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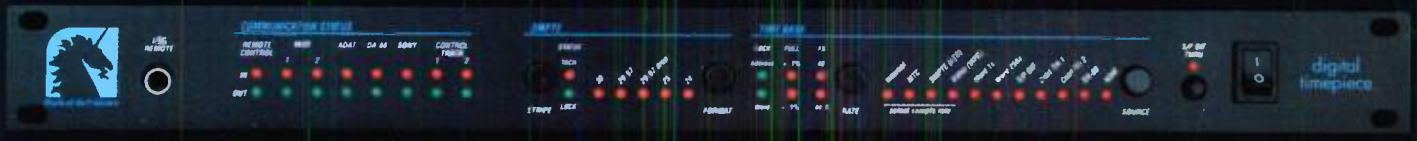

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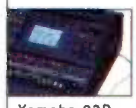
Yamaha 03D

Pro Tools 24

CW Windows PC

Nashville
PowerPC

Main Specification

- 200MHz PowerPC 604e processor
- 512k Level 2 Cache
- Supports up to 21" SVGA monitors
- 96MB RAM (expandable to 160MB)
- 6.4GB Hard Drive (System & Apps)
- 3.2GB AV Hard Drive (for HD Recording)
- 24x speed CD drive
- Sony CD-R drive plus Toast
- 5 PCI expansion slots
- Limited Edition Red Casing!

Package Includes:

- Korg 1212 PCI card offering 8 tracks of digital audio recording/ playback
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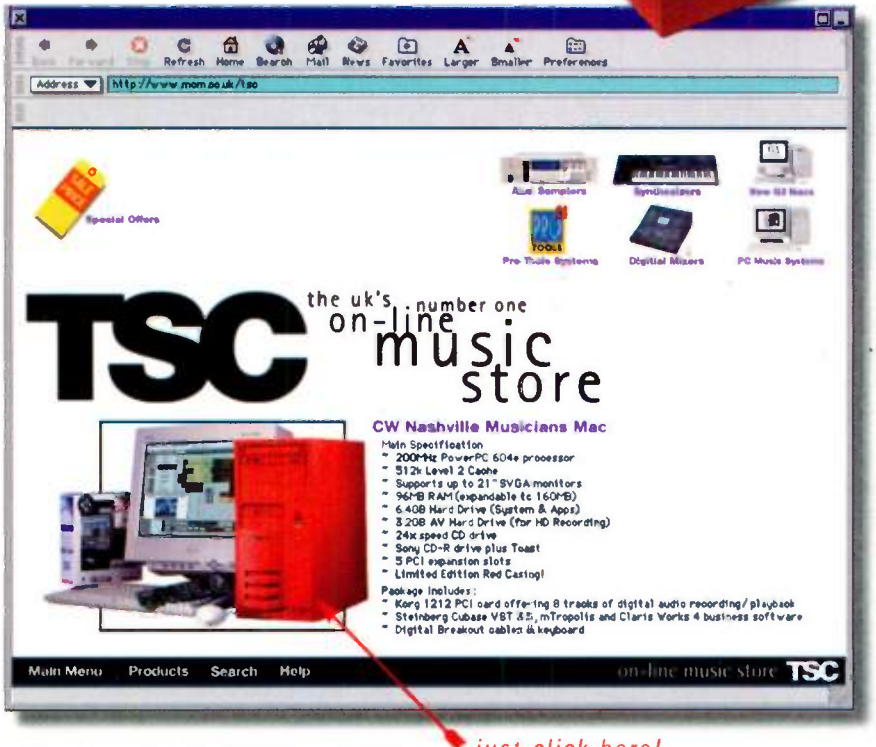
- Digital Breakout cables & keyboard
- MOTU Fastlane Interface



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WRH

leader

So, Christmas is over and I have my Wavestation SR, Martin Walker has his ATC monitors and at least three other members of the SOS staff are currently fighting over custody of Sandra Bullock! By way of the most tenuous link to the theme of this leader, Sandra Bullock starred in a film called *The Net* a while ago, set in a fantasy world where the lines were never busy and where web pages downloaded in less than a second. Currently, the Internet is getting a lot of press, but is all this publicity true — or do I detect just the slightest whiff of male cow's excrement in the air? There is a lot of useful stuff on the net, and email has made a huge difference to many people's lives, not least mine, but I can't help but feel being on-line isn't all it's cracked up to be.

54
TL Audio Ivory Voice Processor

It's a mystery how companies expect to attract serious business on the web, simply because there are so many sites out there and very little means of knowing which ones are worth visiting. Perhaps there ought to be a .crap suffix for the truly terrible sites or an .ok suffix for those that are worth the effort. The Web's not particularly fast either, burdened by Americans spending all day on the net, courtesy of their free local phone call rate, and other parties trying to stuff as much audio and video as possible down a system originally built for text transmission. I have my own theory for rating the performance of technology. If something hasn't happened by the time the reverb of the keystroke initiating it has died away, it's happening too slowly!

There are those eternal optimists who say that the net will gain more bandwidth to satisfy all our future needs, but that's about as daft as saying software will run more quickly as computers get faster. Anyone who's compared word processing on the old 8-bit BBC model B computer with Microsoft *Word* running on a fast Pentium will confirm that the BBC was much faster, mainly because it wasn't burdened with unnecessary features. No matter how much faster a system gets, the demands on that speed will always exceed the system's capacity to cope.

The Web is a good place to go looking for new synth patches or for product support information, but what concerns me is that some companies are relying on their internet sites to provide the bulk of their tech support, which rather leaves off-line users (as opposed to on-line), out in the cold. For example, if there's a problem with your sequencer software, you won't get an apologetic letter in the post wrapped around a revised floppy. Instead, you're expected to visit the Web site regularly so that you can find out about revisions and download the fix file yourself. If this is really the way forward, then at the very least, registered users should automatically be emailed to let them know when fixes or upgrades are available.

And finally, there's a poor guy called Paul White on Compuserve who gets loads of *SOS* mail. The problem is that it's not me — it's someone who just happens to have the same name, so don't go sending stuff to paulwhite@compuserve.com if you want me to see it. My address is paulwhiteSOS@compuserve.com, but general communications should still be sent to the regular *SOS* address. Incidentally, you really should visit our Web site — if there was such as thing as an .ok suffix, we'd have it.

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@soundonsound.co.uk

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

Not Very Logical

I read Paul White's review of Emagic *Logic Audio 3.0* in January 1998's issue with interest. I've been a *Logic Audio* user, on PC, for quite a while now. I agree with most of the points and conclusions in the review, but feel that I should draw the attention of your readers to quite a serious 'gotcha' for PC users. *Logic Audio for Windows* is advertised as requiring a PC with an MME (Multimedia Extensions) soundcard. In addition, Creative Labs (AWE64 manufacturers) state that *Logic Audio* for Windows is "Blaster certified" having been tested with their various makes of soundcard.

Emagic Logic Audio for Windows.

However, it's become evident from much conversation on the Internet (chiefly in the Logic Users mailing list) that *Logic Audio for Windows'* support for MME soundcards is not acceptable. *Logic Audio for Windows* 2.6.9 would drive soundcards in two modes: an 'improved' mode that gave 16 tracks of audio, and the 'old 2.5 driver' mode, which restricted you to eight tracks. Many people (myself included) could not get the improved mode to operate reliably; the MIDI and audio tracks were never synchronised and the timing difference between them would vary from playback to playback. However, reverting to the old driver model gave eight tracks of rock-solid sync. Unfortunately, *Logic Audio for Windows* 3.0 doesn't offer the option to use the old driver model, and so will not operate reliably with many MME soundcards. Even in half-duplex mode (which isn't really acceptable for serious use) the MIDI and audio parts are not synchronised. Those of us who have 3.0 and a decent soundcard are getting frustrated! I'd love to use all those lovely DSP effects but am restricted to running *Logic Audio* 2.6.9 with eight tracks if I want to get any work done.

Ben Last
via email

Trevor Szynk of Sound Technology, Emagic's UK distributor, replies: *When using a multimedia soundcard, the system is completely at the mercy of the the card for its timing information.* Logic Audio for Windows *does not have any control over audio playback after playback has started. The MIDI and audio synchronisation is therefore dependent on the reliability of the MIDI timing. Problems here are often caused by graphics acceleration (turn it off), BIOS settings (reset the default settings) or other system timing settings. A definitive answer would be difficult without knowing your exact system.*

If the audio and MIDI tracks are starting out of sync, you will need to adjust the delay parameters in the Audio Extensions preferences. If the tracks are drifting apart, turn off the High Timing Resolution setting. These problems are often related as much to the system as to the software. For the record, I haven't experienced any problems running Logic Audio for Windows *with a Creative Labs AWE64, and have had as many as 24 tracks running.* ❑

Unauthorised Access

I've just changed my PowerMac and upgraded to System 8.0. In the process, I've had to de-install my music and audio software from my old Mac and re-install it on the new machine. However, I can't get the authorisation disks to work for all the software. Any ideas?

Alan Fish-Barnes
Reigate

Derek Johnson replies: *As it happens, I've just had exactly the same problem: I simply couldn't authorise Steinberg's* Cubase VST *using my master disk, after upgrading my PowerMac and moving up to System 8.0. A quick call to Steinberg distributors Arbiter Pro Audio (0181 207 5050) revealed that a new master disk system is in place; give them a call if you come across this problem. I was recently discussing the situation with Simon Stock of MusicTrack (01462 812010), UK distributor for Mark Of The Unicorn products. While all recent MOTU products should be compatible with the new authorisation regime, he did offer a workaround for anyone who can't get any joy with other software. If you've got a pre-System 8.0 MacOS CD-ROM, simply boot your computer with that, authorise your software, shut down and restart. Once authorised, your software apparently doesn't care what system is running. Thanks to Simon for a nifty tip.* ❑

Quick But Not Easy

I've been trying, with no luck, to get hold of some 2.8-inch Quick Disks, as used by my Yamaha MDF1 datafiler, new or second hand. Can you help? Do you have any lying about idle? Is there a user group contact? Or perhaps you know where some are hiding!

Thanks in advance.

Darren Cleare
via email

Derek Johnson replies: *As it happens, our mail order department does have a single box of 10 Maxell QD2 Quick Disks, literally just lying around. I'll quickly add that this is the last box, so no more queries please! The box is winging its way to Darren as I write, on the house. Aren't we nice? If he (or any reader) wants more, I'd advise an ad in the wanted section of our Free Ads section. Also, I believe this disk format was used by some strange typewriter/word processor hybrids, so a trawl of office supply places (especially big ones) might be fruitful.* ❑

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is the magic number

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Winter NAMM '98

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WRH

Crosstalk

Expanding Horizons

Sound On Sound is a great mag: very informative, good articles and the best in its field — and I buy most of 'em.

I've got an old Studiomaster Series 5 16:8:2 desk, which I love very dearly, and which I'd like to expand from its basic 16 inputs to 24 or more. When this desk came out, Studiomaster did offer expansion units, which added four inputs each. Since the desk is quite old, it's proving difficult to find any of these units. Any help would be appreciated.

Rich Aitken
via email

Derek Johnson & Paul White reply: *We checked with Studiomaster about the Series 5 input expanders, and they definitely don't have any left. Their jocular response was "Why doesn't he just buy a new desk?" We insisted that you really like your Series 5, at which point they took your point, one spokesperson commenting that the desk's EQ offers some "serious bass". Apparently, it has a swept bass control that bottoms out at 25Hz! We'd recommend that you try a wanted ad in* SOS*'s Free Ads section — they can be very effective. If this doesn't bring results, you can use another mixer fed into the Studiomaster via a pair of spare channels or aux returns. This makes it more complicated to share effects between the two mixers, but it can be done with a little lateral thinking, or there's a hardware solution in the form of Mackie's passive MixerMixer (£249). This was designed to group all six aux sends, the monitor send, the alternate and main stereo outs and the headphone outputs of up to three CR1604 mixers, so that one fader (the optional Remote Master) controls the multi-desk mix, and one set of effect units can be accessed easily by all desks. There's even a pair of master insert points on the MixerMixer. It needn't be limited to Mackie desks, though, since the MixerMixer's connections can be used to combine the subgroup outputs or aux sends of any two or three desks: there are nine channels altogether, plus the headphone channel and the main stereo channels. In a multi-mixer set-up, each desk's master faders become a sort of stereo sub-master control; add Mackie's Remote Master (which plugs into the MixerMixer) for controlling overall mix level. Mackie even produce a special pack of leads for use with the MixerMixer. Contact Mackie's UK distributor, Key Audio Systems, on 01245 344001.* ❑

ARPing On

I am an avid reader of *SOS* and a big fan of older analogue synths by manufacturers such as Oberheim, Moog and, in particular, ARP. I was therefore very pleased to see your ARP Odyssey retro in the December 1997 issue, but rather bemused when Gordon Reid attributed filters such as the Moog-style 4012 and the ARP designed 4072 to various versions of the instrument. I spoke to Pete Forrest (author of *The A to Z of Analogue Synthesizers*) who contacted Joachim Verghese (who is building an excellent web site at www.netcontrol.fi/~jocke/arptech/), and I reckon that Gordon's filters relate to the ARP 2600 rather than the Odyssey. Maybe you could shed some light on this?

Adam T
via email

Gordon Reid replies: *I'm indebted to Adam for pointing me in the direction of Joachim Verghese's site. It's going to be a mine of information for analogue anoraks although, as Adam states, some of the preliminary material on the site is in direct opposition to other sources. In particular, you might like to check out Timothy Smith's comments on page 121 of Mark Vail's book,* Vintage Synthesizers, *wherein he states: "The filter that ARP originally used was called the 4012, and it was essentially a copy of the Moog ladder filter... Every ARP instrument that had a four-pole low-pass VCF used the 4072. The old white-faced Odysseys had the Moog filter."*

After I checked this, Adam forwarded to me an email from Joachim which states: "I'm aware of the statement by Tim Smith... according to which the early Odysseys had the Moog filters. I've spoken to Tim and he confirms that the white-faced models had the 2-pole 4023." So, although this is probably not the end of the matter, Joachim's Odyssey definitions appear in the table accompanying this reply.

Joachim also describes each of the filters in depth. To summarise: the 4023 was a slightly noisy 12dB/oct filter similar to an Oberheim SEM, with a good bass response; the rare 4035 was a Moog-style 24dB/oct design; and the 4075 was ARP's 24dB/oct filter, with very low noise and distortion, but the rather limited 14kHz maximum cut-off frequency. But let's not get too carried away by all of this. There was no Grand Design in much of ARP's production and, as Joachim states, "...all this filter talk may not be that important, really. There are so many other factors that define the Odyssey sound..." ❑

MODEL	2800	2800	2810	2810 -2813	2820-2823
YEAR	1972-1974	1974-1975	1975-1976	1976-1978	1978-1981
FASCIA	White, black legends	Black, gold legends	Black, gold legends	Black, gold legends	Black & orange, white legends
OSCILLATOR BOARD	B1	B1	B1 or B2	B2	B2
FILTER	4023	4023	4035	4075	4075
INTERFACE	None	None	None, or CV/gate/trig	CV/gate/trig	CV/gate/trig
PITCH-BEND	Rotary knob	Rotary knob	Rotary knob	Rotary knob or PPC	PPC

NB: PPC stands for Proportional Pitch Controller

Table showing the variations between different models of ARP Odyssey, according to Joachim Verghese.

MS1402 • MS1202

Fade out slowly or twist the night away. Whether you choose the MS1202-VLZ® (rotary pots) or the MS1402-VLZ® (60mm faders), you'll own the best.

Superb mic preamps with our renowned discrete, large-emitter geometry design. Headroom to handle screaming vocalists or miked kick drums. Yet audiophile definition and ultra-low (–129.5 E.I.N.) noise help capture the tiniest nuances at delicate levels.

Low Cut Filter on mic channels lets you use Low EQ on voices without boosting harmful stage rumble, mic thumps, wind noise, and P-pops. Unlike the 6dB or 12dB/oct. "filters" on some compact mixers, our sharp 18dB/oct. design doesn't sacrifice audible bass above 75HZ.

	MS1202	MS1402
Mic preamps	4	6
Mono inputs	4	6
Stereo inputs	4	4
–10/+4 switch[1]	no	yes
Total channel inputs	12	14
Aux sends	2	2
Stereo aux returns	2	2
Channel inserts	4	6
Equalization	3-band	3-band
True low-cut filter	yes	yes
Channel controls	sealed rotary	60mm faders
Master control(s)	ganged rotary	separate L/R faders
Ctrl Rm matrix	yes	yes
In-place solo	PFL	AFL/PFL
Metering	12-LED	12-LED
Stereo outputs	both XLR &1/4"	
Tape ins/outs	RCA	RCA
ALT 3-4 bus	yes	yes

Musical 3-band EQ with wide, natural midrange bandwidth centered at 2.5kHz.

Constant loudness pan control. When you pan a channel to the extreme left or right, the apparent sound level stays the same[2] as in the middle — a critical requirement for accurate stereo mixes... and a Mackie Designs exclusive.

Trim control with –10dB "virtual pad" and ultra-wide 70dB total input level gain range to handle any live or studio situation[3].

Beefy headphone amp.

Aux 1 Master with 10dB of extra gain above Unity.

EFX to MONITOR switch lets you feed Aux Return 1's reverb or other effects back into Aux Send 1 and control the amount via Aux Return 2. A Mackie exclusive feature.

Two aux sends per channel w/extra gain past Unity.

Separate tape inputs & outputs.

Check around. You'll discover that even though there are about a gazillion makes and models of ultra-compact mixers, just two tend to show up in the racks and project studios of serious pros. The MS1202-VLZ and MS1402-VLZ tour on stage with top stars, submix into mega consoles, and even record sound for major motion pictures. Why settle for a toy when the real thing is comparably priced?

Solid steel chassis.

Rude Solo Light.

Inserts on mic channels (unbalanced).

Two stereo Aux Returns, with up to 20dB of gain available.

Control Room/ Phones switching matrix and separate level control. Select any combination of tape, main mix, or ALT 3-4 and route them to the Control Room/ Phones output OR back into the main mix. Consider the possibilities: easy assign to control room monitors, multitrack recorders, submixes, separate monitor mixes, broadcast, or 2-track tape feeds. A Mackie Designs exclusive.

Built-in power supply instead of a wimpy, outlet-eating wall wart.

ALT 3-4. Mute a channel and the output is routed to a separate stereo bus. ALT 3-4 has its own outputs or can be "folded" into the Control Room/Phones bus OR main mix.

Control Room outputs so you don't have to tie up your headphone outs to drive a pair of our nifty new HR824 active near-field monitors.

XLR main outputs with switchable mic/line level.

Stereo in-place solo (1402) retains channel's correct position in the stereo mix. A soloed channel's operating level appears on the main LED display. Solo is PFL (pre fader) on the MS1202-VLZ, and globally switchable to AFL (after fader) on the MS1402-VLZ.

Above right: The MS1402 Control Room section. MS1202-VLZ is similar except without Phantom LEDs, Level Set LEDs and global AFL/PFL solo switch.

Below: A few of the 400+ folks who work at Mackie Designs in Woodinville, WA, 20 miles north of Seattle.

1) On stereo channels.
2) This would make a great album title for the '90s.
3) Except possibly drummers who drink triple espressos.

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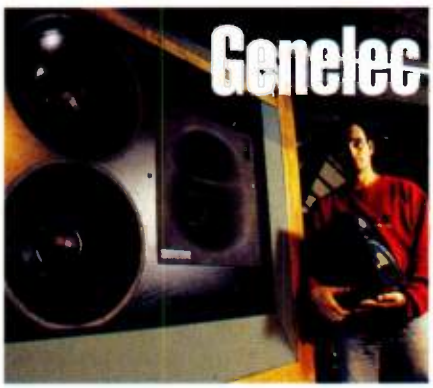
WRH

shape of things to come

by Derek Johnson



Genelec on the farm

Ridge Farm Studios' chief engineer, Pierre-Olivier Margerand has installed a pair of large Genelec 1039s in Ridge Farm's newly refurbished control room. The monitors will be working in line with the studio's new SSL 9000 J-series console; POM says: "Only Genelecs give us the purity of sound our clients are after."

A Project Audio, 5 Castle Road, London NW1 8PR.
T 0171 428 9700.
F 0171 428 9699.
W www.genelec.com

Yamaha's MD8 squeezes 8 into a mini!

The appearance in late 1996 of digital personal multitracks based on the MiniDisc format was greeted with a great deal of excitement. However, there seemed to be one limiting factor: surely, there would be no way to expand the format to offer more than four recording tracks? Come 1998 it looks like this assumption is wrong. Yamaha's soon-to-be-released MD8 stretches the format even further, offering no less than eight tracks on a Mini DataDisc, plus a comprehensive mixer. The spec we've seen is very much preliminary. The mixer section features eight mic/line inputs, with four line ins configured as two stereo pairs. Inputs 1 and 2 also feature XLR connectors, complete with phantom power and insert points. There are two aux sends, eight direct tape outs, plus separate monitor and stereo master outs. MIDI connections are also provided, for synchronisation to MIDI equipment.

Topside, each of the main eight channels features gain, cue level and pan controls, three- band EQ (with swept mid), two aux sends, pan pot, fader and assign switches.

The MD8, while an 8-track recorder, doesn't have an 8-track mixer: it makes do with four busses, so only four tracks can be recorded at once. In its favour, the MD8 offers eight individual audio outs, and the cue section can be used to add an additional eight line inputs during a mix, albeit with just level and pan controls.

Elsewhere in the established Yamaha universe, the AN1x physical modelling synth now has the benefit of a PC-based on-screen editor/librarian. Written by Gary Gregson (author of the popular *XGEdit*), *AN1xEdit* provides easy access to all the synth's hidden depths. Operations such as recording a user Free EG become as simple as a mouse drag, whilst librarian functions allow the user to quickly create personalised voice banks for quick voice loads. *AN1xEdit* is available free of charge from www.yamaha.co.uk, and joins the established Mac-based editor.

A Yamaha-Kemble, Sherbourne Drive, Tilbrook, Milton Keynes MK7 8BL.
T Brochure Line 01908 369269.
F 01908 368872.
W www.yamaha.co.uk

Yamaha's AN1x — now editable in PC software.

Win generator

Lest you lot out there ever suspect that *SOS*'s fab monthly competition prizes never get to any fab *SOS* readers, we've taken the precaution of getting yet another bunch of lunatic enterers (and winnerers) to take a picture of their ugly mugs hovering over their ill-gotten gains.

York's Barry Neville looks like a very nice man — but then wouldn't you if you were clutching a brand-new Quasimidi Rave-O-Lution (offered in our July 1997 competition) and reflecting on what a "top machine" (Barry's words) you'd scored?

Michael Wheldon of Croydon was well chuffed with his Creative Labs AWE64 Gold card, one of the two top prizes in our August 1997 competition. Though he admits he doesn't yet have a PC to put it in, he's on the brink of getting one and has been reading our PC-related articles "with great interest". Thanks for the kind words in your letter about the mag, Michael, and don't worry for a minute about getting lost in the "technicalities of software or hardware reviews" — everyone does from time to time, and if you persevere all will be revealed, honest!

Hove's Bob Evans, a professional cabaret bass player, has been putting together a home studio based around the PC, so his runner-up prize of a Creative Labs AWE64 Value card has come in very handy. Sadly, Bob's let it all go to his head, rather...

But not as much as the best loony of the bunch, who we've saved for last: the chap in the gold corner is Southend's Andy Tillet, who, believe it or not, dunked himself in Hammerite to prove himself worthy of Creative's AWE64 Gold card. OK, Andy, enough already. You're a four-carrot winner, mate. Just don't try this at home, kids...

As always, *SOS* thanks the companies who donated these great prizes and all who entered the competitions — it doesn't half brighten up the occasional Friday afternoon in the office when we judge them!

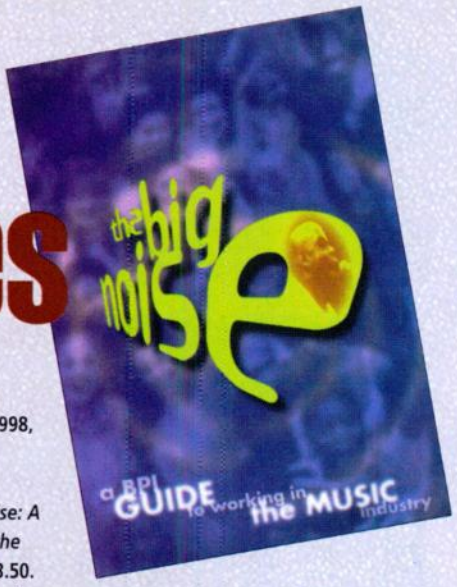
Environmentally Sound

Len Sasso, the chap behind *A Guide to Logic's Environment*, a self-produced handbook for Emagic's top software, has a second guide out. This sequel is called *The Environment Toolkit*, and is a book-and-disk package offering a complete set of tools for customising *Logic*'s Environment to your MIDI studio.

The book takes up where the guide included on your *Logic* CD leaves off, with detailed descriptions of the advanced features of the Environment, numerous construction tips, and an extensive collection of easy-to-import Environments that can stand alone or be integrated into your own constructions. All tools, plug-ins and control panels are included in *Logic* songs on the accompanying examples disk. The package costs US$40, plus $5 shipping to the USA, Canada and Mexico, $10 to Europe and Central and South America, and $15 to Asia, Africa and the Pacific Rim. Owners of the original *Environment Guide* receive a $5 discount, and as a purchaser of the *Environment Toolkit* (or the *Environment Guide*), you'll receive a free 1-year subscription to *ET4*, worth US$20. This quarterly electronic journal offers *Logic* users news, articles, new tools, plug-ins and control panels. Payment is by cheque, money order or credit card.

A Swiftkick Productions, PO Box 4257, Carmel, CA 93921, USA.
T 001 408 624 4123.
E lsasso@swiftkick.com
W www.swiftkick.com

Course notes



If you're interested in a career in the music business, but would like to increase your potential employability by taking a course, the *Music Education Directory*, published by the BPI (British Phonographic Industry), could be an essential purchase. Wait, did I say "purchase"? Actually, it's free! (Sponsored and printed by Prontaprint.) This comprehensive guide details pop music courses run by universities and colleges all over Britain, listed by business, creative or technical criteria. So whether you want to get some marketing background, improve your singing or become a hard disk recording whizz, you should find something in these pages. The latest, 1998, edition is out now.

Another useful BPI publication is *The Big Noise: A BPI Guide to Working in the Music Industry*, costing £3.50. Aimed at school leavers and "young people" who might wish to get into the music biz, this guide clearly provides a lot of useful basic information regarding what jobs are available, what you might do to make yourself more attractive to particular kinds of employers, and where to go for more information. The guide is rounded off with a list of further reading and useful organisations: if you don't know where to start, start here. It'll be £3.50 well spent.

The BPI also run regular music business overview courses. These comprehensive seminars, which take place at the BPI boardroom, last a full day (9.30am to 5.30pm) and cost £35.25 for BPI members or £88.13 for non-members. Confirmed 1998 dates are as follows: February 11, April 23, June 18, September 24 and November 19. Contact the BPI for further details.

A BPI Ltd, 25 Savile Row, London W1X 1AA.
T 0171 287 4422.
F 0171 287 2252.
E general@bpi.co.uk
W www.bpi.co.uk

Digitech divide & conquer

There's a positive flood of groovy new gadgets from Digitech, with their announcement of a new division specially set up to serve the needs of the home and project studio market (it's official, folks: we're important). Digitech Studio, as the new division is called, is staffed by a team "totally focused on the studio" and "completely independent of [Digitech's] guitar-processing division", according to Digitech's director of engineering Jim Pennock. The new product line kicks off with the release of the S100, a full-featured multi-effects processor featuring dual effects processing that can be configured in series or parallel, or combined to provide powerful true stereo effects.

Tucked away inside the S100 are stereo reverbs, multi-tap delays, chorus, flange, tremolo and detune effects, plus parametric EQ. Any one of seven preset effects routing configurations can be used, and there's 99 factory programs and 99 user memory locations on offer. The S100 is MIDI-equipped and can also be controlled with a footswitch. Look for a review in these pages in the very near future.

Also new from Digitech is The Talker, an intriguing vocal synthesis processor that enables guitarists, bassists, keyboardists and other musicians to make their instruments "talk" and "sing". You just talk or sing into a mic while playing an electric or electronic instrument through The Talker, and it creates intelligible words and phrases through an amplifier or PA. The Talker is the result of two years research into the physical modelling of the human voice, according to Digitech, and offers six presets: NuVo, NuWah, TazMania, TalkBox, Alien and AutoTalk. Its back panel features XLR balanced and quarter-inch unbalanced inputs and outputs, with the microphone input having a switchable -10/+4dBu pad to accommodate different impedances. Footswitches can control Program Select and Bypass.

A Arbiter Pro Audio, Wilberforce Road, London NW9 6AX.
T 0181 202 1199.
F 0181 202 7076.
E arbiter@cix.compulink.co.uk
W www.demon.co.uk/arbiter

shape of things to come

Emulator Operator

Emu have launched the latest version — v3.0 — of EOS, the Emulator Operating System. E4 owners will now have access to a 48-track sequencer, with loop record, an arpeggiator, new split and layer modes, and new modulation sources and destinations (including MIDI clock modulation as a source, with filter envelope retrigger and LFO retrigger as destinations). EOS v3.0 will also be shipping with Emagic's *Sound Diver*, for Macintosh or PC, a preset editor designed specifically for EOS-based products. The new OS software will retail for £157.

An upgrade has also been announced for the ESI32 sampler; v3.02 offers 18 new filter types (from the Orbit sound module), support for larger hard drives (up to 4Gb), better support for Iomega Zip and Jaz drives, and a new digital harmonic enhancer. This effect adds "brilliance and cut" to a sample, making it stand out in a mix. The upgrade costs £78.

Emu also report partnerships with various software companies, resulting in more software compatibility. BIAS's *Peak* and Sound Forge's *Sonic Foundry* now both communicate with EOS and ESI sampler platforms, and Steinberg's *ReCycle* is compatible with ESI32 and E4 samplers, as is Interval Music's *Transfer Station*. Gallery Software now offer the dedicated *Emu File Assistant* and *EOS Browser*, and the latest version of Mark Of The Unicorn's *Digital Performer* now allows direct sample importing into ESI and E4-series samplers.

A Emu UK, Suite 6, Adam Ferguson House, Eskmills Park, Musselburgh, East Lothian EH21 7PQ.
T 0131 653 6556.
F 0131 665 0473.
W www.emu.com

South Wales band Flowmotion have received the largest National Lottery grant awarded to a popular music group in the UK: £18,300. Before you rush off and try to top that figure, Flowmotion actually have a good case for the funds: they're a totally 'not for profit' group, and aim to to promote support and generate opportunites for popular music and culture within the community. In fact, the equipment bought with the grant will be made freely available to other bands with similar aims and objectives. The seven piece outfit also have plans to set up community workshops for youth groups, schools and colleges.

Technical tape specialists Scapa Tapes have launched a matt-black gaffa tape specifically for the entertainment industry. The new tape (numbered 3125) is waterproofed, with "excellent adhesion to a wide range of surfaces", and eliminates the light reflection problems of some glass tapes. Rolls are 50m long, with a choice of widths: 25mm, 50mm, 75mm and 100mm.
T Scapa Tapes 0161 336 4433.

Ferry working hard

Ex-Roxy Music main-man Bryan Ferry has installed a 48-track Otari RADAR hard disk recording system at his West London studio. He's currently working on an album due for release this year. Ferry's engineer, Ash Howes, comments: "RADAR has transformed the way we work. It was such a hassle editing with tape that changing the arrangement of a song could take days. With RADAR you can do the job in minutes, and knowing that any changes can be easily undone gives you the freedom to be adventurous with your ideas."

A Stirling Audio, Kimberley Road, London NW6 7SF.
T 0171 624 6000.
F 0171 372 6370.
E sales@stirlingaudio.com
W www.stirlingaudio.com

SPIRIT DEALER LIST

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ALTRINCHAM	Concert Systems	0161-927 7700
BARNET	Digital Village	0181-440 3440
BARNSTAPLE	Soundpad	01271-23686
BELFAST	Marcus Music	01232-322871
BINGLEY	Spectre Sound	01274-568843
BIRMINGHAM	Musical Exchanges	0121-236 7544
BIRMINGHAM	Q Music	0121-643 4655
BIRMINGHAM	London Microphone Centre (LMC)	0121-359 4535
BLACKPOOL	Tower Music	01253-27359
BOURNEMOUTH	Eddie Moir's Music Ltd	01202-395135
BRIGHTON	Rainbow Sound	01273-624048
BRISTOL	X Music	0117-9734 734
BURNLEY	Dawsons Music	01282-425829
CAMBRIDGE	Music Village	01223-316091
CARDIFF	Gamlins Music Centre	01222-220828
CARLISLE	AVI	01228-45599
CHESTER	Dawsons Music	01244-348606
COLCHESTER	Axe Music	01206-765 652
CORK	Russell's Music	00353-21 273 912
COVENTRY	Musical Exchanges	01203-635766
CREWE	Music Control	01270-883779
DERBY	Play It Again Sam	01332-348156
DONCASTER	Electro Music Services (EMS)	01302-369999
DOUGLAS	Ken Mitchell Music	01624-611919
DUBLIN	Control Techniques Ireland (CTI)	003531-4545400
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DUNFERMLINE	Sound Control	01383-732273
EASTBOURNE	Bonners Ltd.	01323-639335
EDINBURGH	Sound Control	0131-557 3986
EDINBURGH	The Warehouse	0131-555 6900
FAREHAM	The Audio Connection	01329-235566
GLASGOW	The Warehouse	0141-950 1757
GLASGOW	Sound Control	0141-204 0322
GRIMSBY	PSS Music	01472-343211
GUILDFORD	Andertons Music Co.	01483-38212
HEYWOOD	Wigwam Acoustics Ltd.	01706-368766
HIGH WYCOMBE	Percy Priors	01494-528733
INVERNESS	The Music Station	01463-255523
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LONDON	HHB Communications Ltd	0181-962 5000
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PORTSMOUTH	Nevada Music	01705-660036
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RINGWOOD	AJS Theatre & Lighting Supplies	01425-480 698
ROMFORD	Music Village (Chadwell Heath)	0181-598 9506
SHEFFIELD	Carlsbro Academy of Sound	0114-2640000
SHEPPERTON	Marquee Audio	01932-566777
SOUTHEND-ON-SEA	Honky Tonk	01702-619615
STEVENAGE	Music Solutions	01438-750751
ST.HELENS	Dawsons Music	01744-730424
ST. HELIER	East Coast Music (ECM)	01534-80575
STOCKPORT	Axis Audio Systems	0161-474 7626
STOCKPORT	Dawsons Music	0161-477 1210
STOKE-ON-TRENT	Carlsbro Academy of Sound	01782-205100
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WAKEFIELD	KGM Studio Specialists	01924-371766
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WASHINGTON	Dawsons Music	0191-416 2385
WATFORD	Active Sound	01923-246 282
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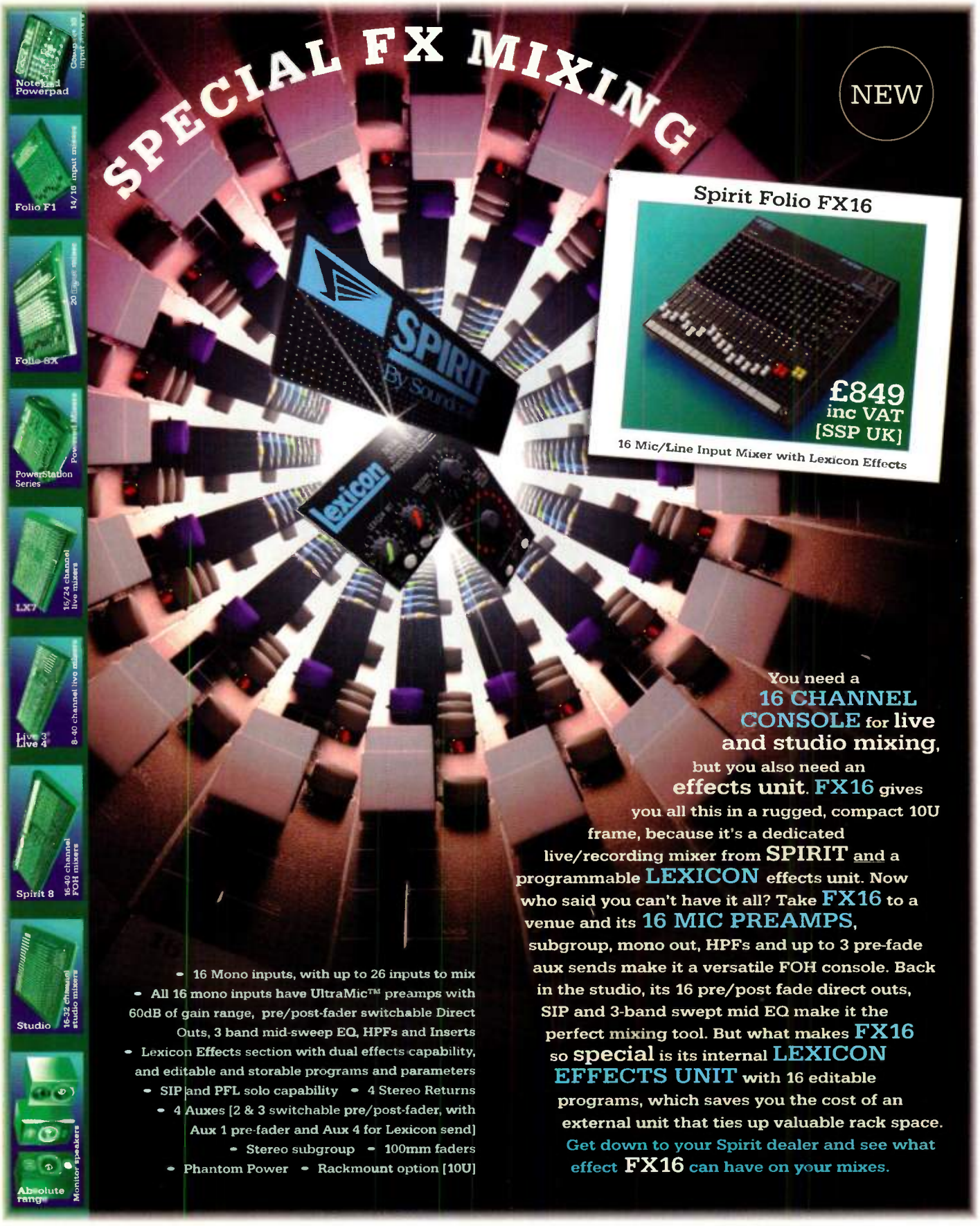
SPIRIT by Soundcraft



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Check out the Spirit Website: http://www.spirit-by-soundcraft.co.uk

WRH

shape of things to come

WaveLab v3.55.

WaveLab's new formula

The latest version of Steinberg's Windows 95/NT audio editing and mastering program, *WaveLab* v2.0, is imminent. The software will offer direct sampler support, enabling processed recordings to be transferred directly as samples. The program's audio file analysis and editing functions have also been revised. Using the new 'Marker' function, you can now create a number of different edits of a particular title for CD production, without having to generate a completely new file each time. Mastering studios will welcome the new analysis functions, enabling problems such as hidden clicks or distortion, which can occur during audio file import, to be automatically detected, making the restoration of long and complex audio files much quicker. Once work is completed, files can now be exported to ExaByte cartridges, with the help of an optional ExaByte driver.

Interestingly, *WaveLab* v2.0's plug-in architecture now supports *Cubase VST* plug-ins. And speaking of plug-ins, *WaveLab* comes with two new ones: *Peakmaster* adds a soft, real-time compression to recordings, and *Puncher* gives more attack to over-compressed rhythmic material. Finally, those of you who do web design will welcome the fact that *WaveLab* now supports the MPEG 1 Layer 3 file format, used for adding music to web sites.

Cubase VST for Windows 95 has also been upgraded, to v3.55. It will be available free to users of the previous version, and includes several new features:

- Channel Inserts on every channel of the *VST* mixer. There are four additional effects per channel; theoretically, depending on your computer, you could have 32 x 4 additional effects for the entire system.
- An Active Movie Interface update offers the ability to organise the list of installed Active Movie plug-ins according to personal preference.
- *ReCycle* Export Files (.REX-Files) is now implemented, allowing the use of 'recycled' sample loops from within *Cubase VST* without a dedicated hardware sampler.
- The VST Audio Engine can now be disabled, making it easier for the user to diagnose audio hardware problems.
- There's a new ASIO driver for the Korg 1212 I/O PCI audio card.

