heard.

The initial impression is that Mario is very interested in sounds, but his use of beats brings the concept right up to date. Most of these are drum and bass beats, some of which I seem to recognise from various modules.

A lot of time has been spent getting interesting sounds



together on this demo, but all the tracks have a problem in common. The sound that generally kicks in first is very dense and full bandwidth. leaving little room for other sounds or, when others join the arrangement, creating the impression of a very crowded mix. So while the actual construction of the sounds themselves is admirable, more care needs to be taken about the way it all fits together and if that means, for example, filtering everything below 150Hz out of a sound loop, to allow the bass to be heard, then so be it. Level changes at crucial points in the mix would also help, as would restricting the HF bandwidth of one of these big sounds occasionally, to add something else in the presence area of the soundscape.

#### QUICKIES



DAVE ROBINSON

was 16 when he recorded this demo, as part of his music GCSE course work. The

are quite well put together but the choice of sound patches let the overall production down. For example, the melody instrument on the first track, 'Interactus', is rather thin and fizzy. A string sound, perhaps doubled up with piano, would have been a better choice. On the second track the bass end of the piano is mixed a little too loud for the melody and there are some bum

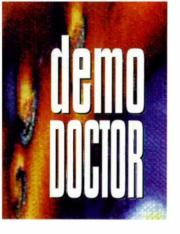
notes, but on the up-side, the use of what sounds like drumsticks as the main rhythm is a good creative idea. On the bigger productions, the general sense of balance is good between the instruments and drums but overall the sound lacks a bit of low bass in the mix.

VITAZDANCE are Mike Smee and BS King from Bristol. Together they're hoping to appeal to both mainstream and underground dance fans with productions drawing on Bristol's



wealth of 'unknown' session singers. The result is well recorded, with a mix that's sonically sound — a solid and warm bass end





#### QUICKIES contd...

that's not overcooked, plenty of presence without sharpness in the upper-mid frequency range, and lots of interest in the wider mid frequencies, with some rhythmic stereo panning using in-tempo echo. I like small mix touches such as the way in which an occasional open filter buzz is caught by echo on the opening track and left to fade into the background. The choice of a male rap - dry and up-front, with a more expansive reverb on the female chorus sections - is also good. On the evidence of this tape I'd hardiv call the music 'underground', but it makes for a good late-night, laig-back listen, If Mike and Barry are looking for energy ratner than relaxation, they could try using some more aggressive sounds, losing some of the vocal reverb and sharpening up the vocal tone.

SHAKE THE BOTTLE: Based in a "sleepy town" called Louth, near Grimsby, this five-piece band must surely wake up a few neighbours



with their pop/funk sound! This is an energetic mix of the old and the new, with some '70s grooves programmed up on the drums and bass, real

funk guitar plaving, some modern dance sounds and three vocalists. The drum sounds could do with some more presence, which would be achieved simply with a highfrequency boost of a few dBs, and on the second song they are mixed too low. That's a shame, because this track has the most commercial potential, and boosting the level of the drums will give it more energy and danceability. The singing on both songs is good, but I prefer the level of the vocals in the mix on the second song. keep writing, and go for a remix on the second song, with

possibly a few more musical ideas thrown in for good measure.

MARTIN SHARPE: If I had a tenner for every tape from a solo artist that came in which used the old "Playing with myself" routine, I wouldn't be rich, but I'd be considerably better off!



Martin redeems himself (just) by playing some lovely throaty sax, well miked, using a Sennheiser 441. His blowing across an electric jazz piano, drum

machine and synth bass is very relaxing — I can just see the smoke billowing past the dim lighting in this particular club. In the mix, the synth bass is losing out to the drums, so turn it up and it will make more sense of the double bass drum beats that have been programmed in. I have to say that the mix is better on the second piece on the demo, but the bass could still have been louder, particularly as the walking line is driving the composition rhythmically. Returning to the music, I was also impressed by the electric piano playing. Is this really all Martin? What a talented git!

YO YO: Suzanne Nicole says in her letter that she's got thinner since she bought her new tape machine. because she can't afford to eat! I suppose I get the blame for that, as I suggested it in my last review, but on the other hand maybe I should market it as a new dieting concept! Still. shedding a few pounds doesn't seem to have affected Suzanne's voice. which is still strong and full of character. On the opener, 'I planned it'. I would have liked to hear this voice louder in the mix, the bass synth lower and the snare louder. All these tweaks would improve the balance of an otherwise decent-sounding song. 'Well Stay' is the second track on the demo. and on this one something seems slightly amiss with the groove, as the drums and the bass don't sit together as well as they should. I also think it was a mistake to add so much effect to the vocal. The delay blurs the clarity of the vocals, and because the voice is really the selling point for Yo Yo it needs to be loud and proud in the mix.

POWER OF PERSUASION: This demo is essentially to get some paid engineering work or music commissions for Brendan Meehan and Ian Whitewood. Both already have some high-profile studio credits under their belts, and on the evidence of this well-mixed tape (recorded at home, incidentally) they deserve to get more

paid gigs. However, in such an oversubscribed market, this kind of work is hard to come by. I was impressed by the mixes, particularly on 'Ain't no Hell' with its resonant overdriven quitar. The heavily saturated sound of this track allows the quitar to sit right in there with the programmed sounds. All the pieces are short and sweet samplers of what the pair can do, although they're all obviously aimed at a modern dance market, judging by the sounds chosen. 'Proto Hominid Shuffle' shows some potential to move into other areas if necessary, by introducing piano, while the amusing 'Council House' proves that the pair can go 'total dance', if necessary.

The first track on JULIAN RAWLINSON's demo was inspired by an E-bow jam, although you wouldn't really have any idea that this was the case from the final mix. The majority of guitar lines have become string lines, while the solo is now composed of "mangled and manipulated" samples. Samples are also drawn from Ken Russell's film Gothic, and I think these could have been shortened to key phrases instead of the longer text that's used here. In general, Julian has gone for a heavy, dark treatment on this production, and with this in mind I think a weightier bass end to the mix would have helped. The kick drum. for example, is a thin and hard dance kick, but without the analogue synth bass that normally accompanies such a sound, it's strangely prominent in the mix. Many of the sounds are treated to too much room reverb, and the result is less a sense of an instrument being played within a certain acoustic environment and more an awareness of the tonal quality of the reverb itself. The creative concept — the semi-classical and dance coming together — is good, but the sounds need to be more carefully chosen so that the whole gels more successfully

JON BLACK: To return to a point I made earlier, if I had a tenner for every tape that was sent in with sampled dialogue at the start, yes, I would be rich. Jon's DAT cassette demo of his forthcoming CD album, which is guilty of this misdemeanour, has some pleasant, well-balanced sounds on it, but the instrumental first track doesn't really develop any further than the opening groove. It's a



nice, funky groove with a fat snare sound and good instrumental balance. but it's not really worthy of more than a minute's running time. The second composition, which incorporates some sampled Gregorian chant, sets up a relaxing ambient atmosphere. complete with a mellow chordal pad, but this time it knows when to end and is refreshingly short. My favourite is the third track, with an interesting clicky sound playing off the kick drum and creating a neat swing to the rhythm. The use of slide acoustic guitar on this ambient piece is good, if a little understated, and the slight jarring of a detuned synth keeps you interested in the piece from it's introduction right to the end.

**SENSORY PULSE**: The mellow sound of the Pulse is defined by the relaxed singing of Jeremy Millington



and Lorraine Reilly. However, the vocals are a bit loud for the backing and are therefore failing to sit in the mix. This could easily be sorted out with a remix, and I'd also

suggest adding a touch more reverb to the voices if it was possible to take some off the backing — especially on the first mix. Some strange things are going on with the instrumental mix, especially on the second song. For example, the drums have had far too much treble EQ added at some stage; consequently the drum mix is cymbal heavy and you can barely hear the kick drum. The use of a long and presence-heavy reverb on the drums tends to accentuate this problem too, so a remix is definitely in order.

VUKAN: Vukan Stojanovic lives and works in Belgrade, Yugoslavia, where he performs dance music at clubs and raves, and radio and TV stations. He seems to have tried his hand at most styles of dance, but is currently recording ambient tracks and looking for record companies to release his material. The mixes are sparse but well balanced, with solid drum breaks, fat bass sounds and some nice touches using delays. The opening mix features a neat 16th-note part treated to negative phase feedback on a short delay that sometimes goes as far as cancellation, but also has some little manual touches of increased delay time or feedback, which add interest continuously. The use of a harp glissando sample, plus various simple piano figures and flute, ensure that the opening mix has all the qualities required for the genre.  $\square$ 

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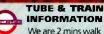
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# brief encounters

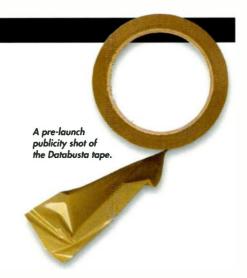
### CONCISE REVIEWS OF ESSENTIAL ACCESSORIES

#### DATADUSTA DIGITAL TAPE BIT-BUSTER

As you've probably noticed, virtually all serious digital audio equipment is going 20-bit or more, but what happens when you want to transfer a 16-bit signal to a machine with 20-bit resolution? In most cases, the digital transfer will go ahead, leaving the additional four bits (or eight in the case of 24-bit systems) unused, which shouldn't cause a problem. However, with some tape-based digital multitrack systems, it has been noticed that having so many bits in one place, all reading zero, results in a net positive magnetic charge on certain areas of the tape's surface. As a consequence, the upper oxide layers repel the lower layers quite strongly, the outcome of which is accelerated oxide shedding. In effect, many of these unused '0' bits are falling off the tape and collecting in the bottom of the equipment case, or worse still, getting stuck to heads and guides. Not only does this mean the machines need more frequent

cleaning, but the fact that the loose oxide is all recorded as zeroes can lead to the situation where a positively charged '0' bit of oxide is attracted towards a negatively charged '1' on the tape's surface, causing it to stick and result in a read error.