A Arbiter Pro Audio, Borehamwood Industrial Park, Rowley Lane, Borehamwood, Hertfordshire WD6 5PZ.
T 0181 207 5050.
F 0181 207 4572.
W www.steinberg.net

It spins him right round...

Jon Lord, keyboard player with the recently-reformed Deep Purple, has fallen in love with Hughes & Kettner's Rotosphere tube-based rotary effects unit. He particularly likes the way the Rotosphere's tube circuitry fattens up up the tone and gives him the added expressive edge he needs, especially when playing on larger stages, where it helps him to cut through the band mix. Not only does Jon treat his Hammond organs with the Tube Rotosphere, he also puts his synths and samplers through the processor, for added warmth and presence. Jon is currently touring with Deep Purple — and his Tube Rotosphere — and an album is due in the spring.

Jon Lord.

A Korg UK Ltd, 9 Newmarket Court, Kingston, Milton Keynes MK10 0AU.
T Brochure Line 01908 857150.
F 01908 857199.
E info@korg.co.uk
W www.korg.com

For just £62, MTR's new PPS48 offers no less than four channels of 48V phantom power. The mains-powered unit has a 'phantom present' LED and a ground-lift switch. With most quality mics requiring phantom power, the PPS48 would be the perfect partner for a desk without its own phantom supply, and at minimal cost.
T 01923 234050.
F 01923 255746.

Tannoy Professional have announced that TEAC UK is now sole distributor for their range of studio monitors in the UK — and apparently, more studios worldwide use Tannoy monitors than any other manufacturer. Tannoy will continue to distribute its range of PA loudspeakers.
T TEAC UK Ltd 01923 819630.
T Tannoy Professional 01236 420199.

If you need any more incentive to treat yourself to Novation's Super Bass Station (reviewed August 1997) or Drum Station (reviewed July 1996), perhaps the company's plan to shave £50 off the retail price might help. Each machine now retails for just £399.
T Novation 01628 828888.

Many of you may know that ace US sampler manufacturer Emu are actually owned by Singapore-based PC sound card giants Creative Labs. Even so, it'll be a surprise to learn that Creative Labs have now bought Ensoniq as well — does that mean Alesis is the remaining high-profile solely American-owned synth manufacturer? The new regime will leave Ensoniq more or less independent — their Malvern, PA HQ stays put, complete with its 200 employees — but the merger will enable Creative and Ensoniq to "extend their reach in the PCI audio segment of the PC OEM (original equipment manufacture) and PC motherboard markets".

Glam metal punks Mötley Crüe are hardly the first band you'd associate with the cutting edge of hi-tech music, yet a visit to the web site for their latest album (the album is *Generation Swine*, and the web site is www.generationswine.com) reveals that each of the band actually owns a Macintosh. Not only that, but bassist Nikki Sixx is on record as saying that he enjoys working with Steinberg's *ReBirth RB338* TB303/TRT808 emulation software as a way of generating ideas. The Crüe's studio is an all-digital affair, based around Digidesign's Pro Tools and the current tour has an interactive Internet element that shows up on projection screens on stage. Cool! Mötley Crüe rule!

02R V2

Version 2 of Yamaha's ground breaking 02R digital mixing console is now shipping. With 24-bit recording capability, surround pan, timecode offset and capture plus enhanced MIDI functionality, flexible I/O assignment and hundreds more value added features, the 02R is working harder than ever.
Call 01908 369269 to find out more.

● 24-bit recording capability ● Surround Pan ● Auto Mix enhancements ● Touch Sensitive Fader Edit ● Flexible I/O Assign ● Real Time MIDI Control ● 96 Scene Memories ● Motorised Fader Control of Bus and Aux Masters ● Multiple enhanced user functions

YAMAHA

Yamaha-Kemble Music (UK) Ltd. Professional Music Division. Sherbourne Drive, Tilbrook, Milton Keynes MK7 8BL UK.
Visit the Yamaha Pro Audio Web site at http://www.yamaha.co.jp/product/proaudio/homeenglish/index.html

shape of things to come

Rocktron keeps it quiet

Rocktron's Studio Hush is a stereo single-ended noise reduction unit for project studios. The company's 'Hush' technology is joined by "variable integral release" circuitry configured for expander enhancement, and, according to Rocktron, the combination provides effective noise reduction when signal is present, and complete silence when it's not. Studio Hush offers a dynamic range of 105dB, with 70dB of noise reduction. Balanced jacks are available for both inputs and outputs, with a choice of operating levels (+4dB or -10dB). Stereo linking allows one set of controls to act as a master for both channels.

A Marshall Amplification, Denbigh Road, Bletchley, Milton Keynes MK1 1DQ.
T 01908 375411.
F 01908 376118.
W www.rocktron.com

plug-in corner

TC WORKS

Not everyone will be aware that signal processing wizards TC Electronic now have an offshoot company devoted to software. TC Works, as the company is called, is pleased to announce its first native DSP plug-in, *TC Native Reverb*, for Windows 95/Windows NT PCs. *TC Native Reverb* (shown below) provides TC-quality reverb for users of native recording environments supporting Microsoft's DirectX standard — including Steinberg's *Cubase VST* and *WaveLab*, Sonic Foundry's *Sound Forge* and Cakewalk's eponymously-titled *Cakewalk* sequencer. Included in the package is a dedicated version for *Cubase VST*, which allows users to take advantage of automation.

TC Native Reverb offers a highly graphical user interface, and has permanent 'ROM' presets to provide the most important basic reverb types. These can, of course, be edited and saved into user presets. The plug-in requires a PC with Pentium 133 processor (166 or faster recommended), 32Mb of RAM (though, as always, more is recommended!), Windows 95/NT4, and host software compatible with Microsoft DirectX. It costs £329 including VAT, and if you'd like to try before you buy, a free demo version is downloadable from http://www.tcworks.de/download. More TC Works native processing plug-ins are scheduled for release early this year; contact distributors Arbiter Pro Audio for details.

Before we leave TC plug-ins for this month, we'll just mention that the *TC Tools* high-quality reverb and chorus plug-in package for Digidesign Pro Tools TDM users, has been upgraded. It now offers full support for Pro Tools 4.0 automation and also includes an additional plug-in, called *EQSat*. This is a 5-band parametric EQ plug-in featuring "special signal-processing circuitry to create a warm analogue sound". The effect, we're told, is similar to analogue tape saturation or the sound of tube technology. *EQSat*'s five bands are comprised of three parametric bands and two shelving bands, and there's a frequency response meter to boot.

TC Tools for TDM systems costs £699; more info and upgrade details for existing users can be obtained from Digidesign — contact details below.

A Arbiter Pro Audio, Borehamwood Industrial Park, Rowley Lane, Borehamwood, Hertfordshire WD6 5PZ.
T 0181 207 5050.
F 0181 207 4572.

A Digidesign UK, Avid Technology Ltd, Westside Complex, Pinewood Studios, Iver Heath, Pinewood, Bucks SL0 0NH.
T 01753 653322.
F 01753 654999.

TC Works' TC Native Reverb.

Opcode Fusion Vinyl

OPCODE

While some of us are using software to try to remove sonic artifacts from old recordings, Opcode are giving you a way to put them back in! *Fusion:Vinyl* is a plug-in which can add the sound quality and artifacts normally associated with vinyl records to your music. There are options for 78, 45 and 33 1/3 vinyl types, and controls for changing the virtual record surface and condition. It's also possible to define how warped you want the music to sound!

Tools are included which vary the stereo width of the sound and control the amount of compression applied, and options for changing the record surface include Dirt, Hiss, Static, Wear, Warp and Scratches. Opcode suggests running drum loops through *Fusion:Vinyl*, to make them sound as though they've been sampled off record, or doctoring multimedia soundtracks to make them sound like scratchy old film footage sound, AM radio broadcast or car stereo playback.

Fusion:Vinyl is available for both Mac and PC and will work with a variety of plug-in formats, including Adobe Premier, Digidesign AudioSuite and Microsoft DirectX. Compatible software programs include Opcode's own *Vision* and *Studio Vision Pro*, BIAS *Peak*,

Feeling listless?

TMR Productions have updated their comprehensive range of fact-filled lists for the new year. To recap, here's a list of what's on offer:

- A&R List (over 1000 entries with addresses, phone numbers and contact names).
- Demo Guide (helpful tips about making and targeting your demo).
- Fanzine List (500 detailed entries).
- Musical Service List (900 entries).
- Gig Guide (900 entries).

Each list costs £6 including second-class postage (except for the Fanzine List, costs £4). Check with TMR for full details.

If so much paper is daunting for you, and you've got a PC with an Iomega Zip drive, you'll soon be able to buy all TMR lists on one PC-format Zip disk, priced at just £25. A CD-ROM version of the lists (priced at £28) will be around in the summer.

Other services offered by TMR include DAT duplication and compilation, cassette and video duplication, and Brain Dead Studios, a 16-track facility which is 10 years old this year. By way of a celebration, they're having a special spring offer: one 8-hour day for £100 (or three days for £270), including a DAT master, a chrome cassette, and hire of one reel of 16-track tape. The studio features a Fostex G16S 16-track analogue machine, a Seck 18:8:2 desk, and lots of mics and outboard. Contact TMR for full details.

A TMR, PO Box 3775, London SE18 3QR.
T 0181 316 4690.
F 0181 316 4690.

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

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

Macromedia's *Deck II*, MOTU's *Digital Performer*, Digidesign's Pro Tools 4.0, Emagic's *Logic Audio* 3.0, *Cakewalk* 6.0, Steinberg's *WaveLab* and Sonic Foundry's *Sound Forge*. The *Fusion* line of plug-ins requires a Power Macintosh or Pentium-equipped computer with Windows 95.

A SCV, 6-24 Southgate Road, London N1 3JJ.
T 0171 923 1892.
F 0171 241 3644.
E mail@scvlondon.co.uk
W www.scvlondon.co.uk

POWER TECHNOLOGY

Back in January 1997 we ran a review of Power Technology's hardware-based DSP•FX 32-bit effects system for PCs. Nottingham's RKMS are now the UK outlet for DSP•FX, and they've announced a software-only version of the system. The *DSP•FX Virtual Pack* offers the same effects and the same visual interface as before, with all processing carried out by the PC. The eight plug-ins provided by the software are currently compatible with *SAW*, or will run as stand-alone programs for processing WAV files. DSP•FX is Microsoft DirectX compatible (for use with *Cool Edit Pro*, *Cubase VST*, *Sound Forge* and others that follow this standard). Owners of the *DSP•FX Virtual Pack* for *SAW* will be able to download the DirectX versions for free. New users should expect to pay in the region of £400 for the system.

A RKMS, Freepost (NG6175), Nottingham NG4 1BR.
T 0115 961 1398.
F 0115 953 3802.
E info@rkms.com
W www.rkms.com

CUBASE VST

Free plug-ins for Steingerg's *Cubase VST* audio MIDI sequencer? You bet, and they're accessible on the Internet via www.steinberg.net. PC users can benefit from a pair of delay plug-ins from one Dave Brown, which can also be downloaded directly from www.dbrown.force9.co.uk.

Tempo Delay is similar to the standard *VST* stereo echo, but with tempo-based editing. Instead of specifying delay in milliseconds, dial in your song tempo and measure subdivision; the plug-in works out the delay time for you. There are two independent delay channels with programmable pan, feedback, delay and level. If you're recording at 44.1kHz, delay times can be a maximum of two seconds per channel (it's cut to 1.83 seconds per channel at 48kHz).

Sweep Delay is a single-channel delay that also uses tempo-based editing, with the addition of programmable auto-panning of the delay channel. The plug-in could be used as a simple single-channel echo with programmable pan position. Maximum delay time is four seconds, at 44.1kHz (or 3.66 seconds at 48kHz).

Mac *VST* users should check out *North Pole*. This excellent analogue synth-style resonant filter comes from Frederic Schelling and Stephan Sprenger, of Prosoniq (the company that brought you the *Ambisone* 3D processor and *Roomulator* reverb plug-ins). *NorthPole* is *not* a Prosoniq product, yet has the feel and presentation of something I'd happily pay money for. Actually, Sprenger and Schelling are long-standing analogue synth fans, and developed the plug-in for the fun of it. The plug-in emulates a 24dB four-pole filter, and has controls for variable cutoff frequency and resonance, is switchable for low-pass or band-pass operation, has an adjustable envelope follower, distortion and a basic digital delay. And yes, I repeat, it's free. You need *Cubase VST* v3.02 for Mac, or higher, and that's all: the plug-in itself requires very little processor power. *North Pole* can be downloaded from ftp.prosoniq.com/pub/northpole-vst-plugin.hqx, although a link is provided from the Steinberg web page. If you haven't got Internet access, find a friend who has — fast!

W www.steinberg.net

North Pole.

SONIC FOUNDRY

The next instalment in Sonic Foundry's DirectX format plug-in series is *XFX 2*, a CD-ROM full of Windows 95/NT compatible effects. *XFX 2* features six plug-ins, all with real-time previewing:

- *Noise Gate* has attack and release time controls and a gating threshold between infinity and 0dB.
- *Graphic Dynamics* offers compression, limiting and expansion.
- *Multi-band Dynamics* has up to four simultaneous bands of dynamics.
- *Paragraphic EQ* provides control over frequency, gain and bandwidth of up to four independent bands; it features variable low-shelf and high-shelf filters and a graphical interface.
- *Parametric EQ* has four filters — band notch, band pass, low shelf and high shelf
- *Graphic EQ* comes with a 'band' page for finer band tuning and a graphic envelope page for control over any filter design.

A SCV London, 6-24 Southgate Road, London N1 3JJ.
T 0171 923 1892.
F 0171 241 3644.
E info@scvlondon.co.uk
W www.scvlondon.co.uk

Guitarist Geoff Whitehorn (over the years, he's played with Procol Harum, The Who, Bad Company, Elkie Brooks and Roger Chapman) has recently become a big TC Electronic fan. He's been using a TC Finalizer dynamics processor in the studio to get his project tapes to sound "one louder", as he puts it. He's also added a new TC Electronic G-Force guitar processor to his tour rack. Says Geoff: "I'm fussy about my guitar sound, but I still need good effects. I really like the G-Force because I can add several fantastic quality effects without colouring my sound. The reverbs and chorus — in fact all the effects I've used so far — are amazingly clean and full sounding."

T Raper & Wayman 0181 800 8288.

Synth sound specialists Sounds OK have recently scored a stock of new, boxed Roland M16C memory cartridges. Compatible with Roland's RD1000, MKS20, MKS30, JX8P, DDR30 and GR77, the cartridges cost £24.95 each, including postage and VAT.

T 01276 682313.

TEAC have developed a new high-capacity floppy drive: the 200Mb HiFD drive. Data transfer rates are 3.6Mb, and access time is 20ms. HiFD uses both IDE (200Mb) and floppy (1.44Mb) interfaces; a dual discrete gap head features both a narrow gap for 200Mb storage and a wide gap for standard 1.44Mb or 720Kb floppies. Media is to be supplied by Fuji Film and Sony, and the drive should arrive in Spring of this year.

T 01923 225235.

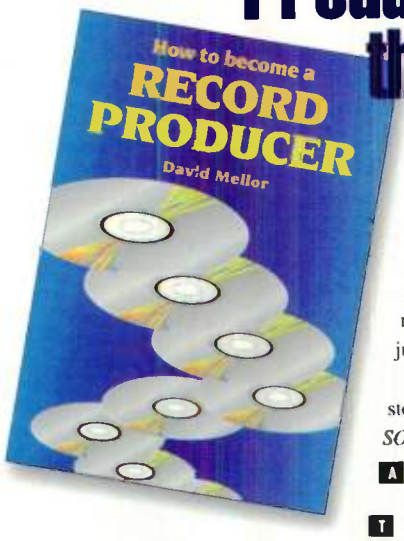
Millennium Music Software, specialists in hi-tech music and PC music systems, have launched a web site. Early visitors are promised special offers, and the site also features record and gig reviews, and articles on music technology. Visitors are invited to submit features or articles, as long as they're relevant to making music with technology and might be interesting or helpful for other visitors. Any submissions featured on the site will get their author a £10 credit at Millennium.

W www.millennium-music.co.uk

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

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

Producing the Goods



If you're a regular reader of *SOS*, you should be familiar with the name of David Mellor, one of *Sound On Sound*'s longest-standing contributors. Well, David's blossomed into print of a different kind with the release of his latest book, *How to Become a Record Producer*. If you remember David's 1996 series of the same title in *SOS*, you'll know what to expect from this new 96-page PC Publishing book: sections on talent spotting and assessing demo tapes, rehearsal and pre-production, working with musicians and MIDI, dealing with record companies, hiring musicians and choosing a studio, and mixing and remixing, to name just some of the subject areas covered.

How to Become a Record Producer costs £11.95, and naturally is stocked by *SOS*'s Book Shop Mail Order department. To order, quote *SOS* order code B366 and add £1.95 for UK postage and packing.

A *SOS* Mail Order, SOS Publications Ltd, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.
T 01954 789888.
F 01954 789895.
W www.sospubs.co.uk

Software, Et Cetera...

PC music specialists Et Cetera have announced a new PC soundcard from Turtle Beach and a new version of Coda Music's *Finale* PC-based scoring software. The Malibu Surround 64 is a low cost 16-bit card offering full-duplex operation, for simultaneous record/playback, and a signal-to-noise ratio of -90dB. It features an S/PDIF digital output (plus mono mic and stereo line ins and a stereo line out), a 64-note polyphonic synth (32-voice Kurzweil wavetable synth plus 32-voice software synth in Windows 95), and comes packaged with a suite of Voyetra software, including *MIDI Orchestrator Plus* and *Audiostation 2*. The name is no mere marketing trick: the card offers SRS surround sound 3D spatialisation. Available now, the Malibu Surround 64 costs £120 including VAT.

With Coda's score-writing package *Finale 97* (£499), it is now "simpler to perform common tasks and take advantage of *Finale*'s underlying power." The software is aimed at, and used by, professional musicians, composers, arrangers, copyists and publishers. *Finale 97*'s new features include enhanced control over ties, individually or globally, on-line documentation, and a new range of plug-ins. Amongst these are:

- *Automatic Tablature*, which creates instant tablature for fretted instruments. All you need to do is choose the music and select an instrument. This feature is customisable, but comes with preset tabs for guitar, bass, banjo, mandolin and lute.
- *Range Checking*, which identifies notes that an instrument or musician can't play, according to the level ability of the target musician.
- *Cautionary Accidentals*, which eliminates repetitive actions by applying your choice of rules globally.

Other plug-ins simplify tempo markings, and measure numbers and repeats. Crossgrades are available from other software for a nominal fee; contact Et Cetera for details.

A Et Cetera Distribution, Valley House, 2 Bradwood Court, St Crispin Way, Haslingden, Lancs BB4 4PW.
T 01706 228039.
F 01706 222989.

Essential Dance Tools

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.

ReBirth
Virtual Synthesizer

Two 303 synths, one 808 drum machine, 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 PC and Mac.

ReBirth - rrp £149.00 inc.vat.

NEW in version 1.5

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.

ReCycle!
Groove Analysis

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 libraries 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 S1000/2000/3000, Roland S760, Kurzweil K2000/K2500, Emu ESI-32, E-64, E4, Ensoniq EPS/EPS16+, ASR10/88, Digidesign Samplecell & Cubase VST 3.5 Mac.

ReCycle - rrp £199.00 inc.vat.

Visualize your Mix X<>POSE

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 abstract, futuristic, ambient results. X<>Pose is available for Mac, PC version scheduled for the new year.

X<>Pose - rrp £399.00 inc.vat.

System Requirements
Macintosh: Power Macintosh 603e processor or better, 66 Mhz or faster, 16 Mb or Ram, System 7.5.3 or later.

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

Steinberg

Distributed Exclusively by **Arbiter Pro Audio**
Unit 2 Borehamwood Industrial Park Rowley Lane, Borehamwood, Herts WD6 5PZ. Tel: 0181 207 5050 Fax: 0181 207 4572

www.steinberg.net

shape of things to come

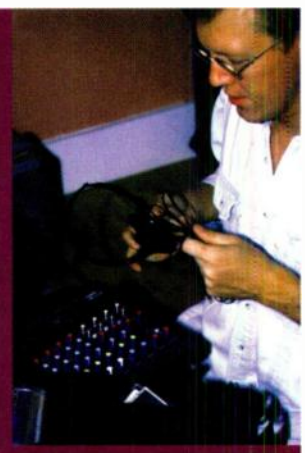
Finalizer Plus: new addition

TC Electronic are replacing their Finalizer studio mastering processor... with the Finalizer Plus. New features include 24-bit A/D and D/A converters, real-time sample-rate conversion, word clock input for post-production users, stable digital clock for rock solid, jitter-free digital input and output, an ADAT port, TOS-Link optical I/O, MS encode/decode, stereo adjust and external device insert, plus precise L-R balance in the input menu.

TC have also announced an upgrade program for current Finalizer users, which will add all of the new hardware and software features of the Plus to the original processor.

A Raper & Wayman, Unit 3, Crusader Estate, 167 Hermitage Road, Manor House, London N4 1LZ.
T 0181 800 8288.
F 0181 809 1515.
E r+w.proaudio@dial.pipex.com

Alan hits the right note



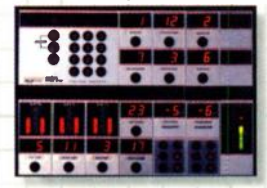
Alan Branch, a producer/engineer/remixer with credits ranging from Shane MacGowan and the Popes to Primal Scream, Eternal, The Cure and Depeche Mode, is a fan of Spirit's Folio Notepad. "It's great for extra inputs and balancing signals to the main desk. It's great for pre-production work and I recently used it on a remix session for the Cure. I love it!".

A Spirit by Soundcraft, Cranborne House, Cranborne Industrial Estate, Cranborne Road, Potters Bar, Hertfordshire EN6 3JN.
T 01707 665000.
F 01707 665461.
W www.spirit-by-soundcraft.co.uk

turnkey

dynaudio lexicon dbx

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 Studio 1.

Huge range across Mac, PC and Acorn platforms.

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

turnkey 0171 379 5148
Fax: 0171 379 0093 114 Charing Cross Road London WC2H 0DT

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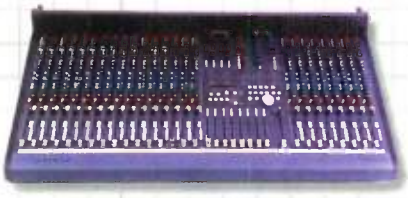
Soundcraft & ALESIS

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 ground in analogue console manufacture 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	RRP £7469	RRP £7575	RRP £8327
£4299.99	£4699.99	£4799.99	£5299.99
GHOST 24 LE + ADAT XT	GHOST 24 + ADAT XT	GHOST 32 LE + ADAT XT	GHOST 32 + ADAT XT
ALL PACKAGES INC FREE LOOMS	ADD £399.99 FOR 24ch METER BRIDGE	ADD £499.99 FOR 32ch METER BRIDGE	ADD £1499.99 FOR 2nd ADAT XT

ADAT XT DIGITAL MULTITRACK RECORDER

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

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.

digidesign

NEW

Digidesign have added a high performance 24 bit system to their ProTools range of products. The new D24 PCI-bus audio card is based on the Motorola 56301 processor, and increases the audio tracks from 16 to 24 per card. There is also an updated 888 interface with 24bit A/D & 20bit D/As, multiple 888s enabling up to 72 channels of discrete analog or digital I/O. They have also reduced the price of the standard ProTools from £7,131 to £4,465 and ProTools Project from £2,137 to £1,079

DSP FARM REDUCTIONS & FREE PLUG INS WHEN PURCHASING PT24

ProTools 24 & G3 Pack

- G3/266 32/4000CD, ZIP & Keyboard
- Apple Multiscan 720 Display
- ProTools24 Core System
- 888/24 Interface
- PCI SCSI Accelerator
- 4Gb External Barracuda Hard Drive

NEW G3 PACKAGE £9999.99 INCLUDING INSTALLATION £11,749 INC VAT

ProTools 24 & 9600 Pack

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- Apple Multiscan 720 Display
- ProTools24 Core System
- 888/24 Interface
- PCI SCSI Accelerator
- 4Gb External Barracuda Hard Drive

9600 PACKAGE £9999.99 INCLUDING INSTALLATION £11,749 INC VAT

ProTools Project

PROJECT £2195.99 £2,579 INC VAT

- Protools Project
- 882 Interface

ProTools III

PROTOOLS III £5495.99 £6,457 INC VAT

- ProTools III Core
- 888 Interface

ProTools Plug-ins

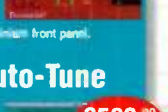
t.c. tools £775.99

Arguably the best reverb plug-in available, TC Tools uses algorithms developed from the M5000 mainframe reverb. Great user interface allows you to visualise the effects via the graphics, making it intuitive and easy to use.

Dolby Surround Tools £1339.99

Produces Dolby Surround mixes entirely within the ProTools environment. Both Encode & Decode Plug-Ins are available as a cost effective digital implementation of encoding/decoding process.

Focusrite D2 £880.99



Based on the famed Focusrite Red 2 Dual EQ designed by Rupert Neve, the D2 plug-in matches the high-quality modelled from the company, even down to the brushed aluminium front panel.

Antares Auto-Tune £580.99

The plug-in that many professionals have but none will admit to it! AutoTune identifies the pitch of a signal and corrects it to a defined scale, retaining original quality, making intonation problems a thing of the past. Available as a TDM or VST plug-in.

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

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 F11, 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.

QUESTED

F11 SELF POWERED MONITOR

The F11'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 using conventional materials. The design is a self powered two way bi-amplified one, with 165mm bass driver, and 28mm soft dome HF unit. Months of fine tuning have resulted in a speaker which produces a superb sound, totally belying its size. Custom colours can be specified for bulk orders.

NEW PRODUCT £1149.99

VS2205 SELF POWERED MONITOR

One of the most popular models in the Quested range, the VS2205 is designed as a highly accurate reference monitor, and its low profile and shielding made it ideal for 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 positioning.

NEW PRODUCT £1699.99

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

We will beat any genuine quote from a UK or European dealer on the line of gear we stock. We must be able to [illegible] and it must be available and in stock. Prices include 17.5% VAT except Digidesign bundles. UK mainland carriage [illegible] £9.99. Please allow 10 working days for [illegible]. E&OE & subject to availability.

KORG ensoniq ALESIS Steinberg Technics Vestax FATA

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dbx DYNAMICS PROCESSORS FOR EVERY APPLICATION

DBX is one of the oldest and most respected names in the audio industry. Classics like the 160 and 165 have given them a reputation for producing no compromise audiophile equipment. Fortunately, modern manufacturing techniques now mean the rest of us can own DBX quality at affordable prices.

1066 DUAL COMPRESSOR LIMITER GATE

DBX build on the success of their highly acclaimed dynamics processing range with the flexible new 1066.
In addition to all the professional features expected from this respected brand, the 1066 offers switching between their patented "Overeasy" soft-knee and hard-knee modes, sidechain switching, ultra-low distortion "Peak Stop Plus" limiting and meticulous US hand-built quality.
A/B this product at Turnkey to hear why DBX remains an industry standard in signal processing.

RRP £479.99

286A 'CHANNEL STRIP'

These days, in the age of MIDI and hard disc recording, most people tend to only record one audio track at a time, and have seen the value in investing in a good quality microphone. However, a mic is only as good as the circuitry you pass it through afterwards, and for some time, high end manufacturers have produced 'channel strip' style boxes which include all the essential acoustic recording processes in one device. Now the DBX 286A brings you a high quality mic pre amp, Over Easy compressor / de-esser, enhancer and expander / gate all in one device, offering you a premium quality signal path at a budget price. The ideal enhancement to any project studio!

RRP £229 £199.99

266 DUAL COMPRESSOR GATE

Two channels of classic dbx compression with new Auto-Dynamic™ 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 in a standard 1U rack design. Entire dbx range on demo at Turnkey!

RRP £229 £199.99

163A COMPRESSOR/LIMITER

Compressors and de-essers are an essential part of the recording process, but the plethora of controls that many of them are fitted with can often lead to confusion and ending up with a worse result than you started with. The DBX 163A and 263A are designed to give you high quality results with total simplicity - a single control gives you 'more' or 'less', and the rest is all taken care of for you. The units are also ideal for portastudio and budget mixer owners as they sport a front panel mic input, so no insert points are required. Buy one of each and get a free universal rack tray. Limited stocks only - order now to avoid disappointment!

RRP £109 £99.99

263A DE-ESSER/COMPRESSOR

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

- *Excellent Sound & Build Quality Throughout the Range*
- *Full Feature Sets for Detailed Sound Control*
- *Automatic Settings for Ease of Use When Required*
- *Turnkey Pricing Means Even Better Value for Money*

THE UK 4 TRACK CENTRE

Our famous 4 track pack includes everything you need to start making music: Maxell headphones, a dynamic microphone, a chrome tape, cables, head cleaning kit and the best book we've yet seen on multitrack recording, taking you through basic track laying, mixdown etc... with sections on everything from mic placement to synchronisation and MIDI. We've obtained some great 4 track pricing and for a limited period, we will give you the 4 track pack (normal price £59.95) absolutely free when you purchase any of these multitrack recorders.

PORTASTUDIOS — TASCAM

PORTA 03 MkII

New version of a classic portastudio. Improved styling and metering.

RRP £229 £145.99

ALL MULTITRACKS INC '4 TRACK PACK' ADD £10 FOR PORTA 03 MKII

414

All new Portastudio from Tascam! Records to all 4 tracks at once using DBX noise reduction. Double speed recording for better bandwidth. 2 band EQ, 4 mic inputs and 8x9 LED metering make it great value for money. Includes free four track pack!

RRP £349 £325.99

424 MkII

A brand new version of the best selling 424 from Tascam, inventors of the portastudio. Features include 3 band EQ with a mid sweep, records to all 4 tracks at once, 2 independent auxiliary sends (1 switchable pre/post fade). Logic controlled 2 speed transport with built-in memory location points, DBX noise reduction, initial supplies limited.

RRP £499 £419.99

ALL MULTITRACKS INC '4 TRACK PACK' ADD £10 FOR X-14

FOSTEX

X-14

The neatest introduction to multitrack recording ever! Built in mic for instant recording and straightforward operation means almost anyone can make a track without reference to the manual. Buy with our complete four track pack for only £10 extra!

RRP £149 £129.99

XR SERIES MULTITRACKS

XR3

High speed machine at £249.99! New auto-bounce facility and built in mic - ideal for 4 track recording on the move.

RRP £249 £219.99

XR5

Exciting new double speed fostex machine with individual EQ, up to 3 aux sends and 2 stereo returns, 2 inserts & 4 separate tape outs allowing use with an external mixer.

RRP £420 £289.99

XR7

The XR7 breaks new ground in price and performance - 6 inputs (2 mics), 2 separate aux sends, low/hi plus sweep mid EQ. Records up to 4 tracks at once - double speed transport, Dolby C.

RRP £489 £379.99

D5 DAT RECORDER — UNDER HALF PRICE

Exclusive scoop purchase on a genuine professional machine brings quality within reach to the rest of us. Now that Sony's domestic machines are discontinued, this is one of the cheapest DAT's around, but just look at the spec! Its 19" rackmount, 44.1 kHz analog recording SCMS-free operation, error detection indicators, balanced ins and outs on XLRs, AES/EBu professional digital connections as well as all the usual DAT features from the makers of the industry standard D208 timecode machine. *Huge reduction.*

RRP £1299 £549.99

TASCAM

DA20MkII DAT MACHINE

The new Mk II version of the DA20 builds on what is already a quality machine: reliable tray-loading mechanism, SCMS is switchable in or out, both analog and digital recording at all 3 sample rates and coaxial SPDIF in and out. High sound quality is guaranteed by 1-bit DAC playback, and there is a special 'Table-of-Contents' feature. New features include error counting & adjustable ID encoding.

RRP £699 £599.99

DA30MkII DAT RECORDER

Professional machines start here! Tascam's DA30 and it's current Mark II equivalent are probably the most commonly found machines in professional studios, and with good reason: they combine a range of pro features such as 44.1kHz recording, AES/EBU digi I/O, balanced analogue connections, and now a jog / shuttle wheel, with sturdy build quality and excellent reliability. Incredible new low price makes pro quality affordable!

RRP £1299 £965.99

102MkII & 202MkIII TAPE DECKS

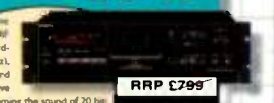
Fantastic deals on Tascam's superb professional quality mastering cassette decks. Both are full 19" rackmount units.
the 102 MkII is a single deck unit, the 202 MkII is a double deck, which records on both decks. Limited stocks only at these prices, ideal for mastering and duplication.

RRP £249 £199.99

RRP £349 £249.99

SONY

DTC-A6 DAT RECORDER



Turnkey have done it again! A pro, full spec DAT machine at a bargain price! Just look at the list of features: SPDIF coaxial and optical ins and outs, digital and analog recording at all three sampling rates (32 kHz, 44.1 kHz, 48 kHz), full 19" rackmount, as well as all the usual ID functions and a full function infra red remote control. Sony's exclusive Super Bit Mapping process can also be switched in, cramming the sound of 20 bit into 16! Stocks at this incredible price are limited - get your order in now!

RRP £799 £499.99

MDS-JE510 MINIDISC RECORDER

Although DCC looks to have died as a format now, Minidisc is thriving, and rapidly becoming a standard in radio stations and other institutions around the world. With sound quality almost as good as DAT, and a range of editing features like Combine, Move, and Auto Cut, it makes an ideal choice for mastering on a budget. If MiniDisc is for you, there's no better value on the market than the MDS-JE510 with digital input, jog dial and full function remote control as standard.

RRP £289 £199.99

MZ-R30 PORTABLE MINIDISC RECORDER

Now available is this compact portable version of the MDS-JE510 as featured above. This must be the neatest walkman you've ever seen!

RRP £399 £219.99

Panasonic

SV3800 INDUSTRY STANDARD DAT RECORDER

The Panasonic SV3700 has been the industry standard mastering DAT recorder, and is now superseded by the SV3800. Using 1 bit, 64x oversampled (equivalent to 20 bit), you can be sure of the highest possible sound quality. Records and plays back at all 3 sample rates via analog and digital inputs. Highly useable jog/shuttle wheel. AES/EBU and SPDIF digital connections, error counting and many other software features. In stock now.

RRP £1291 £895.99

FOSTEX

DMT-8 VL DIGITAL MULTITRACKER

INC 4 TRACK PACK

The personal digital multi-track is here at last, and at a price you won't believe! 8 separate tracks of CD quality audio recorded to half-gig hard-disk (up to 12 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 band EQ and 2 aux sends. Separate outputs and S/PDIF optical output. Why buy 4 tracks when you can have 8!

RRP £1208 £799.99

YAMAHA

MT50 MULTI-TRACKER

BOTH INC 4 TRACK PACK

The MT50 can record on all four tracks simultaneously and works at double the normal speed for improved frequency response and reduced wow and flutter. Each channel has it's own two band EQ an auxiliary send for use with effects units, and DBX noise reduction is incorporated to keep background noise to a minimum. A special 'sync' output bypasses this so as not to interfere with timecode.

RRP £389 £215.99

MT4X MULTI-TRACKER

The MT4X is Yamaha's top of the line machine and has a specification to go with it! It's logic controlled transport means that as well as two auto-locate points and 'return to zero' function, you also get a special 'rehearsal' mode, so that you can practice dropping in and out as many times as you like, without risking erasing your precious recording! Other great features include three band EQ on each channel, two auxiliary sends, LCD metering, double or single speed operation, and individual track outputs for use with an external mixer.

RRP £569 £339.99

We will beat any genuine quote from a UK or European dealer at the time of order. We must be able to substantiate the quote and the goods must be available and in stock. Prices include 17.5% VAT. UK mainland carriage from £9.99. Please allow 10 working days for cheque clearance. Errors & omissions excepted.

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PRICES GUARANTEED*

VIRTUAL STUDIO? VIRTUAL GIVEAWAY!

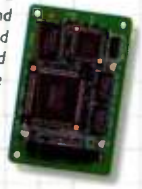
Roland

VS880 DIGITAL WORKSTATION

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, 1 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 £49.99.



To offer a completely integrated solution, we are bundling the VS880 with a 2 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 £1499.99!

- Digital Mixer with Full Automation
- Totally Integrated Solution
- Built in MIDI Sync
- 64 Virtual Tracks
- Built in Effects

~~RRP £2309~~

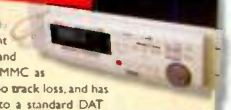
£1499.99

INCLUDES 2Gb HD, MOUNTING KIT & FX BOARD

D80 HD RECORDER

FOSTEX

INC 850 MEG HD



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, all with no track loss, and has SPDIF digital ins and outs to allow backup to a standard DAT machine and direct digital recording. Easy to use editing allows cut, copy and repeat pasting across multiple tracks. Comes with 850 meg HD as standard.

~~RRP £1499~~

£1089.99

D90 HD RECORDER

INC 1.3 GIG HD

The D90 has all the features of the D80, but also has ADAT digi i/o as standard, and optional kits for connecting SCSI drives & balanced analog i/o's for interfacing with pro level equipment. Our price includes a 1.3 gig HD fitted free!

~~RRP £1799~~

£1129.99

D160 HD RECORDER

INC 2.5 GIG HD

Latest in the family from Fostex is the superb D160, giving you a full 16 tracks of hard disk recording for well under £3000 - less than the price of a second-hand 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 - call us for more details. ***Price includes 2.5 gig HD.***

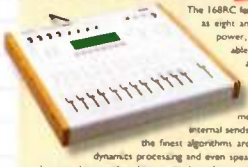
~~RRP £2932~~

£1999.99

SOUNDLINK 168RC DIGITAL MIXING CONSOLE

KORG

OVER 45% OFF !



The 168RC features 16 digi i/o 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 ... can be stored internally, taking a snapshot of every single parameter of the desk, which can then be recalled at the touch of the button, and in addition to this all parameters can be dynamically controlled in real time via MIDI. All in all, a tour de force product with far too many features to detail here.

Call now for a demo!

~~RRP £1899~~

£999.99

MDMX4 DIGITAL MULTITRACKER

SONY

OVER 40% OFF!

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 EQ. 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!

~~RRP £999~~

£599.99

HD-S200 PORTABLE DAT RECORDER

aiwa

OVER ONE THIRD OFF!

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

This beautifully manufactured machine 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), backlit 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!***

~~RRP £599~~

£399.99

PDR-04 CD RECORDER

PIONEER

Why master to DAT when you can master to CD for the same price? DAT, CD or Mini Disc ID codes are automatically translated onto the disc, and recording can be stopped and started on the same disc. CD's are more durable and have a longer shelf life than DAT, and you get all the advantages of instant access, and impressing your mates with your very own CD! ***These will sell out quickly - order now!***

~~RRP £699~~

£499.99

PDR-05 ALSO AVAILABLE with sample rate conversion ONLY £599.99

CDR870 RE-RECORDABLE CD WRITER

PHILIPS

Brand new CD recorder from Philips that is the first on the market to be able to use re-recordable CDs (watch out though, these will not play back in an ordinary CD player). Price includes remote control and one free

NEW PRODUCT

£499.99

MULTITRACKS NEW, USED & EX DEMO

Akai DR4VR	£700	Fostex XR5	£259	Tascam DAP1	£999
Akai DR8	£1795	Fostex XR7	£339	Tascam DA38	£1999
Alesis ADAT	£1179	Pioneer PDR04	£499	Tascam 414	£345
Alesis ADATXT	£1650	Roland VS880	£999	Tascam 424MK2	£399
Fostex D5	£699	Roland VS880 Expanded	£1699	Tascam 564	£1[illegible]
Fostex D160	£2931	Sony DTC46	£489	Tascam Porta03 MK2	£11[illegible]
Fostex D80	£999	Sony MDMX4	£599	Yamaha MD4	£599
Fostex D90	£1299	Tascam DA20	£499	Yamaha MT4X	£349
Fostex DMTRVL	£879	Tascam DA30MKII	£799	Yamaha MT50	£249
Fostex XR3	£169	Tascam DA88	£2300		

DD8 HD MULTI-TRACK RECORDER

NEW PRODUCT

AKAI

Akai's new DD8. Records and/or plays back 8 tracks at a time directly onto hard drive, or crucially, 2.6 gig magneto optical carts. There is finally no lengthy backup at the end of a session, or reload at the beginning (of course you can still make a safety copy if you wish to). Sync multiple machines together, use it with the DL1500 remote for DD1500 style SuperView operation and editing, choose from a myriad of expansion options: TDIF, ADAT, AES/EBU and analog I/O, digital EQ, Ethernet, SMPTE, MIDI, 9 PIN and Biphase synchronisation - the list is endless!

Call for a Turnkey Professional Brochure and a free trial.

PRICES FROM

£3199.99

DR-16 HD MULTI-TRACK RECORDER

INC FREE 4GIG HD & VGA BOARD

First there was the DR4, then the DR8 and now Akai bring you 16 tracks of [illegible] hard disk recording in a single box! 8 inputs and 16 multi-level outputs are provided making it perfectly suited for full blown multi-track recording. Amongst the options available is a VGA output board to give a full colour display of all the tracks which makes editing a breeze. Buy now from Turnkey and we will include a free 4 gig third drive and VGA board!

~~RRP £4195~~

£3699.99

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Authorised Dealer Soundcraft DRAWMER MACKIE Roland SONY TASCAM FOSTEX digidesi

EUROPE'S LOWEST

ZOOM A JOURNEY TO THE MOON!

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!

1201 TRUE STEREO FX PROCESSOR

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

NEW PRODUCT **£95.99**

- *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 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 **£199.99**

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

FAT THC-00 RESINATOR

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 resonance! 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 combination 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 the extreme! *Must be heard! More fresh thinking from F.A.T.*

NEW PRODUCT **£199.99**

PCP330 VOCODER

One of the most asked questions in the industry must be "Why doesn't anyone make 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 doesn't only create robot voices, there are thousands of creative uses, and it's also ideal for processing drum loops.

Order now and own an instant classic!

NEW PRODUCT **£299.99**

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 interconnection and synchronisation. Friend Chip's new sensibly priced digital patchbays and 'black box' problem solvers end the misery and make the digital studio a reality! The DigiMax digital patchbay (£299) has 8 inputs and outputs (2 each on optical), can accept both AES/EBU and SPDIF signals, and is MIDI controllable. An XLR version (£499) is also available for greater AES/EBU reliability. The Audio Time Base (£499) is a 1u 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 1 second!

Also in the range:

OP-CON: optical to co-axial and vice versa	£69
PRO-CON: SPDIF to AES/EBU and vice versa with SCMS stripping	£129
D 4-2 COPY CON: switcher with 1 optical & 3 co-ax ins, 2 co-ax outs and SCMS stripping	£99
SR44.1: converts almost any incoming sample rate to 44.1kHz (ideal for Pro Tools) and non 44.1 DATS)	£149
SRC/W: sample rate conversion to 32, 44.1, 48kHz, with lock to external word clock	£249
Super Clock Driver: converts DigiDesign superclock to word clocks and vice versa, 3 outputs	£129
Silent Audio Clock: converts Super Clock to word clock and vice versa with synchronous SPDIF signal	£129
ADAT Audio Clock: ADAT 9 Pin to word clock, Super Clock and SPDIF clock convertor	£129
ADAT Word Clock Synchroniser: ADAT 9 Pin to word clock and Super Clock convertor, also sends MTC (synchronise your sequencer) with MIDI merg	£199
ADAT SPDIF Synchroniser: as above but with converts only to SPDIF	£199
ADAT MIDI Machine Control: MIDI to ADAT 9 Pin convertor with MIDI thru (add to either of the above for full remote ADAT control from your sequencer)	£69
Rack Kit: holds up to three 'black boxes'	£49

FROM **£69.99**

XR300 SYNCHRONISER

TURNKEY EXCLUSIVE

XRI Systems

Using the synchroniser of choice in professional studios, we now exclusively bring you this industry standard unit at an unheard-of price. Features include time SMPTE at all standard frame-rates, MIDI clocks / song numbers or MTC for compatibility with all MIDI sequencers. Large LED time-code display. Merged MIDI input. Straightforward operating system. Full 19" rack unit.

RRP ~~£299~~ **£169.99**

PROGRAMMER FOR MATRIX 1000 OR MICROWAVE

access

There's no doubt that the Oberheim Matrix 1000 and Waldorf MicroWave deliver powerful analog sounds. However, when it comes to programming your own sounds, the producers have decided to go for older synths like the Minimoog or Prophet. Together, because their knobs and sliders make for easy creation of new sounds. The access programmer gives you the best of both worlds - now you can freely experiment with your modern analog synth using the same intuitive front panel and instantly recall every tweak of a parameter into your sequencer.

EXCLUSIVE **£329.99**

COMPOSER WORKHORSE COMPRESSOR

BEHRINGER

A natural sounding and fully featured compressor at a give away price!

Built-in gate removes any unwanted noise, soft-knee action makes compression much less obtrusive, "auto" mode makes quick setup a doddle and side chain access means it can also be used for de-essing etc.

RRP ~~£349~~ **£169.99**

MODEL 316 SEMI-PARAMETRIC EQ

speck electronics

Speck Electronics are perhaps best known for their ultra high quality broadcast mixers.

The Model 316 is a 3U rack offering 15 channels of 3 band semi parametric EQ and was originally designed for ohmy high and hob maker the Xtramix CX. Each band features up to 15dB of boost or cut and frequencies of 5Hz-500Hz (low), 500Hz-5kHz (mid), and 5kHz-15kHz (high). This is a unique opportunity to upgrade the EQ on your mixer to a standard that is not found on many professional consoles, or add EQ to monitor sections of live desks.

RRP ~~£799~~ **£349.99**

MIDIVERB 4 PRO QUALITY FX UNIT

ALESIS

The MidiVerb 4's excellent Alesis effects algorithms produce dense, natural Reverberation, rich Chorus and Flange, Delay and Pitch effects that are designed for professional use. There are thirty-two effects algorithms, and 128 Preset and 128 User Programs to choose from. Large backlit LCD, online help, MIDI controller routing and programmable footswitch give you complete creative control.

RRP ~~£329~~ **£249.99**

STUDIO QUAD 4 CH. STUDIO FX PROCESSOR

DigiTech

NEW LOW PRICE!

As you'd expect from Digitech, Studio Quad features not only their custom designed and ultra-powerful 5-DISC™ chip, but also unique user inputs and outputs which using the built-in sub-mixer, can be configured as 4 mono ins feeding 4 effects processors, finishing 4 stereo outputs. Huge screens and new intuitive operating system make editing a breeze. 20 bit converters give dynamic range than 90 dB signal to noise ratio. Effects include: reverbs, delays, detune, chorus, flanging etc. - hundreds of other features too numerous to mention.

RRP ~~£529~~ **£349.99**

VTP-1 DIGITAL MIC PRE

DigiTech

The all new 2 channel VTP-1 tube mic amp / EQ boasts set to take the market by storm. It combines four bands of stereo parametric EQ with a high definition mic amp based around a proprietary valve design. Phase reverse, high pass filter, 20dB pad (line inputs also available) and 48v phantom power are provided, together with high quality balanced analog outputs, and AES/EBU and SPDIF outputs at 44.1 or 48 kHz. Ideal front end for any digital system.

NEW BOXED **£999.99**

VCS1 COMPRESSOR

The VCS1 is brimming with innovation and quality, and brings you a sensibly priced dual channel valve dynamics processor with plenty of useful features. The compressor has the usual envelope, threshold and ratio controls, but is also switchable between hard and soft knee compression and has an auto mode for ease of use. There are also separate gate and limiter sections, to give highly detailed signal control. Valve gain is variable to give a range of sound from subtle colouring through to controlled distortion. Call for more info.

NEW PRODUCT **£799.99**

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

**We will beat any genuine quote from a UK or European dealer at the time of order. We may be able to undercut the quote and the goods must be available and in stock. Prices include / % VAT. UK mainland carriage. Add £9.99. Please allow working days for cheque clearance. E&OE*

PRICES GUARANTEED*

Bellari

PREMIUM QUALITY VALVE OUTBOARD EQUIPMENT

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!

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 outs, and sidechain access is fully catered for. ***Ideal for a variety of instruments, vocals and complete mixes.***

NEW PRODUCT **£499.99** FACTORY DIRECT

RP533 Studio Tube Multi-Processor

Whilst mixers these days are of a better quality than they used to be, to get the best possible signal to tape or disk, you can't beat a dedicated unit - and for value for money, you can't beat the Bellari RP533 Studio Tube Multi-Processor. The all tube 2u box, features a premium quality transformer balanced mic pre amp with switchable 30dB pad, phase reverse and true 48V phantom power. The compressor has all the features of the RP583, and the exciter section adds a wonderful sheen to virtually any sound, as well as beefing up the bottom end. Each stage has it's own bypass switch, sidechain access is provided, and the large VU meter can monitor input, output, or gain reduction.
No serious recordist should be without one!

NEW PRODUCT **£499.99** FACTORY DIRECT

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

NEW PRODUCT **£399.99** FACTORY DIRECT

RP562 Stereo Exciter

Traditional exciters usually do a good job of brightening 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.***

NEW PRODUCT **£299.99** FACTORY DIRECT

ADB3 Stereo Direct Box

Stand alone 2 channel tube DI box

NEW PRODUCT **£129.99**

MP110 Direct Drive Mic Pre Amp

Stand alone single channel tube mic pre amp.

NEW PRODUCT **£169.99**

FINALIZER 2
MASTERING PROCESSOR

t.c. electronic

Brings top professional quality mastering tools to the project studio. 5 band stereo EQ, De-esser, Digital Radiance Generator™, Normaliser, and Dynamics all with highly flexible editing or the option to let TC's Wizard do the work for you by analysing the program material automatically. Analogue and digital I/O, call us for a demo - guaranteed to improve your masters! New Finalizer 2 has ADAT I/O and is fully 24 ...

RRP **£1899.99**

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

MIKEMAN
MIC PRE-AMP

The Mikeman is a dual channel, high definition mic preamp featuring up to 73dBs of gain, allowing the noise free amplification of even the lowest input signals. The unique design of the phantom power supply gives a genuine 48v output, alleviating the problem of 'phantom drift' the source of so many problems, particularly when using older or tube microphones. Uniquely the Mikeman has a facility to split a single input into two outputs and features individual controls for gain, phase reverse, phantom power and a -35dB pad. We don't expect to have these long!

RRP ~~£349~~ **£179.99**

4 POLE
FILTER

waldorf

The 4 Pole is the legendary Microwave / Wave 24 dB lowpass filter. You are free to apply this filter to any audio signal that you patch into the Filter. So if your favourite sampler or sample player lacks that special quality, you can give it a tonic boost via the 4 Pole Filter.
It is the most powerful (and quite possibly the only) analog filter available today!

NEW BOXED **£269.99**

VITALIZER STEREO JACK
ENHANCER/EXCITER PROCESSOR

The Vitalizer has always been considered to be the Rolls Royce of enhancer / exciter processors. Using a significantly different process to other such products, the effect deals with the full frequency range and is substantially smoother and richer. Also included is a "surround" effect which varies the width of the stereo field. Massive bulk purchase allows this unbelievable price - check one out now, we guarantee you'll be impressed!

RRP ~~£299~~ **£179.99**

X POLE FILTER

What do you get if you take two of Waldorf's 4 pole filters, put them in a rack and splice it up? The all new X-Pole! Maintaining all of the 4 Pole's great sound, MIDI and tactile controllability, the X-Pole allows you to treat two mono signals independently, or the two channels can be linked together for a stereo signal. Its rack design makes for easy integration into your studio. Fasten up your sound today - your loops need never be the same again!

NEW PRODUCT **£439.99**

SRV-330
REVERB UNIT

UNDER HALF PRICE!

Roland

This incredible unit from Roland uses the technology developed for their £24,000 R5 system. As well as being an ultra high quality reverb unit (30bit processing is employed), the 3D technology allows early reflections to be realistically placed and surround you in a 360 degree circle. Full MIDI control, true stereo processing, 4 CE all in one & more, a wealth of editing facilities and exceptionally quiet performance make this an irresistible buy. *Very limited quantities at this bargain price!*

RRP ~~£859~~ **£429.99**

FOCUS EQ
PARAMETRIC EQUALISER

Focusrite

UNDER HALF PRICE!

Turnkey are well known for bringing you clearance deals at 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 pre-amp complete with phantom power and phase reverse, as well as line and instrument level inputs, making it an excellent recording channel, or even a 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 each have their own bypass switches. Typical Focusrite build 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!

RRP ~~£939~~ **£399.99**

The Dual Mic Pre - an audiophile quality dual channel mic preamp. ***New low price - over 50% reduction!*** **£399.99**

The Voicebox - this combines a mic/instrument preamp, compressor, de-esser and parametric EQ in a single unit - the ultimate signal path for digital recording! **£989.99**

The Compressor - highly versatile compressor with hard & soft knee types, separate limiter and gate and built-in sidechain filters. **£1049.99**

The Channel Strip - similar to the Voicebox, but also featuring line level inputs and extra EQ. **£1129.99**

All 5 are on permanent demo at Turnkey.

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

EQ1
Parametric EQ

UNDER HALF PRICE!

TL Audio

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 recording demands have made them a huge success story. Our tremendous buying power now allows us to offer the superb EQ1 at this incredible price. The EQ1 is a dual 4 band (or single channel 8 band) parametric EQ - a high performance transformerless pre amp is followed by four valve stages per channel, which provide a fine and gradual overdrive characteristic, and a frequency response which is virtually flat from 20Hz to 40kHz. ***Limited quantities only at this price!***

RRP ~~£821~~ **£369.99**

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

REFLEX
EFFECTS PROCESSOR

UNDER HALF PRICE!

lexicon

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!

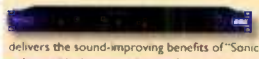
The Reflex packs stunning reverb quality together with other effects such as delay and Resonator, and some of the most comprehensive MIDI control available into a 1U rack unit. Reverse, gated and plate reverbs are included along with more traditional algorithms, and up to 10 editable parameters are available 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 this side of an MPX1.

Limited stocks only - first come, first served!

RRP ~~£469~~ **£199.99**

362
SONIC MAXIMIZER

BBE



The 362 series delivers the sound-improving benefits of "Sonic Maximizer" technology with the convenience of ganged-stereo operation.

RRP ~~£198~~ **£149.99**

362NR SONIC MAXIMIZER & NOISE REDUCTION only £179.99
362SW SONIC MAXIMIZER & SUB WOOFER CONTROL only £169.99

OUTBOARD
NEW, USED & EX DEMO

Alesis 3630	£195	Behringer DualFex	£119
Alesis MICROVERB4	£199	Behringer Ultrafex	£189
Alesis MIDIVERB4	£249	BOSS SX700	£369
Alesis Nanocomp	£99	Drawmer MX30	£225
Alesis Nanoverb	£145	Joe Meek VC3	£189
Alesis Nanoverb	£249	Joe Meek VC4	£379
Alesis QUAD2	£499	LA 4CA	£229
APHEX-104	£199	LA 4G2	£229
APHEX-107	£349	LA 4X4	£199
BSE 362	£219	LA C8	£379
Behringer Composer	£169	LA GX2	£149
Behringer DualFex	£119	LA MX2	£249
Behringer Ultrafex	£189	Lexicon ALEX	£199
BOSS SX700	£369	Lexicon LXP15II	£699
Drawmer MX30	£225	Lexicon MPX1	£869
Joe Meek VC3	£189	Lexicon REFLEX	£229
Joe Meek VC4	£379	SPL Vitaliser Stereo	£299
LA 4CA	£229	Yamaha PROM	£699
LA 4G2	£229	Yamaha REV100	£159
LA 4X4	£199	Yamaha REV500	£299
LA C8	£379	Yamaha SPX1000	£1199
LA GX2	£149	Yamaha SPX900	£729

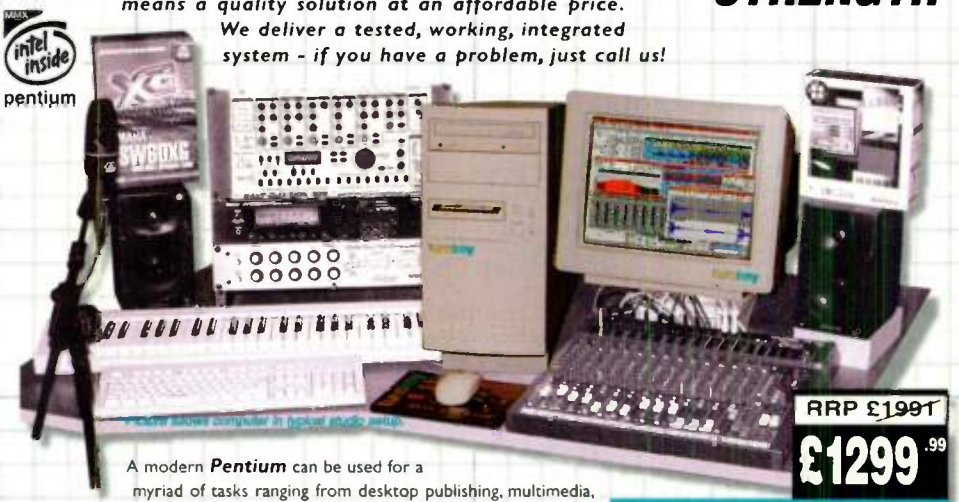
We will send any of these units from a UK or European dealer at the time of order. We must be able to substantiate the quote and the units must be available and in stock. Prices include 17.5% VAT. Un-mentioned carriage when £0.00. Please allow 10 working days for cheque clearance. Subject to errors & omissions excepted.

EUROPE'S LOWEST

turnkey

THE TURNKEY PRO TECH PENTIUM: A TOWER OF STRENGTH

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!



RRP ~~£1991~~
£1299.99

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 immediately, 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

- Intel Pentium 200mmx (opt. 233 etc)
- 512k L2 cache RAM
- 32 Mb RAM (optional 48 Mb, 64 Mb)
- 2 Gb HD (optional 4 Gb, 6 Gb, 9 Gb)
- 24x speed CD-ROM drive
- 15" SVGA display (optional 17")
- Windows95 CD, keyboard & mouse
- Cubase VST PC 3.5
- 16 bit full duplex audio system
- Yamaha SW60XG synthesiser card
- 1x1 MIDI interface adaptor

P233mmx package with 4 gig HD only ***£1499.99!***

RRP ~~£1861~~
£1099.99

P200 PC PACKAGE AS ABOVE BUT WITH CAKEWALK V5.0

PACKAGE PRICE TABLE	16 bit full duplex & SW60	Fiji & DB50	Digi. Fiji & DB50	Pinnacle & DB50	Digi. Pinnacle & DB50
Digital Orchestrator Plus	£1239.99	£1499.99	£1549.99	£1549.99	£1469.99
Steinberg Cubase VST	£1269.99	£1599.99	£1649.99	£1699.99	£1769.99
E-magic Logic Discovery	£1269.99	£1529.99	£1569.99	£1599.99	£1689.99
E-magic Logic Audio	£1449.99	£1729.99	£1759.99	£1799.99	£1889.99

•Add £229 for deluxe 17" monitor •Add £129 for Sony powered speaker system with subwoofer •Add £69 for MIDI interface with 2 separate MIDI outs.
•Add £129 for PC200 keyboard

MU10 GM SOUND MODULE

YAMAHA

OUT OF THIS WORLD MEGADEAL!

Turnkey's incredible buying team have done it again! Yamaha's MU10 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 MU10 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 serial 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 module without a computer!
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 MU10 comes with the CD-ROM version of Steinberg's famous Cubasis MIDI sequencing software, and this incredible offer includes Yamaha's XgEdit editor free for detailed editing of the onboard sounds.
A complete starter kit for anyone looking to get into making music.
This exclusive offer is only available whilst stocks last - get your order in now!

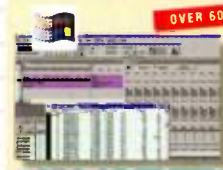
Package available with Peter Stuyvesant Studio A MIDI package (flat, 320 touch sensitive keys, microphone, headphones and cables only) **£169.99**

RRP £199
£115.99

CAKEWALK PRO

CAKEWALK

OVER 60% OFF PRICE



Cakewalk has been the US #1 sequencer for ever. For a limited period, we are offering Cakewalk Pro v5.0, with 4 discrete audio tracks and 256 MIDI tracks for £79.00. That's less than the price of Cakewalk Home Studio! Upgrade option to Pro 6 (£49.99) or Pro 6 Audio (£109.99).
(Comes on CD-ROM. Also includes v4.5 for Win3.1)

Cakewalk Pro 5 + MIDIMan Dman £229.99
Cakewalk Pro 5, MIDIMan Dman + DB50 £335.99
Cakewalk Pro 5 + laptop MIDI interface £149.99
Cakewalk Pro 5 + Pentium package £999.99

RRP £199
£79.99

SIBELIUS-7 TOP-END NOTATION V3.5

Sibelius

Why do so many music academies use a program which doesn't work on the PC or Mac?! Because for professional notation type-setting, nothing else comes close. "In a totally different league from anything else" - Paul Patterson, Royal Academy of Music. Future Music Platinum award.
We are now an Acorn Authorised Dealer, we stock and demonstrate the exciting new RiscPC computer, running RiscOS/3 powered by the 200 MHz ARM Processor, and with optional 486 or 586 board for running Microsoft Windows software.

Call for a DEMO. One to one tuition also available upon request.

FROM ONLY
£499.99

CODA FINALE 97

NEW VERSION NOW AVAILABLE

Finale has long been considered the "Rolls-Royce" of score programs, but at a price of £699, few people could stretch as far as buying it, and with its extremely powerful but complex user interface, many beginners were put off. Well, Finale 3.7 now retails for just £499.99 (£249.99 for Academic Users), and now sports a radically redesigned user interface and rewritten manuals. If you're looking to notate Hello "Planets" or Stockhausen's "Gruppen", Finale contains all the features you'll need!

RRP £699
£499.99

MUSIC AT PASSPORT NOTATION / COMPOSITION

PASSPORT

"Music@rre has been our best selling piece of music software since its introduction in 1992. The latest upgrade is called "Music At Passport" and includes a new "PitchWrite" facility which allows notes to be sung or played into the program using a microphone. A "pure score program" such as this offers the cleanest and most intuitive user interface, since the program revolves around the score, which is always displayed on the screen. Advanced facilities such as part extraction are included, and the program handles transposing instruments with ease. Includes Internet Explorer free!

RRP £129
£89.99

BAND-IN-A-BOX INTELLIGENT ARRANGER V7.0

PG music

Tired of starting each song with a "Blank Slate"? Band-in-a-Box is the worlds leading intelligent arrangement software. Just with built in styles, or create your own. NEW VERSION now includes full GS / XG compatibility, as well as "Auto Soloing" which has to be heard to be believed. Notation / Lyrics display during playback. Can export music into Cubase.

FOR PC, MAC (v8.0) or ATARI (v5.8)

#1 SELLER
£89.99

MIDI INTERFACES FOR PC COMPATIBLES

INTERFACES

Centigram Cable fits any SoundBlaster™ type card		£25.99
MIDI Link	1 in, 1 out serial interface for notebooks	£69.99
MPU-401 II	1 in, 1 out MIDI card with Wavetable	£84.99
Winman 1x1	Works easily with your existing sound card	£39.99
Winman 2x2	2 in, 2 out MIDI card for Windows only	£79.99
Portman 2x4	2 in, 4 out parallel interface for notebooks	£69.99
MIDI Edge 1x1	1 in, 1 out MIDI card with Wavetable	£49.99
Multiport 4x4e	4 in, 4 out MIDI / SMPTE card for Windows	£149.99
Portman 4x4e	as Multiport/4x4e but for Parallel port	£99.99

16 BIT DUPLEX DIGITAL AUDIO RECORDING

midiman

This 16 bit card has much lower noise levels than similarly priced cards, and allows full duplex record/play on fast 486 or Pentium computers. Supplied with Cubase 3.0, Digital Orchestrator, Sound Studio Gold etc. Built-in MIDI interface cable included in the price, and connector for optional synthesiser daughterboard.
Really really easy installation with Win95 (Plug 'n Play). After putting the card in, switch the PC on, and insert the disk when prompted. Takes about 90 seconds! (a bit longer if you already have a sound card)
Buy with Cubase - £399.99, with Digital Orchester - £275.99

RRP £249
£149.99

CUBASE VST FOR PC!

CUBASE

Steinberg

The industry standard MIDI sequencer is now even better value than ever! Version 3 now includes full hard disk recording facilities as on the Mac that work with virtually any soundcard!
Get £50 off Score version at only £449.99

RRP £329
£279.99

CUBASE VST MAC

As well as all the great sequencing and audio recording facilities you've come to expect from Cubase, Power PC owners can now take advantage of up to 32 audio tracks complete with built in digital EQ, DSP reverb and FX! ***Get £50 off Score version at only £449.99***

MIDIQUEST 6.0 UNIVERSAL PC EDITOR LIBRARIAN

Sound Quest

MIDIQuest is the most powerful, flexible and comprehensive editor librarian around, with support for the widest range of MIDI devices including XP50, JV1080 series, Morpheus / UltraProteus, MU50, MU80, Quadraverb Plus / GT, Classic Keys, TD-7, KT76 / KT88, Korg X5, DPM3, and many others. Driver upgrades are generally free of charge, so MIDIQuest will last for as long as MIDI is around! It's a really good investment. New version comes on CD-ROM and is fully Windows 95 native (ie 32 bit).

RRP £235
£199.99

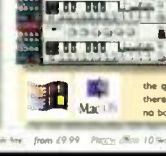
SOUND FORGE 4 PC SOUND EDITOR

ALSO SOUND FORGE XP - £119

Soundl Forge 4 (now with AVI support) is a full-featured sound editor intended for musicians, sound designers and multimedia developers using the Windows platform (16-bit or 32-bit Windows). Allows sound file editing, effects, loops and regions, playlists, external samplers and sync to MIDI and SMPTE Time Code. Multiple window environment allows more than 50 sound files to be open at one time. Supports WAV, AIFF, Creative VOC, VOX, and Sound Designer SDI files. Drag-and-drop glitch-free editing. Sound Forge is perfect for authoring audio CDs on the PC.

RRP £499
£349.99

REBIRTH RB-338 SOFTWARE SYNTHESISER



If you're into techno, trance, ambient, hardcore... you simply must have the sound of a 303 in your arsenal of sonic weapons. As it's been out of production for well over a decade, those still in existence are collector's items. They'll cost you an arm and a leg which has opened a market for clone products. The ReBirth RB-338 is a CD-ROM which gives you two 303s and one 808 - a software recreation of these two classic pieces of analog hardware. All the quirks and subtle qualities of the real thing are there, with full MIDI and sync capabilities. No cables, no boxes - all you need is a Mac or a PC.

RRP £149
£129.99

We will beat any genuine like-for-like price from a UK or European dealer at time of order. We must be able to supply and deliver from stock. Prices and specifications must be confirmed and correct at time of order. E&OE. All prices include 17.5% VAT. UK mainland carriage is free. Prices from £9.99. Prices quoted for 10 hardware items. Extra items & software extra.

PRICES GUARANTEED*

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 hardware, and leads to less driver conflicts.

DMA

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

FREE DIGITAL ORCHESTRATOR PLUS WITH PINNACLE (WORTH £129)

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...

CUBASE VST £549.99 PACKAGE WITH FIJI

C'WALK PRO AUDIO 6 £599.99 PACKAGE WITH FIJI

LOGIC AUDIO £649.99 PACKAGE WITH FIJI

ADD £75 FOR PINNACLE INSTEAD OF FIJI
ADD £99.99 FOR S/PDIF DIGITAL I/O

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... (£99.99 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.

FIJI £299.99

A PINNACLE WITHOUT SYNTH & SAMPLESTORE
ALSO INC. FREE DIGITAL ORCHESTRATOR SE

PINNACLE £375.99

INC. FREE DIGITAL ORCHESTRATOR PLUS

- 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

S3000XL WORKHORSE SAMPLER

INC FREE ZIP DRIVE & 32 MEG

AKAI

Akai continues it's tradition of supplying workhorse samplers to the studio market with this sturdy offering. The compact 2U rackmount machine features 32 note polyphony, 10 outputs, 2 meg expandable to 32 with SIMMS, SCSI as standard, MESA editing software, and a whole range of expansion abilities including digital i/o and an extra filter board. *Buy from us and get 32 meg and a ZIP drive free!*

RRP ~~£1799~~ £1499.99

S2000 SAMPLER

Akai's entry level studio sampler, the S2000 doesn't skimp on features: 32 note polyphony, low pass resonant filters, 2 meg RAM expandable to 32 meg, optional 8 output board and quad FX board. Comes bundled free with MESA software to allow full graphic editing from your computer.

Now bundled with SCSI interface, 12 speed CD-ROM drive, ZIP drive and 8Mb of RAM for the incredible price of only £999.99

RRP ~~£999~~ £799.99

S20 SAMPLER

All new samplers from the makers of the industry standard, the S20 brings quality sampling to a new affordable level. 16 bit sampling gives great quality, and the standard 1 meg memory is expandable to 17 meg, giving up to 18 minutes sampling time depending on the sample rate used. Built in sequencer means you can build up grooves without the use of a computer, and the special auto loop tempo mode makes BPM calculation a doddle. The 1.44 meg disk drive reads floppies from virtually all Akai samplers giving you instant access to a huge library of sounds. *Initial stocks are very limited - get your order in now.*

RRP ~~£499~~ £479.99

MPC 2000 SAMPLING DRUM MACHINE

Ever since the launch of the Roger Linn MPC60, Akai have led the way in sampling drum machines. It's latest evolution, the MPC2000, is a lot more than a glorified drum machine however - the 64 track sequencer is a development of what most people consider to be the only real alternative to computer based setups (32 MIDI channels are available), the sampling section is virtually identical to the best selling S2000, SCSI is standard, and the outputs can be expanded from 2 to 10 and digital for only £249! There are far too many other features to mention here - on demo now at Turnkey.

RRP ~~£1199~~ £1149.99

INC FREE 8 MB RAM

ESI32 + SCSI SAMPLER WITH V2.0 SOFTWARE

EMU

STOP PRESS
END OF LINE EXCLUSIVE DEAL
OVER 40% OFF!

The ESI32 features 32 note polyphony, 4 polyphonic outputs (expandable to 10), G-chip resonant filters, a huge top quality library (also Akai and Emax II compatible), and DSP processes like time-stretch, doppler FX, parametric EQ, exciter etc. All E-mu samplers come with free access to our enormous sample library (we have all the Elll library on CD-ROM) and of course, our excellent technical support. The best sounding sampler this side of an E6400, order yours now before it's too late!

RRP ~~£1199~~ £699.99

Also available bundled with 12x speed CD-ROM drive, ZIP drive and 8Mb of RAM plus 2 CD's for the incredible price of only £999.99

ZIP REMOVABLE DRIVE

INC DISK & 25 PIN SCSI CABLE

IOMEGA

There was a time when hard disks were a luxury for sampler owners. Then with the advent of the ultra cheap Iomega Zip Drive, this has become a thing of the past. For under £150 the Zip drive stores 100Mb (94Mb formatted) on each cartridge. A must for anyone with more than 2 meg of RAM!

RRP ~~£219~~ £149.99

SP202 SAMPLING UNIT

BOSS

More functionality than the original Fairlight for under £300! The SP202 offers 16 bit sampling with sample rates up to 32 kHz, giving a maximum of 4' 20" sampling time or 17' using optional PCMCIA memory cards. Features like time-stretch, filter, delay and ring modulation mean this machine has to be taken seriously, and the built in automatic BPM calculator, together with tap tempo function, is a godsend for loop merchants. The built in midi and battery operation (optional PSU available) make it great for sampling on the move. Ideal for DJ's or anyone needing sampling on a budget. Initial stocks will be very limited - get your order in early!

RRP £299.99

CALAMARI ESI-32 TURBO EXPANSION BOARD

The upgrade all ESI-32 owners have been waiting for! For only £299.99, you get six extra outputs giving a total of ten, two simultaneous FX processors, and a plethora of new filter types taken from the E4x. Unbelievable value for money every ESI owner should have one

RRP ~~£369~~ £299.99*

*When purchased with the ESI-32 or the ESI-4000

E6400 ALSO AVAILABLE only £1999.99 INC.16 MEG FREE

PROTECH 12x CD-ROM DRIVE

turnkey

If you want access to large amounts of sample library in a hurry, then there's no better way to do it than via CD-ROM. Hundreds of discs are now available full of everything from orchestral instruments to hip hop loops, all ready prepared to load into your sampler. In theory SCSI is SCSI, but in practice it's just not the case, particularly when it comes to samplers. Drives that work perfectly with one machine will often flatly refuse to work with another. So we've taken the guesswork out, and come up with a bargain priced CD-ROM drive that works with all current Akai, Emu and Roland machines. And what's more, it runs at 12x normal speed, for ultra quick loading (actual speed depends on SCSI spec of sampler). Guaranteed to work! (Supplied with connector for 25 pin SCSI port, specify sampler when ordering - may require additional cable)

NEW PRODUCT

£169.99

SU10 SAMPLING UNIT

INC 2 FREE TIME & SPACE CDs

YAMAHA

Yamaha's SU10 is a ground breaking unit, making professional quality stereo sampling available to everyone. Up to 54 seconds of sampling is available and 48 samples can be held in memory at any one time. Samples can be filtered, reversed, scaled, crossfaded, pitchshifted and even scratched using the ribbon controller. The built in sequencer means you can produce your own tunes using just this unit! The SU10 comes bundled with 2 free Time & Space CDs containing almost 800 samples.

RRP ~~£299~~ £229.99

ALSO AVAILABLE WITH 3 OCTAVE MIDI KEYBOARD only £299.99

ESI4000 NEW SAMPLER

EMU

The ESI4000 has all the features of the ESI32 we have come to know and love, but now has 64 note polyphony, memory capacity of up to 128 meg, and an operating system upgrade giving you E4 style multi mode filters. All E-mu samplers come with free access to our enormous sample library (we have all the Elll library on CD-ROM) and of course, excellent technical support. Also available with the fantastic Calamari Turbo board pre fitted for only £1499! Initial stocks are very limited - call to reserve yours now!

RRP ~~£1199~~ £949.99

COMPUTER NEW USED & EX DEMO

Cakewalk Audio	£199	Turtle Beach TROPEZ+	£199	Yamaha SW60	£129
MOTU MTPAV	£349	Yamaha DB50XG	£99		
Turtle Beach Fiji	£329	Yamaha MDF2	£249		

SAMPLING NEW, USED & EX DEMO

Akai CD3000 XL	£1799	Akai S3200XL	£2399	Kurzweil K2500	£2199
Akai MPC 2000	£999	Emu E6400	£1999	yamaha SU10	£175
Akai S2000	£759	Emu ESI32	£589		
Akai S3000XL	£1499	Emu ESI4000	£799		

SAMPLE LIBRARIES

Time+Space

We have two 100 CD jukeboxes in store holding the complete Time & Space range of sample CDs. Whether you want drum loops for techno, drum & bass or deep house, ethnic instruments & textures or a sound FX library - there's sure to be something to suit your needs. These discs make ideal fodder for all kinds of sampler, from those built into mixers to full-blown stand alone units.

Check one out today!

PRICES FROM £19.99

A3000 SAMPLER

YAMAHA

Arriving only time now, Yamaha's A3000 is their first entry into the sampling market for almost ten years, but this breath has allowed them to take a good look at the market and come up with a highly competitive product. 64 note polyphony, four outputs (expandable to twelve plus digital I/O), WAV file compatibility and memory expandable up to 128 meg, means that the A3000 must be taken seriously at this price. Call for full details or a demo.

RRP ~~£1299~~ £999.99

*We will beat any genuine, in-stock quote from a UK authorised dealer at the time of order. Prices may be subject to substantial change after this date. Some items may not be available at time of publication. Prices include 17.5% VAT. UK mainland delivery £9.99. Please allow 10 working days for delivery. Errors & omissions excepted.

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EUROPE'S LOWEST

IMPROVE YOUR PERSONAL SPACE!

Ask just about any recording engineer for their opinion on who makes the finest reverb and effects processors, and you will get just one answer - Lexicon. Their 224 was the first digital reverb made, and even now twenty years on, is still much sought after.
The current mid-priced range of the MPX1, PCM80 and 90, make the famous Lexicon sound more affordable than ever, and represent some of the best value for money signal processing around.

MPX1 MULTI EFFECTS PROCESSOR

For those of us who need top quality reverb & multi FX but cannot stretch to the expense of the PCM80 & PCM90, Lexicon have released the MPX-1. Featuring the famous 'Lex' chip for reverb and separate DSP processor for multi FX, the MPX-1 brings you all that is good in signal processing for an incredibly low price. Up to 5 simultaneous effects are available including pristine quality stereo pitch shifting, and effects can be "morphed" from one algorithm to another, as pioneered in the Vortex. All new operating system includes on-line help and database for sorting presets - achieving quality results is as stress free as possible.

~~RRP £1199~~
£749.99

PCM80 MULTI EFFECTS PROCESSOR

The PCM80 effects processor has state of the art audio quality with true stereo processing, amazingly detailed editing including MIDI clock control and a card slot. Cards available include Dual FX, Pitch FX and the Martin Gershin card.

~~RRP £2199~~
£1399.99

PCM90 REVERB PROCESSOR

The PCM90 is dedicated to reverb and features two of the the famous proprietary Lexi2 chips (the PCM80 has one Lexi2 chip and one Motorola DSP). The dual layer programming architecture makes it a breeze for day to day use, but allows ultra detailed editing for those who want to get right 'under the hood'. Optional cards mean obsolescence is built out!

~~RRP £2589~~
£1699.99

- *Unrivalled Reverb Quality from the First Name in Digital Effects*
- *Excellent Realtime Control via MIDI & other Modulators*
- *True Stereo Processing with Dual Mono Possibilities*
- *Wide Range of Extra Program Cards for PCM80 & 90*

SYNTH MODULES

EMU

Emu have taken their wealth of experience in making modules such as the Proteus, Vintage Keys and Morpheus, combined it with the filters from the incredible Emulator 4, and with their usual innovation, come up with the Orbit, Planet Phatt and Carnaval.
The Orbit is stacked full of classic drum sounds, pulsating bassline, ambient pads, as well as a huge variety of fills and effects. Planet Phatt brings a new definition to swing, and the Carnaval is ideal for dance grooves as well as Latin specialities.
The inclusion of the E4's 16 different types of 6 pole filters means that these modules have more powerful filtering than any other synth. Finally the BEATS MODE includes a wide selection of loops and grooves, which can have their pitch changed without tempo change and vice versa, and even their sounds too!
V2 software now gives improved beats mode and other enhancements.
Orbit upgrade available for only £69.99.

RRP £869
£799.99

SC88-VL SOUND MODULE

Roland

Based on the original Sound Canvas module, but with much more of everything, the SC88 is 32 part multi-timbral with two independent MIDI ins, plus 64 note polyphony for handling virtually any MIDI thrown at it. Having twice as much sample ROM too, the SC88 is really like two SC55s, except with 18 bit D/A converters, delivering the same audio quality as the JV-1080 synth. Choose from a GS & GM compatible sound palette of 654 individual sounds, and 24 drum kits. The built in interface for Mac or fast PC makes it even better!

RRP £649
£369.99

VIRUS VIRTUAL ANALOGUE SYNTH

ACCESS

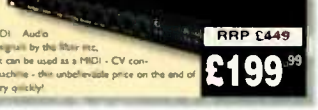
Control specialists Access have used all their considerable expertise in the design of their new 'virtual analogue' synth, the Virus. All major parameters have their own dedicated knob or switch, and an 'expert' mode allows super detailed editing via the LCD display and parameter controls. Of course, 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.

NEW PRODUCT
£899.99

DEEP BASS 9 TB303 CLONE

Control Synthesis

UNDER HALF PRICE!



A great sounding TB303 clone. Tu rack with 1 knob per function, all the sound controls of the 303 are duplicated, filter cutoff, accent and glide all controllable over MIDI. Audio input allows treatment of external signals by the filter etc, and CV / gate in / out also means it can be used as a MIDI - CV converter. An excellent analog bass machine - the unbelievable price on the end of the line means they will sell out very quickly!