The solution to this potential problem is both ingenious and simple, and appears to have been discovered entirely by accident at the Audio Research Department at the University of Central Wales in Rhyader. While moving some of the University's recording equipment around during a studio reorganisation, Al Filparo, a Portuguese research assistant, dropped and badly damaged one of the University's tape-based digital multitracks, jolting the front panel clean off the unit. It seems Filparo then endeavoured to make good the damage he had caused before any of his superiors found him out, and re-affixed the front panel with a handy roll of metallic adhesive



double-glazing tape, generously applying it to the insides of the machine. Unbeknown to Filparo, the adhesive tape had previously (and quite coincidentally) become magnetically charged following a long period of storage next to a loudspeaker coil in a supply cupboard. To Filparo's amazement, over the following few months, the damaged multitrack showed a dramatic reduction in both the frequency of data read errors and also the amount of oxide it shed onto the record and playback heads. Systematic research conducted into the behaviour of the broken multitrack has now revealed the reason for the improvement in performance; the problematic loose oxide (all measuring digital zero) on the multitrack tapes used in the machine was being attracted to the charged double-glazing tape.

Following this exciting discovery, the Department are now planning to market strips of magnetically charged film with a self-adhesive backing, so that they can be fixed to the inside bottom cover of any tape-based digital multitrack recorder. Once the film, which is going to be marketed under the brand name Datadusta, is fitted, any unwanted 0s that become dislodged from the tapes used in the recorder will be attracted towards, and then trapped by the Datadusta strip before they can cause problems elsewhere in the machine. Every couple of years or so, the film, which can be thought of as the digital equivalent of fly paper, can be peeled off and replaced by a fresh piece.

Studio spares companies interested in developing the potential of the Datadusta film should contact Huw Felfrett, head of the Audio Research Department at Rhyader, as soon as possible. The Department has also made it clear that they welcome email enquiries from private project studio owners. *Paul White* 

141998@ucw.org.wl

#### EMU MORPHEUS PATCH CARDS

Emu's Morpheus, the Z-plane morphing synth launched nearly five years ago (see review in SOS December 1993) is a bit of a cult studio item. You can achieve some truly weird and wonderful sounds with it, but to get the most out of it, you have to get fairly heavily into programming. To be honest, the factory patches don't really do the machine justice, but Emu do now produce a number of ROM cards that show the instrument in a rather better light. The two cards reviewed here are entitled Film Score and Morpheus Expanded, and both appeal to my tastes — I have a weakness for evolving, textural sounds. Many of these patches major on the extraordinary Morpheus filter, which can not only emulate conventional synth filters, but also mimic the human vocal tract quite effectively. The result is a range of patches that swirl, squirm and even grumble at you, not unlike a Wavestation possessed by demons!

Taking the Expanded card first, I went through all the patches listing my favourites until I found I'd listed over half the patches on the card! In addition to the evolving textural stuff, there are some solid bass sounds, a couple of useful rock organ sounds and a number of less obviously musical but nevertheless arresting sound effects. Add to this treated percussion, industrial backgrounds, and a few techno candidates, and you have a collection that's hard to fault. Many of the sounds morph as you change the mod wheel

position, and further parameters are patched to other controllers, accessible via joystick or MIDI pedal. A number of the sounds are also programmed to respond to aftertouch.

The Film Score card provides a similar mix of patches, including some very elaborate sci-fi pads and backgrounds, eerie water bells, flanged pads, cold glassy sounds and a number of more conventional instrumental standbys, such as treated strings and basses. Again, most respond to controller information via the mod wheel, aftertouch or some other source.

The Morpheus isn't everybody's idea of the perfect instrument, but if you like sounds that change with time, which can either be sharply focused or elusively diffuse, and which can shimmer or threaten, then both these cards provide plenty to work with. Personally, I feel that memory cards are quite an expensive way of adding patches, and maybe these should also be available on disc as a cheaper alternative, but either way, the majority of these patches are a distinct improvement on the original factory presets. There's also a dance card in this series of expansion cards, but this is so popular that it was out of stock at the time of this review! Paul White

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# Different Strokes

THE KORG MINIKORG FAMILY

It was 1973 and everyone was playing Minimoogs, and ARP Odysseys. So why did the Keio ORGan company produce a little synthesizer with the most unorthodox controls imaginable, call it the MiniKORG 700, and try to convince the keyboard cognoscenti that it was worth buying? GORDON REID explains...

y first encounter with a MiniKorg 700 was in February 1974, in a town in which knocking two rocks against each other (or, preferably, against somebody else) was considered musically sophisticated. Keyboards, especially synthesizers, were unknown. But I was entranced by the orphaned little Korg sitting unloved at the back of the shop. Ignoring parental disapproval, I scraped together the £160 I needed to buy my first second-hand keyboard, and thus satisfied my first really serious teenage craving. (Well, maybe my second craving, but this was the one I satisfied

It was only later that I discovered that my pride and joy was not considered kosher by much of the keyboard world and, even in these analogue-crazy times, it remains almost totally unsung. Yet several top players -

Vangelis and Kitaro for two — cut their teeth on a Korg 700. But why? It had just a 37-note keyboard, was neither velocity nor pressure sensitive, and lacked any performance controls. Even its programming controls were incredibly limited, with several vital parameters — such as the envelope and filter resonance controlled by mere on/off toggle switches (see 'Architecture' box).

The answer was, of course, The Sound. Despite its limitations, the 700 was a remarkably capable little synth. Of the three (3) pages that comprised its manual, one was devoted to 13 patch charts that provided an excellent demonstration of the instrument's flexibility. The best of these was the 'Human Voice' patch, and its wonderfully nasal "aahhh" is instantly recognisable as a staple of early 1970s electronic music. Delving beyond the factory patches showed that the 700 could mimic many other analogue synths: its chorus waves captured the swirl of the earliest Rolands, and its dual filters imitated the thin



tones of the first Yamahas without difficulty — even though the Korg 700 pre-dated all these.

The quality and stability of the Korg oscillator was another good reason for liking the 700. For years I thought that complaints regarding the tuning drifts of other synths were the incoherent ramblings of chemically enhanced musos. Years later, when I discovered that these problems really existed, I simply wondered why no other company built synths that stayed in tune.

But perhaps the most compelling reason for buying a Korg 700 was its price. At under £350 it cost less than half the asking prices of its contemporaries, the Minimoog, the ARP Odyssey, and the ARP Pro-Soloist. This gave the 700 a huge advantage, and for a year or so it was perhaps the most popular synthesizer in the world. With a 700, a long blonde wig and a flowing cape, the world was at your feet!

#### THE KORG 700S

Early in 1974, the blank panel to the left of the 700's keyboard vanished, and a second control panel appeared in its place. Korg called this the 'Effects Section', and it marked the evolution of the 700 into the 700S.

At £499, the 700\$ was a somewhat more

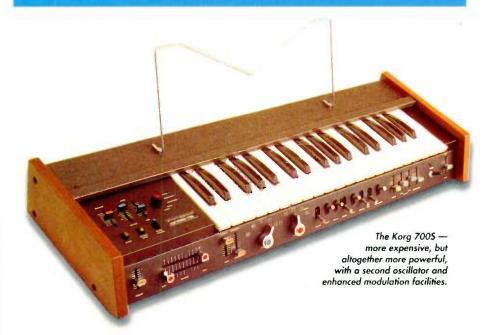
# The MiniKorg 700 - "with a 700, a long blonde wig and a flowing cape, the world was at your feet.

#### THE 900PS & M500 MICRO-PRESET

This story would be incomplete without a mention of three models that finished the line-up of Korg's first generation of monosynths. The first was the semi-preset 900PS, released in 1975. Korg designed this synth to compete against the preset pressuresensitive (hence 'PS') synths sold by ARP and Roland, However, instead of allowing you to press a note harder to generate the desired effects, the 900 featured an unusual contact-sensitive rail. This, when touched, acted as an on/off switch for vibrato and four

other 'touch' effects.
Unfortunately, the 26 preset
sounds were poorly chosen and
(although this was to some extent
compensated for by a few extra
sound-generation facilities) the
single-oscillator architecture, the
single low-pass filter, and other
short-cuts in the envelope and LFO
ensured that the 900PS was never
going to set the world on fire.

The final two models in this first Korg monosynth generation were the M500 Micro-Preset and its near-identical twin the M500SP (which was simply an M500 with a small speaker mounted on the underside of the case). These were ghastly little affairs that achieved brief notoriety in the 1980s when OMD used one for their hit 'Enola Gay'. To their credit, both Micro-Presets offered 30 sounds, with the bonus that you could mix any two simply by pressing two selector buttons simultaneously. But, again, the limited voicing let the synth down. Indeed, many fundamental voice-creation sections - the filter, the envelope and so on --- could only affect a handful of the sounds. Despite their brief filrtation with success, the Micro-Presets are best forgotten.



expensive, but altogether more powerful, synthesizer. It had a second, independently tunable oscillator; white and pink noise sources; filter modulation (which Korg called Travel Vibrato); and a 'Sustain Long' switch that multiplied the envelope times by a factor of 10. Most impressively, the Effects Section also added three modes of ring modulation. Two of these modes tracked the keyboard and were ideal for aggressive lead and bass sounds, whereas the third did not track, so each key you played produced a different timbre.

These additions hugely increased the type of sounds obtainable, and a range of complex atonal and percussive patches appeared in the manual. But, mindful that it would be useful to be able to jump between the more elaborate noises of the 700S and the simpler sounds of the original 700, Korg provided an on/off switch for the Effect Section, thus making it trivial to leap from a basic 700 sound to a more powerful 700S patch (and back again).

#### THE KORG 800DV

This was all very neat, but Korg hadn't finished finding ways to exploit the 700's strange architecture. Later in 1974, the company launched one of the greatest monosynths ever

built. This was the Korg 800DV, which I first heard on a rainy August Bank Holiday Saturday in 1975, in Rumbelows' music department in Reading. (Don't laugh: Rumbelows was a significant music store in 1975, and it was Reading Festival day, with Yes headlining.) Store manager Martin Lawrie (whom I met again 21 years later when he worked for Korg) was showing a customer how he could use the 800DV to play both parts of ELP's 'AquaTarkus' simultaneously. This was synth heaven!