RRP £449
£199.99

QUASIMIDI

RAVE-O-LUTION 309 DANCE WORKSTATION

FUTURE MUSIC PLATINUM AWARD

The Rave-O-Lution 309 is 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.
Call for a free demo CD. Money back within 7 days if not satisfied (ask for condition).

FACTORY DIRECT
£549.99

RACK EARS ALSO AVAILABLE only £25.99

309 AUDIO EXPANSION

Input / output expansion board now available only £149.99! 2 extra outputs, 2 inputs allowing you to route any 2 external signals through the AES synthesis. Also comes with new operating system with many new features.

FACTORY DIRECT
£149.99

POLYMORPH SYNTHESISER

Coming soon, the 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.

FACTORY DIRECT
£769.99

ATC-1 ANALOGUE MONOSYNTH

Studio Electronics started out life as a company that serviced and modified old Moogs, moved on to producing remanufactured Mini Moogs in 19" rack form, and then developed the SE1 - a modern Mini Moog whose components were painstakingly researched to provide an instrument that was according to the reviewers indistinguishable from the real thing.

Most recently has come the ATC-1 Tone Chameleon - hand crafted in the USA in the same way as their previous products, but with reduced cost due to less knobs but a vastly increased sound palette thanks to the ingenious use of filter cartridges to emulate the best sounding instruments of yesteryear. Editing is a breeze thanks to an individual button for each function, and a large central parameter dial.

Circuitry is analog throughout - right down to the oscillators and the sound is needless to say, superb. There are 2 LFO's (one syncs to MIDI), three envelopes, and virtually all parameters can be controlled over MIDI. The ATC-1 is supplied with the Mini Moog filter, and can also be fitted your choice of a TB303, ARP 2600 or Oberheim Xpander filter (only £69 each), and for the filter fetishists amongst you, the filter Shifter (only £199) takes all 4 filters simultaneously, and the filter type is automatically stored with each patch, avoiding the need for switching. The rear panel sports an audio input, and CV & gate ins and outs as well as the usual MIDI connections.
Incredible reduction on another Turnkey exclusive - quality doesn't have to break the bank!

RRP £899
£569.99

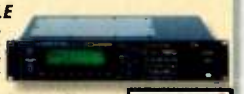
JV1080 SYNTH MODULE

Roland

In the same way as the S1000 became the industry standard sampler, Roland's JV1080 has become the industry standard synth module. It's not hard to see the reason why - straightforward operation combined with top flight sound quality and a huge range of useable sounds.
But expandability of the machine is where it really comes into it's own. There are over 10 different expansion boards which can be fitted (up to 4 at once), each one with as much ROM as this original machine, covering sounds from Vintage to Orchestral and Dance to World! At Turnkey we have the full range in stock, as well as an unbeatable price on the machine itself. ***Expansion boards only £199.99 each!***

RRP £1199
£849.99

JV2080 SYNTH MODULE



The Roland JV1080 has been become the industry standard sound source for home studios and professionals alike. It's superb sound quality, 64 note polyphony and expandability were a winning combination.
Now the new JV2080 builds on that success by offering a giant editing screen, three independent effects processors as well as reverb / delay and chorus, and room for 8 of Roland's renowned expansion boards - the potential is virtually limitless! Judging by the success of the JV1080, these will be in strong demand - call us now! ***Expansion boards only £199.99 each!***

RRP £1399
£999.99

We will beat any genuine quote from a UK or European dealer at the time of order. We must be able to substantiate the quote and the goods must be available and in stock. Prices include 17.5% VAT. Uk mainland carriage from £9.99. Please allow 10 working days for cheque clearance. Errors & omissions excepted.

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PRICES GUARANTEED*

YAMAHA

STAY IN THE MIX WITH YAMAHA

PROMIX 01 Digital Mixer

This is the digital mixer that shattered the price/performance barrier. You get 1 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, 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.

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

RRP ~~£1999~~
£995.99

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 multi-effects 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.

- Ultra 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!

RRP ~~£2999~~
£2239.99

02R Digital Console

INCLUDES FREE SONY DTC A6 (RRP £799!)

The fully digital 40 input 8 bus console with total automation and moving faders. 4 band parametric EQ and dynamics for every input and 2 comprehensive on-board fx processors with a range of reverbs, delays and other standard fx. Optional 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~~
£6095.99

MEGADEAL ALERT NEW LOW PRICE!

FAT

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! 1U rack with 1 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 oscillator - no more continual drifting!

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

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

FACTORY DIRECT

RRP ~~£199~~
£129.99

MC-303 GROOVEBOX DANCE WORKSTATION

Roland

The enduring popularity of the TB303, MC202 and TR909 has just refused to go away but increasing rarity has meant that secondhand prices have been driven up to ridiculous levels. Roland, the creators of these machines, now bring you the MC303 Groovebox which combines all their classic drum machine sounds, a step time / real time sequencer, 303 'acid' bass sounds complete with front panel filter controls and a whole host of other useable sounds (it's 16 part multi-timbral!). This box is an all in one dance music solution, and believe us, it sounds the business! Initial supplies will be very limited, order now to avoid disappointment!

RRP ~~£569~~
£469.99

ALSO AVAILABLE WITH MK149 MIDI KEYBOARD only £559.99

MICROWAVE II WAVETABLE SYNTHESISER

waldorf

The Microwave II combines all the famous features of the original Microwave together with today's requirements for user interface, signal to noise ratio and sonic purity. It's simplicity of use is obvious with the use of just 5 rotary dials and a 2x40 character back lit LCD. On the back the Microwave II has 2 fully modulatable stereo outputs (configurable as 4 monos with panning). Tone generation comes from a powerful DSP generating wavetables, the 10 voices each feature two 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 keep even the most demanding programmer satisfied!

NEW PRODUCT
£999.99

M-BD1 SOUND MODULE

UNDER HALF PRICE

Roland

Over 50% off on this top quality bass & drum module. Packed full of superb acoustic and electronic sounds of typical Roland quality, the M-BD1 is 28 note polyphonic and 8 part multitimbral, and has 2 built in FX processors. Makes an ideal addition to any MIDI setup, providing the bread and butter sounds for a wide variety of tracks.

Very limited quantities - order now to avoid disappointment.

RRP ~~£469~~
£199.99

BASS STATION BUDGET MONO SYNTH

novation

END OF LINE CLEARANCE EXCLUSIVE TO TURNKEY

If you need to get into analog synths on a [illegible] then the Bass Station keyboard is for you. But this is no mere toy! Two oscillators, pulse width modulation, two LFO's and knobs that send out MIDI information, make this a versatile sound creation tool, capable of a wide range of bass sounds and effects. An ideal addition to any MIDI setup!

RRP ~~£349~~
£219.99

SD-35 MIDI PLAYER

OVER 60 % OFF!

Roland

The SD35 is a Standard MIDI File player / recorder, and so much more. As well as simple playback of both Type 0 and Type 1 MIDI files direct from floppy disc, they can be transposed, parts can be soloed or muted (an incoming MIDI signal is automatically routed to this channel in this case), tempos can be changed, and CD style controls are available to enable programming of whole sets, complete with repeats!

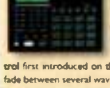
As if all this wasn't enough, you don't even need another sound source! The SD35 comes with Roland's acclaimed GS sound engine built in (which most MIDI files are programmed on), giving you 223 top quality General MIDI sounds, plus reverb and chorus and all the GS editing features. For ultimate convenience, tracks can be stopped and started via an optional footswitch, and you don't even need a separate mixer to sing or play along - the SD35 can accept mic, instrument or line level signals, which are balanced and mixed with its own sounds.

Another Turnkey exclusive bringing you incredible value for money on this end of line exclusive! Order now while stocks last!

RRP ~~£785~~
£299.99

DR-660 Dr. RHYTHM DRUM MACHINE

BOSS



BOSS have been making Dr. Rhythm drum machines since the early eighties, combining value for money and ease-of-use with the latest drum and percussion sounds. The DR-660 builds on the success of the DR-550 Mk2, but offers 16 full velocity and aftertouch sensitive pads, 4 separate outs (unheard-of at this price), and 255 drum sounds including the best of TR808 / 909. The 660 also boasts the 'human feel' control first introduced on the R8 which allows velocity to control a real-time crossfade between several waveforms. Process your sounds with on-board digital reverb and chorus - fully editable, with individual effect-send control for each drum sound.

RRP ~~£459~~
£299.99

DM5 DRUM MODULE

OVER 60% OFF PRICE

ALESIS

The DM5 offers superb performance features and an excellent selection of drum, percussion & FX samples putting over 540 all-new studio drum sounds into a 1u rack space, many recorded in true stereo and with ambient effects. It's Expanded Dynamic Articulation feature allows sounds to change volume, tone, and pitch according to MIDI velocity. The Random Sample feature realistically varies the sound of the drum as you play. The DM5 includes an ultra-fast trigger-to-MIDI converter with 12 trigger inputs, 4 audio outputs and a backlit LCD display. The drum sound for you is waiting right here! Another Turnkey megadeal!

RRP ~~£429~~
£169.99

SR-16 DRUM MACHINE

ALESIS

The SR-16™ Stereo Drum Machine is an excellent tool for songwriting and performance. It features a great selection of 233 sounds, offered both in dry form and with reverb. Alesis's exclusive Dynamic Articulation™ feature enables a drum sound to change its tonal content as it's played harder for truly realistic performances. The SR-16 features 200 preset patterns that were actually played in by top studio drummers - not just programmed and quantised. Of course, the SR-16 also provides complete MIDI implementation, a footswitch input, flexible programming and editing features and velocity-sensitive pad buttons.

RRP ~~£299~~
£189.99

MICRO PIANO PIANO MODULE

KURZWEIL

The MicroPiano is the most highly regarded piano module on the market, featuring Kurzweil's brilliantly realistic true stereo samples - 32 note polyphony means you won't suffer from note-stealing and the wide range of other keyboard sounds and strings make it useful in many other situations. Built in effects including very high quality reverb mean there's no need to tie up another effects unit. Strictly limited quantities at this price mean that stocks won't last long. Order today - you won't be disappointed!

RRP ~~£599~~
£349.99

SOUND MODULES NEW, USED & EX DEMO

Yamaha RY8	£119	Kurzweil K2000R	£1499	Waldorf PULSE +	£429
Alesis DM5	£269	Kurzweil KMP1	£359	Yamaha MU5	£179
Alesis QSR	£599	Novation Drumstatn	£399	Yamaha MU50	£299
Alesis SR16	£125	Novation Super BStation	£399	Yamaha MU90	£799
Boss DR5	£249	Roland JV1080	£699	Yamaha P50	£239
Emu MORPHEUS	£500	Roland MC303	£399	Yamaha QY700	£699
Emu UltraProteus	£929	WALDORF MICROWAVE 2	£849	Yamaha RY20	£199
Korg XSDR	£389	Waldorf PULSE	£349		

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EUROPE'S LOWEST

Wave Synthesiser

TURNKEY EXCLUSIVE! waldorf

We now offer a new custom range of Wave synthesisers with 76-note keyboards in four colour options - standard blue, red (as shown), Sahara and black. Totally unique sound

PRICES FROM £6299.99

CALL TURNKEY PROFESSIONAL ON 0171 240 4036 FOR DETAILS

THE RAVEN

KEYBOARD DANCE WORKSTATION — QUASIMIDI

Dance experts Quasimidi have done it again with this incredible new product. Stacked full of hundreds of the finest dance sounds, from fat analog synths through retro drums and special effects. On board sequencer with special loop motif mode makes it a cinch to create instant hits! Typically superb sound quality from this top German manufacturer. Also available, Raven Max expansion board giving over a thousand new sounds. Call in for a demo, we guarantee you'll be impressed. Free demo CD available, please call to receive one. ***Money back within 7 days if not completely satisfied - please ask for conditions.***

NEW PRODUCT £849.99

K5000s ADDITIVE SYNTH

KAWAI

In this age of many 'soundalike' synth keyboards, it's not often you get something coming along with a completely fresh approach. Kawai have dared to be different though with the K5000S, and reintroduced additive synthesis. This has been tried in the past, but the limited DSP power has severely curtailed the possible results. The only method of synthesis that can theoretically produce any possible sound, additive has a palette which ranges from superb acoustic simulation, to timbres quite unlike those offered by any other synth. The inclusion of a traditional synthesis section complete with an incredibly powerful filter means it's also a cinch to create fantastic analogue style sounds, and a generous complement of knobs which all send MIDI controllers add to the ease of use. Far too many features to mention here - call for more information or for a demo.

NEW PRODUCT £1199.99

RACK VERSION ALSO AVAILABLE only £999.99

X5D

KEYBOARD SYNTHESISER — KORG — OVER 40% OFF PRICE!

Another unbelievable end of line clearance special from Turnkey! Top quality General MIDI compatible keyboard from Korg was a best seller at the original price but with this deal stocks won't last long! The X5D features 64 note polyphony, 16 part multitimbrality, 47 effect types for its 2 built in processors, a five octave touch sensitive keyboard with pitch bend on modulation wheels, and there's a special 'Combi' mode which stacks up presets for some truly huge sounds! There are over 500 sounds of renowned Korg quality, covering the full range of acoustic sounds through drums and percussion to huge synth textures. The clear 2 line backlit LCD display makes for easy parameter editing, right down uneven temperec tuning. An ideal beginners instrument or for anyone wanting more sounds, its light weight also makes it great for gigging. ***Very limited quantities only on this one.***

RRP £699 £389.99

PROPHECY

VIRTUAL MONOSYNTH — KORG — UNDER HALF PRICE!

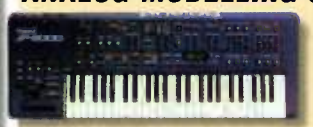
The Prophecy is already a legend in its own lifetime, and this incredible new low price makes it better value for money than ever. Virtual synthesis not only gives some great acoustic simulations, but also superb analog sounds, from Moogs through ARP's to some of the classic Rolands. The keyboard that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

Limited stocks only at this price - buy now or forever hold your peace!

RRP £899 £429.99

JP8000

ANALOG MODELLING SYNTH — Roland



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

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

RRP £1499 £1049.99

XP-50

WORKSTATION KEYBOARD — Roland

All the power and flexibility of the JV1080 in a keyboard, together with what has to be the best onboard sequencer around, and a built in disk drive. The XP50 has a 5 octave keyboard and 2 outputs, also available is it's big brother the XP80 with a 7 octave keyboard, 4 outputs and the king size display as featured in the new JV2080. We have limited stocks only at staggering prices - don't delay - order today!

RRP £1499 £859.99

XP-80

WORKSTATION KEYBOARD

RRP £1799 £1199.99

TRINITY

KEYBOARD WORKSTATION — KORG

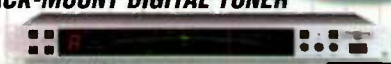
When it comes to workstation keyboards, the Korg name is legendary. Their current flagship product, the Trinity not only features the customary range of exemplary sounds, but also touchscreen technology to make it one of the most intuitive instruments on the market, and a range of options to turn it into a fully fledged recording studio: sample playback (Aka: compatible), Prophecy expansion board, and even hard disk recording!

RRP £2345 £1449.99

CALL SOHO SOUNDHOUSE ON 0171 379 6766 FOR DETAILS

DTR-1

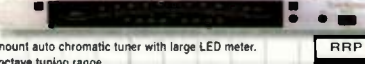
RACK-MOUNT DIGITAL TUNER — KORG



- Oversize easy to read LED meter.
- Auto tuning with 3 selectable modes; Strobe, Cent, Hz.
- Two tuning inputs to handle tuning of 2 instruments.
- Built-in microphone is perfect for tuning acoustic instruments.
- 3-Octave reference tone. • Cable check function.

RRP £249 £169.99

DTR-2 RACK-MOUNT DIGITAL TUNER



- Rack-mount auto chromatic tuner with large LED meter.
- Full 7 octave tuning range.
- Auto reference calibration function can automatically calibrate the tuner to instruments that are not easily tuned.

RRP £149 £99.99

PC-200 MkII

MIDI CONTROLLER KEYBOARD — Roland

Compact touch sensitive master keyboard offering full control over pitch bend and mod, data slider assignable to reverb, pan or any controller, sustain pedal input, transpose over 2 octave range, send patch & bank change messages.

Check out our unique package prices with these modules:

RRP £199 £139.99

CTK-601

GENERAL MIDI KEYBOARD — CASIO

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

RRP £249 £199.99

PS2

ELECTRIC GUITAR — Jackson

The PS2 is equipped with 1 high output Jackson humbucker and 2 Jackson single coil pickups and full locking trem system. We have managed to acquire a limited quantity of these quality guitars at an incredible price! ***Hurry - as always first come first served - choice colours available.***

RRP £399 £POA

CALL SOHO SOUNDHOUSE ON 0171 379 6766 FOR DETAILS

AN1x

VIRTUAL ANALOGUE SYNTH — YAMAHA

The analogue emulation market is hotting with this exciting new release from Yamaha. Building on the incredible success of the CS1X, the AN1x is built on the same design principles, but uses technology from the groundbreaking VL range to produce stunning virtual analogue sounds. With a 5 octave aftertouch sensitive keyboard, 10 note polyphony, 8 knobs and a ribbon controller, and built in effects, the AN1x is sure to be an instant hit.

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

RRP £899 £669.99

WK-1500

76 NOTE MIDI WORKSTATION KEYBOARD — INC FREE STAND, HEADPHONES & PSU

This TOP OF THE RANGE Casio has 128 sounds, 100 auto accompaniments and a 76 note keyboard. It is also fully General MIDI compatible and all 16 MIDI channels can be controlled from the keyboard. With an onboard six track sequencer all your songs can even be recorded on the instrument itself. This is unbelievably good value for such a great instrument.

RRP £549 £299.99

SANSAMP RANGE

TECH 21 - NYC

The Tech 21 range of hand built American products emulates every tube amplifier sound ever desired, giving you the classic Fender, Marshall, Boogie, HiWatt, Vox sounds etc - an all in one versatile unit at a fraction of the cost of the originals!

CALL SOHO SOUNDHOUSE ON 0171 379 6766 FOR DETAILS

CS1x

SYNTHESISER — YAMAHA

Not only does the CS1-K look great, it sounds great too! As well as 480 XG format voices and 11 different drum kits, the CS1x also has 128 special performance sounds especially designed for dance and techno music. Front panel knobs allow instant access to crucial edit parameters like the filter, and 2 are assignable to anything you like. Round this off with top quality effects and an arpeggiator, and you have what has to be the best value keyboard of the year!

RRP £599 £459.99

BUY WITH VL70M VIRTUAL LEAD MODULE for only £799.99

MK149

MIDI CONTROLLER KEYBOARD — Evolution

Compact touch sensitive master keyboard offering full control over pitch bend and mod wheel assignable to reverb, pan or any controller, sustain pedal input, transpose over 2 octave range, send patch & bank change messages.

Check out our unique package prices with these modules:

RRP £119 £99.99

GR-30 INC. GK-2A

GUITAR SYNTHESISER — Roland — OVER 20% OFF PRICE

The Roland GR-30 brings the world of MIDI and sound synthesis to any guitarist. With fast and accurate pitch to MIDI conversion the GR-30 offers total access to sounds and possibilities previously unavailable, from its internal banks of over 380 editable sounds. The GR-30 also features an arpeggiator accessible from one of it's 4 foot switches which will control various effects such as wah-wah, whammy etc, and access to it's internal guitar tuner. ***As ever, these will be sold on a first come, first served basis, as stocks are extremely limited.***

RRP £799 £599.99

KX88

MASTER KEYBOARD — YAMAHA

The KX88 has been the luxury master keyboard of choice in top studios, and with the death of the Synclavier, has probably the best action available. 88-note wooden weighted keyboard, inputs for 2 sustain pedals, 2 continuous controller pedals (one of each is included), breath controller, 2 wheels, 4 sliders, 5 momentary switches, 2 toggle switches and aftertouch. Apart from taking pride-of-place in your studio, the KX88 can be considered a 'collector's item, and with no sounds to go out of date, it will last your whole musical career.

RRP £1649 £849.99

KEYBOARDS NEW, USED & EX DEMO

Alesis QS6	£549	Korg Trinity PLUS	£1795	Roland RD500	£1249
Alesis QS7	£779	Korg X5D	£399	Roland VK7	£1099
Alesis QS8	£1299	Korg Z1	£1699	Roland XP10	£299
Korg N364	£799	Roland A33	£335	Roland XP50	£849
Korg PROPHECY	£549	Roland A90	£1099	Roland XP80	£1199
Korg SGPROX	£1799	Roland A90EX	£1399	Yamaha AN1x	£849
Korg Trinity	£999	Roland AX1	£249	Yamaha P150	£1099

GUITAR SILENCER

COMPRESSOR/LIMITER with 'Hush' — ROCKTRON — UNDER HALF PRICE!

As one of the world leaders in the guitar processing field, Rocktron bring you the guitar silencer. This 1u rack combines a 2 channel compressor/limiter with Rocktron's famous "Hush" noise reduction switchable from the front panel or external MIDI switching device. ***As well as the guitar silencer we have managed to obtain a small quantity of the entire Rocktron range at unbelievable prices - call for more details!***

RRP £322 £129.99

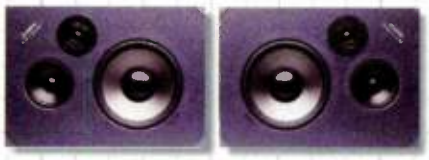
*We will beat any genuine quote from a UK or European dealer at the time of order. We must be able to match the quote and the goods must be available and in stock. Prices include 17.5% VAT. UK mainland carriage from £9.99. Please allow 10 working days for delivery clearance. Errors & omissions excepted.

PRICES GUARANTEED*

TURNKEY MEGADEAL

ALESIS

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 speaker. We cannot hold this offer forever - buy now before it's too late!

~~RRP £699~~ **£349.99**

BUNDLE WITH SERVO 550 only £699.99

SPIRIT STUDIO
CONSOLES BY SPIRIT

Soundcraft

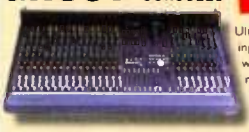
Soundcraft's Spirit Studio desks revolutionised the project studio market when they were introduced over 5 years ago offering sound quality and features only previously found on desks several times the price. Even then they were great value for money, but because Soundcraft have recouped their R&D costs, and because of our substantial buying power, they are now available at an unbelievable price. No other desks represents such fantastic value for money, just check out the feature list:

'In line' layout means 40, 56 and 72 inputs respectively for the 16, 24 and 32 channel desks. 4 band EQ with 2 mid sweeps, 6 aux sends, 8 true [illegible] direct outs on every channel, LED metering, fader reverse - the list is endless!

~~RRP £1537~~	~~RRP £2063~~	~~RRP £2894~~
£899.99	**£1465.99**	**£1999.99**
16 ch.	24 ch.	32 ch.

GHOST CONSOLES

OPTIONAL METER BRIDGE AVAILABLE



Ultra low noise inputs, 4 band EQ with 2 fully parametric mids, up to 12 auxiliary sends, MIDI mute automation and MTR transport control are a few of the features that put other project consoles to shame (no MIDI on LE versions).

~~RRP £4617~~	~~RRP £6607~~
£2499.99	**£2999.99**
24 ch. LE	32 ch. LE

SERVO 170
AMPLIFIER

SAMSON AUDIO

Samson's Servo 170 is specifically designed for use with nearfield monitors, and does an excellent and unobtrusive job, sticking as close as possible to the "wire with gain" ideal for an amplifier. It offers a power rating of 85 Watts per channel RMS, making it an ideal partner for most of today's nearfield studio monitors. The standard 2u design means it fits neatly into your rack system, independant left and right volume controls are given, and there are built in signal and clip indicators, together with protection circuitry to help prevent blowing your speakers.

At this price stocks won't last long - another Turnkey exclusive!

~~RRP £289~~ **£159.99**

ABSOLUTE ZERO
by SPIRIT
NEW NEARFIELDS

Soundcraft

The latest addition to Soundcraft Spirit's monitor range are the Absolute Zero's. For those of us with slightly less demanding monitoring applications, they make the ideal choice.

~~RRP~~ **£199.99**

ABSOLUTE 2
by SPIRIT
STUDIO MONITORS

Here at last! Stunning sounding and looking monitors from the UK's leading mixer manufacturer. Incredible bass extension and power handling at a killer price. In stock now, come in and audition them ASAP!

~~RRP £269~~ **£POA**

AT4033
LARGE DIAPHRAGM MIC

audio-technica

For years the Neumann U87 dominated the large diaphragm condensor mic market, but at a price. That was until the advent of the Audio Technica ATM4033. For about one third of the price, it offers superb sound quality - sparkling vocals and acoustic guitars, and all the kind of qualities you would expect from this kind of mic. Now Turnkey have secured a quantity at a new unbelievable price. If you're in the market for a serious microphone, you can't afford to pass this one by!

This price is available on current stocks only.

~~RRP £599~~ **£319.99**

C1000 CONDENSOR MIC

AKG

This C1000 has become an industry standard amongst project studio owners and live performers alike, offering as it does a great frequency response, and extraordinarily rugged construction for a condensor mic. It can be phantom powered or used with a 9v battery, and even comes with a power adaptor to change from card'oid to hyper-card'oid.

~~RRP £286~~ **£149.99**

WMS51 WIRELESS MIC SYSTEM

High quality diversity radio mic systems have always been the reserve of the professional, due to the high costs often associated with them. AKG's WMS-51 system breaks that tradition, offering an unbelievable price/performance ratio. The system consists of either the HT51 hand-held transmitter featuring AKG's well known and respected d3700 dynamic capsule, or the BT version can accept any of the Micro mic II series or guitar, whilst reception is handled by the SR51, a half rack receiver featuring balanced and un-balanced outputs, a control for squelch (RF interference rejection) and an auto mute facility.

~~RRP £316~~ **£219.99**

C3000 LARGE DIAPHRAGM MIC

This C3000 uses all of AKG's experience in building large diaphragm mics such as the C12 and C414, but by using modern manufacturing techniques, and only offering two patterns (cardioid and hyper cardioid), the price has been kept to a minimum. Its open sound and superb frequency response make it ideal for vocals, as well as sounding great on a variety of other instruments.

~~RRP £399~~ **£229.99**

SM58
INDUSTRY STANDARD DYNAMIC MIC

SHURE

Shure's SM58 has been the industry standard microphone for as many years as we can remember, and even today it's still a great buy. Robust enough to withstand countless heavy metal gigs, versatile enough for a wide range of studio uses, the yard-stick by which all other mics are judged, now at an unrepeatable price.

~~RRP £169~~ **£99.99**

NT1
LARGE DIAPHRAGM MIC

RØDE

Rode have quickly made a great name for themselves with the NT2, now the NT1 cuts out the frills at an incredible price. The gold plated large diaphragm capsule gives a superb full frequency response, and is great for all round use and particularly good on vocals. If you only have one mic, this has got to be a strong contender!

~~RRP £329~~ **£299.99**

NT2 ALSO AVAILABLE only £499.99

CONTROL 5
STUDIO MONITORS

JBL

These classic monitors from JBL have been a standard in studios for several years and still stand up very well against more recent competition. The solid build quality you can expect from JBL comes as standard and the ported design gives fantastic bass response. Internal fuses help to prevent blown tweeters and a compatible Turbosound sub-woofer is also available for only £199.99. Exclusive to Turnkey.

~~RRP £439~~ **£249.99**

CONTROL 1 COMPACT MONITORS

These superb compact monitors (RRP £199) are ideal for accurate monitoring on a budget. Sturdy impact resistant casing makes them the only choice for location work.

~~RRP £109~~ **£99.99**

BUNDLE WITH DENON PMA250 only £269.99

IMPACT SERIES

Turbosound

IMPACT180

IMPACT120

Turbosound is a legendary name in the PA business, but until recently, many of us could only dream of owning a Turbo rig. Now with the introduction of the Impact series, you can stop dreaming! Turbosound quality at a previously unheard of price - for example we can offer the superb Impact 120's at only £999.99 a pair - incredible value for money. Come down for a demo now - they're sure to make an impact!

~~RRP £1295~~ **£999.99**

IMPACT110

~~RRP £282~~ **£199.99**

CALL TURNKEY SOUND SYSTEMS ON 0171 497 5737 FOR DETAILS

MONITORS
FROM HARBETH ACOUSTICS

Many of today's popular budget monitors sound impressive in the store, with tremendous bottom end and sparkling treble. But mixes made on these monitors can still sound wrong when played on other systems. The problem? Lack of clarity and detail in the mid-range, particularly vital when working with vocals and lead instruments. Harbeth manufacturers of monitors for the BBC and others for many years, now address this problem with their new expression near-field monitors, offering great frequency response, and excellent mid-range clarity.

NEW PRODUCT

£319.99 PER PAIR

MONITORING NEW, USED & EX DEMO

Behringer Autocom £159	Soundcraft Absolute 4P . £799
Samson SERVO170 .... £195	Tannoy PBM 6.5 MkII ... £289
Samson SERVO260 .... £265	

SPIRIT FOLIO NOTEPAD PORTABLE MIXER

Soundcraft

For quality mixing on a budget, this has to be the neatest solution around. Typical Soundcraft quality has been further enhanced by the use of surface mount technology and custom designed rotary pots. 4 mono inputs are provided along with 2 stereo, which also feature RIAA preamps for record deck connection. 2 band EQ and an auxiliary send complete a highly flexible package.

~~RRP £199~~ **£149.99**

FOLIO F1 NEW MIXER

The introduction of the new F1 sees the Williams team of mixer manufacturers in top gear! Features include 3 aux. sends, 100mm faders, 3 band mid sweep EQ and insert points. Available in 14 or 16 channel versions.

~~RRP £379~~ **£299.99**

MIXERS NEW, USED & EX DEMO

Mackie 16 ..... £1500	Mackie LM3204 ..... £499	Sndcrft RACPAC £399
Mackie 24 ..... £2350	Sndcrft Folio F1 14 ..... £269	Sndcrft SPIRIT24 ..... £1250
Mackie CR1202VLZ £279	Sndcrft Folio F1 16 ..... £319	Tascam M2600 ..... £1495
Mackie CR1402VLZ £399	Sndcrft Folio Powerpad £269	Yamaha i2R £5999
Mackie CR1604 ..... £450	Sndcrft Ghost24LE £2499	Yamaha i3D £2999
Mackie CR1604VLZ £725	Sndcrft Powerstation £389	Yamaha Promix 01 £950

MICS NEW, USED & EX DEMO

AKG C1000S £159	Soundcraft DM01 ... £199
AKG C3000 ..... £229	
Beyer MC740 ..... £1199	

AMPS NEW, USED & EX DEMO

Bose 802 ..... £599	JBL TR225 ..... £789	Yamaha P3500 ..... £499
C Audio ST400 ..... £449	Yamaha P1500 ..... £375	
C Audio ST600 ..... £549	Yamaha P2500 ..... £449	

SOUNDLAB DLP3Rs & KAM GMX7

INC FREE CABLES

MIX PACK

A fantastic start-up DJ [illegible] the Bedroom Jockey the most respected names in DJ equipment, the outstanding DLP3R [illegible] day of the GMX7 sampling mixer. Can it be a winner?

~~RRP £649~~ **£429.99**

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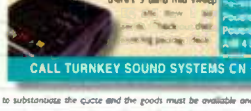
POWERSTATION 600
PA MIXER BY SPIRIT

Soundcraft



The PowerStation has been revamped, and this is the first of a 3 model range. Power [illegible] there are 6 mono and 2 stereo inputs. Lexicon effects get 2 editable parameters, there's 3 band mid sweep [illegible]

CALL TURNKEY SOUND SYSTEMS ON 0171 497 5737 FOR DETAILS

SL 1210 MkII
TURNTABLE

Technics

After more than 10 years at the top, Technics SL 1210s are still holding their own.

Solid build quality, near instant start & stop and [illegible] pitch [illegible] make them a safe [illegible] Package [illegible] is also available with various [illegible] please [illegible]

RRP £499

£POA

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*We will beat any genuine quote from a UK or European dealer at the time of order. We must be able to substantiate the quote and the goods must be available and in stock. Prices include 17.5% VAT. UK mainland carriage from £9.99. Please allow 10 working days for cheque clearance. Errors & omissions excepted.

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preview

Clavia Nord Modular

Virtual Analogue Modular Synthesizer

If you'd love a modular synth, but couldn't possibly afford a real one, it's possible that virtual salvation is at hand. PAUL NAGLE investigates.

If you've always been daunted by the sheer size and expense of vintage modular synths, yet drawn by their programming potential and flexibility, life is about to take a turn for the better. Clavia, the Swedish creators of the Nord Lead (reviewed *SOS* May '95 and September '97) have taken virtual analogue synthesis to its next logical stage. Imagine, for a moment, a synthesizer with no fixed signal path — indeed, no fixed structure at all. This synthesizer would contain all the necessary sonic building blocks and give you the tools to connect them together. Using a software front-end to map out your instrument, you pick how many oscillators a given patch requires, you decide the type and number of filters, LFOs, envelopes... everything. Better still, you can choose exactly how each component part should be wired together, how it reacts to MIDI controller messages — even how it incorporates external signals into the audio chain. Colour this imaginary synthesizer red, liberally sprinkle it with knobs, build it in a package small enough to pick up with one hand, and you have the Nord Modular.

THE HARDWARE

I'm not sure if the Nord Modular's two-octave, velocity-sensitive keyboard (no aftertouch) is intended for performance or purely for programming, but with its lack of modulation wheels and pitch-bender I suspect the latter. Either way, it's incredibly cute, and pretty handy too, although you'd have to decide for yourself if it was worth the £200 price difference between the keyboard and rack versions. The front panel has 18 assignable control knobs, a dedicated volume control, four slot selectors (for each part in a layered or multitimbral performance), various function and navigation switches, a rotary dial and an LCD, plus two transpose switches which give the keyboard a range of six octaves.

THE SOFTWARE

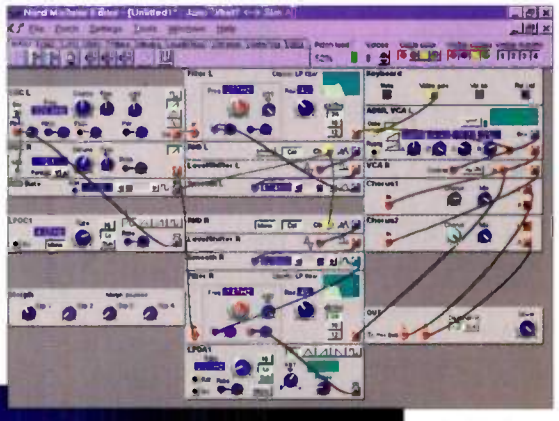
Most of the Nord Modular's programming is done via a software front-end, which looks elegant yet still seems usable. PC requirements are not too demanding either, since the Nord hardware does all the real work: a Pentium 90 running Windows 95 or Windows NT is recommended: for the purposes of the preview I ran the software on both a Pentium 75 Notepad and my main P133 studio PC, with no problems at all. The bad news for owners of other computers is that the Nord's software is currently PC-only.

The software, obviously, is what enables you to select modules and cable them together. A wide variety of 'objects' means you won't run out of inspiration in a hurry, but I'll save the full list until next month, when we'll look at the steps involved in designing a synthesizer from scratch. I'll say now that there are all the expected components, and some unexpected ones too. There are eight types of oscillator, low-frequency oscillators, envelope generators, chorus, delay, distortion, audio and control mixers, and so on, plus more esoteric items such as step-time sequencers, percussion oscillators, clock dividers, and various logical comparisons which offer mathematical operations. The on-screen modules are laid out like a real modular synth, but with the added bonus of graphical displays of envelope curves, filter peaks, and even LFO waveforms which change, oscilloscope-style, as frequency and phase are altered.

THE RIGHT CONNECTIONS

To understand a modular system, you need a grasp of how different types of signal flow around the synth. To this end, four types of connection can be made, and these are colour-coded to help you see what's going on. Connecting two modules together is as simple as dragging the mouse between an output (distinguished by a square frame) and an input (round frame). If you reposition modules on the work area, any connected cables magically stretch to fit, so you can spread things around whilst working and then drag them together to save screen space later. Various views of the cables can be defined, and you can hide them all or actually unplug the lot and start again.

As on a real modular, it's quite possible to experiment by connecting different types of signal. You could, for example, connect the audio output of an oscillator and frequency-modulate a second oscillator with it.



The Nord Modular editing software — dig those virtual patch cords!

DSP POWER

Patch complexity and polyphony are dependent on the amount of DSP power available. The basic Nord Modular comes with four DSP 'engines', though this number can be expanded to eight with an optional card. I found that a typical two-oscillator polysynth with LFO, filter, envelope and output mixer stage, plus a few exotic modules of my choice, still left a healthy 16 notes of polyphony to play with. Helpfully, when you select a module, it gives an estimate of the DSP processing it will require — for example, the single largest resource gobbler, a master oscillator, complete with oscillator sync inputs and a modulatable pulse width, requires 11%, and many of the simpler modules require less than 1%.

Much of the pleasure in a system like this is the freedom to experiment with things that you could never do with actual hardware: in real life you don't get to trade off an oscillator for a filter, but since they all exist in DSP RAM, the Nord can handle this kind of thing with ease.

TWEAKING

You can build patches from scratch or grab the current settings, modules and cabling and display them on the screen as a starting point. If you want to tweak the sounds you've made, 18 assignable knobs are provided on the Modular keyboard hardware, so you can spend hours painstakingly creating a patch at home, then take it on stage in the confidence that your complex routings are stored safely away but can still be modified during the performance. Clavia have sensibly left the knobs unlabelled, other than by a number, since they can perform different tasks in each patch you call up. When a parameter is allocated for knobby control, its corresponding LED lights up.

If the 18 on-board knobs aren't enough for you, any external MIDI controller can be used instead, although you can't allocate more than one controller per feature directly. If you want to do this, you need to set the parameter as part of a 'morphing' group and then allocate a knob or MIDI controller to control the morphing group. We'll take a detailed look at morphing groups in the full review. Bear in mind that though you need to use the software front-end to create new module routings, all parameters of the current patch can be edited via hardware — the keyboard's LCD and rotary dial or an external controller. Perhaps unexpectedly, the Nord Modular's own knobs don't by default send out MIDI information, though Clavia tell me there's a way of setting them up to do so.

CONCLUSION

I hope this preview has whetted your appetite a little. In next month's full review I'll look in far more detail at what's on offer. I must confess that I've already had to reassess some of my own preconceptions, which previously steered me away from synths that could not be edited by on-board facilities alone. For this powerhouse of a synthesizer, all rules change. Designing your own synths, as the Nord Modular's software allows you to do, might make you think again about the value of computer-based editing. Unlike my old modular, the Nord's patch cords and connecting jacks are all noiseless, and there's no danger of running out of leads just as you need to make that one last connection. With the prospect of new modules available in software, and the extensive MIDI and performance control on offer, this looks like a remarkable and ground-breaking instrument. SOS

info

£ £1495 (keyboard); £1295 (rack). Prices include VAT.
A Key Audio Systems Ltd, Robjohns Road, Chelmsford, Essex CM1 3AG.
T 01245 344001.
F 01245 344002.
E info@keyaudio.co.uk
W www.keyaudio.co.uk/keyaudio and www.clavia.se

AT40 SERIES

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Axis Audio - Stockport - 0161 4747626
Blue Systems - Saffron Walden - 01799 584095
KGM - Wakefield - 01924 371766
Musical Exchanges - Birmingham - 0121 2367544
Music Lab - London - 0171 388 5392
Music Village - Romford - 0181 598 9506
Rose Morris - London - 0171 836 0991
Studio Spares - London - 0171 4854908
Sutekina - London - 0171 2407696
The Guitar & Amp Centre - Brighton - 01273 676835
The M Corp - Hants - 01425 470007

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Waves *MaxxBass*

Bass Enhancement Plug-In

PAUL WHITE takes it to the max with Waves' latest plug-in.

While plug-ins used to be the preserve of high-end Digidesign system owners, many are now available in versions that can be used from within MIDI + Audio sequencers. One such is the brand new *MaxxBass*, the latest in a long line of plug-ins from Waves. *MaxxBass* is designed to enhance the subjective level of bass in the material being processed, without adding any additional low-frequency energy. It's available for version 2.80 or above Nubus *SDII* (*Sound Designer II*) systems, Digidesign Pro Tools TDM systems, or in a native version for use with the computer's own processor hardware and a MIDI + Audio sequencer such as Steinberg's *Cubase VST*. For the purposes of this review I used *Sound Designer II*, an editing and mastering package able to exploit processes such as this to the full.

HOW DOES IT WORK?

MaxxBass works by analysing the existing bass end of a signal, then creating harmonics around an octave higher than the original, which you then add into the mix using a slider. It's almost like a traditional HF enhancer, but tailored to the low end of the spectrum. The user can set the frequency below which *MaxxBass* analyses the bass harmonic structure, and it's also possible to attenuate the existing bass below this frequency if required. But why might you want to do this?

Take the example of music being mixed for playback over compact loudspeakers that cut off around 80Hz. If you feed them frequencies below 80Hz, the cones will thrash about, but you won't get much more useful bass. However, if you deliberately reduce the level of sub-80Hz signal being fed to the speakers and at the same time add in some of the artificially generated low-frequency harmonics, you can actually increase the impression of bass, even though the speaker cones are moving less. What's more, *MaxxBass* lets you compress the added harmonics, to create a more dense bass end.

If you're working with a mix destined for full-range speakers, you can leave the original bass intact, or possibly drop it back by only a few dBs, then add the harmonics to make it more punchy. Obviously, if you were using full-range speakers, you'd set the bass frequency limit to something like 50Hz, rather than the 80-100Hz appropriate for small speakers.

A button bearing a low-pass filter icon allows you to select different low-frequency rolloff slopes for the added harmonics, so you can choose to keep these well out of the deep bass region or allow them to overlap the existing bass by quite a large margin. It's also possible to adjust the amount by which the new harmonics extend upwards into the mid-range. This may sound complicated to you, but the graphical interface makes setting up very intuitive.

MaxxBass provides a frequency/amplitude graph showing the existing bass relative to the cutoff frequency you set; a second curve shows the added harmonics. A reference line shows the original bass level, so you could, for example, drop the original bass by three or four dBs, then bring in the harmonics until the subjective sound is right. Solo buttons at the bottom right of the *MaxxBass* window allow

pros & cons

WAVES *MAXXBASS* £239

pros
- Easy to use.
- Adds power and depth to material mixed for small speakers.
- Flexible without being complicated.

cons
- Mixes optimised for small speakers can sound restricted and tubby over full-range systems.

summary

A clever plug-in that will be most useful to people producing specialist material for reproduction over limited-bandwidth loudspeaker systems.

SOUND ON SOUND

you to listen to the whole signal, the original bass only, or the added harmonics only. The input level, original bass level and bass harmonics level can all be independently adjusted by sliders, and the usual plug-in buttons are arrayed at the top of the screen. As with all plug-ins, these may vary depending on what platform you're working on, but in the *SDII* version you can preview the effect while setting up (by cycling around a short chunk of audio held in RAM), play an existing sound file back through the process without changing it, or process the sound file to destructively edit it. A stereo bargraph meter shows if clipping is occurring.

HOW DOES IT SOUND?

Obviously, *MaxxBass* offers a process that many of us would find useful — providing it works. Perhaps the hardest job is to recommend how *MaxxBass* might best be used on general mixes, because you never really know what kind of speakers the end-user has. If you mix specifically for compact speakers and filter out a lot of the existing bass, you'll end up with a mix that sounds more punchy on small speakers, but somewhat 'tubby' and lacking in deep bass if played back on big speakers. It's therefore probably best, assuming that most people have speakers that extend to around 60Hz, to drop the existing bass by 3dB or so, then add just enough harmonics to restore the subjective level of bass you had to begin with. This should give you a mix that works reasonably well on all speakers.

On the other hand, if you're mixing material that you know will be used on small speakers — for example, multimedia sound for CD-ROM, or material for a specific venue — you can tailor the sound more carefully to the probable type of playback system. To do this properly, you need to mix using the restricted-range speakers the end user will be listening through, so that you know exactly how solid the bass will sound after processing. During my tests I optimised some material for JBL Control 1s and found that it sounded a lot more punchy than before processing, but the same material played back on my main studio monitors tended to sound boxy, with not enough genuine deep bass. Though the added harmonics do create the *illusion* of bass, they don't duplicate the physical sensation of deep bass.

Compressing the added harmonics brings the subjective bass level up further, and could be useful for some dance mixes. If you chose the setting which allows the added harmonics to spill back down into the natural bass area, it should be possible to get depth as well as punch. Ultimately, though, the real benefit of *MaxxBass* is that it enables you to create mixes that will sound louder and punchier than their unprocessed counterparts, on any given speaker system.

SUMMARY

MaxxBass isn't magic, and you do have to give some thought as to what settings are best for a specific application, but used properly it can make the bass end of a mix sound a lot more powerful. It seems most useful in processing material for playback over small speakers with restricted frequency ranges, but used with care it can also add extra weight to mixes of dance tunes, say, that will be heard over full-range systems. Over-use or inappropriate settings can result in a mix that sounds boxy or tubby when played over a full-range system, but it really doesn't take long to get used to the controls, and providing you can check the mix on the same type of speakers you intend the playback to be heard on, you shouldn't have too much trouble.

In MaxxBass, Waves have come up with a product that offers something a little different, and one that will be of particular interest to people working on music for games, multimedia or installed systems based on small speakers.

SOS

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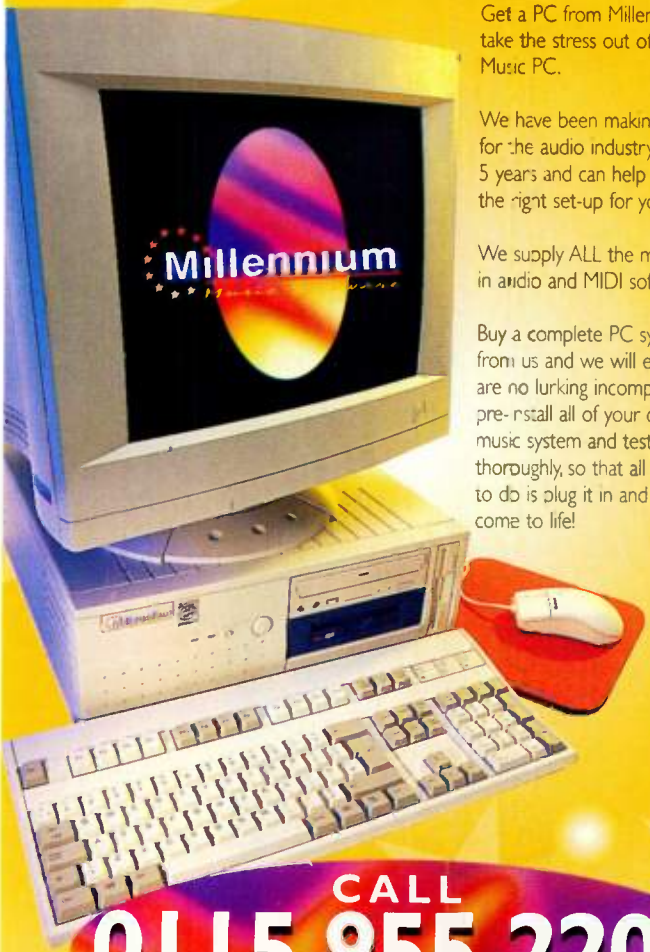

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Neumann TLM50

Capacitor Microphone

PAUL WHITE tries out Neumann's versatile TLM50 omni-pattern mic, a model that combines transparency with a subtle high-end lift.

If you've had any experience of Neumann microphones before, you'll know that when Neumann set their minds to something, they do it properly. Not only are their microphones beautifully engineered, but this latest model also comes in a nice hardwood case with a custom-moulded foam interior and a cable that terminates in a combined XLR and swivel-mount stand adaptor. A further adaptor is provided, designed to clamp to the mic's own cable and allowing it to be hung from the cable in an auditorium. The full shockmount is an optional extra.

What's unusual about the TLM50 is that it's a fixed-pattern omni (omni-directional, picking up sound equally well from all directions) microphone. While omni mics have the most natural, open sound, most people still tend to use cardioid-pattern mics (which pick up sound best from one direction) to achieve the best possible separation. However, as I've pointed out on many occasions, the difference in spill from off-axis sources isn't nearly so great as you might imagine, especially in a room with reflective surfaces, so unless you're working in a really difficult situation, an omni mic may well give you noticeably better results.

DESIGN

Styled along the lines of other Neumann studio mics, the TLM50 is a transformerless design (hence the TLM prefix), but the 50 in the model number is a nod in the direction of an older Neumann tube mic that used the same design of capsule. The capsule itself is a medium-diameter 12mm device flush-mounted into the surface of a 40mm-diameter sphere, in order to preserve the best omni response possible across the frequency range. The spherical shape helps eliminate diffraction and offers less of an obstacle to sounds coming from behind the mic. To achieve a wide frequency response, the diaphragm mass has been kept low by using nickel, 2.25 microns thick, rather than the more usual materials. The diaphragm is manufactured by a galvanic process, which I assume is related to electro-plating. A dual-layer mesh basket protects the capsule and helps dissipate breath blasts that might cause popping, but there is no internal foam shield that might affect the high-frequency response of the microphone. Neumann have created what they term an 'active capsule', in that the impedance-converting stage is built into the capsule housing, so that the majority of the signal path is low impedance, to prevent hum pickup on the vulnerable high-impedance section of the circuit.

> "This is a mic designed to be used on-axis, where it produces a transparent, open sound that is also solid at the low end."

Though this is a single-pattern mic, switches are fitted to bring in a 10dB pad and to activate a low-cut filter that rolls off below 100Hz. In the linear position, an active filter comes in at 30Hz to prevent very low-frequency sounds from producing sub-audible signals that might compromise the performance of other equipment later in the signal chain. The pad isn't just a resistive attenuator, but works by reducing the capsule voltage. Because of the very small air gap inside the capsule, changing the voltage alters the acoustic impedance of the capsule slightly, resulting in a marginal top-end lift.

Power for both the capsule and the amplifier comes from an internal DC-to-DC converter, which means that there may be a

pros & cons

NEUMANN TLM50 £2489

pros
- Natural, transparent sound.
- Nicely engineered.
- Very versatile.

cons
- As with all Neumann mics, quality comes at a price.

summary

A lot of people will think twice about paying this much money for a dedicated omni-pattern mic. Normally, when you're paying almost £2500, you'd expect to be buying a switchable-pattern model. Nevertheless, this is still a flexible and natural sounding omni mic that is great on both vocals and acoustic instruments.

SOUND ON SOUND

slight noise when the mic is powered up or down. Likewise, because the pad operates by changing the capsule voltage, the mic may take a few seconds to stabilise once the pad has been switched in or out. Phantom power to the 48V standard is required to operate the microphone, though if standard phantom power isn't available, Neumann produce a battery-powered phantom supply that may be used with the TLM50.

> "When Neumann set their minds to something, they do it properly."

TESTING TIMES

In my tests with vocals and instruments, the TLM50 behaved much as I expected, though the off-axis high-end loss was a little more pronounced than I had anticipated. This is a mic clearly designed to be used on-axis, where it produces a transparent, open sound that is also reassuringly solid at the low end. As with all omni mics, you don't get the proximity bass boost that cardioid mics exhibit, but I still found the sound warmed up slightly when the mic was used very close up. The TLM50 is actually a very nice vocal mic, and it makes a nice change from using cardioids all the time, but you do need to work in a room that doesn't have an adverse acoustic character, otherwise some of this will be picked up by the mic. The best vocal sound is achieved by using the mic just a few inches from the mouth, though an additional pop shield is necessary to guarantee freedom from popping on 'plosive' B and P sounds.

Checked out with acoustic guitar, the TLM50 produces a very natural result, partly because the acoustic guitar radiates sound from all parts of its body and neck, and having an omni mic helps render these off-axis sounds more accurately. The noise level from the TLM50 is reassuringly low, as you'd expect from a mic in this class, and because it can handle high SPLs, applications such as percussion recording and drum overhead work are also easily within this mic's capabilities. Indeed, if you have a reasonably benign room to work in and you want one high-quality mic that can handle just about any job, this might well be it. SOS

TECH TALK

The TLM50 is a true capacitor pressure microphone with an omni-directional pickup pattern operating over the frequency range 20Hz-20kHz. Though the frequency response is very flat up to 1kHz, it rises gently above this to exhibit dual presence humps, one centred at around 3kHz and another at around 10kHz. Sensitivity is 20mV/Pa at 1kHz or 6.3mV/Pa with the attenuator switched in, and the equivalent input noise is quoted as 25dB. The A-weighted equivalent SPL due to noise is 13dB.

The maximum SPL for 0.5% distortion is 136dB or 146dB with the attenuator switched in, and the phantom power requirement is 48V +/- 4V. The TLM50 weighs 490g and measures 56mm x 145mm.

Accessories include wooden box, cloth cover, cable with swivel-mount, MNV87 auditorium hanger, and thread adaptor for 3/8-inch and 1/2-inch threads.

info

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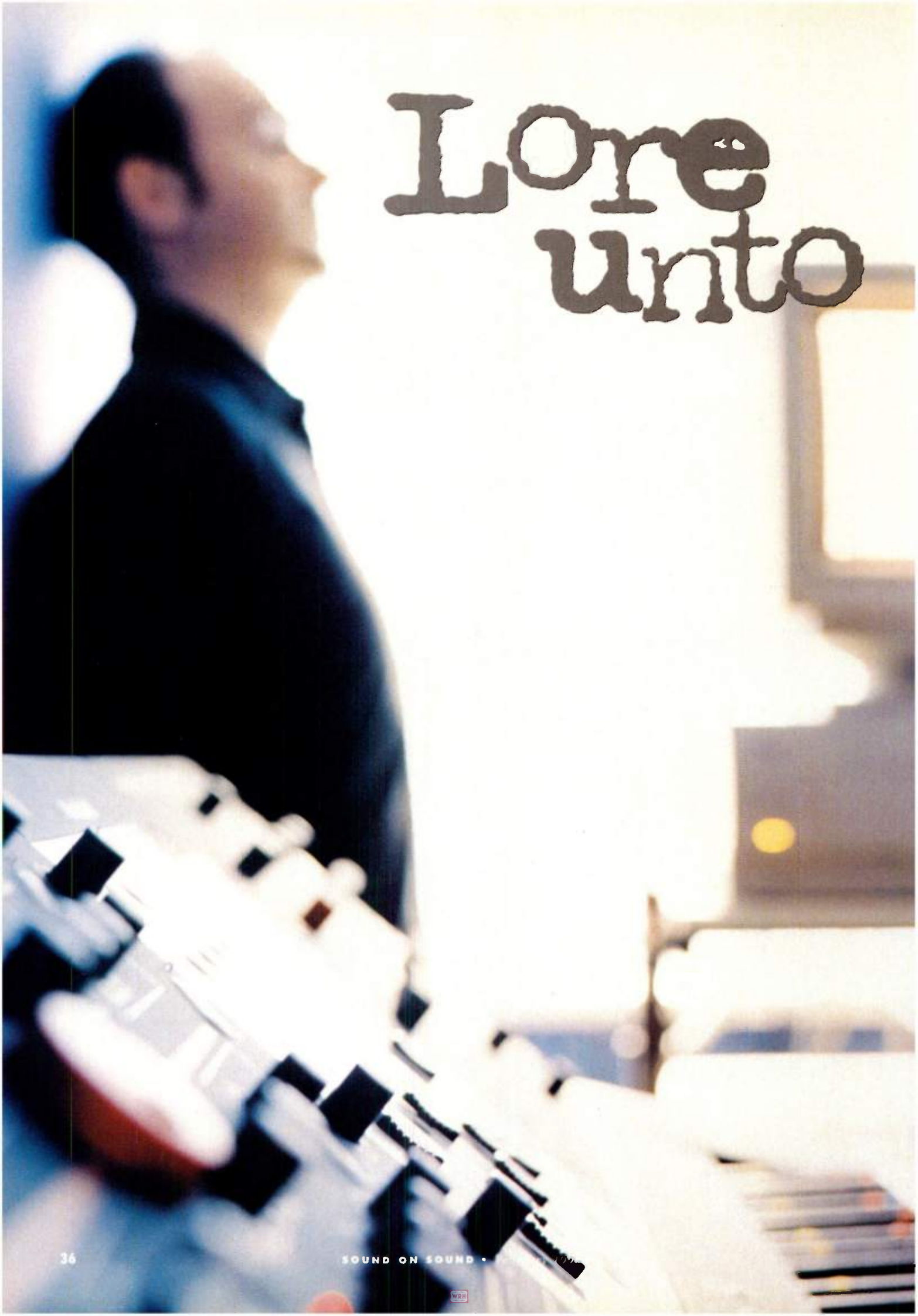

Lore unto

Himself

KIRK DEGIORGIO • AS ONE

Kirk Degiorgio, aka As One: head of the cult techno label Op ART, producer of the recent Planetary Folklore LP on Mowax, co-composer for the notorious Adidas 'Prince Naseem in America' ad, and proud owner of a huge collection of Blue Note jazz LPs. Phew! CHRISTOPHER HOLDER discovers that Ipswich is nearer the centre of the universe than he thought.

I caught Kirk on an eventful day. [*Phone rings, stage left*] "Ah, that'll be the guys from Doepfer." [*Moments later*] "This afternoon...? Excellent." (Kirk was expecting a huge modular synth system any time now). "50 or 60 modules!" (Apparently, a number of Serge sound processing modules were winging their way over from the States, as was a rare 1972 Moog 8-channel mixer, bought from an Internet-based virtual auction).

Though his name may be initially unfamilar, Kirk Degiorgio commands enormous respect on the dance scene as one of the first people to spread awareness of the original Detroit techno sound at the turn of the '90s. Enthralled by the tracks being produced by the likes of Derrick May, Kirk, who was then a DJ, brought records back from a trip to the States and began playing them over in the UK. Suitably inspired, he then began to make his own music in the same vein under the name As One, but reasoning (with some justification) that major labels were unlikely to touch it, he founded his own, ART (now known as Op ART). Nowadays, of course, independent techno labels are ten a Eurocent, but at the time, this was a bold move — and Kirk's risk also paid off. His first release was a collaboration between himself and Black Dog, his second was an early Aphex Twin LP, and the third was Carl Craig's first UK release. Kirk's future was most definitely assured.

And it's no wonder that I found him chirpier than the dawn chorus, as things seem to be going as well in the present as in his illustrious past. Prospects for his new As One LP *Planetary Folklore* (released via the well respected Mowax label) seem rosy, demands on his time to write music for advertising are on the up following his successful commission to write the music for the recent high-profile Adidas commercial featuring boxer Prince Naseem, and in spare moments there's always DJing and tracks to work on for an upcoming release on the famous Belgian techno label R&S.

SETTING THE SCENE

When you talk to Kirk, you get a rare insight into the techno scene when it was still in nappies; and when you lend an ear to his current long player, it's easy to appreciate how much the Detroit sound has matured (and mutated) in less than a decade.

Looking around the country now, you can scarcely conceive of a dance music landscape that's not littered with over-crowded shanty towns of tiny independent labels, extreme fragmentation and a tired and jaundiced core of die-hards clinging to the pure and minimal. It's easy to forget now, but techno was at one time new, radical and exciting. Over to Kirk for more on those days...

"I moved to London from my home town of Ipswich to go to college and I landed a part time job in Reckless Records, Soho, which is or was one of the best sources of second-hand records, especially at that time. The store sent a couple of us record-buying in the States in 1990; so we were in Chicago ▶

White from wrong: Kirk bought and sold an Oberheim OB8 before settling on this 4-Voice.

▶ and Detroit soon after the boom of house music. We bought some rare stuff on labels like Trax and Transmat. I had actually already met Derrick May when he was touring the UK with Inner City, and he gave me his address in Detroit. So we went there and we met up with the original pioneers of techno: they were really good to us and we stayed with them for a while. When we went back to Chicago we stumbled on this warehouse, Barney's Warehouse, which was a huge distribution outlet. We ended up buying about 700 12-inches! They had all the original Electroplex catalogues; it was an amazing place."

"I know R&S Records have a Waldorf Wave in their studio, and it's just propping open a door! It's a crying shame when you think of all the money they paid for it."

PILGRIM'S PROGRESS

It was this pilgrimage that proved cathartic for Kirk the producer as well as Kirk the DJ.

"The only previous studio experience I had was with Black Dog. Those guys were from Ipswich as well and used to be a breakdance crew when I was DJing up there. They asked me to come up to their studio and contribute some ideas. Even though they had quite a minimal setup, I was totally fazed, it was like a different world. When I went to Detroit, I expected to see some amazing studios — but they had the same sort of setups, maybe even more basic in fact. That's what did it for me. As soon as I got home, I sold all my records, collected maybe two or three thousand quid together, and bought my first equipment. That was in 1991.

"It helped that we got on so well with the Detroit guys, because that was the sound that we preferred, rather than the European techno sound. What helped even more was that Derrick May left a load of equipment in the UK when he was on tour with Inner City — he just couldn't be bothered to take it back with him. So I actually borrowed his [Yamaha] DX100 and a Kawai K3 that he had. My friend and I shared that equipment when we first started. It had all of Derrick's patches in the DX100, including that over-used bass sound and other stuff you'd recognise."

This kind of head start is enough to make all those who've spent weeks trying desperately to get an approximation of the *Is What It Is* and *Nude Photo* bass lines weep in agony, but as Kirk explains, he wasn't really in a position to appreciate it at the time, having only the most basic understanding of what gear produced what kind of sound:

"My initial setup was pretty minimal. I bought an Akai S950, and given that my only first-hand experience with gear was of a [Roland] TR808, it took me a good three or four months to get my head around it. I bought a Roland D5, which was terrible. I just used it as a MIDI controller; I couldn't find any sounds that I liked on it at all. I got a Fostex 8-channel mixer, which had mute switches, and that played quite a significant part in my early stuff. Then I had a [Oberheim] Matrix 1000, which was by far the best thing that I owned. I immediately noticed that the sounds I got from that were different from the other gear. That was when I began learning about the differences between analogue and digital."

SOUL TRADER

"From a very early age I was into soul music. I grew up listening to bands like Earth Wind and Fire, and that heavily influenced the type of sound that I wanted in my own recordings. I think George Massenburg was the engineer for some of those recordings, and I was thinking, 'oh God, it's going to take forever, and I'll need heaps of money to get that quality of sound'. On the other hand, almost the whole point of techno for many producers at that time was getting a lo-fi bedroom sound, but personally, I wasn't happy with the usual home studio compromises from a very early stage.

"The first restrictions came from the sequencing side. I started out on an Atari with C-Lab *Creator*. *Creator* made you think in loops and I found it hard to break out of that mentality. I think I made a mistake here: I bought *Creator* because everybody else told me to buy [Steinberg] *Cubase* and I wanted to be different. Other than what I borrowed from Derrick, I swapped some records worth about 25 quid for a broken [Roland] TB303. The only thing wrong with the 303 was the envelope, which I suppose is quite serious, but I could still get a basic sound out of it. I used that, sampled it and reversed it on my very first release, which was on B12 Records, in 1992. Then Grant [Wilson-Claridge] from Rephlex Records, Aphex Twin's label, was really desperate for a 303 so I lent it to him, and I haven't seen it since. I think he probably sprayed it gold and said Aphex made it or something! ▶

SELECT GEAR

- Moog Minimoog: "I picked up the Minimoog from an ad in *Loot*. It said 'original box, hardly used' — I couldn't believe it. This guy had formed a band in the late '70s, but then the band had split up and he had had it in his loft ever since, virtually unused!"
- Moog parametric EQ
- Moog 1084 mixer (serial #1!)
- Moog drum controller
- ARP Odyssey
- ARP Pro Solus
- ARP Little Brother expander
- Waldorf Wave
- Waldorf Pulse: "For people who want a Minimoog but can't afford or find one, I'd recommend the Pulse. It's a well designed piece of kit, and it's so cheap for what you get."
- Oberheim 4-Voice: "This was apparently owned by Billy Curry of Ultravox. It's third-hand now, but the guy I bought it from in auction said it was played on *Vienna*. Lovely to look at; a bastard to tune."
- Solina string synth
- Fender Rhodes
- Emu E4 sampler
- Mutronics Mutator filter bank
- Latronic Notron Sequencer
- Yamaha ProMix 01
- Yamaha SPX990 multi-effects
- Spirit Absolute Zero monitors
- Spirit Absolute 2 monitors
- Apple Mac running Steinberg *Cubase* and Digidesign Pro Tools
- Doepfer modular synth: arrived two hours too late for the author to get his mits on it.

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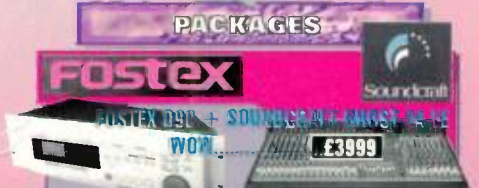

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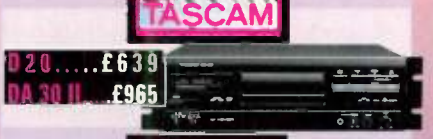

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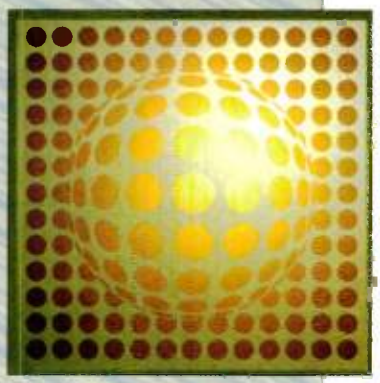
Kirk Degiorgio —As One

THE *PLANETARY FOLKLORE* ALBUM

"It was quite important to get this record on a label that would understand what I wanted to do. I talked to James Lavelle of Mowax,



The As One op art cover, designed by Ben Drury.

and didn't have to explain anything to him: the fact that I wanted the CD packaged like a vinyl 12-inch, or why I wanted sleeve notes and the '60s op art design. He understood straight away, and let me get on with it."

"Obviously, my equipment tends to grow every time I have a successful album; it's the only way most people get along. My first release got me a little bit of money, so I bought a bit more kit. My music was Detroit-orientated, but I had wanted to use breaks as well, although at the time, I didn't even have a drum machine; I used to borrow other people's drum machines to sample. So I went ahead and bought the TR808 and had it MIDI-retrofitted. My basic setup for the following year was mainly the DX100 — as a master keyboard, of all things; it's not even touch-sensitive! — with the Matrix 1000, my old mixer, sampled drum sounds, and the 808. That's the basis of my gear from which I did all my early material on my own label.

"From the success of the first ART release and the subsequent *Philosophy of Sound Machine* compilation I was able to ditch the Fostex and buy a Mackie 1604, which was a great improvement, but still wasn't anywhere near what I was after; and I made the switch from an Atari to a Mac, running Opcode *Vision* via the Studio 3 MIDI interface. About that time I bought my first major bit of analogue kit. I really loved the Oberheim sound of the Matrix 1000, but was frustrated by the lack of editing possibilities, so I saved up a lot of money and bought an OB8. I was disappointed, I have to say. It only featured on a couple of tracks before I sold it on. I found the OB8 sound very '80s, which I guess was no surprise, as it was made then, but because of the Matrix 1000 I had thought that it would be exactly what I was after. I have since found out that in the '80s Oberheims were mainly used in rock music, — Prince, Van Halen, stuff like that. The Oberheim I wanted, which I've now got, is the 4-Voice. So that was another learning experience.

OBI GONE

"After about three or four months I traded in the OB8 for a Kurzweil K2000. I realised that I was going to need a decent MIDI workstation first and foremost before I got into buying the old stuff. I also needed a decent master keyboard with some solid sounds. The Kurzweil was a total surprise; I was really impressed with how different it seemed. I used it a lot, and only recently sold it. The second As One album was mostly the K2000 and the Matrix 1000, and my setup stayed that way for some time.

"Around 1993, the scene changed and the original Detroit feel got lost, leaving mostly European-influenced ambient techno. That was quite a barren period for me. I was trying to experiment with breaks and people didn't really want to know at the time. Thank God for drum & bass, because that revitalised interest in breakbeat, and interest in my music. At the time, though, it seemed like the music from hell! I didn't like any of the early rave stuff, and even today I don't like the majority of drum & bass. Most of it's too fast, and it sounds sped up and gimmicky. I picked up on a couple of artists though; one of them was [fellow eclectic techno artist] Photek, and coincidentally enough he was from Ipswich, or at least he was living there at the time. I was also back in Ipswich for a while in '95, so I got in touch with him, and we bounced a lot of ideas off each other. I saw the way he worked on *Cubase*, and his Roland S700 series sampler. It was from that experience

ANYTHING TO AD?

If you haven't caught up with Kirk in his early ART guises or in his As One *alter ego* then you're sure to have heard his handiwork on the TV. Kirk and his production partner Rohan Young have been responsible for the soundtrack to Adidas' Prince Naseem advertisement, amongst others.

"The first one I did was for Adidas, for Euro 96. It didn't come to the UK in the end; it went to the rest of the world, but not here for some reason. Landing that gig was pure pot luck. Adidas were running out of time to get some music together, and it turned out that the engineer was a fan of my music. He played a track of mine to the suits and they went for it. They wanted permission to use it that evening — they phoned me at midnight!

"I know a lot of people send demos to ad agencies. I don't want to dishearten people, but that's not really the way into it, it's just one of those things where if they want you, they'll come looking for you. I consider myself very fortunate to have got that gig. Since then, I've done the Naseem ad for Adidas, two Fanta ads, and others for for the likes of Michelin and Microsoft.

"Fortunately, we're now established enough to charge demo fees, because I can tell you it's not a laugh spending a couple of weeks doing a demo for no return, and finding they've completely re-cut the picture anyway. I think the most important thing is being handed a good brief, or knowing when to ignore the brief and go for something you know is right for the ad. It's a dangerous game to play, because the ad men want to take the credit for the entire concept. It's all about serious psychology and diplomacy. You can't be precious about your music either. I'm really careful about my own material that I do for recording purposes, but for adverts you'd be a fool to start saying, 'I'm not going to do that cheesy line'. That's what you're there for; you're doing a job for someone. If you're professional about the work, it can be a good laugh, but it can also be frustrating when you get people who give you the most ridiculous brief. There was one time when they said to us: 'we want an authentic Cuban track, but like, with Metallica over the top'. 'Erm... right, OK'. We actually hired a Venezualan percussionist — you couldn't get more authentic than him. He studied about 140 West African rhythms and played a perfect Afro-Cuban line for us. When they heard the demo, they said, 'oh no, we wanted something techno-sounding, but like Metallica... and can you do some Indian chanting over the top'! Oh god. Half the time *they're* the ones struggling for ideas, and they're hoping you're going to spark it off."

Surely, though, I wondered, the material benefits must outweigh the disadvantages — that is, it must pay well? Kirk:

"It can do. If I compare it to some other industries, yeah, it's very lucrative. But it all depends on what territories the ad goes to. If you get a worldwide one, it's great. The Naseem ad was pretty high-profile, but probably the highest profile ad must be Aphex Twin's Pirelli effort. He made it common knowledge in the music press that he got a hundred thousand quid for that — which is great for us, because we just had to quote that to up our fees! But that £100,000 figure is pretty unrealistic. We've been paid really well, but a lot of the stuff we now do is through a company that takes its cut — which is fair enough, as they get the contact in the first place. Also, I work with Rohan which splits the money again, so really, I'm getting 25 percent.

"After the fees, you're looking at PRS royalties every time the ad is played, although if you do an overseas ad, you probably won't see any performance royalties for at least 18 months. Everything is registered with the equivalent royalty societies in overseas countries, apparently, so I'm sure I'll be paid what I'm due ... eventually."

I asked Kirk to talk through the creation of the Prince Naseem ad, the one that was really responsible for putting him in the commanding position he enjoys today.

"At that time, I had a (Kurzweil) K2000, so I took that and a few other bits and pieces to Scramble Studios in London. The audio quality had to be spotless, so we were using all their top-of-the-range gear: a Lexicon 480L reverb, Eventide Ultraharmoniser, and an AMS digital delay — I'd kill for one of those. We patched it all into their AMS Neve Logic console. We were lucky because the director, Stewart Douglas, is quite young and is into music as well. He sat with us, and initially we were thinking, 'we don't want the ad people around', but he was great. He gave us a good brief, didn't interfere and we just went to work. We worked on it solidly for two weeks, and in the end I think we matched the mood of Naseem and the surroundings, the menace and his arrogance as well, with a straight-ahead techno track. It's pretty much a 4/4 track with a bubbly 303-ish line from the (Waldorf) Pulse, a menacing bass line, and some nice wah-wah guitar. There's loads of filtered and backwards drums as well. It was one of the most enjoyable things I've worked on."

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Left: A rare glimpse of the Moog parametric EQ, along with the Mutator filter bank, Tascam DA30 DAT and Footprint power amp.

Below: Kirk's Minimoog, bought from an amazing ad which read simply, "Minimoog, boxed with manuals, hardly used". Lucky sod...

"Personally, I wasn't happy with the usual home studio compromises from a very early stage."

that I switched to *Cubase* myself. Soon after that I did a few demos and got signed to R&S Records, and for the first time I was given a decent budget to work with — so the first thing I bought was a Waldorf Wave!

"After the OB8 fiasco I did my research before buying the Wave. I knew I didn't want loads of equipment, but I did still want a MIDI instrument, and I didn't want to go down the clichéd analogue route. So I thought the Wave would be the perfect hybrid, and that's exactly what it is. Saying that, if you talk to someone who has spent £6,000 on a synth, they're *obviously* going to defend it, even if it's a pile of crap — but I honestly think it's an amazing synth, if a bit unfinished. Waldorf have been pretty astute: instead of risking their whole company on the one flagship, they've left the Wave alone for a couple of years and built up the range from the bottom, with the Microwave and the Pulse, which is also a fantastic synth. I'm a subscriber to the Waldorf forum on the net, and they have promised a completely new Wave operating system early this year. It's just as well: people are running out of patience a bit. There are a lot of Wave owners out there whose synths aren't working properly, even to some sort of acceptable standard. I've never really had a problem with mine — my LEDs occasionally don't extinguish and light up properly, but there's been no sound malfunction. I think I've been lucky, because most of the Wave owners I've spoken to tell a different story. I know R&S have a Wave in their studio, and it's just propping open a door! It's a crying shame when you think of all the money they paid for it."

KEYS TO SUCCESS

Kirk's next significant purchase was a Digidesign Pro Tools system. With the freedom offered by hard disk recording, he is able to get the most out of the performance aspects of the vintage analogue keyboards, unfettered by sampling time. A Minimoog, ARP Odyssey, Fender Rhodes, Solina string synth and Oberheim 4-Voice, make for a desirable collection of classics.

"For the analogue bits that I've got, Pro Tools has really come into its own, because these analogue synths are all about playing live. But if I do have a repetitive line, I will sample it, and there's only one sampler that I'd use to do that — the Emu E4. It retains more of the bottom end of the analogue gear. The only thing that it won't preserve is the Minimoog's bottom end, which is a shame, because it's got to be my favourite bass sound ever. So I've compensated for that by getting hold of an old Moog parametric EQ, which is incredible. The bottom end I lose from sampling the Mini is brought right back by the parametric EQ, and ends up 10 times more powerful; it's phenomenal. I have to give Carl Craig credit for that one, because he put me on to that piece of gear. He said that if you're ever sampling analogue synths you've got to find one of these things. He's been after one for years, but never found it — and I found one immediately, in lovely condition!

"Going back to the E4, it's by far and away the best sampler I've ever used; again, not just because I've spent five grand on it. By comparison, I think

CARL CRAIG — BAND FOR GOOD?

Carl Craig has raised (and furrowed) a few eyebrows with his new direction, which sees him teaming up with a number of musicians, combining the sounds of jazz with the urban techno flavours of the Motor City. Anyone who caught his live set at Tribal Gathering last year had an opinion; I wondered what Kirk had to say.

"I wasn't actually there, but I've heard so many different reports. I've heard people say that they loved it, and others say they didn't like it at all; it's great when people don't know how to react! The word from Carl himself is that he knows what he wants to achieve, and he's very excited about using these musicians [a double bassist, percussionist, and so on]. One observation he did make was that he's had problems with engineers miking the musicians up properly and that some of the tunes that didn't come through so well; they were let down a bit technically.

"Carl is interesting because he's coming from the opposite standpoint to me. He's a black American musician who grew up with European music; he loves bands like Depeche Mode. It's weird that he's applying electronics with jazz musicians in this way — it's going to come out completely different to what I'm doing. I think his is a more pure electronics approach. He's working on the *Innerzone Orchestra* album now, I imagine with the musicians he had at Tribal Gathering. Knowing Carl, he'll take the concept a lot further. I can't wait for that."

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Kirk Degiorgio —As One

ART BEAT

With Kirk's latest release coming out on another label, Mowax, what of the future of his own oufit, Op ART?

One of Op ART's most recent releases: Paul W. Teebrooke's Connections LP, an exquisite mix of Detroit and jazz-influenced breakbeat.

"I haven't had much time, especially this year, to put much energy into the label. I'm really struggling to find material I want to put out. My label has never been prolific; three or four releases in a year is the most we've ever done. I've got this grand motto that I only release records to make history, because in the past the releases, without wanting to sound too grandiose, have sort of done that. The first one was Black Dog and myself, the second was Aphex Twin, and the third one was Carl Craig's first independent release in the UK. Then I was the first person to back Steve 'Stassis', who is still an incredibly under-rated producer. Since then I've released stuff with Autocreation, Fourth Wave and others. I tend to just pick and choose; I don't put material out just to make the label survive. Thus far, it's managed to survive on its prestige, and that's quite a rare achievement."

▶ Roland's samplers are very accurate, but they don't add anything, while the E4 adds a bit of punch, particularly to the drum samples. My drum programming involves the standard drum & bass method of sampling and chopping it up, so it can take a while to get the right attack and feel to those individual edits. I find the process helped by the E4. I doubt whether I could live without it now."

HERB'LL REMEDY

Most people, when they think of techno's early ancestors, immediately quote Kraftwerk, and then maybe the early electro and new wave progenitors. Kirk, however, looks to Herbie Hancock, Stevie Wonder, and Tonto's Expanding Head Band. If, like me, you were given a few moments to explore the sounds of Kirk's almighty collection of Blue Note 12-inches, you'd probably find yourself a disciple of some of these past artists as well. He sticks on one example of Herbie Hancock going solo on an ARP 2600 and ARP analogue sequencer (with Minimoog and Rhodes overdubs); if more people had only known about this, it surely would have been bastardised with a 4/4 909 Hard Kick years ago. Kirk is packing shelves of other stuff like this, which all helps to explain his musical direction and the transportation that's taking him there.

"It seems that the marriage of electronics and jazz stopped years ago, when Herbie stopped experimenting. It would be nice to pick up the baton, as it were, and carry on. Obviously, you're never going to find a keyboard player with Herbie's touch, but the techniques and the attitude of experimentation might carry on."

BATON CHANGE

Kirk has spent years getting to the point where he feels worthy to pick up that baton. Years of combing through sleeve notes and pictures to find the equipment responsible for the sound, years of research and seeking advice, years of acquiring his own production skills and years of equipping his studio with the necessary kit. It's a story of relentless progress, but it's peculiar to find a producer forging ahead with such purpose while keeping one foot so firmly embedded in the production values of the past. If there's a lesson here, it's got to be that progress is an intensely personal journey — there's no hard and fast rule to artistic satisfaction, other than the pursuit of new challenges. Kirk's comrade-in-arms Carl Craig is a case in point. Being a leading proponent of the early Detroit DIY techno ethic, he's moved onto glossier production values and even 'real' musicians. "Carl's *Songs of Revolution* was really well received, but his next LP, *Landcruising*, took some stick from the critics," recollects Kirk. "I think that was really harsh, because production-wise that was an amazing album. The criticism did smack a little bit of the media saying, 'Carl Craig should stick to doing underground techno, and shouldn't worry about this production lark.' People wanted him to continue making badly produced techno classics, and that's not what he wanted. When I discussed this point with him his words were, 'I don't want to be using a Mackie for the rest of my life', you know what I mean?