The power of the 800DV lay in its unusual architecture — not the layout of its knobs and sliders, but the way in which you could create and play sounds. Disregarding the Volume, Key Transpose and Repeat controls on the far right of the synth, you could take a hacksaw and horizontally cut its control panel into two equal and almost identical halves. You then had, in essence, two Korg 700S synthesizers — one represented by the Upper half of the panel, the other by the Lower. And with two distinct synths, each replete with its own oscillators, filters, and envelopes, you could create two different sounds and play them independently.

Now, before you leap in, shouting that other mid-'70s dual-voltage synths allowed you to play two notes simultaneously, I should point

## KORG MINIKORG 700S



7005

800DV

900PS

M500/M500SP

- ▶ out that instruments such as the ARP Odyssey used the same sound-shaping parameters for both voices. None of the 800DV's competition could produce two completely independent patches that you could play as either a complex composite or as two completely independent synthesizers. But this was still only half the story, because the 800DV's unique Key Transpose and Repeat panels offered 20 voice-allocation modes that allowed you to deploy the voices in a huge variety of ways. Key Transpose offered four modes:
  - AC was the most conventional of these, playing both Upper and Lower synthesizers together if you pressed one key, and allocating them to the highest and lowest notes if you played more.
  - BC, the second mode, played only the Upper voice if you pressed one key, introducing the Lower when you pressed a second.
  - AD operated as BC, except that the Lower voice played during monophonic passages.
  - BD was the most curious mode, in which no sound was produced unless you played two notes or more simultaneously, at which time the two voices were allocated appropriately.

The Repeat panel offered five further modes, each of which could be used in tandem with any Key Transpose mode. These were:

75

100

100

200

200

300

100

- Repeat the Upper voice only.
- Repeat the Lower voice only.
- Repeat the Upper and Lower simultaneously.
- Repeat the Upper and Lower alternately.
- Execute a single shift from Upper to Lower.

In retrospect, it is the fifth of these that is the most interesting. Why? Because it's the forerunner of the 'partial'-based synthesis re-introduced on the Roland D50 more than a dozen years later. For example, you could set up a 'chiff' on the Upper section, and a sustained sound on the Lower to synthesize a far more realistic flute than could be produced using a conventional monosynth. But my favourite 800DV patches were, again, the 'vocal' sounds

created by setting all four filters to emulate the formants produced by the human larynx. Instant Vangelis!

As you'll have gathered, I became a lifelong fan of the 800DV. Over and above two 700Ss, it offered a generous 44-note keyboard, extra waveforms, and extra footages (including a super-deep 64'). It also had separate outputs for the Upper and Lower sections, plus independent effect sends and returns for each. With its four oscillators, duophonic structure, wealth of instantly grabbable controls, and all manner of strange synthesis capabilities, it remains one of the most impressive, flexible and articulate synthesizers ever.

#### THE KORG 770

Unfortunately, at nearly £900, the 800DV was way beyond my reach, so I persevered with my Korg 700 for another two years. Then, in 1977, I had my first encounter with a Korg 770. Released in 1975 and, therefore, getting a bit long in the tooth, it was on offer at just £399. But it sounded great and I fell in love at first twiddle. Indeed, I was ready to trade in my 700 right away (or as soon as I had sorted out the problems of transporting both synths 40 miles on the back of a Yamaha XS500).

Part of the 770's appeal was undoubtedly its physical appearance: it looked like a baby Minimoog. But despite the radical redesign, the 770 retained the basic architecture that had made the 700S such a success. The twin oscillators offered 64' to 1' settings; 'chorus'; noise; two types of ring modulation; and, for perhaps the first time on a non-modular synth. an external signal input. The filters retained the 'Traveler' arrangement (see 'The Architecture' box), but were now called high-pass and lowpass filters, and you could cross their cut-off frequencies. The filters also offered two levels of resonance, two LFO modulation depths, and both positive and negative envelope modulation. The strange Attack/Singing envelope generator (see 'The Architecture' box) was also retained, but this was now enhanced by three envelope modes, three trigger methods, three EG ranges, and three sustain time ranges. A complex VCO modulation section rounded things off,

#### THE ARCHITECTURE

The Korg 700 was perhaps the strangest massmarket synthesizer ever. Very little conventional synth terminology made it onto its front panel and, as a result, many players felt lost when faced with one.

The 700's single oscillator was, perhaps, the most conventional thing about it. It offered five waveforms: sine, square, sawtooth, and two forms of PWM called Chorus I and Chorus II. Footages ranged from 32' to 2'. In contrast, the envelope was limited to Attack, plus an unconventional Percussion/Singing control. These roughly, but not exactly, imitated the 'A' and 'D' of

conventional ADSR envelope generators. There was also a toggle labelled Sustain, but this was, in fact, a 'release' switch, the time of which was roughly proportional to the Singing level.

The dual 12dB/oct low-pass and high-pass filters were combined in the unique and extremely usable 'Traveler' (their spelling, not mine) arrangement favoured by Korg on most of their early instruments. The Traveler knobs were moulded so that the low-pass knob could not move to the left of the high-pass knob, thus ensuring that there was always a band of centre frequencies unaffected by the filters. Many players, however, hacked bits off so that the cut-off

frequencies could cross. Ho hum! The controls for filter resonance and envelope modulation were particularly limited: an Expand toggle applied the amplitude envelope to the filter cut-off frequency by a fixed amount (or not), while the Bright toggle introduced a fixed amount of filter resonance (or not).

The rest of the set of eight toggles introduced performance-like effects: Bender started each note a few semitones beneath the correct pitch and then glided quickly up to the note played (to emulate 'tonguing'); Repeat offered trill effects; Vibrato featured controls for variable depth, rate and delay; and the 700 offered variable-rate Portamento.

#### A LARGE AND UNRULY FAMILY

In 1976, Korg produced two polyphonic instruments with 'travelers' (see 'The Architecture' box for explanation). The first was the PE1000, an electric piano with seven voices differentiated by preset values of the 'traveler' and envelope. Some control was available, but with a single filter and envelope for the whole keyboard, and no touch-sensitivity, it sounded horrible. Even chorus, vibrato and portamento failed to alleviate the tedium.

The second was the PE2000. With three oscillators per note (or, more likely, three detuned versions of the same octave-divided

sources) and an integral phaser, this was somewhat more desirable than the PE1000. Its presets — strings, chorus, brass, and reed — support the view that Korg saw the PE1000 and PE2000 as a matched pair: one for percussive duties, the other for sustained sounds.

But there were better ensemble keyboards than the PE2000, while plano and harpsichord sounds vastly superior to those obtainable from the PE1000 lurk in even the cheapest and most basic MIDI modules.

Don't pay more than £50 for either of them.

incorporating auto-pitchbend (with delay) and a delayed vibrato that was independent of the main LFO.

It was another impressive package of features and, although the 770 lacked the bite of most American synths, it was warm, rounded, and very controllable. Unfortunately, in 1978 (and before I bought the 770) Korg replaced their first-generation synthesizers with what was to become an extremely successful new series of instruments: the MS10 and MS20 monosynths, plus the MS50 expander and the SQ10 sequencer. I fell for the potential-laden patch sockets of the MS20, and all thoughts of buying a 770 went right out of the window. I was blinded by the

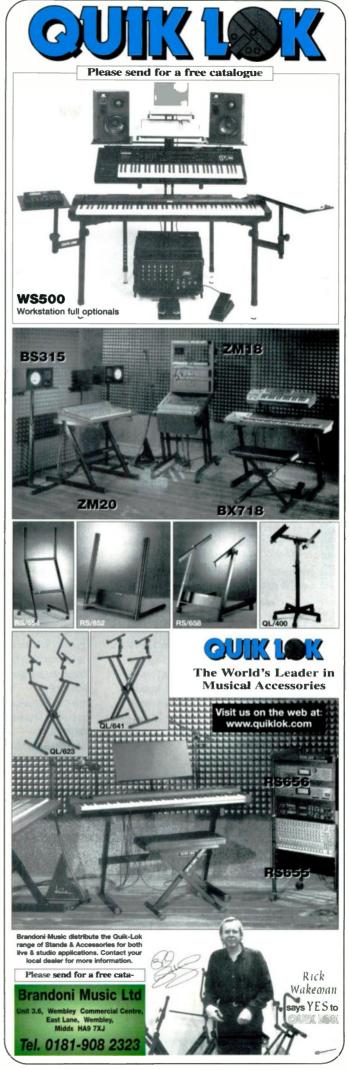


appearance rather than the sound of the new models, and I wasted my hard-earned dosh on an MS20. What a mistake that was! Yes, the MS20 had a million tricks up its programming sleeve, but for simple, powerful, and easily accessible synth sounds, it was (and still is) exactly the wrong choice.

#### A HAPPY ENDING

Korg never returned to the philosophies of the 700, 7005, 770 or 800DV. In retrospect, we can see that when they discontinued these and replaced them with the MS-series, they broke the mould that produced quirky and different little monosynths. But at least *this* story has a happy ending: it took me 15 years to track down another Korg 800DV, and 18 years to find another 770. On each occasion, they sounded as good as I remembered them... so I bought them.

SOS thanks Junko Fukai and all at Korg Japan for their help in supplying the photographs in this article.





top Music Goodies

n the first of this month's two great competitions (turn the page for the other), SOS, in association with Comtracks UK, is offering a multitude of PC-based desktop music goodies worth nearly £1300 for not just one or two, but four lucky SOS readers. If you're a PC-based desktop music composer and use MIDI files in your studio, this is the competition for you!

Comtracks is the UK representative for three international MIDI file companies: Tran Tracks USA, Powertrax Australia and the German firm SWT. This makes it one of Europe's largest MIDI file companies (offering over 6000 MIDI and Audio titles, all fully licensed). The company also distribute Wildcat Canyon's *Autoscore* audio-to-MIDI software (see review starting page 112 this month for more details), and *Internet Music Kit*, an easy-to-use PC application for putting musical accompaniment onto web sites.