For me, the most telling anecdote that epitomises the individuality of progress came from Kirk himself, regarding his mentor, and music electronics pioneer, Herbie Hancock. "I read an interview with Herbie in an American magazine. He was asked something like, 'of all the hi-tech gear you've used in your entire career, what was your favourite?' Do you know what his answer was? The [Emu] Proteus! Here's a man who is famed for his Minimoog and Odyssey solos, who's had a huge Moog modular system under his control, and he tells us that the Proteus is his favourite synth. The Proteus ... can you believe it?"

Incidentally, the much anticipated arrival of the Doepfer monster modular never happened. Dangnabbit. It didn't arrive... can you believe it?

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EFFECTIVE DRUM PROGRAMMING

PART 1: If you're after a great rhythm section, these days it's very easy to whip a fabulous loop off a CD or nick a great groove from a MIDI file disk. But an inside knowledge of how and why drum patterns work can help make you a better musician and get your rhythm sections really working. NICHOLAS ROWLAND — well, he got rhythm...

I was talking to a man the other day — not necessarily an interesting fact in itself, I grant you — except that this man made his living from selling commercial bite-sized MIDI files. He was explaining that, after producing a number of groundbreaking products devoted to MIDI-fying the subtle nuances of highly expressive instruments like bass and guitar, he had been surprised to discover that what many people still wanted were disks full of drum patterns. Quite naturally, he had assumed that with the abundance of sample CDs, commercial MIDI files and preset accompaniments available, the world would be well catered for in this area. Not so, it would seem.

> "I've known grown men — and thoroughly competent musicians to boot — grow pale and weak-kneed at the thought of programming a drum track from scratch."

This is a curious state of affairs. Whereas in the days of hi-tech yore you really did have to get to grips with the quirky programming systems of dedicated drum machines, these days anyone with the most basic GM module and rudimentary sequencer has the capacity to experiment with rhythm from the comfort of their own armchair. And as many software sequencers now sport a special editor for drums, many musicians are quite comfortable with the idea of programming the rhythm track as an integral part of creating a composition.

Yet I've still known grown men — and thoroughly competent musicians to boot — grow pale and weak-kneed at the thought of programming a drum track from scratch. Perhaps they're afraid of becoming the butt of all those post-modernist drummer jokes (you know: "how many rhythm programmers does it take to change a light bulb?").

Of course, you might argue that with more drum loops on more sample CDs than you can shake a drumstick at, there's really no need to get your hands dirty with all this DIY programming stuff. Just load up the appropriately labelled pattern — Soft Rock 2, Techno Fill 3 — and press play. After all, it's the melody that's the most important thing, right?

It's true that samples give you access not just to killer grooves but also to the heavily treated sounds it would take you a rock of ages to create yourself. Nonetheless, working with sampled loops does bring its own set of practical headaches, not least of which is making your selection. If you've ever had to trawl your way through a CD containing 300 minor variations on a hip-hop beat, you'll know what I mean. Then there's the issue of pushing or pulling the loop to fit the desired tempo, a process which can often destroy the feel which attracted you in the first place. And just when you think it's all over, you decide to change the tempo of your masterpiece, necessitating another return to the time-stretch function on your sampler.

Good God, if only people knew the kind of hell we go through for our art...

This is where your friendly *SOS* comes in. The purpose of this series is to look at some of the basic principles of drum programming as the inspiration for creating your own loops. Of course, ▶

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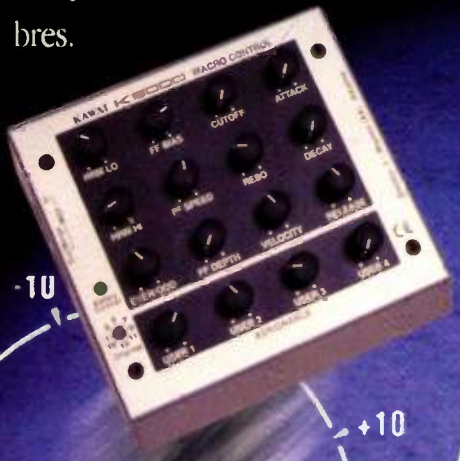

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-10 +10 +20 -40 +30

4:1 3:1 2:1 1.5:1 1:1 ∞:1 15:1 6:1 -10 -20 +20

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TEENY TIP

Concentrating on programming variations on the hi-hat, while maintaining a consistent kick/snare pattern, can be a good way to approach programming a rhythm track for an entire song. The basic kick and snare provides a sense of continuity, while the hi-hat patterns help to differentiate verses from choruses and so on.

▶ while I say drum programming I'm conscious of the fact that it's not just drum and percussion sounds which constitute the rhythm track. In fact, I happen to believe that all great grooves are driven by great bass lines. But all this is a matter for that Doctorate of Drum and Bass Dynamics which I'm saving for my retirement years. As my time here between the *SOS* covers is short, you'll just have to take these underlying sentiments as understood.

The motion before the house today is: how do you produce killer grooves? It's rather a vast question, given the many variables involved, but one I shall attempt to deal with by looking at some of the main principles of drum programming. I'll say now that my aim is not merely to present you with a set of ready-to-run preset patterns, but to give you some ideas and examples to do with as you wish.

THE THREE ELEMENTS

In my humble opinion, a good rhythm pattern consists of three elements: the pattern itself, the sounds, and the speed at which the pattern is played. And really great rhythm tracks usually work because the right balance has been achieved between these three elements. A great pattern can sound clumsy or too frenetic at the wrong tempo, and a new set of sounds can turn a bog-standard pattern into something really quite wonderful. You appreciate that when you're listening through a sample CD: often it's not the rhythms, but the 'how did they do that?' sounds which catch your ear.

The other important point to remember is that excellence in drum programming is also about fitting the rhythm track to the music. A groove which, when heard in isolation, knocks the audience dead at 500 paces may not necessarily do the rest of the composition any favours. Sometimes you have to tell your virtual drummer to stop showing off, put the kit back in its box and just concentrate on shaking that tambourine once every four bars. In fact, while we're on a roll of general rules of thumb, creating interesting rhythms tends to be more a matter of subtraction than addition. In other words, the toe-tappability factor is often more dependent on your leaving holes than filling up the whole rhythmical canvas. More of this in a future article.

> "The toe-tappability factor is often more dependent on your leaving holes than filling up the whole rhythmical canvas."

In the meantime, let's look at what many will recognise as lowest common denominator stuff. (I'll apologise now if what follows seems nothing more than an exercise in patronising that national champion egg-sucking grandmother of yours. But the *SOS* editors did insist that I started from square one.)

THE THREE INSTRUMENTS

Despite the fact that today's sound modules offer a wide palette of exotic percussion and non-drum sounds, the core of most rhythm tracks is still rooted in the instrument that the arrival of drum machines were supposed to make redundant in the first place — the good old drum kit.

And even though many contemporary (with a small c) rhythms are driven by programmers rather than drummers, the three core instruments of the drum kit — that's the bass drum, snare and hi-hat — still remain the key elements in virtually all rhythm tracks. It's not hard to see why this should be the case, as they give you the ability to accent ▶

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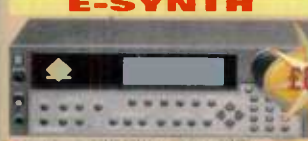

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▶ the low, medium and high frequency ranges respectively.

It's the interplay of these three instruments which usually provides the ident (to use a local radio term) of the mainstream musical styles. You'll probably also be aware of how different styles of music put a different emphasis on each of these three instruments. In pop and rock, for instance, the dominant drum is usually the snare. In '80s pop, you were nothing if you didn't have a snare drum which sounded like the ricochet from a dozen firing squads — thus putting the accent on the backbeat (that is, the second and fourth beats of each 4/4 bar). In reggae, the bass drum accentuates the first beat of the bar, while the snare falls on the third beat, but it's the job of other instruments, such as chopped guitar or keyboard pads, to accentuate the two and the four.

A style like modern jazz leads from hi-hat or ride cymbal. These high-frequency instruments act as a kind of syncopated metronome, with the mid-frequency snare and low-frequency bass drum providing accents and embellishments as and when required. Here also the sense of regular bar divisions is not particularly important to help listeners navigate their way through the music. In hip-hop and big beat, the rhythm is more about the interplay of bass and snare.

These are broad generalisations, I know — so respect to the musicologists among you. But you soon discover that it's the way you play around with these three instruments that determines the feel of the drum track and how it fits with the rest of the composition. As a simple example, if you take the same basic kick and snare pattern, then program different hi-hat patterns over the top, you can alter the perception of that rhythm quite radically. For example, compare a pattern using quarter-note hi-hats (that is, four even strokes to the bar) to one using 16th-note hi-hats (16 to the bar). The second one will appear to be faster, even though the tempo is exactly the same. A

BANG ON: THE EXAMPLES

It can only aid communication if everyone is talking a common language. For the purposes of this series, I've opted to present the drum pattern examples in terms of diamonds on grids, generated as screen dumps from within the drum page in Steinberg's *Cubase* sequencing software. This not only makes life easy for me, it's also a fairly tried and trusted method of drum notation. Firstly, you don't have to be able to read music to make sense of them; and secondly, they're easy to interpret for inputting into whatever drum machine, workstation or sequencer you use for generating your rhythm tracks.

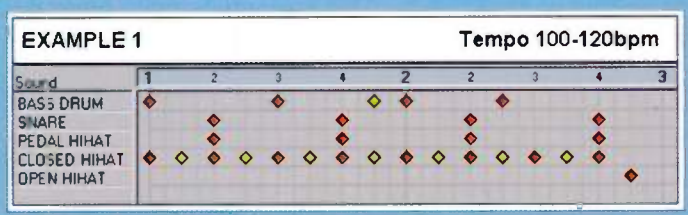
The important point to note is that the colours are not there just to prettify the page. They indicate the dynamic levels/MIDI velocity values for each beat/instrument. For the sake of clarity, I've chosen to represent only three different volume/MIDI velocity levels within the patterns — basically soft, medium and loud. I could have had more, but then the grids would have started to look like an out-take from *Joseph and his Amazing Technicolor Dreamcoat*. Feel free to play around with these dynamics and introduce more sub-levels. The final point to mention is that all these rhythms were created using bog-standard sounds from a GM sound module, simply because that way I can ensure that I'm programming stuff that anyone can relate to.

This month's examples are designed to show what happens when you take a fairly straightforward bass and snare pattern, then play around with the top line of percussion — that is, the hi-hats, plus other high-frequency instruments such as ride cymbals and tambourines. The idea here is to encourage you to experiment with your own top lines, or to try different bass drum and snare patterns with these.

◆ = hard (MIDI velocity 120)
◇ = medium (MIDI velocity 100)
◇ = soft (MIDI velocity 80)

EXAMPLE 1

This is a very straightforward soft rock rhythm using 8th-note hi-hats. The important thing to note is that all the on-beats are accented, which helps give a little more movement to the rhythm than if all the hi-hats were played at equal volume. The open hi-hat sound is there to provide a lift at the end of the second bar and lead in to the first beat of the next. Although the suggested tempo is 100-120bpm (beats per minute) this can actually be slowed down to around 85-90bpm, where it will do very nicely for slow rock ballads. Incidentally, I usually program rhythms in 2-bar blocks, with the second bar offering a slight variation on the first. This is partly because it gives you bigger chunks to work with when building up entire songs; it also ensures that there's twice as much interest!



EXAMPLE 2

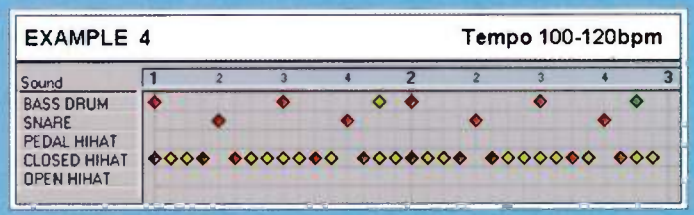
This one is actually Example 1, but the start point has been moved on by half a bar. However, this illustrates how you can use the editing functions of sequencers to quickly modify preset patterns, just by chopping and changing different sections and then reassembling them in different orders.

EXAMPLE 3

The open and closed hi-hat sounds on GM modules are usually never more than adequate. If you've got a module which offers a 'half open' hi-hat, you'll usually find that this makes a better sound than the fully open version. But even within the GM sound set there is third 'pedal hi-hat' sound which supposedly represents the sound made when the hi-hat cymbals are brought together by the drummer pressing his/her foot down on the hi-hat pedal. This sound can be quite useful in its own right, being somewhat thicker in tone and of slightly longer duration than the closed hi-hat. It can be employed fairly successfully as a substitute for an open hi-hat. Here it's being used to emphasise the off-beats of the rhythm, which helps even mid-tempo rhythms go with more of a swing.

EXAMPLE 4

Here we have the 16th-note hi-hats beloved of the disco floor, but, thanks to crafty use of accent levels, we avoid the machine-gun effect which used to distinguish the mechanical beatbox rhythms of the early disco years. In this particular case the accenting could be changed around to fit more closely with the pulse of the composition as a whole.



syncopated hi-hat pattern can, depending on the programming, appear to push the rhythm forward or pull it back. Now take those syncopations and use them as the basis for a series of accents to be applied to a 16th-note hi-hat rhythm and you have a different rhythm again.

These points are all explored in the set of examples here, which take you through some very basic variations on standard rock rhythms and also introduce you to some of the conventions which I'll be following throughout the entire series.

TEMPO FUGIT

The question of tempo is easy to appreciate if you're a human drummer — the faster the music, the quicker you have to play. And when it goes too fast, then you simply have to play like crazy or leave some bits out. As rock music gets faster, drummers tend to switch from playing eighth notes on the hi-hat or ride cymbal to playing quarter notes. Not only is this less tiring, it doesn't clutter things up as much. Conversely, what's characterised as hard rock played at slow tempos will still see drummers playing quarter-note hi-hats. But this is to give them the musical room for some fancy footwork on the double bass drums.

Tempo also determines the kind of sounds ▶

EXAMPLE 5

I've introduced a ride cymbal here to provide a counterpoint to the main hi-hat rhythm. Even though it's technically impossible to use them together from a real drummer's point of view, rides and hi-hats are sounds that work well together. The tambourine also gets an outing, again providing an uplift by emphasising the off-beats. For all these rhythms, the standard GM drum kit will work well. But try changing the kits around (most GM modules have at least three or four different types) and hear how the different sounds change the feel of the rhythms.

EXAMPLE 5 — Tempo 100-120bpm

Sound	1	2	3	4	2	2	3	4	3
BASS DRUM	◆				◆	◇			◆
SNARE					◆	◇			◆
CLOSED HIHAT	◆	◆	◇	◆	◆	◆	◆	◆	◆
RIDE BELL	◆		◇		◆	◇			◆
TAMBOURINE		◆		◇		◆		◇	

EXAMPLE 6

16th-note hi-hats again, but with a sprinkling of open hi-hats to provide the accents.

EXAMPLE 6 — Tempo 100-120bpm

Sound	1	2	3	4	2	2	3	4	3
BASS DRUM	◆	◇		◇		◆			
SNARE			◆		◇			◆	
PEDAL HIHAT		◇		◇		◇		◇	
CLOSED HIHAT	◆		◆	◆	◇		◆		◆
OPEN HIHAT		◆				◆			

EXAMPLES 7 & 8

For this funk-style rock example, I've changed the bass and snare drum pattern to give a more syncopated feel, and brought in the tambourine to provide the straight 16th-note feel. The hi-hat sounds are used more as accents to support the tambourine rhythm.

EXAMPLE 7 — Tempo 100-120bpm

Sound	1	2	3	4	2	2	3	4	3
BASS DRUM	◆	◆			◆			◆	
SNARE			◆			◆			◆
PEDAL HIHAT	◆	◆		◆			◆		
CLOSED HIHAT	◆	◆	◇		◆	◇		◆	◇
OPEN HIHAT									
TAMBOURINE	◆	◇	◆	◇	◆	◇	◆	◇	◆

EXAMPLE 8 — Tempo 100-120bpm

Sound	3	2	3	4	4	2	3	4	3
BASS DRUM	◆	◆			◆	◆			◆
SNARE			◆				◆		
PEDAL HIHAT	◆		◆	◆		◆		◆	◆
CLOSED HIHAT	◆	◆	◇	◆	◆	◇	◆	◇	◆
OPEN HIHAT									
TAMBOURINE	◆	◇	◆	◇	◆	◇	◆	◇	◆

EXAMPLES 9 & 10

Now here's a useful trick. By applying a 16th-note triplet feel to patterns 7 and 8 (easily done in Cubase, using the over-quantise function) and slowing the rhythm down a bit, you can turn what was previously a fairly funky rock pattern into instant hip hop. Try the over-quantise technique on all your favourite rhythms and see what you end up with. If it's not obvious to you, the grid has changed from 16 sections to 24 (in other words, you need to set the quantisation of your drum machine/workstation/sequencer to give you 24 steps to the bar).

EXAMPLE 9 — Tempo 85-95bpm

Sound	1	2	3	4	2	2	3	4	3
BASS DRUM	◆	◇			◆	◆			
SNARE			◆				◆		
PEDAL HIHAT	◆		◆	◆		◆		◆	◆
CLOSED HIHAT	◆	◆	◇		◆	◇		◆	◇
OPEN HIHAT									
TAMBOURINE	◆	◇	◆	◇	◆	◇	◆	◇	◆

EXAMPLE 10 — Tempo 85-95bpm

Sound	3	2	3	4	4	2	3	4	5
BASS DRUM	◆	◇		◆	◆			◆	
SNARE			◆			◆			◆
PEDAL HIHAT	◆		◆	◆		◆		◆	◆
CLOSED HIHAT	◆	◆	◇		◆	◇		◆	◇
OPEN HIHAT									
TAMBOURINE	◆	◇	◆	◇	◆	◇	◆	◇	◆

EXAMPLE 11

This is a simple, funk-based pattern which should be played at fairly slow tempos for best effect.

EXAMPLE 11 — Tempo 90-110bpm

Sound	1	2	3	4	2	2	3	4	3
BASS DRUM	◆		◆		◆	◆		◆	
SNARE				◆			◆		
SNARE 2		◆			◆	◆			◆
OPEN HIHAT			◆				◆		
PEDAL HIHAT	◆	◆		◆	◆	◆		◆	◆

EXAMPLE 12

Although reggae is hardly a mainstream style these days, I've included this reggae pattern to illustrate my point in the text about half-time feel.

EXAMPLE 12 — Tempo 90-110bpm

Sound	1	2	3	4	2	2	3	4	3
BASS DRUM	◆				◆				
RIMSHOT	◆		◆	◆			◆	◆	
SNARE			◆			◆			◆
PEDAL HIHAT	◆	◆		◆		◆		◆	
CLOSED HIHAT	◆	◆	◆	◆	◆	◆	◆	◆	◆
OPEN HIHAT					◆				

▶ which are suitable for a track. Quite simply, long sounds, such as big gate-reverbed snares, don't sit too well in busy mixes, unless they're part of the feature of the track. I'm sure this is why those TR808/909 sounds work so well in dance tracks — they're sonically quite punchy, yet short, so they don't take up too much space in either the temporal or frequency spectrum. Which is a jolly good thing when you're running at tempos of 140bpm and above.

The question of sounds — and specifically ways in which drum sounds can be effected and generally mangled around a bit — will be revisited in a later instalment. In the meantime, try out the examples contained in the 'Bang On' box on page 50. As I've already explained, these are simple exercises in using hi-hat rhythms to give different feels to very basic beats. They also illustrate one of the key elements of successful drum programming: correct use of dynamics. Or, put more simply, use of accents to provide a subtle and not-so-subtle sense of movement within a rhythm.

"If you take the same basic kick and snare pattern, then program different hi-hat patterns over the top, you can alter the perception of that rhythm quite radically."

We'll cover this in more detail in the next issue, when we look at jazz patterns and discover that programmed drums really can swing with the best of them.

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IVORY POWER

TL AUDIO IVORY SERIES VP5051 VALVE PROCESSOR

DAVID MELLOR warms to TL Audio's new mid-range valve voice processor.

In a well known London studio a year or so ago, an engineer I was talking to expressed a preference for certain channels of the studio's SSL mixing console for recording vocals. On the surface, all the channels looked identical. But the console was over 10 years old and apparently, over the course of time, some channels had 'mellowed' more gracefully than others. I'm sure the studio's maintenance engineer could have corrected the discrepancy and brought all the channels back to their original specifications, but that would have removed the element of choice which effectively gave the engineer more tools in his recording toolkit. Choice in voice processors is not something we're short of these days, and it won't be long before it's possible to assemble a sizable recording console — well, at least the channel section — from different voice processors!

The TL Audio Ivory series gives us another range of processors from which to choose, and is certainly very welcome. And unlike some other products, which appear to do very little and cost the earth, the Ivory range offers a lot for a much more reasonable price. You might be tempted to think that lower prices may mean inferior performance, but if the other models in the range come up to the standard of the valve voice processor reviewed here, you're in for a surprise. TL Audio have an extensive catalogue of products, with other ranges which include the Classic Valve Series, the Indigo Valve Series and the Crimson Solid State Series. There's a lot of activity going on in TL Audio's laboratories and they obviously know a thing or two about valve as well as solid-state electronics. They even make a valve mixing console!

THE VP5051

The VP5051 Valve Processor is what has come to be known as a voice channel or voice processor. Basically, it offers, in a simple package, the processes you are likely to want to use when recording vocals — amplification, compression, EQ and an expander/gate. This goes beyond the capability of the simple outboard mic preamp, of the type that some engineers use for the sake of sheer excellence of sound quality, and sometimes consistency, when travelling from studio to studio. Many engineers, indeed, prefer to record 'flat' to tape, with no effects of any kind. This is so that the recording is as pure and unadulterated as it can be, and all the processing is left to the mixing stage, when it can be judged in the context of all the other sounds in the arrangement. If this is the way you like to work, a full voice channel would be overkill. But the combination of voice and microphone often gives a less than perfect sound, even with a good singer and a good mic. Most singers need at least a little compression to even out the dynamics of the voice. Likewise, no mic gives its best performance, technically speaking, with the singer only inches away from the diaphragm. Working close to the mic emphasises certain elements of the voice to good effect but it also changes the frequency balance, particularly with directional mics. EQ is sometimes, therefore, necessary to correct this, and also to provide the extra brightness we have become accustomed to in recordings. The aim should be to record a sound that has controlled dynamics and the right balance of frequencies. Consider this, rather than simply the raw output from the mic, as the perfect sound, that you can later bend and shape to your will at the mixing stage.

INPUT OPTIONS

As should be the norm in all voice processors, and mixing console channels too, the VP5051 has three input options: mic, line and instrument. As an additional option, the mic input can provide 48V phantom power. All three alternative inputs share a common gain control. Since this is a valve unit, as the gain is increased so that the signal approaches the clipping point, the distortion level gradually increases, so there's a 'Drive' LED which indicates how hard you're pushing the electrons through the glass bubble. The brighter this LED glows, the more 'valve sound' you're getting. Watch out for the clip LED, though. If you're driving the input hard, inevitably your headroom is reduced and you risk clipping, which does not sound at all pleasant. A 90Hz low-cut filter deals with any problematic low frequencies.

pros & cons

TL AUDIO VP5051 £469

pros
- The valve sound works with beautifully when driven hard.
- Good compression and EQ.
- Excellent feature set.
- Fair price.

cons
- The EQ switches generate a slight electrical click when turned.
- Some may see switched compression and EQ controls as a con.

summary
The VP5051 puts voice channels in the price bracket they ought to be in. It sounds great, does the lot, and is well worth buying.

SOUND ON SOUND

COMPRESSION

The compressor section has a full set of features, with controls for Attack, Release, Threshold, Ratio and Gain Make-Up. Surprisingly, the Attack and Release controls are both four-position rotary switches rather than continuously variable controls. I know that valve circuits work in strange ways (I have only ever designed circuits with transistors and ICs) but I wouldn't have thought that a switch was really necessary here. (Perhaps it's a 'retro' design feature.) Having had my little moan, I must admit that there is something to be said for rotary switches, since they restrict your range of options, but not necessarily the limits of that range, and prevent you from being more finicky than will benefit the end product.

An accessory to the compressor section is a single-knob expander/gate. As always with compressors, more compression results in more noise, since the difference between the highest and lowest levels is reduced. An expander or a gate is often useful in such a situation, but if you're expanding or gating prior to recording, it's absolutely vital that none of the signal you want is lost, since you can't get it back. This imposes very stringent requirements on any voice channel that incorporates an expander or gate, since if it didn't work absolutely correctly, that feature wouldn't be usable.

EQ

Moving on along the signal path, we find the EQ section. Some voice channels provide parametric EQ where some or all of the sections have boost/cut, frequency and Q controls (Q is the sharpness of the peak or dip in the response). Although I like to have a parametric EQ available somewhere in my rack, just in case, I'm not a great fan of having Q controls on every EQ section of every piece of equipment. If the designer chooses a good value for Q, that becomes part of the character of the EQ, and you can spend more time on the gain and frequency controls, which are more important. The two mid-band sections of the 5051's EQ do, indeed, have a fixed Q (0.5), and I feel that's all they need. The LF and HF sections are shelving, with up to 12dB boost or cut.

Like the attack and release controls of the compressor, the EQ frequency controls are rotary switches, with centre frequencies as follows:

LF:	60Hz, 120Hz, 250Hz and 500Hz
Low Mid:	250Hz, 500Hz, 1kHz and 2.2kHz
High Mid:	1.5kHz, 2.2kHz, 3.6kHz and 5kHz
HF:	2.2kHz, 5kHz, 8kHz and 12kHz

One final point about the EQ section is that there's an EQ in/out button, as in the compression section. This is great, not just for comparing the processed and unprocessed sound, but also for shortening the signal path when the EQ isn't needed.

METERING

On the right hand side of the unit is the output and metering section. I love the VU-style mechanical meter, not for its retro look, but because I like mechanical meters. On a unit such as this, it doesn't particularly matter that VU meters tend to under-read transients and that there is no associated peak LED. The meter can be switched to read the input level, output level, output with 10dB boost (if you need to see what's going on at low signal levels) and gain reduction. The gain reduction position shows the degree of compression at any instant. If the signal is below the compressor's threshold level, the meter indicates 0dB. Once the signal exceeds the threshold, the meter indicates the amount by which the compressor squashes it back down. When you're using the gain reduction setting of the meter, obviously you can't at the same time check the input level. Since this unit encourages you to use outrageously high gain settings (rightly, since it is intended to exploit the characteristics of valves at high signal levels), you may find when you switch back ▶

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Model featured: P8 20/20 bas

"The most enlightening moment came when I took the mix to mastering. I gave the tapes to Bernie Grundman and he put them on and did his initial listen. For the first time ever with one of my mixes, Bernie turned to me and said, "I don't think you need any EQ on this"

Francis Buckley EQ Magazine July 1996

"The Event 20/20's turned out to be damn fine monitors, well up to the task of serious mixing, editing or post-pro work."

"The 20/20's bass end is sufficiently extended to make them useful as the sole pair of monitors in a small studio."

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Paul White SOS July 1996

"Detail in the program material was maintained regardless of volume...high, tinkling synth lines seemed unaffected by ponderous bass drums and remained well-profiled against a thick, swirling, mid-range - exactly as they were intended to be in the mix"

Nigel Lord The MIX January 1997

EVENT

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from the gain reduction position that the needle is hitting the end stop, and very noisily too. I wouldn't call it a problem, just a little idiosyncrasy that gives the VP5051 more character!

Also in this section is a clever little button that places the EQ section before the compressor. If you're wondering why you should want to do this, suppose you had a singer with a good voice and a good mic, and the two combined well. In this case you would probably want to compress first to even out the dynamic range, and *then* EQ the compressed signal to enhance it further. But if the signal from the mic had a less than perfect frequency balance, it wouldn't make sense to compress it right away, because the level-sensing element of the compressor would be basing its action on false information. In this case it is best to use the EQ *before* the compressor, so that the compressor is working on a good signal. In fact, it would be really nice to be able to EQ before *and* after the compressor, but that's a facility you're very unlikely to come across in a single unit.

The very last button on the VP5051, if I exclude the power switch, is a Link button. This is a single-channel unit, and you may want to splash out on two so that you can process stereo signals. However, if you compress a stereo signal with independent compressors, the stereo image tends to swing back and forth, due to the different amounts of gain reduction applied to each channel. Fortunately, the VP5051's Link feature allows you to connect a cable between two units, so that you can indeed do proper stereo compression, where the gain reduction of both channels is forced to be the same. A nice touch. Another nice touch, although you can't see it from the front panel, is a side-chain input, so that you can do frequency-conscious compression with the aid of an additional equaliser — if you want to do de-essing, for example.

PERFORMANCE

This is the big one, since if the VP5051 doesn't perform better than the mic amps in your console there isn't really any point in buying it. Subjectively, I would say that the VP5051 is equivalent to a decent console mic preamp, and better than some, but then it goes beyond that, giving you the ability to push the valves and obtain a warmer, more present, more intimate sound from a good mic. It isn't an effect that is immediately obvious, but subtle and deceptively beneficial. Likewise, the compressor isn't the type that you can use to twist the signal into a contorted parody of what a human voice is supposed to sound like (which sometimes you might want to do). This compressor is gentle and easy to use in an unobtrusive manner — although putting the EQ before the compressor can allow more exaggerated effects.

The EQ section is fine for its intended purpose,

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LINE VS MIC INPUTS

You might not be quite sure what the difference is between a line and an instrument input, both of which are present on the VP5051. Well, the line input is, to put it simply, for any source that is powered from the mains, or at least several Duracell batteries. It could be a keyboard, sampler, or one of the tracks of a multitrack recorder. They all provide a line-level signal. An electric guitar, on the other hand, is powered only by the swipe of the plectrum and therefore can produce only a weak signal — reasonably strong in voltage, perhaps, but impoverished in current. Such an instrument needs a so-called high-impedance input which doesn't demand as much current as a normal line input does. The noise level is a little higher, as is the susceptibility to interference, but it retains the full brightness and attack of the instrument. Conveniently, the instrument input of the VP5051 is on the front panel, exactly where a guitarist would want to plug his jack lead in.

and if it doesn't offer the precision you might sometimes want, due to the switched frequency controls and lack of adjustable Q, you can always EQ further when you mix. A minor doubt I had was that the switches produce a small electrical click when they are turned. There are ways and means in circuit design of preventing switches from doing this, but perhaps it's more difficult in a valve circuit.

The expander gate isn't as quite good as the very best I have heard, but it is good, and it is possible to set a threshold low enough so that the often quiet start of 'f' and 's' sounds is captured. Even at such a low threshold, the gate will still open and close reliably, if at the expense of a little waiting time before the gate closes.

VERDICT

Any good voice channel isn't just a voice channel, and the line and instrument inputs of the VP5051 allow it to be used in many ways. For instance, the cold, clear sound of modern synthesizers can benefit enormously from a little valve warmth, and while you're at it you might as well try out some compression and EQ, because you don't really want to use standard patches unmodified all the time, do you? You might think it's a drawback to plug one channel of a keyboard's stereo outputs into this single-channel module and lose the stereo effect. But recording keyboards in stereo eats up tracks (to the benefit of Alesis and Tascam, no doubt!) and often ends up cluttering the mix anyway, so why not? And even at mix time, the line input of the VP5051 will prove its worth when one track stubbornly refuses to sit correctly among the other instruments and your console's EQ doesn't have quite the right facilities to bend it to your will.

This, indeed, is the kind of unit that you would find yourself using on every session and probably every mix too. The TL Audio Ivory Series VP5051 is a great sounding, well featured product at a price that offers good value. I can't wait to hear the rest of the range! SOS

info

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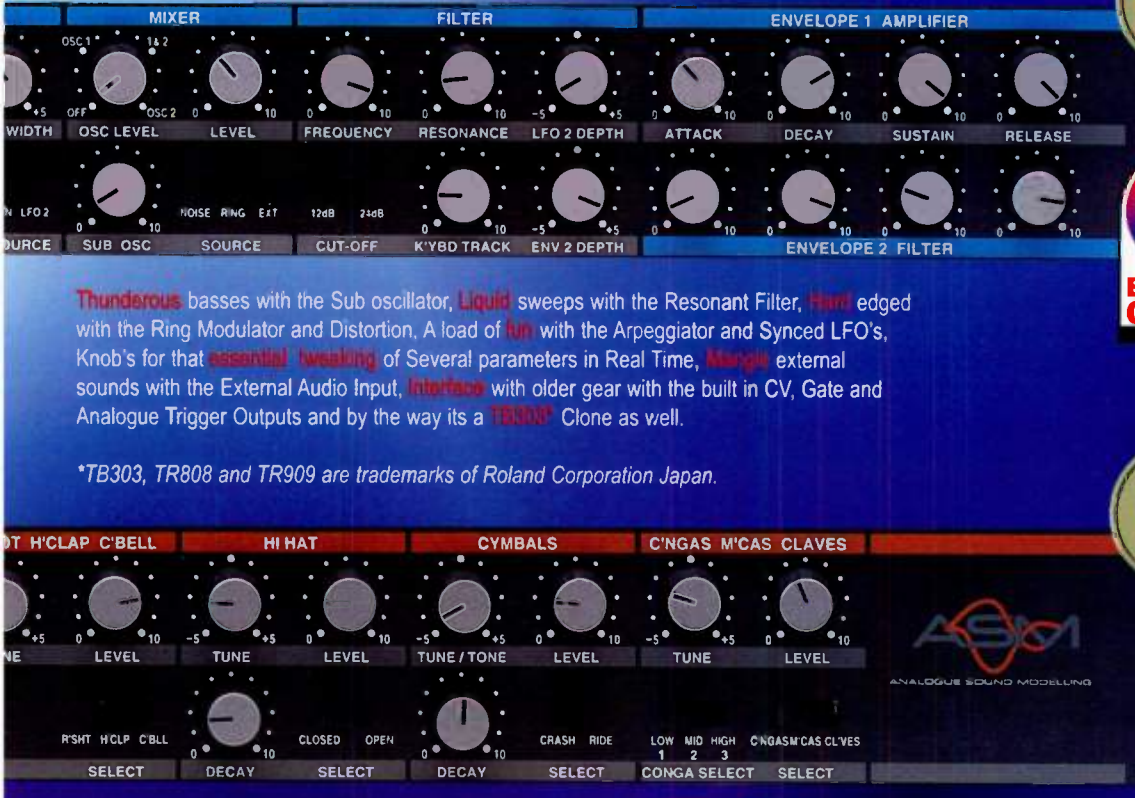

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electric blues

XPRESSION! DPM1 PROACTIVE POWERED MONITORS

PAUL WHITE lends a critical ear to Xpression's first ever powered monitor, to test the company's claim of accuracy at a budget price.

In the relatively short time they've been on the market, the two-way Xpression! DPM1 passive monitors have won over a lot of users with their combination of tonal accuracy and low cost. Now the company have built an active version, the Xpression! DPM1 ProActive. These use the same drivers and cabinets as the passive DPM1s, though the bass/mid cone is now deep blue rather than purple, and dual amplifier packs and active crossovers are built into the rear of the cabinet.

Alan Shaw, the MD and chief designer of Xpression! parent company Harbeth, has a history that is closely interwoven with that of the BBC's monitoring systems, and Alan still adheres to their basic design principles. Indeed, Harbeth are the only company licensed to build the BBC-designed LS3/5a, which they still manufacture today, along with the newer LS5/12a.

Having spoken at length to Alan about his designs, I would say that he's always been obsessed with obtaining the best possible audio reproduction from available loudspeaker technology, and I get the impression that his integrity won't let him market anything he isn't thoroughly happy with. Unlike most manufacturers, who use third-party drivers, Harbeth build their own bass/mid drivers from scratch using some unusual manufacturing techniques researched with the aid of a significant Science and Engineering Research Council grant. As far as I know, the Xpression! bass/mid driver is unique, in that it is built around a high-pressure, injection-moulded, 200mm synthetic-polymer cone that varies in thickness across its diameter to minimise resonances and coloration. This driver, which also features an aluminium voice coil, has a moulded plastic basket rather than a metal chassis, and the cone is supported by a long-throw roll surround. A field-cancelling magnet is fitted to the rear of the driver to enable the monitor to be used close to computer and TV monitors. The 1-inch soft-dome tweeters, which are built by Morel, use ferrofluid cooling and are individually tested and selected.

According to Alan, the aim with the active monitors was to reproduce the filter characteristics of their original crossover, which gives it a relatively gentle slope compared with most other active designs, but the closer coupling between the amplifiers and the drivers yields a much improved damping factor compared with the passive version, and this translates into a tighter, better-controlled sound, particularly at the bass end.

The power amplifiers themselves are actually single-semiconductor devices, rather than being built from discrete components, which keeps both the cost and the weight down, and there's around 75W available for the tweeter, with the same for the bass/mid driver. Anti-thump circuitry keeps the speakers muted until the amplifiers have powered up and stabilised. Very high tolerance components are used in the crossover to ensure close matching, and specially designed custom modelling software was used to evaluate the driver performance in their intended cabinets.

CONSTRUCTION

MDF is used for the basic cabinet construction, but the specialised Nextel textured grey paint finish gives the cabinets more of a moulded plastic appearance. All the cabinet corners are rounded, and the baffle features a raised centre section with machined rebates so that the drivers can be flush ▶

pros & cons

XPRESSION! DPM1 PROACTIVE £749

pros

- Accurate, detailed sound.
- Not too heavy to use as a portable reference.
- Stable stereo imaging.
- Ideal frequency response for use in smaller music studios, broadcast studios, edit suites and MIDI studios. They're also great for general music listening.

cons

- More power amp headroom might avoid the slight raggedness that creeps in at very high monitoring levels.

summary

These are extraordinarily good loudspeakers at a bargain price.

SOUND ON SOUND

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> "Over the past few years small monitors have become big business."

mounted. Porting is via a slit-shaped port beneath the bass/mid driver. Each cabinet measures 420 x 255 x 305mm and weighs just 12.6kg.

The crossover point is set at 2.6kHz and is based on Sallen and Key filter topography to produce a critically damped response. Overall, the frequency response extends from 46Hz to 20kHz, flat within +/-3dB, which for nearfield use is about ideal. If the bass response were to go much lower you'd run the risk of getting very misleading bass results in a room with no acoustic treatment, but as it is you can hear the fundamental of the lowest note on a 4-string bass guitar. The speakers are relatively sensitive, so there's plenty of level for their intended nearfield application. A solid-state protection trip is used to protect the tweeter from overload — though few people have managed to feed in enough HF to get this to come on — and in the event of this operating, a red warning LED on the tweeter surround lights. An orange LED below the tweeter shows that the mains power is active.

The power amp heatsink covers a fairly large area and has low-profile fins to provide adequate cooling without extending too far from the back of the cabinet. Other than the power switch, the only control on the monitors is a sensitivity pot. The XLR input feeds a balanced input stage, though a transformer option is available for those professionals who need complete electrical isolation. Apparently the tweeter sensitivity can be varied, but the adjustment is internal.

AUDITION TIME

Over the past few years small monitors have become big business, but there are some truly terrible-sounding designs out there, both active and passive. Happily, Harbeth's designs don't fall into this category. When you're mixing, the most important thing is to have accurate mid-range reproduction, because that's where human speech frequencies fall, and you can tell a lot about a pair of speakers by listening to material that is predominantly vocal. Of course, when you select your audition material you have to sort out good recordings from those that have been enhanced to death, but given good source material the DPM1 ProActives sound exceptionally smooth and natural for voice reproduction. What's more, they'll expose the flaws in material that isn't as well recorded as it could be, whereas coloured-sounding or flattering speakers may hide these details from you.

When I fed the ProActives with acoustic jazz, pianos were reproduced very naturally and evenly, brass fairly leapt out at me, and detailed cymbal work was revealed in intricate detail, as was any other high-end percussion. Double basses had depth and resonance, but stayed tightly controlled, and though the bass response of any small speaker is necessarily limited I didn't feel I was missing anything. Pop and rock mixes delivered a tight bass drum sound that stayed separate from the bass guitar, while right across the spectrum, the impression I had was of being able to hear *into* the mix, rather than listening to it from a distance. This degree of clarity allows you to better judge the result of adding subtle effects to vocals and instruments.