The prizes up for grabs are as follows:

#### **1ST PRIZE**

- Wildcat Canyon Autoscore Pro v2.2 pitch-to-MIDI conversion software
- Wildcat Canyon Internet Music Kit web page music software
- 1 pair of Roland MA5 desktop stereo monitor speakers
- Roland DoReMix MIDI file composition software
- Musicator MIDI sequencing and scoring software
- 100 Standard MIDI files (SMFs) of your choice from Comtracks UK's library (worth £500!!)\*

#### **2ND PRIZE**

- Musicator MIDI sequencing and scoring software
- 20 Standard MIDI files from Comtracks UK's library\*
- Roland DoReMix MIDI file composition software
- 10 Standard MIDI files from Comtracks UK's library\*

#### 4TH PRIZE

• 5 Standard MIDI files from Comtracks UK's library\*

All you have to do to have a chance of winning all of this fab kit is answer the selection of questions and tie-breaker in the box below. Oh, and ensure you get your entry to us by the closing date (Friday, 1st May), of course!

\* Prizes may include only selections from Comtracks' single MIDI files. Prize titles may not be chosen from Comtracks' album MIDI file catalogue.

the small print

I Only one improper person is permitted a Employee of SOS following the flowing and the service of the flowing service of SOS following the service of the flowing service of the service

#### <u>QUESTIONS</u>

Which o	đ	the	following	com	pani	es'	MID	file
product	s	ÓO	Comtrack:	s UNC	NOT	ď:	stribu	te?
SWT								

b. Powertrax Australia

c. British Gas

d. Tran Tracks USA

#### 2. Which of the following descriptions best sums up Wildcat Canyon's Autoscore settware?

a. A revolutionary new type of kiln

A revolutionary new type of kill
 A gathering of elders from
 aboriginal tribes

c. A family stonemason based in the Cotswolds

d. Pitch-to-MIDI coversion software for the PC

#### 2. What does SMF, in the context of Commracks UK, stand for?

a. It's what the Belgians

b. Standard MIDI File

c. Sligo, Meath and Fermanagh

d. Siberian Mink Fur

If you would like to receive more information on Comtracks-distributed products, please tick this box.

#### TIE-BREAKER

If you won this competition, what would be the first tune you'd be whistling into Autoscore for conversion to MilDi data — and why Answers in not more than 30 words please — and the more wit, wisdom and repartee you exhibit, the more of a shout you're in w	
	*******
Name	

. Daytime tel. no. . . .

Post your completed entry to: SOS Comtracks Competition, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.

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#### OUESTIONS

- 1. Gina and Barla conform to which PC protocol for easy setting up of music devices?
- a. Plug and Play
- b. Plug and Pray
- c Play Away
- d Away In A Manger
- 2. Which Eric Clanton song shares Its
- name with one of Event's cards? à Gina
- b. Darla
- c. Layla
- d. Edna

- 2. Which PC processor do the Clus and Darla require?
- a. Helium
- b. Pentium
- c. Strontlum
- d. Paramecium

Would you like to receive more inform on Key Audio products? If not, please tick this box.

#### TIE-BREAKER

In 30 words or less, suggest a name for a fictitious Event card (in a similar vein te Gina, Daria and Layla) and tell us why you've chosen it. Smut will be frewned upon, as will any references to Pamela Anderson
***************************************
Name
Address
Daytime tel. no

completed entry to: SOS Event Competition, Sound On Sound gar Way, Bar Hill, Cambridge CB3 8SQ.

> Event Competition

nyone running a MIDI + Audio sequencer program knows the value of good-quality audio hardware. For PC audio work a soundcard is essential, and even if you own a modern Mac with built-in 16-bit audio capabilities, adding a PCI audio card to your setup can provide better quality A/D and D/A converters and studio-level inputs and outputs.

If you've explored the PCI audio card market at all, you're almost certain to have come across Event Electronics, whose Gina multitrack PCI audio card has been making quite an impression. SOS took a look at the cross-platform Gina back in our December 1997 issue, running on a PC (though Mac drivers are promised in the near future), and our reviewer was impressed, saying: "Basically, this is the one I've been waiting for... I'm having one of these "It's easy to see why: the Plug and Play Gina features two analogue inputs and eight independent analogue outputs, all on standard quarter-inch jack sockets and mounted in a compact breakout box, plus an S/PDIF digital input and output. The converters used are 20-bit, 128x oversampling, the S/PDIF I/O has 24-bit resolution, and there's a 24-bit internal signal path. The card's dynamic range exceeds 96dB, and its PC software driver allows full-duplex operation, so you can simultaneously record on four channels while playing back audio through all 10 outputs. It's also a short PC card, which means it should fit most PCs.

The Gina card could revolutionise the sound of your MIDI + Audio productions, with its multiple audio outputs giving you access to your favourite effects and processing outside the computer, and its wide dynamic range and low noise performance offering cleaner audio quality. At £499, it's been recognised as a best buy for PC owners, and if you enter this month's competition you're in with a chance of getting one for free, courtesy of Event's UK distributors Key Audio (01245 344001). Mac owners shouldn't be deterred from entering, either - a Mac driver will be along shortly, and this will make the Gina a very strong contender in the Mac audio card market. Watch out, too, for Event's forthcoming Layla, the top of the Event card range, which offers an even more mouthwatering feature set including digital I/O, word clock in and out, and a professional rackmount box housing converters and connections.

Gina's baby sister card, the Darla (£299), is up for grabs in this month's competition too, so a lucky runnner-up will also be clearing some computer room for a new arrival. The Darla offers two inputs and eight independent outputs on phono connectors, mounted on a small box which plugs into the back of the card. The Darla's converters, like the Gina's, are 20-bit, and it also offers full-duplex operation.

As always, there are a few trivial questions to answer and a cunning tie-breaker to compose and when you've done all that you still have to struggle out to the post box and mail your entry, to be with us no later than Friday, 1st May. It's a hard life...

Minimum PC system requirements for Gina and Darla are: Pentium processor, 16Mb RAM, hard disk with 10ms access time and data throughput of 2.65Mb per second.

. Only one entry per cerson is permitted 2. Employees of SOS Publications Ltd. Event and Key Audio, and their immediate families, are invitable for th alternative is available in lies, or the states prize 4. The competition organises reserve the right to change the specification of the prize offered 5. The cision is final and legally binding, and no correspondence will be entered into 6. No other correspondence is to be included with competition entries.

1





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#### KEYBOARDS

ALESIS NANOSYNTH module, £199, Yamaha PSS51 vector synth £125. Atari 1040STE. monitor, Cubase, £225, Evolution MK149 master keyboard £65 Atari 520STFM Pro 24 printer £75 = Stephen 01553 674076 (Norfolk)

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ARP PRO SOLOIST, manuals, flightcase, £300, R8, good condition, 2 manuals, Roland Space Echo studio analogue tape effect = 0410

BOSS DS330 GM module, 16-part mi 8 drum kits, charus & reverb, £80, MOTU MIDI Fiver, 32-channel MIDI interface for PC parallel port, including bypass switch, £90, MPU401 PC 16 channels, £30 = Jon 01473 717525/605432 (hom: \work)

CASIO (Z101, £110, Korg poly 800, £160, JX3P, £260 PG200 £150 Juno 1 £275 Juno 2 £350 DX7, £260, 606, £120, all in excellent condition. # 01670 523363.

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all home use only # 01344 625900 (Berks) CHEETAH MS6 analogue module, fat sound with hundreds of presets, £160 = Andy 0151 201

CLAVIA NORD LEAD virtual analymue keyboard 8-voice expansion board, RAM card containing 297 extra sounds and 100 performances, mint £750, Roland JV1080, very good condition, £595. Akai \$2000 18Mb 8 output expander fitted SCSI digital in/out, mint, boxed, manual, £730 or £800 with Zip drive, no offers # Martin 01244 376446

CLAVIA NORD LEAD 2 quaranteed with case and RAM, £1195, Wavestation A/D, £849; sample expander for Korn M1 M3R wavestation £475 M3R, £250 # 01275 332957/0468 647432

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ROLAND R8M, mint, £349, Boss DR660, £199, Atari Mega ST2 with SM124 and Cubase v3, £299 # 0467 637725 (Glasgow)

ROLAND SH09, excellent condition, £200, Roland M-VS1 vintage synth module, as new, £250 Cheetah MS wave module, as new £110, all based with manuals. # 01708 523469 (Essex) ROLAND SUPER JX10, classic 12-note polypuloge synth, full MIDI spec with keyboard split includes 2 cartridges, manuals, as new, £500 01243 267792 (West Sussex)

ROLAND U20, lovely sounds, in excellent condition apart from the stuck transpose button, £300 Boss BX4 mixer afters. • 01925 228132 ROLAND SYSTEM 100M, 8 VCOs, 4 VCFs, 8 VCAs, 5 VCLFOs, 8 ADSRs, ring modulation S&H, noise, sequencer, muer, patch bays, £3500. may split into 3 smaller systems. # Ab 0410 763727 (London)

ROLAND XP10 synth, 2 years old, boxed, cover, stand, manual, £350 # Bret 01702 353875 (Fssex

ROLAND XP50, mint condition, never glosed. £880 and # Glenn 01705 359187 (Ports) ROLAND XP80 workstation, fitted with pop, orchestra and experience expansion boards boxed with full manual and disks, mint, not gigged, £1100 
Don 01905 797419/0850

SEQUENTIAL SIX TRACK multitimbral keyboard synth, full MIDI control, £300. = Dave 0117 907

SEQUENTIAL PRO ONE analogue synth. MC202 in very good condition, £300 = 01432 760613 (Herefo

SEQUENTIAL PROPHET 5, £870, Oscar MIDI, £870, Cheetah MS6, £170, Yamaha FB01, in good condition, £75, all ono **Text** Kevin 01268 548204 (Essex)

SEQUENTIAL SIX TRACK synthesizer, good vorking order, manual supplied, £400, Casio CZ1000 synth, strange acid sounds, £150, SBX80 SMPTE sync box with many facilities, £200. # Smon 01364 653747 (Devo

SERGE MODULAR MUSIC SYSTEMS 76, -panels/44 modules built into wooden suitcase PSU, spring reverb, 70 patch-cords, and manual US\$5,000 Email duper@concentric net for info. In +1 818 385 1956 (CA/USA) SOLTON MS50 Roland G800, both mint and

nly = 01986 788719 (Norfolk) STEINER ANALOGUE resonant filter, made in 1979, breath/bite controller, also gives CV

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outputs for VCO/VCF/VCA/PWM, with case manual, plastic tubing, £200. # 0171 263 4933 SYNTON SYRINX mono synth, in good condition with flightcase and manual, £1450. # Jelle 00 31 70 3623358/00 31 70 3820172 (Netherlands)

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YAMAHA MU100R module, 1500+ voices, 46 drum kits, 32 multitimbral, 64 poly, 256 VL voices, iocal harmoniser, 70 effects, 2 analogue nputs, one month old, £575. 