Along with all other leading loudspeaker designers, Alan Shaw realises the importance of having a response that's as accurate as possible off-axis as well as on-axis. Attention to detail in this area has resulted in a consistent sound, even when you move quite a long way off-axis, plus a very believable, stable stereo image — sounds that are supposed to be in the centre stay there, rather than hopping from side to side as you move your head. Localisation of instruments within the stereo field is especially good, and any mixes that have been treated with 3D enhancement algorithms work to their full effect.

So far it's all good news, but is there a downside? Obviously, every loudspeaker is a compromise, and in an ideal world I suppose some users would like a little more available SPL, though I'm only being slightly cynical when I say that anyone regularly monitoring at such levels probably won't be in a position to appreciate the finer points of good monitors anyway.

SUMMARY

Within the boundaries imposed by the laws of physics and the cost restraints of manufacture, the Harbeth DPM1 ProActives are exceptional performers, but what's really surprising is that they are also amongst the cheapest active nearfield monitors available. The frequency response is spot-on for smaller studios or home MIDI systems, the clarity and detail is better than on many monitors two or three times the price, and there's no attempt to flatter the sound — these are monitors in the true sense of the word. I found that there was plenty of level, though the sound does become slightly ragged when you're approaching the maximum SPL capability of the units, but if you monitor at sensible levels, the sound is as smooth and well integrated as you could wish for. Though they cost more than the passive DPM1s, the performance is noticeably tighter, and of course you don't have to budget for a power amplifier and cabling, so they could actually save you money.

The DPM1 ProActives still haven't replaced the ATC20As on my wish list, but at under a quarter of the price of the ATCs, the ProActive's only real competition is probably the Event 2020 BAS. If you're looking for sub-£1000 active monitors and you don't audition these speakers, your ears may never forgive you! SOS

£ £849 per pair including VAT.
A Xpression! Harbeth Acoustics Ltd, Haywards Heath RH16 1UA.
T 01444 440955.
F 01444 440688.
W www.harbeth.com

MUSIC CONNECTIONS
MC

MUSIC

MUSIC CONNECTIONS

LONDON - 0171 7315993
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All over the world, professional musicians have come to rely on the KORG brand name. Their continual innovation has now brought about the Z1, a 'next generation' synthesizer with advanced synthesis techniques that provide realism, limitless creativity and expressiveness at an unsurpassed level.

For those interested in other areas of audio creativity, KORG have produced the SGproX and the TR-RACK. The SGproX is the ultimate stage piano, with an unbelievably rich and realistic sound and feel. The TR-RACK has all the features of the famous Trinity keyboard, but in rack format. This rack is sure to be a hit with those of you who want powerful synthesizer effects but don't have the room for the full keyboard.

KORG

Clavia must now be one of the most renowned synth manufacturers in the world, and after their success with the ground-breaking Nord Lead and rack version thay have gone from strength to strength. Nord Lead 2 has been designed to add and improve features of the original whilst still keeping the feel and quality. Good eh? Well listen to this...Now a musician's dream is due to redesign synth technology again. The Nord Modular is the most versatile synthesizer ever. As with the old patchcord method of synthesis, the Nord Modular makes practically any synth you want without messy wires and diagrams.

DO NOT MISS THIS!

ENSONIQ

MR RACK £499

Want to sound different? These days very few synths can make you sound unique. However one manufacturer namely Ensoniq can. At Music Connections we realise that Ensoniq is a wonderful niche synthesizer manufacturer. Very few synthesizers sound as distinctive as an Ensoniq. That's why many top artists around the world don't want you to use Ensoniq. Otherwise they won't sound as unique anymore. If you haven't tried one of Ensoniq's new synths or their stunning new groove machine the ASR-X, you really don't what yuor missing.

As probably the country's largest EMU retailer, we offer the largest range and the best prices on all EMU equipment, you'll see it here first.

We believe EMU equipment to be second to none and we are proud to have their equipment on show & on demo in our stores.

Great deals available on all EMU equipment, if you would like an example just check out the great offer on Darwin on our hard Disk Recording page. And try out the superb Carnaval, Planet Phatt and Orbit V2.

novation

Super BassStation

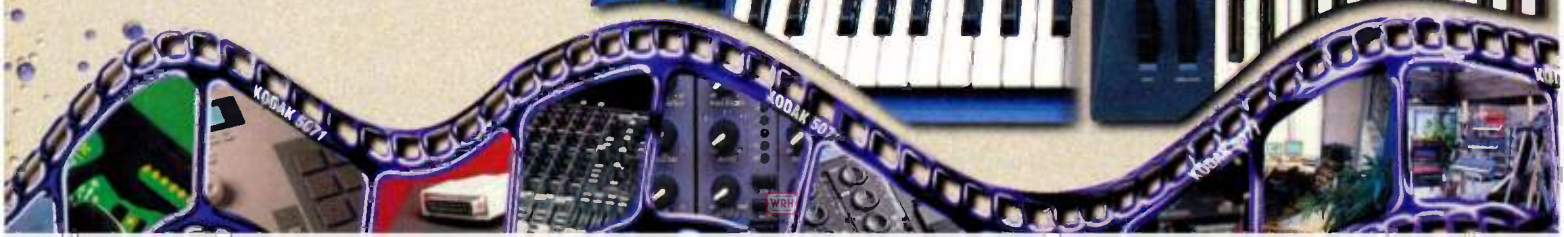
An exciting evolutionary development of the BassStation rack, the new Super BassStation adds a plethora of must-have features: a sub oscillator, white noise, ring modulation, LFO2, independent external MIDI sync of both LFOs, arpeggiator, analogue chorus and distortion effects and stereo outputs with assignable autopanning. The MIDI to cv/gate converter can now be run on a seperate channel, and can even derive an analog trigger output from MIDI clock. Phew!

This unit can now be seen as a serious tool for the serious synthesist

YAMAHA

Has this company woken up from a deep sleep or what. I mean, this is the company that bought us DX synths, TX Synths and VL synthesis. And now this little wonder called the AN1X. This synth really must be heard. No advert can ever convey just how good this little gem really is. Don't forget there's still the CS1X & VL70 as well. Also hot on the heels of the AN1X is Yamaha's A3000, this sampler is so packed full of features, that it has most of the established sampler manufacturers hurriedly rushing back to the drawing board. Once again you must come in and sample the delights of this unit for yourselves (no pun intended)

The A3000 Sampler features on page 5 of this advert.



CONNECTIONS

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ENSONIQ

Ensoniq'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 Ensoniq'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 forgeting 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 groove machine for yourself, we can't begin to describe the power of this machine in words, hear what you've never heard before!

ASR-X TURBO

E-MU

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

A3000

The A3000 is an affordably priced 64-poly, 128 MB professional sampler that's as accessible to techno-hip-hop-dance DJ's 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 edit sound architecture, the A3000 takes the mystery and frustration 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 four 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-Fi effects, and others which can be configured specifically for each program.

All of these are available for analog input audio recording and external audio mixing. Dynamic filters (Lo Pass, Hi 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 song sketches, plus sound file compatibility across multiple platforms (including WAV, AIFF). All this, and more, make the A3000 the one sampler that professional musicians everywhere will want to take a serious look at.

ESI-4000

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

64 Voice polyphony - 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 learn and a pleasure to use-you'll spend more time making music less time reading manuals.

Powerful DSP and sample editing - The ESI-4000 gives you incredibly powerful digital signal processing that lets you massage and manipulate samples to create your own unique sounds. Built-in sample editing tools 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 as never before.

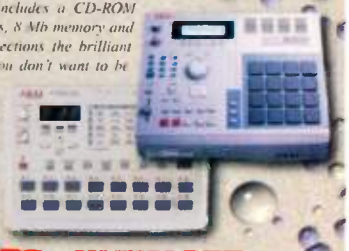
Highly expandable - Your ESI-4000 can hold up to 128Mb of RAM using 72-pin SIMMs and you can easily upgrade the number of outputs, add dual 24-bit effects and digital I/O with the ESI turbo kit.

Unbeatable value - the ESI-4000 starts at only £1199 with 4Mb RAM, making it the best value sampler in it's class. Shift dimensions and see the ESI-4000 at Music Connections.

AKAI

CD3000 AMAZING DEALS!

The new AKAI samplers have all the capabilities that made the S3000 series the world standard for professional sampling, the new range add features like a powerful multi-mode for ease of layering and multitimbral sequencing, multi-effects card that provides four independent channels of effects, RAM expansion with readily available SIMM memory, flash RAM, MESA graphical Macintosh based front-end etc. And because we are probably the country's largest AKAI retailer we can offer you the best package deals, technical support and back-up that most of our customers require. Currently top of our hit list is the stunning CD3000XL, as standard this machine includes a CD-ROM player, 8 seperate outputs, 8 Mb memory and solely from Music Connections the brilliant EB16 effects board. If you don't want to be dissapointed call us soon as possible, as the stunning price we are selling this for means that our meagre stocks will not last very long. Happy Shopping!



EAST★WEST

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

Unleash the power of your PC.

Today's fast computing and storage capabilities allow the GIGASAMPLER PC software to utilize the inexpensive, high performance hardware that already exists in most PC's. GIGASAMPLER 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!

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SOUNDTRACS

A dedicated multitrack recording console must provide the following: Superb audio performance, exceptional equalization, versatile monitoring, comprehensive patching and 1st class ergonomics.
All are in abundance in the stunning new Topaz Project Studio Console from Soundtracs.

YAMAHA

then you're ready for the 03D Digital Mixing Console. Nestled between the popular ProMix 01 - famed for bringing affordable digital mixing to the masses - and the award winning, industry standard 02R Digital Recording Console.

YAMAHA 03D

If you're ready for a compact,comfortably priced, full-featured digital mixer - one especially made for professional project and post production studios relying on modular digital multitrack recorders such as TASCAM, ADAT, AES/EBU and YAMAHA digital formats -

KORG

168RC

The 168RC has been created with this goal; to help you create stunning recordings without adding noise, by converting from analogue to digital and back again. The 168RC utilises KORG's renowned heritage in DSP design coupled with 16 channels of Digital I/O in the industry standard ADAT optical format. So two digital 8 channel devices can be simultaneously mixed to 8 buses digitally, using the optical link.

ENTER THE WORLD OF ADVANCED AFFORDABLE DIGITAL RECORDING

MACKIE.

DIGITAL 8•BUS

- 48 true channels for tracking, overdub & mixdown jitter-free, touch-updateable motorized faders
- 12 aux sends per channel.
- 10 fade & mute groups.
- 24-bit output.
- 32-bit processing
- Direct assign.
- Dynamic & snapshot recall of all parameters.
- Multiple simultaneous digital effects, dynamics & EQ.
- V-pot virtual rotary controls.
- SVGA monitor output.
- Mouse & keyboard inputs
- Built-in hard disk & floppy drive
- Instantly upgradeable DSP effects
- Dedicated transport controls & jog shuttle
- Built-in multifunction meter bridge
- Powerful CPU with 8 megs of memory
- Record-ready button on every channel

and that's just a preliminary spec list!

These consoles offer the highest audio and build quality with easy to use features that take the effort out of superb mixing.

Don't forget the Original Mackie 8•BUS

Still one of the leading mixing consoles in the world for reliability, sound quality, ease of use and ergonomics
Put this together with our amazing price deals and you've got a serious machine at a serious price.

CALL FOR DETAILS!
COMPLETE MACKIE RANGE AVAILABLE AT ALL STORES!

Still the world leader in small mixers the VLZ range includes 1202, 1402, 1604, SR24, SR32 and LM3204.

CONNECTIONS

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AKG

In 1953 AKG's classic C12 set the standard in valve microphones. Following an extensive R&D program designed to make this legendary technology available to a wider audience, AKG are now proud to present the SOLIDTUBE.
By combining the latest solid-state manufacturing techniques with traditional AKG tube technology, the SOLIDTUBE recreates the classic, warm sound of the C12.

SOLIDTUBE

TANNOY

We are still finding Tannoy's 600 series monitors to be one of the most popular selling pairs on the market and it's not surprising when you hear the sound quality they produce. 6.5" Dual Concentric, reference class nearfield monitoring from a compact speaker at a sensible price. Unique cabinet shaped for optimum acoustic performance. Ideal for left-centre-right in a project studio surround system.
Test them for yourselves at all of our stores and we'll give you an unbelievable price!

600's £CALL

MACKIE

HR824 £CALL

Mackie's eagerly awaited HR824's have now arrived, and believe us they were worth the wait! These monitors are receiving rave reviews by magazines and users alike for their combination of servo feedback, passive radiators and waveguides never before seen ina studio monitor of this type. They offer such a high level of performance at such an attractive price that passing them by is going to be a hard decision indeed. And just like Mackie's other lines these monitors are built like tanks and perform like a Rolls Royce. The HR824's deliver main monitor performance for a nearfield price. What's more, the small size and reasonable weight means these make great portable references for the travelling producer, not to mention great home cinema speakers for a Dolby Pro Logic system. Come and see what all the fuss is about you have to hear these to believe anything so small could sound so big!

MASS

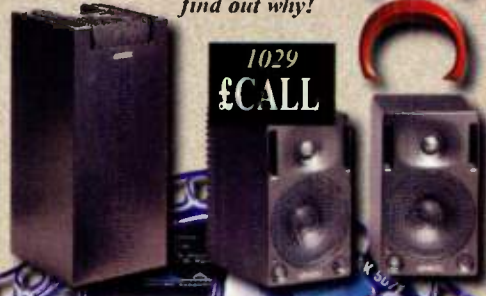
With all these wonderful monitors on show what possible amplifier would one choose to go with a pair of massive monitors? Well there can only be one make...MASS.
If you have never seen a Mass amp you haven't lived. Look at those gorgeous curvaceous VU metres. The chrome is so amazing, it's almost liquid. The unique aluminium finger cooling system.
This system is so efficient that no cooling fans are needed, therefore for todays noise conscience recording artist there really isn't a better pro audio amplifier.

Call into a Music Connections store and see why the recording world is talking about these amplifiers.

1031 £CALL

GENELEC

STOP PRESS...We are now stocking Genelec 1029 & 1031 monitors, these near-field monitors are the best named brand in the industry, come and find out why!



1029 £CALL

Event speakers have built themselves an image to be proud of and considering how young this company is they must be something special for people to take these in preference to a known brand name. The 20/20's have such clarity and accuracy that you would believe them to be of such value as to put a sizeable dent in your wallet. Yet they have the price tag to compete with well known brands fighting for space in anyone's home studio' These monitors need to be heard to be believed and we'll prove it, demo's can be arranged at all of our stores nationwide

20/20 £CALL

EVENT

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Steinberg

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.

Cubase VST
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 combination 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 effects.

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

PORTASTUDIOS

Of all the portastudios. DAT recorders and CD Burners available only the best get through the Music Connections door. Which means that you can be sure that all of our range are proven winners from the acclaimed YAMAHA MD4 to the classic and trusted TASCAM 424. Not to mention the DA-38, DA-20 or DA-30 Mk2 for backing up your precious recording. We stock everything you need for studio and live applications so call us for demonstrations and unbeatable prices!

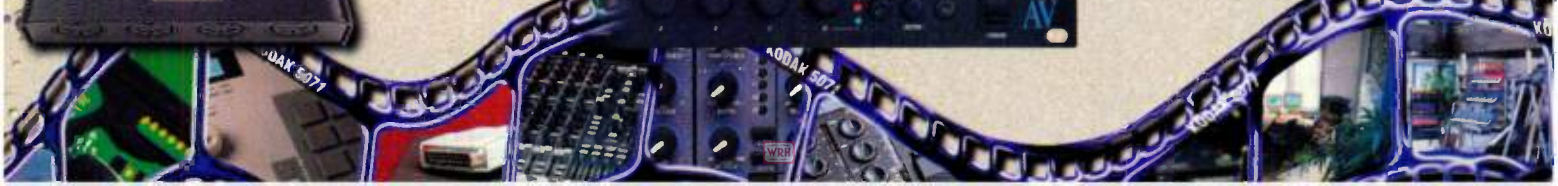
CD RECORDERS

Why master to DAT, when most professionals master direct to CD.
Come in to your nearest Music Connections store and see these two stunning CD recorders.

"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 other).

Call in to your local Music Connections for the best deals in the country.

Digital Performer 2.1



CONNECTIONS

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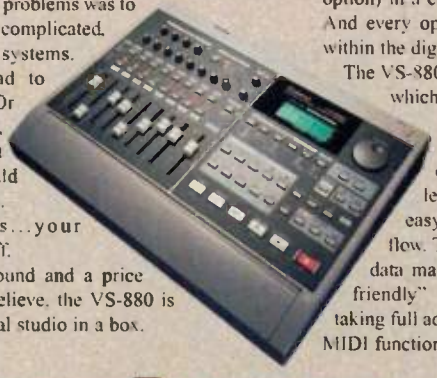
Roland

Roland VS-880

For everyone who has ever felt the limitations of taped based multitrack recording, the VS-880 is the product you've been waiting for. Poor sound quality, limited tracks, troublesome effects access and MIDI sync problems need no longer be part of your recording process. In the past, the only way to resolve these problems was to spend big bucks on complicated, multi-component systems. So maybe you had to settle for less. Or maybe you waited, hoping that the next 'big thing' would have all the answers. Congratulations...your patience has paid off. With CD-quality sound and a price that you'll barely believe, the VS-880 is your complete digital studio in a box.



The VS-880 is a truly comprehensive digital studio workstation. It handles everything from data input and recording to mixing and mastering in one compact unit. The VS-880 provides 64 recordable tracks, a CD-quality digital recorder, a digital mixer and studio-quality multi-effects (an add-on board option) in a completely self-contained unit. And every operation is performed entirely within the digital domain.

The VS-880 offers a superb user interface which is specifically designed with the musician in mind. Roland's musical instrument expertise means that there's less of a "computer vibe," so it's easy to maintain your creative flow. The VS-880 uses sophisticated data management within a "musician friendly" measure/beat system, while taking full advantage of the comprehensive MIDI functions.

KORG

The KORG 1212 I/O 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 I/O. All I/O's can be used simultaneously for maximum interfacing flexibility. The only sensible choice for those looking for Professional quality at a sensible price!

1212 I/O
£CALL

Fostex

FOSTEX D90 & D160

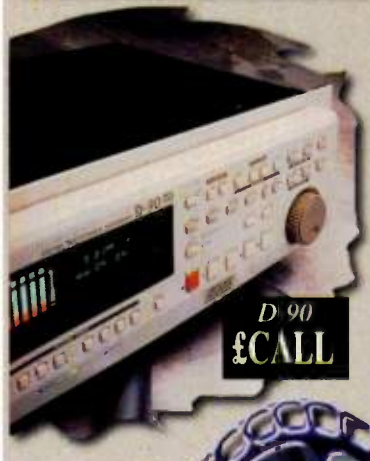
Proffesional Digital Multitrack Recording.

D-160
£CALL

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.



D 90
£CALL

AKAI

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.

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DARWIN

E-MU

Just when you thought you had made up your mind on what hard disk recording package to buy, EMU arrive to spoil your plans. Do you remember the DARWIN??? this wonderful piece of equipment developed by EMU but unaffordable to you. Well EMU thank God have had a change of heart. Exclusive to Music Connections we bring you that exact piece of equipment for the amazing sum of £1495 inc vat. Yes that's right just £1495. Now when we heard this news we had to stop and think? Is there anything that's comparable at anywhere near the price to this amazing piece of equipment. To tell you the truth, we don't think so. And could this now, really be the end of tape based recorders as we know them?

This machine is so capable that it is impossible to tell you everything about it in an advert, and really you should see it in the flesh to see just what amazing value this represents. So if you were thinking of a tape based machine, maybe you think again. Give us a call, come and try it, or forever stay in the dark ages. This offer is limited to first come, first served.

exclusive

GREAT NEW PRICES, CALL FOR DETAILS!

AKAI

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.

ENSONIQ PARIS

ENSONIQ PARIS™

20-bit Multitrack Recording system

PARIS is the most advanced digital audio recording system ever developed. PARIS seamlessly integrates digital audio recording, object-orientated editing, digital mixing with automation, real-time effects processing and MIDI sequencing into an intuitive and flexible environment. PARIS grows to meet your needs with a dedicated control surface and a family of expandable input/output modules. Powered by ENSONIQ DSP technology on a cross platform PCI card, PARIS delivers a total audio recording solution at a revolutionary price.

CONNECTIONS

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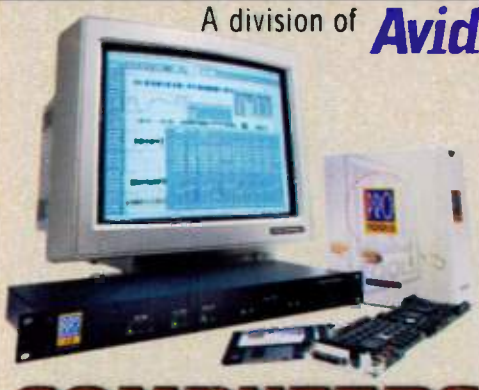
LEEDS - 01943 850533 **SOUTHAMPTON - 01703 233444**

PRO 24 TOOLS

If you rely on Pro Tools, Mackie's HUI studio console can boost your productivity 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 real-time, hands-on multi-channel fades, mutes; select and adjust 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 as 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 connections.

digidesign®
A division of Avid



EVENT

Gina is proving to be one of the most popular Multitrack recording cards we've ever stocked! Gina features S/PDIF I/O with up to 24-bit resolution. 2 in 8 out 20-bit digital to analog converters, full duplex operation and easy trim automatic input gain. A dedicated card for dedicated professionals, come and put it to the test! You won't be disappointed with it's performance or our price!

Darla is designed for musicians who think computer-based multitracking is an expensive hassle. It's also the perfect step-up solution for those who have tasted the awesome power of digital multitrack recording, but who aren't satisfied with the audio quality or channel limitations of their current audio card.

COMPUTERS

ATTENTION!

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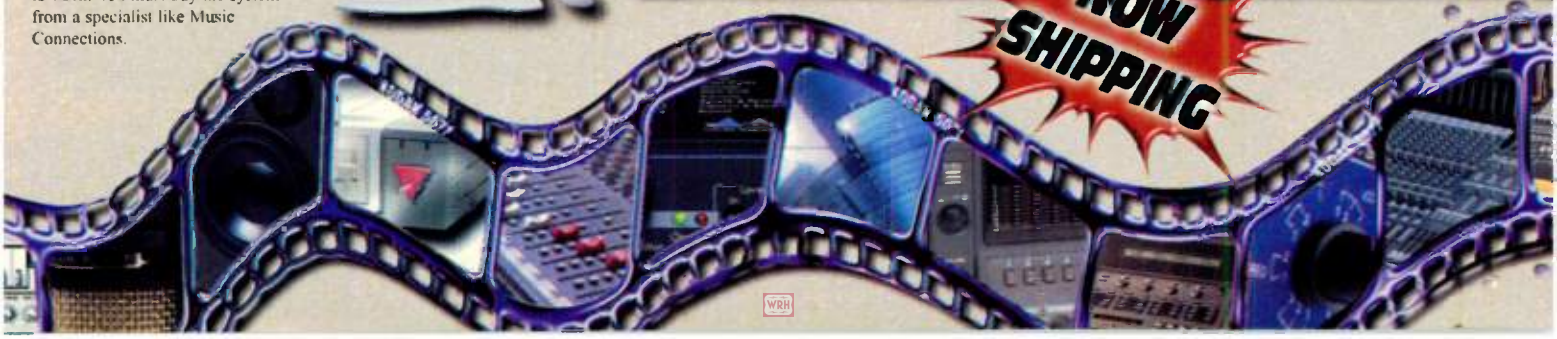

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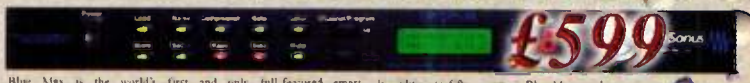

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Inputs and outputs are 1/4" TRS un-balanced. Operation is switchable +4dBu or -10dBV. The power transformer is switchable for international operation. Blue Max is housed in a single rack space, all steel chassis and in keeping with the Presonus "no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

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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 Lo 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 1/4" TS unbalanced. Each channel operates at +4DBU or -10DBV, selected via rear panel switch. The ACP-22 is housed in a one rack space, all steel cabinet. In keeping with the Presonus "no wall wart" tradition, an internal power supply with voltage (for international use) is standard.

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silver streak

KORG AM8000R AMBIENCE MULTI-EFFECTS PROCESSOR

This good-looking unit hides more than just reverb beneath its shiny exterior. DEREK JOHNSON appreciates the ambience...

Following last month's review of Korg's funky new multi-tap digital delay, it would be easy to assume that its companion processor — the AM8000R ambience multi-effects processor — would be dedicated to variations on a reverb theme. As it turns out, this is only part of the story. The AM is both more and less than a reverb processor: more because it offers a variety of non-reverb effects (many of which *can* help in the creation of ambiences) and less because the actual reverb section is not as sophisticated as one might expect. But we're jumping ahead of ourselves.

THREE INTO ONE

Essentially, the AM8000R is a three way multi-effects unit: it offers two effects blocks (FX1 and FX2) that can each access an identical selection of 29 effects, plus a dedicated delay/reverb effect block with a choice of 11 different treatments. The 29 effects available to FX1 and FX2 are listed in a separate box over the page, but I'll just mention here that alongside the straight ones — various types of delay, chorus, flange and so on — are some interesting processors I wasn't expecting to find. See the 'Sound' section later for details.

The signal path starts with a so-called Pre-EQ (high and low frequency with gain and a swept mid), which can be bypassed if you wish. Korg have provided a flexible routing matrix which offers plenty of control over how effects are routed and accessed, but one strange anomaly is that the individual effect blocks can't be removed from an effect chain, although their volume can be set to zero, and they can be muted over MIDI. A number of effects are provided in stereo or dual versions (the dual version provides independent control over parameters for left and right signal paths, while stereo effects have one set of parameters for both); there are also strictly mono and mono-in/stereo-out effects. Even the delay/reverb block effects have a similar range of options.

Physically and operationally the AM is virtually identical to the DL: it has the same brushed-aluminium 1U rackmount package, the same highly visible 12-digit fluorescent scrolling display, and the same five control knobs and four buttons. But there are minor differences. For example, three of the four small buttons toggle the effects blocks on and off, which is nice for real-time experimentation, though their 'off' status can't be saved as part of an effect program. The fourth button is a standard bypass switch. Another difference is that the AM8000R's output-level control is not a dual ganged pot, as found on the delay, meaning that left and right output balance can only be tweaked in software. The AM8000R does, however, retain the dual input-level control of the DL. The back panel is nearly identical: two sets of stereo ins and outs on quarter-inch jacks and the standard MIDI socket triumvirate are there, but, unlike on the DL8000, three of the four external control sockets function as inputs for expression pedals. The fourth accommodates a simple bypass footswitch. Power comes from a chunky external PSU.

EDITING & MIDI

Although the effects and their actual parameters are obviously different to those in the DL8000, the method of editing patches is identical: turn the Function knob clockwise to scroll through a list of parameters, occasionally *press* the Function knob to access various sub-menus, where available, and tweak the Value knob to adjust parameter values. A typical sub-menu is provided when you want to fine-tune an effect: the main top-level parameter allows you to select an effect type (to go in the FX1, FX2 or delay/reverb effect block), and pressing the Function knob takes you to the full parameter list for your chosen effect. To store an edited program, press the Value knob and select a memory location. Just like the DL8000R, the AM offers 256 memory locations: 128 preset and 128 user-definable.

The AM offers just as comprehensive a selection of real-time control options as the DL. The Warp! knob once again provides real-time front-panel control over parameters in a program, something like the real-time control knobs that have become so popular on synths lately (pressing it restores a Warped parameter back to its normal setting). In addition to the Warp! knob, three expression pedals and MIDI events (including Note Ons and the full range of controllers) can be used to control up to eight parameters per program. The MIDI controllers are defined globally, and then assigned on a per-program basis. One nifty feature to keep in mind is that effects can be muted via MIDI. This adds considerably to the ▶

pros & cons

KORG AM8000R £469

pros
- Easy to operate.
- Very flexible.
- Great sound.

cons
- Range and quality of reverbs could be better.
- Patchy manual.

summary

Like its companion DL8000R delay, this wouldn't be your first or only processor, but if you already have your bread and butter effects needs covered, the AM8000R will add some wonderful sonic jam!

SOUND ON SOUND

EFFECTS OPTIONS

The list of effects available to the FX1 and FX2 blocks, though relatively short, is comprehensive and includes a variety of stereo/dual options, where a dual effect offers independent parameters for left and right signal paths. The difference between stereo and dual effects is indicated by their names, but in the following list I've indicated the mono in/mono out effects with an (M), and mono in/stereo out effects with an (M/S).

- Stereo Chorus/Flanger
- Dual Chorus/Flanger
- Modulation Delay (M)
- Stereo Modulation Delay
- Dual Modulation Delay
- Tape Delay (M)
- Phaser (M)
- Stereo Phaser
- Dual Phaser
- Pitch Shifter (M)
- Ensemble (M/S)
- Doppler (M/S)
- Horn Simulator (M/S)
- Rotor Simulator (M/S)
- Stereo Tremolo
- Stereo Ring Modulator
- Dual Ring Modulator
- Stereo Resonance Filter
- Dual Resonance Filter
- Stereo Wah
- Talking Modulator (M)
- Stereo Compressor/Limiter
- Dual Compressor/Limiter
- Stereo Gate
- Dual Gate
- Early Reflection (M)
- Saturator (M)
- Stereo 3-band EQ
- Stereo Ducker

DELAY/REVERB OPTIONS

The third processor, dedicated to reverb and delay, offers the following choices:

- Long Delay (M)
- Tempo Delay (M)
- Stereo Delay
- Dual Delay
- Cross Delay
- Left/Centre/Right Delay (M/S)
- Multi-tap Delay (M/S)
- Dual Multi-tap Delay
- Room Reverb (M/S)
- Hall Reverb (M/S)
- Plate Reverb (M/S)

▶ processor's value on stage, since by muting effects (or changing sundry parameters with controllers) you can make a single program manage many jobs, during the course of a single song, say.

IN USE

My comments about operating the DL8000R go for the AM8000R, and even with the greater number of effects and parameters offered by the AM8000R, editing is just as easy. The most awkward tasks involve working out the various level, pan and routing options for the three available effects. Luckily the operation is so logical that once you've conceptualised what you want to achieve, chances are that the AM8000R will let you do it. For example, I was curious as to whether I could use any of the effects independently of each other, perhaps to emulate the dual processing capabilities of some of the more standard multi-effects processors on the market. A little thought revealed that this should be possible, and a scroll through the parameters confirmed this. Each effect has three main input options: left and right; left; or right (there are options for feeding the outputs of the effects into each other too). Muting the delay/reverb effect for a moment, I assigned mono in/mono out effects to FX1 and FX2. The outputs of the effects needed to be panned hard left and right, and only fed by one of the main inputs, but I got my result: the left channel processed a signal independently of the right, with no mixing of the two outputs. One effect exits the left output, and the other the right. Adding the delay/reverb does mess this up a little, but you don't have to feed the outputs of FX1 and FX2 into this effect unless you want to: it can be fed direct from the main inputs, independently of the other effects. This way you can balance the delay/reverb effect without compromising your independent processing.

A little planning can go a long way with the AM8000R, and this is just one example of the surprising flexibility offered by what is essentially a simple processor. Negative points are few; while there is a tempo delay available, it can't be clocked to MIDI. You choose the tempo (in bpm), which will allow you to sync delays to a song's tempo, but if it varies by any great amount, the sync will come unstuck. The manual also has a lot in common with that provided with the DL8000R: it's not the clearest I've come across, and lacks basic material such as an overview of the unit and concise descriptions of what every parameter does, and how they interact.

SOUND

The AM8000R's effects are of uniformly high quality, with comprehensive lists of editing parameters on offer for each. For example, the tape delay effect available to FX1 and FX2 has a 'signal-to-noise ratio' parameter which allows you to add plenty of grunge if you want it, and the same effect has a saturation parameter, plus flutter, a simulation of a real-world tape delay's wow and flutter. Other unexpected effects include compressors, a saturator (kind of an overdrive), resonant filters, dual and stereo ring modulators, and the excellent talking modulator. This last effect is a vowel simulator that seems to be nicked from Korg's Trinity workstation — make your treated sounds appear to talk! Rotary speaker fans will welcome the inclusion of separate horn and rotor effects, and comprehensively specified they are too: plenty of control over speed, acceleration, mic distance and mic spread. These all make interesting additions to the AM8000R's sonic armoury.

I was a little disappointed to discover the lack of a truly sophisticated reverb. I was hoping to find something capable of everyday vocal treatments, but to my ears the reverb is a little coarse for this task. I'll quickly add that the reverb is fine for synth, guitar and other instrumental applications, and that vocals can benefit from combinations of effects, especially during a creative or off-the-wall mix. I also thought that more choice in the reverb department could have been offered by a unit dubbed an 'ambience' processor; as it is, of the 11 effects in the delay/reverb effect block, only three are true reverbs (with an early reflection option open to FX1 and FX2).

CONCLUSION

The AM8000R has turned into one of my favourite effects processors. I love its simplicity, but I also appreciate the quality, variety and accessibility of its effects. The unit's presets do, for once, give you an honest idea of what it might be capable of, and the creative amongst you will have a lot of fun exploring the possibilities. Korg's new baby would be a good choice for the musician with an existing collection of effects, who's in search of something unusual, and the sturdy build and large display may well cause the AM8000R to inhabit space in a gigging musician's rack. SOS

info

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considering capacitors

PAUL WHITE looks at the workings of capacitor mics and discusses their advantages for studio recording.

CAPACITOR MICROPHONES EXPLAINED

At the heart of every studio microphone is a transducer system designed to convert sound into an equivalent electrical signal. This works by means of a moving coil suspended in a magnetic field, or by utilising the change in capacitance of an electrically polarised capsule where one of the capacitor elements is a lightweight, conductive diaphragm. So-called capacitor mics tend to be expensive when compared to dynamic models, but they have very real advantages that justify their cost.

CAPACITOR MICROPHONES

Capacitor microphones are able to respond to very high audio frequencies, and they are usually much more sensitive than their dynamic counterparts. In other words, they require less amplification than dynamic models to produce the same output level from the same signal source, making them more suitable for quieter or distant sound sources. The reason capacitor microphones have such a good frequency response is that their diaphragms can be made much thinner and lighter than those of dynamic models, as they don't have to drag the mass of a voice coil along with them. A typical capacitor mic diaphragm is just a few microns thick, often fabricated from mylar, with a thin gold coating to make it electrically conductive. This diaphragm forms one plate of a capacitor; the other plate is fixed parallel to the diaphragm with a small air gap between them. This fixed backplate is generally perforated to allow air to pass through, and there may also be some holes drilled only part-way through, to form the mechanical damping system required to compensate for the natural resonance of the diaphragm. As you can imagine, any diaphragm acts like a drum skin and has a natural resonant frequency.

The electrical capacitance of the capsule changes whenever variations in air pressure cause the distance between the diaphragm and backplate to change, and if a fixed electrical charge is placed across the capsule, the voltage on the diaphragm

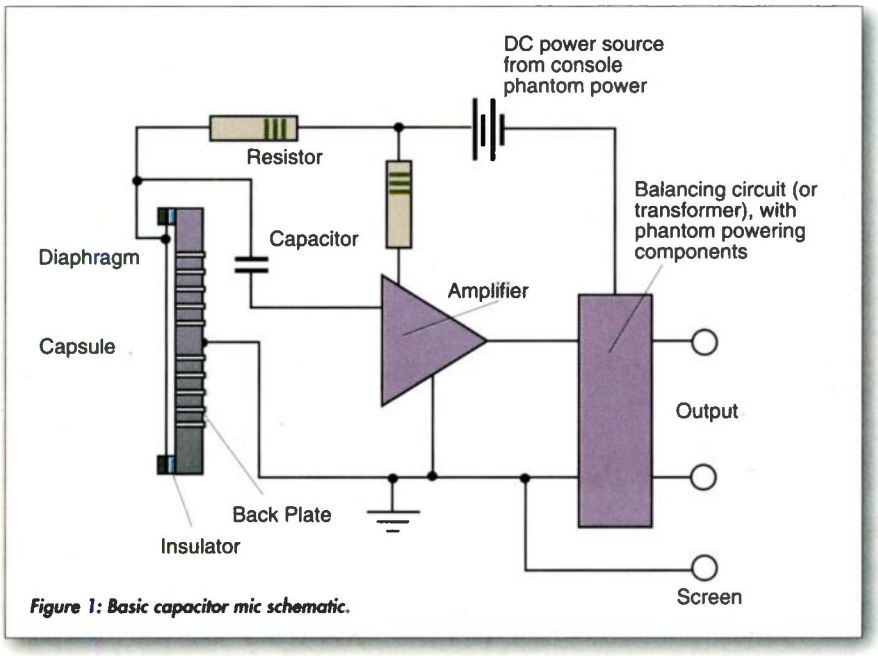


Figure 1: Basic capacitor mic schematic.

is modulated by the sound pressure to produce a small electrical signal. This small signal voltage is amplified by circuitry within the microphone, so the phantom power source required by this type of microphone actually performs two separate functions: it charges the capsule and it drives the preamp circuitry. Figure 1 shows a typical capacitor microphone block diagram.

The polar pattern of the microphone depends on the design of the backplate and the acoustic chamber behind it, so it is possible to build single-diaphragm capacitor mics to produce any of the available polar patterns. However, the only way to adjust the polar pattern of a single-diaphragm capsule is to mechanically change the acoustic system at the rear of the capsule, and this is extremely difficult to do properly. Instead, if switchable polar-pattern microphones are needed, it's generally better either to use interchangeable capsules or a specially designed dual-diaphragm capsule that can recreate all the polar patterns via simple electrical switching.

VARIABLE-PATTERN CAPSULES

The majority of variable-pattern microphones are built around a dual-diaphragm design where two diaphragms are fitted either side of a common backplate. Porting, via perforations in the backplate, is used to give each side of the capsule a cardioid response, so in essence the capsule is really a pair of back-to-back cardioid mics occupying virtually the same point in space. By varying the signal level of one of the capsules, and by switching its phase, it is possible to sum its output with that of the fixed cardioid side, to produce all the commonly available polar patterns, as shown in Figure 2. Note that the outputs combine to form an omni response, which is the result of having opposing cardioids electrically in phase with each other — but as you can see from the accompanying polar-pattern plots in Figure 2, switching the polarising voltage produces a whole series of patterns. In theory, it is possible to move from a figure-of-eight pattern at one extreme, via the various widths of cardioid pattern, to omni at the other extreme, but most microphones provide a limited number of switched steps. Simpler models, for example, may offer just omni, cardioid or figure-of-eight patterns, whereas more comprehensive models may also include hypercardioid and wide cardioid — it's all down to how many switch positions are provided.