© 0113 269 6386 (W Yorkshire)

YAMAHA SK50D analogue ensemble synth, massive sound, loads of sliders, similar to CS80, £299, or swap for Emu Morpheus 

Ade 0151

722 2165 (Liverpool)

YAMAHA SY22 vector synth, in very good condition, boxed with manuals, £230. T Dave 0171 771 9558/0956 919311

YAMAHA SY35 vector synth, superb condition, boxed, manuals, £250 ono = Sasha 01684 564637 (Worcs)

YAMAHA \$Y55 workstation, £299 or swap for Fender guitar, lead or bass, hard case, 920x330x70mm, £45. Roland \$D35 datafiler, £335. © Paul 01229 466238 (Cumbria)

YAMAHA SY77, as new, cost £2000, will sell for £520, Tascam DA20, £500, Fostex DMT8, £750, Roland JX10 module, £490, Alesis Nanosynth, £280, Kawai K1r module, £130, Boss GX700, £270, 2 channel phantom power unit, £50, Roland MKS50 with editor, £330. 

⊕ 0961 157247 (Merseyside)

YAMAHA SY85 workstation with expanded sample RAM, 16-part multitimbral, 8-track sequencer, 100s of on board sounds, great effects, front panel real time sliders, four outputs, great sounds, loads of sounds/samples on disk, boxed, manuals, good condition, £700. ▼ 01354 695239

YAMAHA SY99 workstation, 76-note modern classic, excellent condition, flightcase, 40 disk library, manuals, offers ₱ Jon (room 125) 01924 249115 or 249096 (Wakefield)

YAMAHA TG77 module, 8 outputs, manual, soundcards, never gigged, £500 ovno, buyer arranges delivery, SY77 synth, slight case damage, otherwise fine, never gigged, manual, extra sounds, £500 ovno 

Angus 01227 767266 (ewes)

YAMAHA TX816, 8 DX7s in a 4U rack, balanced XLR outputs, 128 voices, £650, Yamaha KX88, 88-note weighted keyboard, £400 © Jody 0181 390 9457 (Surbiton)

YAMAHA VL7 with breath-controller, footcontroller, disks, one-year-old, hardly used, boxed, £650 

□ 01765 600237

#### RECORDING

AKAI MG1212 multirack recorder, 12 channels records onto hal-inch tage cartridges, 5 yet track, dbx noise reduction, 3-band parametric EQ, £795, Peavey (£8100 keyboard combo, 3 channels, ballcincel line imout, 4-band EQ, reverb, effects, DDT compression, £230, McGregor 200w PA amp, 5-band graphic, monitor and tapirouts, £175. ▼ 01253 838959 (Blackpool) ALESIS ADAI XT digital 8-track with remote, priect condition, only 20 hours use, £1650. ▼ Marc 01534 498596 (Jersey)

ALESIS MICRO EQ parametric EQ, good condition. £75, Symetrix 511A, single-ended noise reduction, excellent condition, £225, Slapback Scintillator aural exciter, excellent condition, £100 ono 

Chris 01943 602203 (W Yorkshire).

ALLEN & HEATH GR1, 6-channel mic mixer, balanced line and mic inputs, £140 ono, in good condition = 01908 566350 (Milton Keynes)

ALLEN & HEATH 653V, 16.8.2, MIDI automation, mint condition, one year old, baxed with manuals, £1600 ono #lan 01736 753057.

ALLEN & HEATH 5ABER, 32 16.24 mixer with automated mutes, senious 16-buss desk, in very good condition, £2500, Panasonic \$V3700, £490 #Luke 01252 710244.

ALLEN & HEATH SYSTEM 8 desk, 16:8.2, £450, Atari 1040STE with Cubase and tone module, £300, Vestax MR44.4 track, £300, all ono. # 01608 642682/0973 823989 (Oxon)

APHEX TYPE Count exister, as now, £90, Boss half-rac's pitch-hitter/delay, £95, compressor/in tir/gate, £75, both as now # Alec 01204 888675 (Lancs)

BEHRINGER MX1602, mixer, 4 mono mics, 6 stereo lines, phantom power, £140 # Keith 01749 673464 (Wells)

BEHRINGER 24:8:24 Eurodesk, £1000; Korg

£250, Fostex B16, £900, Ala S3000, 8Mb RAM, £200 = Tim 01923 267733

BEHRINGER VIRTUALIZER, excellent 20-bit dual engine, stereo effects unit, new and unused, £150, Peavey Adverb, not working, £20. © Kez 01208 873649 (Cornwall)

DRAWMER DL221, compressor, £175, Symetrix 511, studio noise reduction unit, £175 

□ 0181 675 0651 (Clapham)

DRAWMER M500 multi-dynamics, SPL 2channel Vitalizer, Fostex B16 plus 4050 autolocator, MiDI SMPTE synchroniser, Allen & Heath 52 mixer, 24 8 24 2, offers # Pete 0117 924 4411/01454 413217 (Bristol)

FOSTEX B16 half-inch multitrack recorder with manual, looms, same as the E16, £1100, 10 Ampex 456 half-inch tapes (used once), £35 each # 0117 942 9490 (Briston)

FOSTEX DCM100 plus Mixtab, two available, giving 16 stereo inputs and four stereo auxsends/returns, full MIDI control over all paramiters, £500 • Nixt 01225 469532 (Bath).
FOSTEX DMT8VL digital 8-track, excellent condition with box and manual, £800 • John 01874 636784

FOSTEX 0160, brand new with 3.2Gb drive, £2000 ono, Korg 168RC digital mixer, brand new, £850 ono; Technics WSA1X workstallion, £750 ono, Emax II stereo sampler, £575 ono, Korg DS8 synth, £300 ono. 

■ 01274 817317 (Bradford).

FOSTEX E16 16-track reel-to-reel, quick sale, £950. T8303, £750, Soundcraft 2008 desk 16.8.2 £450. \$\frac{1}{2}\$ Steve 0181 455 7677

FOSTEX G16 half-inch 16-track recorder, £1400, Sequential Pro One mono synth, £200. ♥ 01633 880858 (Monmouthshire)

FOSTEX G24S, with sync card, hardly used, immaculate, £3500, Fostex G16 with remote extension, home use only, £2100  $\approx$  0171 916 2724

FOSTEX M80, 8-track quarter-inch open reel with loam, very good condition, £420 ono 

François 01273 239590 (Brighton).

FOSTEX R8, remote extension, boxed as new, £695, Yamaha MC1202 desk, swept mid £Q, VU meter bridge, phantom power, £495 ♥ 0161 776 2476

FOSTEX 280 4-track cassette/mixer good condition, £325 ono & 0181 926 2886

FOSTEX 280 4-track. 3 effect loops, 2 of which are stereo, sweepable EQ, 8-channel mixer, good condition, £300 ono ₱ 0181 985 3264

FOSTEX 380S Doby multitrack, £375, ARP Axe analogue mono synth, £245, Roland Drumatix, £85, Yameha CP30 electric puino, very heavy, suit home publishes a 04325 270082 (Devon). HARBETH XPRESSION DPMI PRO manitors, pristine, home use only, includes speaker protection circuitry, still under warranty, cost £439, will sell for £325 a 01952 260064 (Tellord).

JBL M355, 15-inch subs, hardly used, £750 for the pair, QSC MX1500 amp, flightcase, £750  $\varpi$ Dave 01305 265066 (Dorset)

KAWAI MX8R, 8-channel rack-mounting keybail d miwer, 2u deep, good condition, home see only, EGO at Mike 0170 221703 (Upminster) KORG A1, multi-effects with digital VO, £590, Sony DPSM7 modulation effects, £490, Digitech DSP 256, £190, Protools Bridge Nubus card, offers. # 0336 782 888 (London)

KORG IH rocal harmoniser with Shure prologue OL LC microphone and cable, 4-months old, cortor r £400, will accept £275 © 0191 584

LESLIE CABINET, model 910, pristine condition, never gigged, would suit studio installation, Hammand UK price £1800+, I'll sell for £600 

₱ Price 01274 815222 (Bradford)

UNEAR PHASE 8810 studio monitors, pair, brand new, onginal box and packaging, unused with 2-year warranty, £1250 ono @ 0385

LINEAR PHASE 8810 studio monitor speakers, 12-inch bass drivers, full two-year warranty, boxed, as new, cost £1700, will sell for £550 and  $\pm$  0114 281 3425 (Sheffield)

LINEAR PHASE 8810 single studio monitor speaker, 125m RMS, orcuir protection, baxed as new, hardly used, cost £900, will sell for £400 ono # Dan 01203 523523 ext. 25252.

MACKIE CR1604, with rack ears and Rotopod jack rolator, 16 inputs, two sets of stereo outs, 6 aux sends, 3-band EQ, swept mid, phantom power, insert points, flexible, compact, great sound, boxed, manual, £575 vo 01354 695239 MACKIE 24:8 desk, mint condition, £1950, K2000 rack sampler with 500Mb hard drive, 8Mb, £1250, Korg X5, £275, Clavia Nord Lead rack, £600 vo 10892 664006/0385 933969

MACKIE 24-CHANNEL mixing desk, 4 sub-mix busses, main L/R, six aux busses, 3-band EQ, excellent sound recording desk, boxed with manual, £900 ono. \*\* 0973 694081 (London). NEUMANN U87 mic, recent senice with new gold capsule, £975. \*\* 01865 77657 (Oxford). OHM MR228 speakers and matching MR450 18-inch bass units with speaker stands, in perfect working order and good condition, system cost over £2000, will sell for £1200. \*\* 0171 485 4881/0181 361 9140.

PEAVEY 1PM & 1M powered monitor system, mint\_£300, Peavey CS1000X amp with PL250 plug-in crossover, £450 # Andy 0114 286 2209

PHILIPS CDR870 re-wmable CD recorder, one month old, mint, excellent for digital recording, as reviewed in SOS December '97, cost £500, will self for £400. ▼ Francis 0114 247 6759 (Sheffield).

ROLAND SRV2000 reverb, £225, TC2290 delay,

£850, Samson Servo 500 power amp, £200 ± 0121 422 9605 (Birmingham).

ROLAND VS880, 1Gb pilus effects board, £900, Rolland TR909, £650 ono, Rolland JD800, boxed, mint, £799 ± 0181 596 0928 (Essex).

ROLEC PMX 6:2 mmmixer, £100, Rogers studio monitors, £150, Lyrec quarter inch open reel master recorder, £500, Drawmer DL221 stereo compressor imiter, £100, other kit also available \$\infty\$ fee. Morwich 01603 625980 (Nomich)

only, £100 = Jon 01473 717525/605432 (hame/work)

SAMSON MPL2242 mixer, great spec, 22 ins, 48V phantom power, 4-band EQ, 6 aux, mint condition, boxed as new, very quiet mixer, un antiid sequencing software for PC free with the purchase, 6500 = 01787 280057 (soffolk). SAMSUI MR6 rack-mounting 6-track cassette recorder, double speed, Doby B, sync on track 6, great sound, 50% more tracks than the average cassette multitrack, recent full service, £375. = 01354 695239

SECK 12:2 mixer, very good condition, no noisy pots or faders, 3-band EQ, 4 aux, manual, PSU, camp-case, £120 ono # Dave 01642 459355 IM do esborough)

SECK 18:8:2 mixer with flightcase £550 ono, Yamaha RX5 tunable drum machine, 12 outputs, £220 ono # Mark 0117 972 4966 (Bristoli)

SHURE VP88 stereo microphone, uses internal battery or phantom power, mint condition, boxed, accessories, £325 = 01206 384143 (Colchester)

SSL FXG383 dual preamp EQ, 2 units, 1U box, £1200 each, PRO-AC Studio One MkII monitors, £300 = 01869 810956 (Oxford)

SONY DTC55 ES, regularly serviced,

d tal/optical in/out, very good condition, £300 ono # Mark 0121 520 6132 (Dudley)

SONY DTC A6 DAT, hardly used, £430, Yamaha QY700 sequencer, hardly used, boxed with manual, £480 ≈ Andy 01992 560341 (Essex) SOUNDCRAFT GHOST LE24, boxed, unused, £2000, offers welcome. ▼ Arron 01925 485180 (Warrington)

SOUNDCRAFT K2, PSU, PSM325, £350 ono, K2 24 frame, Packhorse flightcase, £300 ono, Soundcraft Delta, 32, 4.2 mixer, 4 stereo modules, EDAC, compression, flightcase, £1900 ono # Jud's 0181 964 4623

SOUNDCRAFT SPIRIT FOUO SI mixer, 6 stereo channers, 18 in total, 3-band EQ, swept on 2 channels, Spirit cover and applications guide, boxed, home use only, £225 = 01202 421995 (Depart)

SOUNDCRAFT 200 SERIES, 16-channel desk, £600 one, Roland S550 sampler, £370 ≡ Alex 01865 513180 Oxford

STUDIOMASTER DIAMOND PRO 12:3, 4 aux, 3-band, good condition, £225 ono a Andrew 01733 253288 (Peterborough)

STUDIMASTER PROLINE Gold mixer, 16.8.16.8-bus, 24 total inputs, £450 ono, rack-mountable carry case, 6U, £75 ono # 01722.744.196/0374.851067 (Wils)

STUDIOMASTER SERIES 5 16 8.2 mixing desk manuals, mint condition, £675 ovno = 01795

TAC SCORPION mixing desk, 28 12 24, 8 aux, excellent condition, £3500 = 01527 584044

TASCAM DA20, £390, Tascam 202 Mkill, £200, Aless RA100, £190, Aless Midwert 4, £180, Aless Monitor Ones, £180, Zoom 9050, £330, Yamsha \$Y55, £310, Rolard Y5880, £1050, all ono 

■ Rob 01449 721726 (e-es)

TASCAM DA20 MKII, with 10 blank 90-minute tapes, £595, Lewcon Alex effects unit, £185, D gitech digital delay unit, £85, Roland MC303 Groovebox, £365 • 01245 603198 (Essex)

TASCAM M1516 recording mixer, 16 B input with 4 outputs, 4 aux-sends for effects, group outputs for 8-track recording, £500 ▼ Matt 0121 472 3459 (Birmingham).

TASCAM 22-2 two-track open reel, 7-inch reels,

good working order, £225, Roland PR100 digital sequencer with 50 quick disks, £75 \* 01502 713713 (Suffolk)

TASCAM 38 half-inch 8-track with Tascam

remote noise-reduction unit, excellent condition, all boxed, £800 = Rob 0378 751163/01473 601575 (Suffolk)

TASCAM 414 portastudo, 4 tracks, 12 months

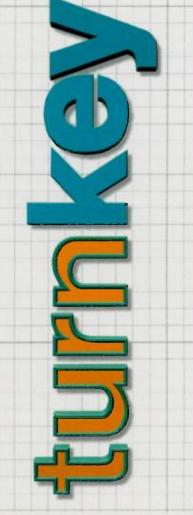
old, hardly used, still boxed with manual, 4-track simultaneous record, high-speed, pitch control, dedicated sync-track out, £250 = 01455 844933 (Lecester). TASCAM 424 MK2 4-track cassette recorder. 8

inputs, 4-b and EQ & 2 effect sends only used for 3 recordings, immaculate condition, £350, Alia

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TASCAM 644 Midistudio, 20 inputs, 2 aux. MIDI-mutes, tape MIDI sync, excellent condition, £395, Casio FZ1, £325, Roland RE501 tape echo, £300, Midiman Syncman tape/MIDI sync, £50. 01483 423088 (Surrey)

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TEAC A3440 4-track needs attention, dbx RX9 in good working order, if you want them, making an offer # Alan 01983 200203 (Cowes) 3M 79 2-INCH, 16-track, 15/30 ips, auto-locate relapped heads, in very good condition, truly superb, £2500, Akai MG1212, 12 audio, better than G16 and includes mixer, £750 = 0114 266 2900 (Sheffield)

TRIDENT SERIES 65, 24-channel mixing desk with full professional patchbay and leads, private use only, has been used to produce more TV programmes than you've had hot dinners, £4500 = Grahame 01223 890908, email

VESTA FIRE \$1,020 dual compressor/limiter. 1U rack, excellent condition, boxed with manual, £130 ono, Soundtracs Solo MIDI, 32 inputs, six aux, 4-band EQ and MIDI-muting on all inputs absolutely pristine, bought new for £4500, offers around, £2300 # Andy 01633 613342

YAMAHA DMP7 fully automated digital mixer, absolutely mint condition, £450 

Anthony 01784 481871 (Middlesev)

YAMAHA 02R digital automated mixing desk £4100 ono, Akai S3000XL sampler, £1050, Roland JV2080, £850 ono, Akai MPC2000, f850 # 0181 800 9944/800 1040

YAMAHA MTBX. 8-track cassette multitrack home use only, £400 ono = Luca 0802 478705 YAMAHA PROMIX 01 digital mixer, 36-brt EQ, 3 compressors, 2 digital effects, motorised faders with dynamic automation, rackmount housing, mint, £950 or swap for top sampler # 0141

#### SAMPLERS

AKALOD 3000L 8 CD-ROMs £950 Oberheim Matrix 1000, Access programmer, editor, £500, Yamaha SY77 workstation, Synthworks thousands of sounds and sequencer, £700. = Adam 0181 449 9160

AKAI CD3000XL v2 0, 24Mb, effects board fitted, CD-ROMs, disks, still boxed, hardly used, £1550, Kawai MDK61 II master keyboard, boxed as new, £140 = Paul 01536 761014 (Northants) AKAI 5900, Akai MPX820 MIDI mixer, Proteus with orchestral, Sony 55ES DAT machine, WEM Copycat tape echo, 70 Akai quick disks, please phone for prices. Michael 0181 807 3923

AKAI \$20 sampler, 17Mb, six months old, mint boxed with manual, £325, Folio Notepad, 10 input mover, one month old, mint, boxed, manual, f90 # 0113 269 6386 (Leeds)

AKAI 5900, £425, Akai \$950, £550, Akai \$1000PB £600 # 0171 582 9767 AKAI \$1000, 6Mb, one owner from new, boxed,

manuals mint £750 ono # Pete 01268 757334

AKAI \$1000PB playback sampler with 85 disks. Akai library, £450, Yamaha TG77, £450, Symetro 528 voice processor, £295, Samick electric mandolin, £125, Didieridoo, £75 # 01442

AKAI S1100EX EXM3002 Akai S1100EX expansion unit, never used, near mint with original manuals, buyer pays shipping, wanted SO1 memory upgrade, S950 memory and SCSI upgrade, reply to replikator@pagfic net sq. #

Wilfred 065 258 0706 (Singapore).

AKAI \$2000, 10Mb with effects-board, mint £850 ono, JV1080, mint, £720 ona = Rob 0116 251 0405/276 1242 (Leicester)

AKAJ \$2800, 2Mb, internal effects, latest OS, 32 voice poly, SCSI lead, immaculate, boxed, with sample CDs # Dale 0161 872 9064/0956

AKAI S3200XL sampler, £1900, immaculate condition, Yamaha KX88 MIDI keyboard, seldom used, £800 ≈ 0181 275 0693 (Herts)

AKAI \$3000XL sampler, hardly used, boxed plus MESA PC software offers # George 0181 991 9559/0370 564428.

AKAI X7000 sampling keyboard, works well, lots of disks, £225 = Chris 01943 602203

CASIO FZ1 16-bit sampler, 8 outputs, resona filter, large LCD, 150+ disk library, manual, £250 Simon 0161 860 6139 (Manchester)

CASIO FZ10M, 2Mb memory, in very good condition, £325, C-Lab Notator v3 2 for Atan. £75, Steinberg Avalon, v2.1 Atan, £75, all ono = Mark 0121 344 3942 (Birmingham)

EMU E64, absolutely mint condition, 10Mb RAM,

540Mb hard drive with Emu sounds, £1350 # Alan 01989 780382 # Alan Carter 01989

EMILI EMAX SE, rackmount sampler, stereo plus 8 separate outputs, sequencer, arpeggiator, digital and analogue pressing, real-time control, 200 disk library, £300 ono = 0131 447 5279 Edinburah)

FMILESIR2 with 32Mh RAM SyQuestE7 135 hard drive, SCSI, £950, Nord Lead with 4-voice expansion and PMCtA card, £900: Mackie 24channel, 4-buss VLZ desk, £900. All items as new # Gary 01266 40601 (N Ireland)

KORG DSM1 module, rare 4-part, 16-voice, 16 outputs HSI port, additive synth, analogue filter £600 ono, Alesis Midwerb 3, £85, wanted, Kawa K4R manual # 0121 622 2743 (Birmingham) OBERHEIM DPX1 digital sample player manual and Emulator II. Mirage sound libraries. op condition, £200, Future Films 240-way patchbay, boxed, £200 = 0181 449 6110 (Herts) ROLAND SP700 sample playback module, 8 outputs, powerful filters, EQ, Roland and Akai samples, Roland library, £850 ono, MKS70 with carts, £545 ono # 0161 440 8759 (eves)

ROLAND W30 sampler/workstation, with Roland sound library and manual, excellent condition wij accept £500, no offers @ Richard 0113 304

SEQUENTIAL PROPHET 2000, filters, arpeggiator, large library, needs new disk-drive, £300, Akai \$950, fully-expanded memory, £475 ± 01902 744293 (Wolverhampton)

#### DRUM MACHINES

ALESIS HR16, perfect condition, boxed, manual 0181 926 2886 (Chingford).

BOSS DR660 254 sounds, 4 outs, on-board effects, great 909, 808 sounds manual, £195 Andy 01924 469002 (evening)
KAT DRUMKAT 3.5 drum controller, 2 pad

cymbal add-ons, latest software, home use only, 2595. # Paul 01684 561397 (Midlands)

KORG KPR77, £95, Cutec 20-band graphs £30, Alesis Micro enhancer, £60, Alesis Micro limiter, £60, Boss RCL10 compressor, £60, home

NOVATION DRUM STATION, 808 and 909 sounds, 8 outputs, all parameters, MIDI controllable, as new, boxed, with manuals, £330 ono. # Pat 0181 470 7309.

ROLAND RS Human Rhythm Compo supply, MIDI cables, manual, boxed, as new, ▼ 01227 462059 (Canterbury)

ROLAND R5 drum machine, boxed as new llent condition, £120, # Paul 0181 209 1026 ROLAND TR808, £350, TR909, £700, TB303, 6500, # Steve 01933 405341 (Northants)

ROLAND TR626, excellent condition, boxed w manual, £80, Casio GZ50M GM module, £35 #

Martin 0131 650 5353 (Edinburgh) ROLAND TR707, £100, TR626, £75, TR505 £50, Korg M1, £400 ≈ Riggsie 0171 352 1453 SIMMONS SDX, sampling drum & keyboard workstation, 8Mb Ram, 70Mb HD, 8 FSR 128-position pads, kick pad, HH pedal, rad/hardware, offers @ 0336 782 888 (London).

#### SEQUENCERS

AKAI ASQ10, MIDI sequencer, 60,000-note sequencer capacity, 7 sync modes, 4 ndependent MIDI outputs and 2 in, com with manual, good condition, £350 ono. # 0171

AKAI MPC60 sampling drum machine with large library, in good condition, £850 ono, s for Yamaha VL1/VL1M @ Dave 0181 441 5656

QUASIMIDI RAVE-O-LUTION 309, mint, fully expanded, £725 ono or will do a cash deal on Korg Trinity or Z1, Ensoniq ASRX, Yamaha A3000 or Akai MPC2000 & Craig 0973

ROLAND MC202, with Kenton Pro2 MIDI to CV converter, £350 for the pair, Korg Poly 800 Mkll, £200 = Tim 0115 942 2762 (Nottingham) ROLAND MC303, excellent condition, boxed, manuals, receipt, new 1 3 version software, £400 = 0181 402 5967 (Kent)

ROLAND MSQ700 sequencer, MIDI, DCB, Sync 24 in and out, 8-tracks, excellent condition with original manual, £85 ono, Kenton Pro Solo MIDI to CV, £80 © Gwyn 0171 387 1834 (anytime) ROLAND PMAS, 15 drum kits, 306 PCM sounds, 600 styles, sequencer, arranger, Filofax format, brand new, £249 = Paul 01723 351732

ROLAND TB303 bassline with carry-case manual, excellent condition, £650 ono. ≠ 0161 286 9709/957 1736

YAMAHA OY20 compact sequencer boxed in mint condition, £200 ono = 01332 340544

YAMAHA QX5 sequencer, £50, Roland TR606 analogue drum machine, £80, Soundcraft Series 200 input modules, £20, Deltalab stereo flanger, £120. # 01342 323094 (West Sussex)

#### COMPUTERS/SOFTWARE

AMIGA 1200, 2Mb, colour monitor, Octamed Soundstudio, MIDI interface, sampler, prin 3 disk drives, utilities and games, £150; Yamaha DX21 synth. £150 or £250 for both. # Gawain 01926 419814 (Warwick)

APPLE SE30 4/40, Cubase v1 8, £150 = 0171

APPLE MACINEY RIND RAM complete system with, keyboard, mouse, hard drive, Cubase Score v2 f450 ono # 01245 603198 (Essex)

APPLE MAC QUADRA 650, 14-inch monitor, keyboard, CD-ROM, 44Mb RAM, Cubase XT, Recycle, Time Bandit, all disks and m new, Digidesign Session 8, with 882 interface ibus Mac version, £1250 ono # 01636 611899 (Notts)

APPLE 7200/90, 3 PCI slots, 500Mb hard drive 24Mb 17-inch colour monitor, extended keyboard, mouse, Mac O/S 8, one year old, perfect condition, £1100 ono \$\infty\$ 0171 266 4141 APPLE PERFORMA 5300 100MHz PowerPC 603e CPU, 40Mb RAM, 1 2Gb hard drive, CD ROM, Zip drive, integral 13-inch screen, £700 ono ■ Robin 0117 904 6562 (Bristol)

APPLE POWER MAC 6500/275 4Gb hard drive, 64Mb RAM, 33.6 modem, video card, Avid Cinema Cuhacis AV System 8 RAM/Sneed ono: SvOuest EzFlver 230, £100 ono # Mark 0181 287 8920 (Surrey)

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latest 14-inch model with sound, in very good condition with box, can send, two available, £75 each, Roland colour monitor, 14-inch digital RGB with special cable, suitable for any Roland sampler and condition, only £85, # 0181 668 6077

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ATARI MEGA ST4 powerful 4Mb ST sequencing package, brand new monitor with warranty, Cubase, extra 16 MtDI channels, MIDI arpeggiator, £300 ono # Pat 0181 470

ATARI STE, 4Mb RAM, high-res monitor, hard drive, software including Cubase, loads of extras, £250, Pentium PC, 32Mb RAM, 1 2Gb hard drive, 14-inch monitor, fully-set-up MIDVaudio workstation with Cubase, Wavelab, £450 Andy 01223 276311 (Cambs)

ATARI 520 STE, 2Mb, with SM124 monitor 2nd disk drive and 2nd MIDI out, recently ed, £200 ono = Mickey 0161 955 8484 ext 859 3012 (Manchester)

ATARI 1040 and 520 with monitor in drive, £150, no offers # James 0171 561 0175 ATARI 1040STE, 14-inch swivel-base, high-res monitor, fully upgraded to 4Mb RAM Cubase v3.24 f230 Atan 1040 ST f160 # 0181 656 0291 (Croydon) ATARI STE, 4Mb RAM, high-resolution monitor,

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DIGIDESIGN PRO TOOLS 3, Nubus Mac, 882 VO, disk, DSP, 1Gb AV drive, 16-track HDR, TOM, cost £7000, sell for £3300 ono = 0121 520 6132 (Dudley)

IGIDESIGN AUDIOMEDIA III, PCI audio card Mac and PC, works with PCI burst mode, £325, MiDiMan 18.2 line level mixer, 2 effect sends, 2 returns, £125 Kevin 01242 230489

DIGIDESIGN SESSION 8 for PC with 882 VO £825. ADAT interface. £500. Soundforge 4.0. £225 # 01703 870334 (Southampton

IBM BLUEPOINT MONITOR, 14-inch SVGA £55 ono, Roland SAX80 sync box, SMPTE, £100, External 50Mb hard disk for Atari system including box and leads, £75 = 01494 815593

GRAVIS ULTRASOUND, 16-bit wavetable soundcard, 1Mb sample RAM, sequencing and sampling software, fully boxed as new £35 = ul 0181 209 1026

OPCODE STUDIO VISION PRO 3 02, digitalaudio and MIDI recording, all disks, manual £300, Galaxy librarian, £100, Opcode Studio 4 8-in 10-out SMPTE MIDLinterface £150 whole package, £450 = 01524 736158 (Lancs)

PC 486, DX50, 8Mb RAM, 640Mb hard drive Cool Edit, Goldwave 14-inch monitor, keyboard, mouse and printer included, £300 ono 
Michael 01505 320714 (Renfrewshire)

PENTIUM 166 MMX, audio/MIDI system 32Mb, 1.6Gb hard disk drive, CD-ROM, SVGA monitor, Yamaha MU10 audio card, Microsoft mouse/keyboard, Cubase VST, Soundforge 4.0, Windows 95, cost, £1399, sell for £790 = 0181 203 5960

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ROM, including VST, Recycle, Time Bandit, Waves, Hyperprism, £1100, Yamaha RM50-6, s 8-outs custom sounds, £350 Ensoniq DP4, £780, Audiomedia 1 NuBus card, F85 # Mick 01924 785945 (Wakefield) PENTIUM 200MMX with 32Mb RAM, AWE64

Gold 8-speed CD-ROM, 2 1Gb ultra hard drive. fully configured and working, plus Cubase v3.5, Rebirth, may split. = 0421.551.087 PROTOOLS BRIDGE I/O CARD, adds 8 tracks to core Soundtook digital I/O Soundtook AD

convertor, all offers, Opcode StudioVision, £150. © 0336 782 888 (London). P166MMX, 16Mb RAM, 1 2Gb hard drive, fax, modern MIDI sound card 14-inch VDU, £750, or swap for Mac with similar spec and Cubase. Marcus 0171 516 4734

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SOUNDSCAPE v1.18 PC, 500Mb, £950 = 0115 947 4038 (Nottin

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ARTISTS WANTED, house, garage, deep house, techno, hip hop, soul, jungle, drum & bass, trance, breakbeat # Marcel 0370 791180

BASS GUITAR TUTOR wanted for private tuition, W1 = Matthew 0802 850840 (London) COLLABORATORS wanted, Basingstoke area for breakbeats 'n' acid tweaking, many sounds and styles a James 01256 781987 or email

DRUMMER AND BASS player needed, both of professional standard, to start in August '98, must be dedicated to God and music # Jenny 01902 881080 (Saltmine Trust)

FEMALE VOCALISTS required to front a 6-piece dance/funk band, recording, gigs and the ch to join a band on the move # Dave 01933

KEYBOARD PLAYER REQUIRED for North London based rock-band, writing, gigging, and recording own material, must have own gear and transport = Andy 01582 862902

(Bedfordshire)
INTELLIGENT ELECTRONIC POP song-writing duo, Elikon, seek female singer, future number ones warting for a voice, West-Midlands Area Scott 01902 721977 (Woverhampton)

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678 1832/Kev 01352 734329 (Flintshire)
MALE VOCALIST REQUIRED, odd bi commercial band seeks vocalist (initially for studio ork), Bath/Bristol area or mad commuter. Matt 01225 835769 (Bath)

MUSICIANS WANTED, for Guildford based band(s), experience useful, but not essential, must be keen on recording, Influences, REM, Sheryl Crow, Dwne Comedy, Gav@technologist.com 24 YEAR OLD drum and bass/trip hoppy-type bloke seeks vocalist for moody numbers, male/female # Nick 01332 385421 (Derby) TYNESIDE BASED vocalist/songwriter/ programmer, seeks inventive musicians to form d, playing original material, influences include indie, alternative, ambient and experimental

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thdoc # Stove 0191 240 1004 (N

VOCALIST WANTED, looking for vocalist (preferably female), for space/psychedelic rock, Glos or London area, there must be someone out there. # Kevin 01242 230489 (Cheltenham).

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■ Ian 0116 286 1720 (Leicester)

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Duncan 0121 444 2681 (Birmingham).
YAMAHA WX11, MIDI wind controller with soft case, hardly used, BT7 MIDI/power-pack, £150 for both = Larry 0956 283705

#### WANTED

ADAT XT wanted, I need two new or with lo record time, will pay a good cash price # 01722 744196/0374 851067 (Salisbury).

A FRAME STAND, good quality 3-tier wanted, such as Ultimate Support System or Tama Power Tower Simon 01256 350259 (Basingstoke) ANALOGUE MONOSYNTHS, cash waiting for Roland SH101, SH09, Pro-one, CS5 or similar, no silly prices please, cash waiting # Angus 01227

APHEX COMPELLOR, also tutonal video for Cubase wanted # 01482 448767 (Hull)

APPLE 8200 OR 8500 CPU and colour printer 14 or 15-inch monitor for Apple Mac, must be in good condition, cash waiting for best offer #

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BROKEN PROPHET 5, wanted urgently for spare parts, cash warting Simon 0836 667799

CASIO RZ1 drum machine wanted. in good condition, cash waiting, preferably within 60 miles of Leeds. # Robin 0113 278

CUBASE SCORE or Cubase v3 for Ata nclude manuals and dongle @ Richard 0121

CUBASE VERSION 3/SCORE for the Atar riginal version, must include dongle and anuals, will swap for AMDK6, 200mHz, MMXCPU, Yamaha D850XG daughter board must include track listings, will pay £40 = 0181

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EMU E4 or £6400, Opcode Studio 5LX, MKS20, Yamaha VL1M, Yamaha 02R meter bridge, selling 02R AES/EBU card, £19002R analogue £380 = Darren 0181 441 7441 (Herts) KORG POLY 6 mother-board, any condition

= Ed 01270 624080 (Cheshire) KORG PROPHECY, extra sounds, must be in perfect condition, willing to pay £150 = 0171

KORG SM20 Doncamatic Stageman or Korg Mini Pops 7 # Chris 01232 236093 (Belfast) 

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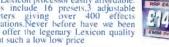
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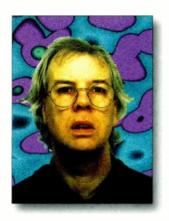


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ove or hate, computers usually invoke one feeling or the other. I was once suffused with the glow of silicon-based romance, but these days, I often suspect that I'm about to change sides. To be honest, my problem probably lies with me and my music, rather than computers per se, but as I am a computer-based musician, this only makes my problem harder to solve.

You see, in that short space of time between dinosaurs dying out and the introduction of digital audio, I recorded on everything from a stereo Ferrograph to a 24-track Studer tape machine. Although the recording quality improved over the years, the techniques remained largely unchanged; punch-ins were pretty well the only way of editing, unless you had the courage to attack the two inch tape with a razor blade, and musicians were expected to be capable of playing a whole song. In fact, in the early days, the only difference between a studio recording and a live recording was the room

in which it took place; everything was miked-up and mixed straight into stereo. If you were at the cutting

edge, you'd record the backing first and then perform the vocals to the stereo playback and mix the result onto another stereo machine.

Reverb consisted of a large room with a loudspeaker at one end and a microphone at the other — no, don't laugh, I'm serious, and it's not that long

ago, either — and the amount of reverb was adjusted by moving the mic

closer to the speaker. OK, I'm laughing as well

when I look back on it, but this is all true, and a lot of good recordings were made this way; remember *Sgt Pepper* was recorded on the then-recently-intorduced Studer four-track machines.

At about this time, a typical small computer would occupy a building about the size of a recording studio. The rooms (note the plural) in which it resided would be temperature and humidity-controlled, and the air would be filtered to remove every trace of dust, which was capable of shutting down the entire machine in an instant. Questions were asked of this electronic God, and sent in the form of postcards with holes punched in them, which, it was claimed, the God would understand. Only the prophets, denoted by their traditional white coats and anti-static overshoes, would visit the shrine to receive the machine's answers and translate them into the endless print-out, which the shredder would then devour. Of course, computers never worked in those days, but we all had such fun because no one really expected them to work anyway.

Things stated to go downhill sometime after 1980, when proper computers were invented. For a start, PCs were now supposed to work properly in the home, so people got angry and stressed when they didn't; but the trouble really started when computers first entered the recording studio. At first, I was happy to slave a Commodore 64 to a tape machine,

because I could now store all my keyboard parts on the computer rather than using up precious tape tracks on them, as I'd had to do until then; but then things started to go badly wrong. Firstly, the microprocessor killed (or at least seriously injured) the live drummer, and then MIDI allowed me to quantise the life out of the keyboards. Some years on, I can completely massacre all manner of recordings, not just MIDI ones, by playing a few bars of 'live' instruments into my computer and then copying merrily until a song emerges complete, if terminally boring.

I confess to being a bit of a Luddite, in that I firmly believe that a guitarist strumming through a whole song sounds better than a few sampled chords copied in the right order. The subtle variations in the full-length performance may not be glaringly obvious, but do impart a feeling of life to the music. This is enhanced when several musicians are involved and they can interact, musically, in a way which is ruled out by the 'cut and paste' method of composition (this method also does away with the euphoric period of self-congratulation at the pub which inevitably follows a good performance). So why do I use computers on so many recordings? After all, nobody is forcing me to use them. To understand this, we have to explore a flaw in my character (and, I believe, that of many other computer-based composers who may be reading this). This flaw is best illustrated by an anecdote.

Some years ago, I managed to survive without a car for two weeks, between the old one being towed away for scrap and the slightly less old one arriving. The studio I was working in at the time was a 10-minute walk from home, which was just short enough to be practical and just long enough to produce that self-righteous feeling that one gets when saving the world from pollution. I even bought an umbrella (great invention -- cheap, effective, easy to operate even without the manual, and positively never any system, resource, or extension conflicts). Of course, I resolved to continue walking to work even when the new car arrived, and, for a while, I remained steadfast. A combination of factors started the rot: a late night, followed by an early booking at the studio and a forgotten alarm clock — surely this was a good case for taking the car? The next morning it was raining and windy; not a good day for the umbrella, and the car really needed a run to keep the battery in trim... You begin to get the picture? It only took about another two weeks to get back to being a full-time motorist. After all, what's so awful about global warming? It'll save going to Spain to get a tan.

And so it is with me and computers. These insidious devices are like those drugs you hear about which are supposed to represent a great leap forward in medical science — until someone finds out that they're addictive and their side-effects are worse than the disease they were supposed to eradicate. How many times have I resolved to use the computer as a simple recording medium, a replacement for tape, only to find myself hoping to save a few hours by using a composite rhythm track to rescue a guitarist, and ending up using Quantise To MIDI on everything? One day, I'm going to buy another old tape machine and sell all my computers!

Except the one I'm using to type this, obviously...

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SOUND IN Which middle with the second second

After nearly 30 years working with computers in the fields of recording and broadcasting, ROGER JACKSON has realised he is suffering from a problem a lot of SOS readers will sympathise with; his love affair with computers is coming to an end. But breaking up, as someone wise once remarked, is hard to do...

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, Cambs CB3 8SQ.

Any comments on the contents of previous columns are also welcome, and should be sent to the Editor at the same address. Email: sos.feedback@sospubs.co.uk



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