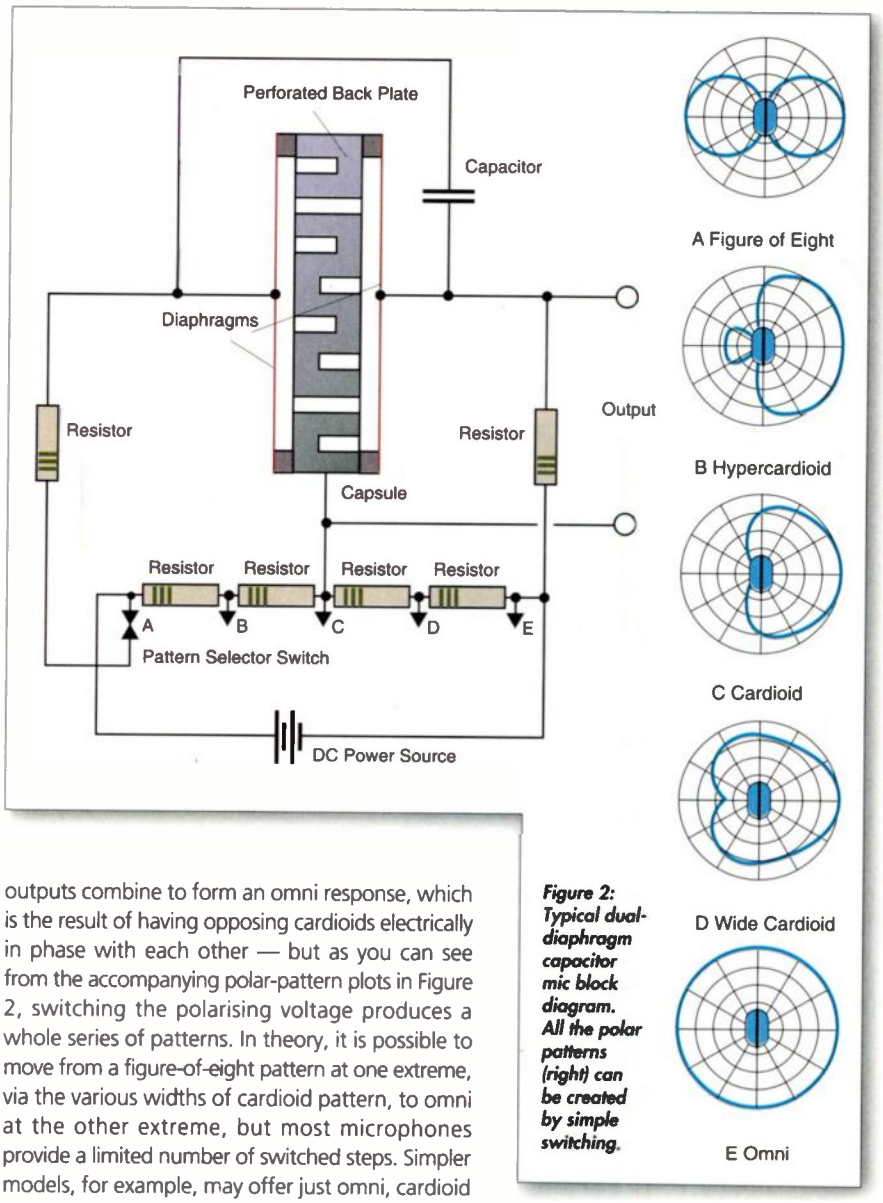


Figure 2: Typical dual-diaphragm capacitor mic block diagram. All the polar patterns (right) can be created by simple switching.

> "The majority of variable-pattern microphones are built around a dual-diaphragm design..."

OUTPUT STAGE

The output from a capacitor microphone must be balanced if it is to be operated from phantom power, and with the exception of valve microphones ▶ right-hand diaphragm is polarised by a fixed voltage taken from the right-hand end of the resistor ladder, but the left-hand diaphragm is connected via a switch that can be set to any position along the ladder, allowing it to be set either positive or negative with respect to the backplate (the centre point of the ladder is the reference point and connected to the backplate). Varying the diaphragm's voltage is a simple way of controlling its sensitivity, and reversing the voltage also reverses the phase of its output. When both capsules are polarised with the same voltage (position E), the

Nevaton MC51.

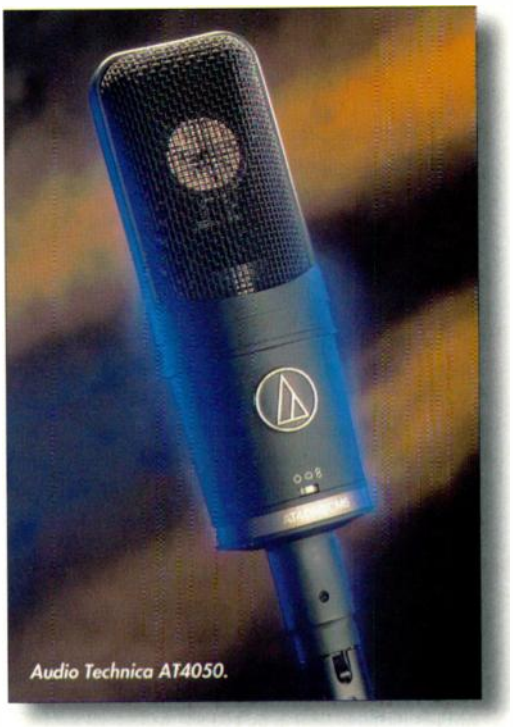
▶ and certain specialist models, modern capacitor mics are invariably phantom powered. With transformerless models, the phantom power is isolated by means of blocking capacitors and summing resistors, whereas a transformer can be made to provide phantom power from a centre tap on the secondary (output) winding. There is much debate over whether transformerless or transformer-output mics are best, and whilst it is certainly possible to get a better transient response by dispensing with transformers, the benign saturation characteristics of transformers are thought by many to result in a warmer, more natural sound. This is rather like the valve versus transistor argument all over again, so the only advice I can give is to listen and make up your own mind!

AKG C3000.

DIAPHRAGM SIZE

Large-diaphragm capsules are currently popular, especially for vocal work, again because of that enigmatic word 'warmth'. In theory, small-diaphragm mics are more accurate because their small geometry produces a more accurate off-axis response, and with the diaphragm mass being less, the high-frequency response may also be better. However, large-diaphragm mics tend to be used mainly on-axis in close-miked recording situations, and their frequency response can still extend to 20kHz or even more, so there's no real practical limitation in choosing a large-diaphragm model unless you want to work with distant sound sources where off-axis sound is likely to make a major contribution.

There are various reasons why large-diaphragm capsules might sound different to small-diaphragm models, but the main one is that the natural resonance of the capsule is likely to be lower. A combination of damping and acoustic resonators will generally be used to flatten out the overall response to some extent, but despite the similarity of the paper specifications, there's often a distinct subjective difference between large- and small-diameter capsule models. The more distinctive sounding large-diaphragm models often have frequency responses displaying noticeable bumps and troughs, and though this is technically undesirable, in artistic terms these frequency anomalies can enhance certain parts of the human speech spectrum in a subjectively pleasing way. Because of this disparity between paper specifications and subjective performance, it is is essential to try microphones in a studio environment before deciding on their suitability for a particular purpose.


Audio Technica AT4050.

"...switching the polarising voltage produces a whole series of patterns."

WHICH PATTERN?

So much recording is done with cardioid pattern mics that it seems we sometimes forget the other patterns exist at all, but each has its strengths — otherwise there'd be no point in spending the extra money on a switchable-pattern model. Cardioid mics have the advantage that they exclude a reasonable amount of off-axis sound, especially from the rear of the mic, but the elaborate acoustic porting required to create the pattern often affects the subjective sound of the microphone in a negative way, resulting in a sound some users may describe as nasal or honky. On a well-designed mic, these artifacts are minor, but ▶

PROXIMITY EFFECT

All cardioid mics exhibit a proximity effect, which results in a rising bass response when the mic is used close to the sound source. The reason this happens is that cardioid mics also capture sound from the rear of the capsule, which is then delayed in a labyrinth and then added to the sound energy arriving on-axis. The phase shift introduced by the labyrinth causes sounds arriving from the rear to be largely cancelled out, but this only works if the same level of sound arrives at the front and rear of the mic. When the sound source is distant, this is nominally the case, but for very close sound sources, the inverse square law conspires to ensure that there's more sound level at the front of the mic than at the rear. This reduces the efficiency of the port in cancelling low frequencies, the outcome of which is that singing very close to the mic produces a significant amount of bass boost.

In theory, dual-element capacitor mics set to a cardioid response should demonstrate exactly the same proximity effects as a fixed cardioid mic, but in practice the characteristics vary from model to model, depending on the porting arrangement used. Some manufacturers have managed to keep the proximity effect fairly well under control, whereas some mics generate huge amounts of bass boost when used close up. If this become a problem, it sometimes helps to use the low-cut filter on the mixing console or mic, in combination with a little conventional EQ. For studio work, though, it's better to move further away from the microphone. If you work very close, in addition to the risk of popping, you'll find that any small change in position causes a large change in both the level and tonal characteristics of the mic. A strategically placed pop shield can stop singers getting too close.

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▶ even so, direct comparison with an otherwise similar omni-response mic will usually show the omni to have a more 'open', natural sound.

The problem with omni mics is that they pick up sound from all directions, but that needn't be too much of a disadvantage, as moving them slightly nearer to the sound source may be all that's required to reduce the spill level to around the same as you'd expect from a cardioid. What's more, room reflections (and spill from other instruments), will be captured more accurately because of the more uniform off-axis response. Indeed, if you're working with something like a folk ensemble, where spill between instruments is likely to be significant even with cardioid mics, you might find you get better results by using omni mics, even though you may have to accept a higher level of spill.

"...these frequency anomalies can enhance certain parts of the human speech spectrum in a subjectively pleasing way."

CONDENSATION

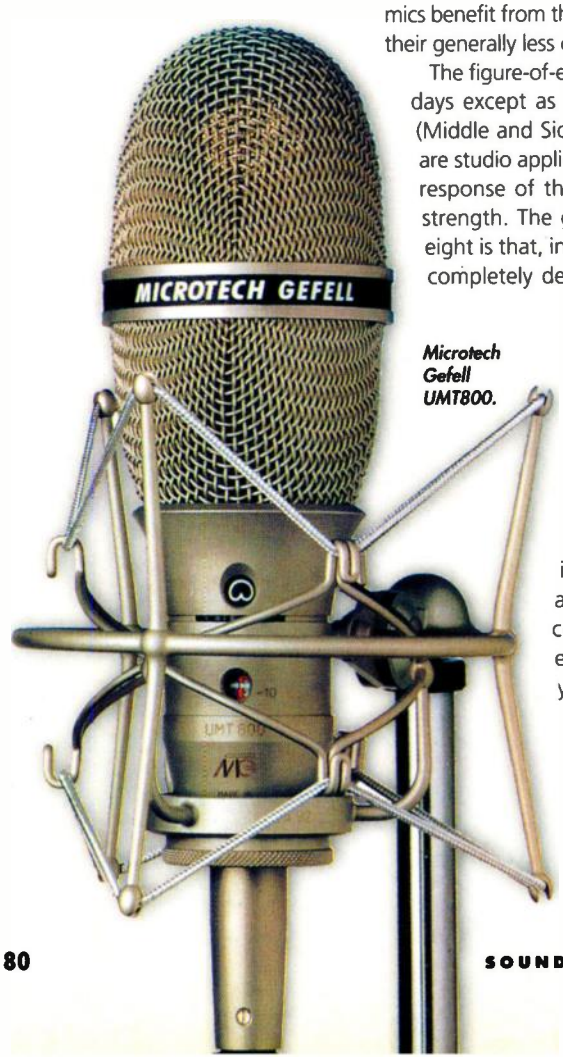
Conventional capacitor mics are very high-impedance devices, so any condensation on the capsule will affect electrical performance quite noticeably. This can be a problem when taking a mic from a cool locker and then having somebody sing into it at close range. What tends to happen is that the sensitivity of the mic falls off and irregular background noises such as pops or crackles start to appear. Using a pop shield will help, but it's important to make sure the mics are at room temperature before use, and to ensure that the room isn't cold enough to permit condensation. In extreme cases, the mic may have to be withdrawn from service for a short while and placed somewhere warm to dry out. Note that RF capacitor mics, such as the Sennheiser MKH series, don't tend to suffer from this problem.

FURTHER READING

If you're not familiar with how microphones work and what the various polar patterns mean, have a look at the 'Choosing a Microphone' article which appeared in the June 1995 issue of *SOS* for a bit more help.

When miking more distant sounds, such as choral groups or acoustic instrument ensembles, or even when setting up drum overheads, omni-pattern mics benefit from their better off-axis response and their generally less congested sound.

The figure-of-eight pattern is rarely used these days except as the side-firing part of an MS (Middle and Side) stereo mic array, but there are studio applications where the unique polar response of the figure-of-eight is a definite strength. The great thing about a figure-of-eight is that, in a fairly dead room, it's almost completely deaf to sounds coming in from the side. When you're miking a singer who also plays guitar, for example, you can use this to your advantage by pointing the live end of the mic at the singer and the dead side of the mic towards the guitar. This will only be partly successful, as the guitar isn't a point source of sound, and the room is unlikely to be completely non-reflective, but even so, this technique can help you claw back a few precious dBs of separation.



Microtech Gefell UMT800.

SUMMARY

If you have a typical home studio and only need a good mic to record vocals or acoustic guitar close up, a decent cardioid capacitor mic is a good option, as it combines quality performance with affordability — with low-cost models such as the AKG C3000 and Rode NT1 doing the rounds, most people can afford at least one good mic. On the other hand, a multi-pattern mic will provide more flexibility, especially if you're not limiting yourself to close-miking vocals and guitars, and even though you may find it's set to cardioid most of the time, those extra patterns may help you out of the occasional tight spot.

Whether or not to buy a valve mic is a different proposition altogether, as valve models start at around £1000 and go up as high as you like. The good ones do have a distinctive sound, but don't be seduced until you've done a head-to-head with a good solid-state model — you may be surprised at how little difference there is, and in some extreme cases, the tube mic may sound distinctly muddy by comparison. Note that a warm sound doesn't mean a dull sound. A good tube mic tends to sound clear and open, with a confident low end, but it shouldn't sound woolly at the bass end or spitty at the top. As a rule, tube mics are slightly more noisy than their solid-state counterparts, but in a close-miking situation this shouldn't be significant. On a more practical note, you do have to use an external power supply with a valve mic, as phantom power can't supply either the necessary current or voltage for valve circuitry, but this is no big disadvantage in a studio environment. As a rule, valve models require a little more care and attention than their solid-state counterparts, due to the fragile nature of valves. Unlike FETs, valves also deteriorate with age and must occasionally be replaced.

I hope the information in this article will help you decide on the right mic for your own requirements — or, at the very least, help to explain the apparently high cost of switchable-pattern capacitor mics. Microphones last a long time if they're looked after — they can go on for decades with minimal maintenance, so even though it might seem like a lot of money now, a quality mic is a good long-term investment. SOS

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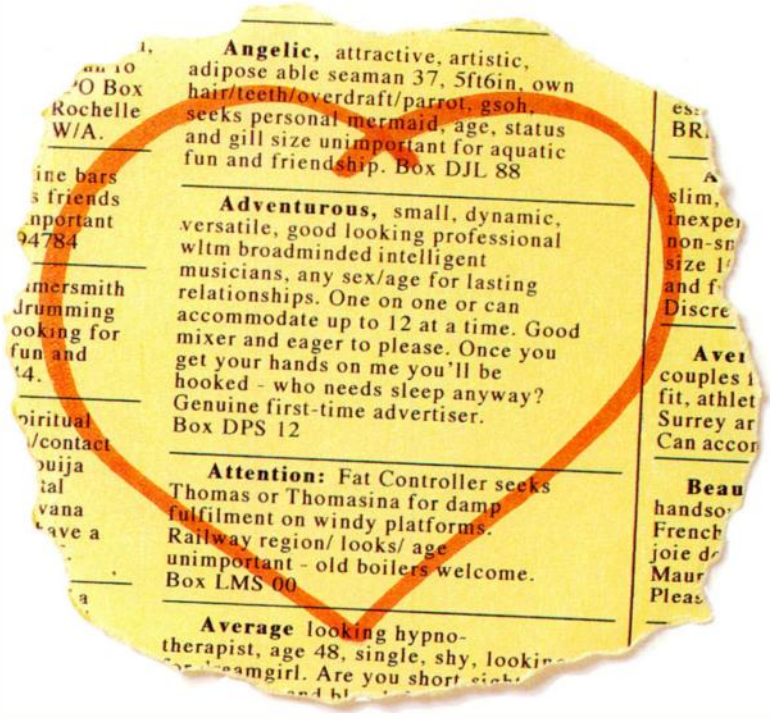

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BIG MAQ

DOEPFER MAQ 16/3 MIDI ANALOGUE SEQUENCER

The original MAQ 16/3 analogue-style step sequencer, developed with the help of Kraftwerk's Florian Schneider, was released almost five years ago, but Doepfer clearly believe in shelf-life and have continued to update this unique instrument. CHRIS CARTER steps ahead.

Those of you with long memories may be experiencing feelings of *deja vu*. This is because the original Doepfer MAQ 16/3 was first reviewed in *Sound On Sound* way back in July 1993, by Derek Johnson. So why, you might ask, is a five-year-old sequencer getting a full review again, instead of a retrospective? Well, the MAQ 16/3 has gone through a number of system and hardware updates (see 'More for your Money' box for a list), a colour change and a substantial price reduction. About the only thing that hasn't changed is the name. Also, now that Doepfer have a new UK distributor, the time is right for a relaunch.

Assuming that most readers won't remember the original review or haven't come across an analogue-style sequencer before (see the box on these pages elsewhere in this article for mor informtion), I'll briefly recount the main features of the MAQ. It's a 3-voice (3-row), 16-step-per-row, multitimbral, hybrid MIDI/analogue sequencer, which uses rotary pots to set and change the output signal (MIDI and analogue) at each step in a sequence. The MAQ can store 30 performance patches, or 'Presets', as Doepfer call them, and settings can also be saved and loaded via MIDI SysEx dumps. It can be synchronised to an external MIDI clock signal (it also transmits MIDI clock from 50-254 bpm) and many of its editing and control functions can be controlled by external MIDI commands.

NOT A PLASTIC MAQ

Physically, the new MAQ 16/3 looks pretty much the same as the original — a metal, 4U-high rackmounting case, about four inches deep, featuring three rows of 16 knobs (with an LED indicator above each), eight small Menu buttons, a continuous data wheel, and a large, 3-digit LED display to show bpm and editing values. In place of the original black paint job, this new improved MAQ sports a pleasing silver grey facia to match the rest of the current Doepfer range. Another obvious change is around at the back of the unit, where you now find, in addition to the original MIDI In, MIDI Out and power socket, three CV and three Gate mini-jack outputs for connecting to Doepfer analogue synth modules or, indeed, any 1V-per-octave, voltage-controllable analogue VCO, VCF or envelope generator. Each pair of CV/Gate outputs is permanently tied to the corresponding row of knobs on the front — so row 1 controls CV/Gate output 1, for example.

Power is supplied by a standard 9V wall-wart PSU and unfortunately the MAQ doesn't possess any form of power on/off switch, so turning it on or off means unplugging the PSU. This is a bit annoying, not to mention inconvenient. However, the Teutonic build quality is quite substantial (and heavy) and up to the usual Doepfer high standard.

CYCLING TO WORK

The eight front-panel Menu buttons handle editing and playback modes, with an LED above each to indicate which button is active. The buttons are as follows, with the first four being in the upper row and the following four in the lower row:

- Event
- Channel

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DOEPFER MAQ 16/3

GERMLISH

The MAQ's manual could do with a bit of a rewrite to tidy up the German to English translation, which is a little laboured, and it would certainly benefit from a few practical examples and diagrams to help beginners. Some sections are particularly confusing, such as the pages concerning remote MIDI control, which is a shame, as the poor instructions could put some users off investigating this machine's deeper and less obvious, but useful, features.

MORE FOR YOUR MONEY

These are the improvements offered by the current version of the MAQ 16/3 over the original one, reviewed in July 1993.

- **3 CV/Gate outputs.**
- **Extensive MIDI remote control options.**
- **30 memory presets.**
- **Presets can be saved, loaded and edited 'on the fly'.**
- **Dynamic MIDI switching per row.**
- **More sequence playback modes.**
- **Sequences can be chained or cascaded.**

▶ difference between Normal (the default) and Pause note events. If a row event is shown in the LED display with a 'P' (as in the example 'PA2', which would designate Pause, Absolute, 2-octave range), turning any knob fully clockwise inserts a mute (or mutes) in the sequence for both MIDI and CV/Gate outputs. Another notable Event parameter is Step Duration, which adjusts for how long individual notes play before the MAQ steps onto the next note. Used carefully, this feature can be put to good use, to make sequences run with a slight swing.

Other MIDI Event types which can be transmitted include MIDI Controllers 0-31, pitch-bend, velocity, aftertouch, and Program Change.

2: CHANNEL

This menu is dedicated to assigning a MIDI channel to each row — unless dynamic MIDI-channel switching has been activated, in which case you can set a different MIDI channel for each *step* in a sequence, to a maximum of 16 per row. (To use this latter feature fully, you would need to be working with either a 16-part multitimbral MIDI module or 16 separate MIDI sound sources.) Although a similar effect could also be achieved by assigning different program changes to each step, the MIDI module under control would need to be able to cope with changing programs pretty damn quick to keep up with even a slowish sequence.

3: FIRST/LAST STEP

The default number of pattern steps for any row is the maximum 16, but a sequence loop can begin and/or end at any step number. You could, for instance, have row 1 running a 4-note sequence, row 2 a 16-note sequence and row 3 a 12-note sequence.

4: PRESCALE/TIME

Here you can adjust the relative time difference between rows, by changing a time-divider value (1-32). The default MIDI clock value is 6, but if a value of 3 were selected the row would run at twice normal speed. If set at 12, it would run at half normal speed. Using different values for each row gives you scope for some pretty complex patterns. This menu also allows access to row gate on/off and row step-time on/off parameters.

5: MODE

The Mode menu determines the direction/order in which a row plays a sequence or loop. There are 13 possible configurations:

- Forward — clock control
- Backward — clock control
- Pendulum 1 — clock control
- Random — clock control
- Pendulum 2 — clock control
- One Shot, no retrigger — clock control
- One Shot, with retrigger — clock control
- One Event, Forward — note control
- Backward — note control
- Pendulum 1 — note control
- Random — note control
- Pendulum 2 — note control

(Pendulum mode swings back and forth.)

All modes under clock control are sync'ed to internal or external MIDI clock, while note-control modes are triggered ▶

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Definition

passive /ˈpæsiv/ adjective **1** submissive. **2** inert

active /æktiv/ adjective **1** given to action; working, effective. **2** practical; diligent.

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by incoming MIDI note commands (from a keyboard or sequencer). If One Shot mode 2 (with Retrigger) is selected, it plays a sequence row once then triggers the next row. If all three rows use this mode it's possible to construct cascading 48-note sequences.

6: SINGLE STEP

This selects and repeats (at the set bpm rate) a single step, and is mostly used while editing individual notes. When the Single Step button is first pressed, the same note on all three rows is selected, and in this mode you can play back all three row sequences in sync and by hand, turning the data dial forwards or backwards and at different speeds. Pressing the button again cycles this mode through the rows one at a time.

7: PRESET

This is where the 30 available presets are stored and retrieved, and where the MIDI SysEx function is initiated. When the MAQ is switched on it automatically loads preset 1 into memory for immediate playback, and preset 0 always corresponds to the actual current status of the 48 front-panel knob positions.

8: START/STOP

This isn't really a menu button at all, as it simply functions as a Start/Stop control while the LED display shows the bpm rate. Pressing the button once starts the sequence, pressing it again stops the sequence, and pressing it a third time will restart the sequence from where it stopped. To reset a sequence to start from the beginning, you must first exit the Start/Stop menu (by pressing any other button) and then press the Start/Stop button again — a slightly inelegant method. However, if the MAQ is synchronised to an external MIDI clock (activated by turning the data knob past 254bpm) things improve, as the sequencer follows remote MIDI start, stop, continue and reset commands like a lemming.

KNOBS AND MICE

If you get tired of all that knob twisting, you can assign the MAQ an incoming remote MIDI channel, and control all manner of internal functions via an external MIDI keyboard or sequencer. This is implemented using what Doepfer quaintly call an 'alienated' MIDI specification, a very non-standard combination of MIDI note numbers 36-83, controllers 0-30 and program changes 1-127. Some of the controllable functions are: tempo, internal/external sync, mute/unmute individual steps, mute/unmute rows, adjust row velocity, set row first/last step, row playback modes, row MIDI channel, set row program changes, adjust row gate time and note time. About the only thing you can't do is control the knobs themselves. I came across a couple of problems if I programmed a controller signal into a sequencer track and sent it as a continuous data stream rather than as short messages — the MAQ started to complain a little, slowing down or behaving erratically. This also happened if I tried sending it too many program change messages too fast. However, if the sequencer is playing, it copes well when receiving single SysEx dumps: it simply changes over to the new sequencer pattern and continues running without a glitch.

FAST, FURIOUS & FUNKY

Considering the wealth of features available inside the MAQ 16/3, this is a comparatively brief summary of its editing and performance capabilities — I could quite easily fill as much space again if I were to cover everything. So what's it like to play with? Well, once you've got your head around the foibles of the operating system and basic display, the words fun, fast and furious spring to mind — even more so if your setup includes both MIDI and analogue gear. Once you start using the MAQ, you'll probably be quite surprised at how quickly you can get decent results — as long as you don't try to be too clever with real-time editing, that is, as this can leave you with hung notes, unpredictable time signatures, zero volume and your brain out of sync, if you're not careful.

The MAQ is a pretty fast machine to work with: you get immediate and usually satisfying results from all your button-pushing and knob-twiddling, and you can save and load presets without a glitch or hiccup — and, more importantly for live and/or improvisational work, without stopping sequencer playback. It can sync, or be sync'ed, to MIDI, it has almost full remote control over MIDI, and it offers enough editable parameters to please even the most insatiable MIDI control junkie. Ironically, this last point is the source of my only real criticism (well, more of a moan really): most of the time I longed for a fourth row of knobs. The problem with MIDI technology, as opposed to analogue, is the wealth of control options available: volume, velocity, pitch-bend, aftertouch, program change — the list goes on and on. With the MAQ 16/3, if you want to transmit any of these MIDI controllers you have to sacrifice a sequence row that could be generating MIDI notes, unless you want all your sequences to have fixed velocity, volume, and so on. However, there are solutions to most problems: using the MAQ 16/3 with another MIDI software or hardware sequencer is an obvious option, and is probably the most practical setup for the majority of users.

Some may think the MAQ 16/3 a little pricey when considering the smallish 30-preset memory and 1400-note capacity, but this is a pretty unique instrument, and I can't think of many (if any) hybrid MIDI/analogue sequencers, past or present that match the capabilities of the MAQ 16/3. A fine machine that I will be very sorry to see leave our studio. SOS

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DRUM DI DUM DI DUM

In a classic case of accidental lateral thinking, one use that occurred to me just as I was putting the finishing touches to this review (and will no doubt push me over my word count — again!) is hooking up the MAQ to a MIDI drum module or a sampler loaded with percussion and/or effects sounds. Although you are, in reality, using the sequencer in exactly the same way as if you were controlling a synth module, the difference is that each note transmitted will trigger a totally different sound. As I mentioned previously, you could use dynamic MIDI switching or the program change-per-step feature but this way is a lot easier to use, doesn't involve setting up multitimbral modules, and somehow just sounds tighter and groovier. You get faster results to boot.

I achieved the best results if all three rows were set on the same MIDI channel as the drum module and the row octave ranges were set to one or two octaves — otherwise it can be difficult selecting individual drum sounds with each knob. Unfortunately, you can only trigger three sounds simultaneously, but the fun part comes with the real-time editing features, as you can have individual rows playing patterns forward, in reverse, randomly or swinging back and forth (pendulum mode). You can also change the prescale, first/last steps, step duration (time between notes) and Event types on each row for even more variations and swing. You can save and load patterns to memory without taking a breath or stopping the sequencer, and if you're feeling really adventurous you could control patterns with remote MIDI commands. To get the most from this technique (or regular MAQ sequencing) it's probably a good idea to record your patterns and arrangements into a second MIDI sequencer sync'ed to the MAQ.

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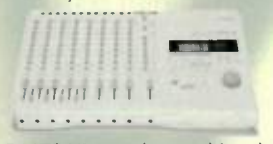

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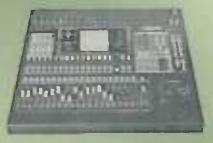

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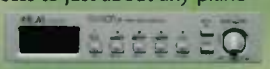

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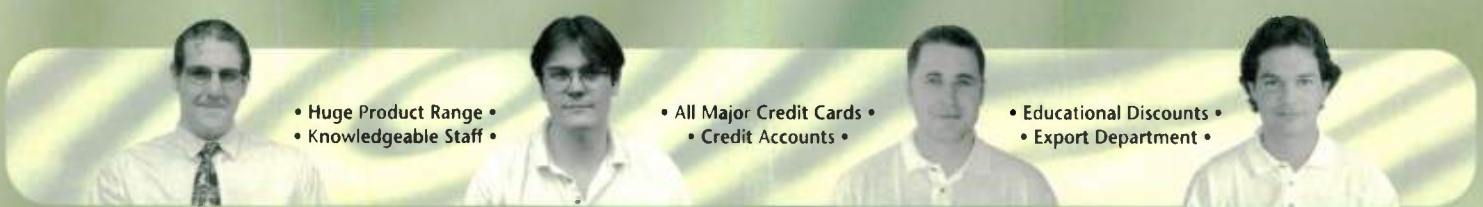

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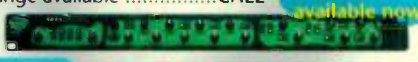

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SUPER FLY?

METALITHIC SYSTEMS DIGITAL WINGS FOR AUDIO PC RECORDING SYSTEM

Multi-channel PC soundcards are now arriving in droves, but this one is rather different, and incorporates a potential 128 tracks, using unique hardware technology. MARTIN WALKER channels his efforts.

If I told you that you could now buy a complete PC hardware/software package, including a suite of DSP plug-ins, to enable you to record and play back up to 128 tracks of digital audio, for less than £300, would you believe me? Digital Wings for Audio (DWA), from Metalithic Systems, does just this, and its other claim to fame is that it does it without needing a PC with a NASA control specification (a Pentium 90 and 24Mb of RAM is recommended, although you can scrape by with 16Mb). This is achieved by "rendering all the track information into a single stereo file" using special hardware on the soundcard. Every time you record a new section, or edit an existing one, only the relevant section is re-rendered, and if you want to remove an existing track in the mix, it subtracts the appropriate data from the composite mix. Clever, eh?

Currently, the card provides two analogue inputs (one of which can be switched between balanced mic and unbalanced line levels), and a single stereo analogue output, which puts it in line with the majority of stereo soundcards. There is also a 5-way D-type connector providing a 1-In/1-Out MIDI interface, which you can access by attaching a standard soundcard MIDI cable adaptor. However, an optional BreakOut Box (BOB) should be available shortly, and this will give balanced XLR and quarter-inch jack connectors, as well as AES/EBU and S/PDIF digital I/O, which puts DWA into a more professional arena.

In keeping with DWA's different approach, the software looks unusual too, with a colourful 'fun' interface, complete with animated buttons. As Metalithic Systems themselves say "At first DWA looks and feels a little different. But work with it for a few hours, and suddenly everything else seems old-fashioned." Let's find out if they're exaggerating.

INSTALLATION

The Digital Wings hardware is a full-length (9.5 inches) ISA soundcard. Some PCs are severely restricted when it comes to installing these, so it is worth checking inside yours first before parting with any money. Only one of the four ISA expansion slots in my machine was suitable, the rest being obstructed by assorted heatsinks and processor fans. As always, it's best to check the ▶

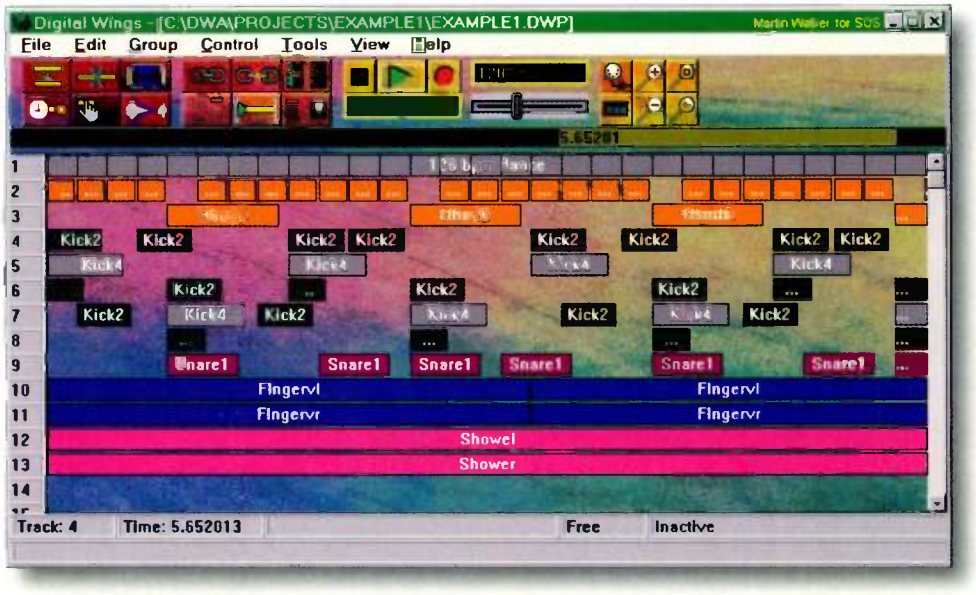


Figure 1: The main Project Editor page is a riot of colour, and if you move the cursor over any of the graphic buttons, they animate to indicate their function.

INTRODUCING THE HR824 ACTIVE MONITOR.

If you've been trusting the quality of your creative product to passive monitors, there's an astonishing revelation waiting for you.
In our opinion, the active, biamplified HR824 is the most accurate near-field monitor available — so accurate that it essentially has no "sound" of its own. Rather, Mackie Designs' High Resolution Series™ HR824 is the first small monitor with power response so flat that it can serve as a completely neutral conductor for whatever signal you send it.

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

SCIENCE, NOT SNAKE OIL.

Internally biamplified, servo-controlled speakers aren't a new concept. But to keep the cost of such monitors reasonable, it's taken advances in measurement instrumentation, transducers, and electronics technology.
In developing the HR Series, Mackie Designs sought out the most talented acoustic engineers and then made an enormous commitment to exotic technology. The HR824 is the result of painstaking research and money-is-no-object components, not to mention thousands of hours of listening tests and *tens* of thousands of dollars in tooling.

FLAT RESPONSE... ON OR OFF-AXIS.

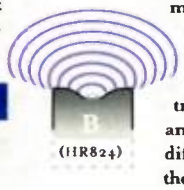
One of the first things you notice about the HR824 is the gigantic "sweet spot." The detailed sound field stays with you as you move back and forth across the console — and extends far enough behind you that musicians and producers can hear the same accurate playback.

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

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

Like biamped speakers, wave guides aren't a new concept. But it takes optimized internal electronics and a systems approach to make them work in near-field applications.

The HR824's wave guide (Fig. B) maximizes dispersion, time aligns the acoustic center of the HF transducer to the LF transducer's center, and avoids enclosure diffraction (notice that the monitor's face is perfectly smooth.) The exponential guide also increases low treble sensitivity, enabling the HF transducer to handle more power and produce flat response at high SPLs.



(HR824)

CLEAN ARTICULATED BASS.

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

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

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

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

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

A TRUE PISTONIC HIGH-FREQUENCY RADIATOR.

We scoured the earth for the finest high frequency transducers and then subjected them to rigorous evaluation. One test, *scanning laser vibrometry*, gives a true picture of surface vibration patterns. Two test results are shown in the upper right hand corner of this ad. Figure C is a conventional fabric dome tweeter in motion. You needn't be an acoustic engineer to see that the dome is NOT behaving as a true piston.

The Mackie HR824 Active Monitor. ±1.5dB from 42 to 20kHz.

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

INDIVIDUALLY OPTIMIZED.

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

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

Fig. C: Uneven fabric dome tweeter motion distorts high frequencies.

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

Mackie is one of the few active monitor manufacturers that also has experience building stand-alone professional power amps. Our HR824 employs two smaller versions of our FR Series M•1200 power amplifier — 100 watts (with 150W bursts) for high frequencies, and 150 watts (200W peak output) for low frequencies. Both amps make use of high-speed, latch-proof Fast Recovery design using extremely low negative feedback.

TAILOR THEM TO YOUR SPACE.

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

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

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HR824 Active Monitors accept balanced or unbalanced ¼" and XLR inputs. Jacks & removable IEC power cord face downward so that the speaker can be placed close to rear wall surfaces.

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pros & cons

DIGITAL WINGS FOR AUDIO £299

pros

- Excellent value for 128-track capability.
- Clever Loop Recording.
- Good clean sound.
- Much further system potential.

cons

- Long card and limited IRQ settings for hardware.
- Hardware only appears as a standard stereo soundcard to other applications.
- Misleading advertising of both DSP plug-ins and hard disk storage requirements.

summary

For anyone who really needs up to 128 tracks, and has a modest PC, this is the only way to go. For those with less grandiose track requirements, there's a lot of other competition already providing real-time effects on multiple tracks.

installation details in the manual before starting, to see whether the hardware or software should be installed first. In this case, since there are several hardware jumpers on the card which may need setting prior to plugging it in (Digital Wings is resolutely non-Plug and Play), you need to pre-check for the availability of one IRQ and one Port Address. These default to IRQ 5 and 250h (hexadecimal). Whilst address 250h is a good choice, as it seems to be generally available (the Soundscape system reviewed last month uses it for the same reason), the only available IRQ settings are 4, 5 and 7. I did a double take here, as IRQ4 is nearly always used by the COM1 port (for the mouse), and your parallel port (LPT1) will use either IRQ5 or IRQ7. This will leave most people with a choice of only one IRQ, which could involve users in the dreaded resource shuffling (altering the settings of another card to make way for DWA). In this day and age I really do think a few more IRQ options should be provided.

IN USE

Fortunately, the actual hardware and software installation proved fairly easy (since I had removed my previous soundcard, the biggest potential source of clashes, in advance). The first thing that strikes you when you run the software is its colourful nature. I wonder whether Metalithic Systems carried out a user survey before committing every user to a fixed colour in an overall scheme that resembles an explosion in a toy factory? Serious Audio (the UK distributors of DWA) tell me that more sober colour schemes in line with the English temperament will probably appear as an option shortly.

The main software window is the Project Editor, and this shows the current contents of a project as parts, much like the Arrange page in *Cubase* (see Figure 1 on page 94). Below the title bar are (from left to right) the Function buttons (more on these later), the Transport bar (stop, play and record), and the Time display (in either seconds or bars:beats:ticks). There's a MIDI tempo slider which allows you to send out MIDI Song position pointer and clock messages to sync an external sequencer, and the MIDI sync facility allows DWA to be MIDI master, MIDI slave, or free-run from its own internal clock. Finally, there are four Zoom buttons, to allow you a more detailed view of part of the current display area.

DWA can play back up to 128 tracks, and there are also some additional tracks for sync and 'scratch' purposes. The parts all appear in the lower portion of the Project window, with the number of the track displayed as a vertical strip on the left-hand side of the screen. Audio can be imported from existing WAV files, recorded directly, or downloaded as samples from the Metalithic web site. In addition, GRP (group) files can be imported: these are special DWA files that link several parts. All the files and groups associated with a particular project are organised into a File Bin (for storage, not for throwing away).

RECORDING

The Recording Console provides a familiar-looking mixer for the soundcard inputs, along with a clutch of input select buttons. The top four buttons select the record source (stereo Line 1, Line 2, CD, or mono Mic), and in this mode, the input faders set monitoring levels during playback, but record levels are fixed (it is better to optimise the levels in your external mixer). When the bottom button (Mixed) is selected, the title 'Monitor Levels' beneath the input faders changes to 'Input Mixer' (see Figure 2 on page 98), and in this mode the input faders *do* set relative record levels, along with the HD Monitor fader. This allows you to set the balance of previously recorded tracks on the hard disk, when everything is being 'bounced down' to two tracks. The Master Fader raises or lowers the levels of all other faders. Also in the Recording Console is a more comprehensive transport bar, which, in addition to the normal stop, play, and record buttons, provides 'go to beginning', 'go to end', fast forward and fast reverse buttons. There are also four sets of user-programmable auto-location points — markers to enable you to jump quickly between sections of your song.

If you activate Play/Record Region mode from

HOW DO THEY DO THAT?

To perform all of the clever bits in DWA, Metalithic Systems use a technology called 'Reconfigurable Logic', and this redesigns special ICs known as FPGAs (Field-Programmable Gate Arrays) on the fly. The key component is nanoprocessing (nP), and this is achieved by using a reconfigurable RISC processor embedded in the FPGA chip. Multiple nPs can be implemented on a single FPGA to provide increased performance through parallel processing. The whole system has been dubbed Wingware, and the Nanoprocessor has also been patented by Metalithic.

Essentially, what Wingware is doing is reprogramming the hardware to suit the current application, and this can happen thousands of times per second. Imagine a custom DSP chip inside an effects unit — Wingware could be this chip, and then a fraction of a second later be something entirely different, depending on how it is programmed. This means that it could also be asked in the future to perform completely different functions, by a new set of instructions downloaded from the MSI Website — the distinction is that this will be a *hardware* update, rather than a software one, so it can be far more powerful. Any software routine run by DWA can have its performance boosted if the function is transferred to hardware, and the signal then diverted to this hardware sub-routine. Many multimedia requirements could be superbly served by such a system, which effectively provides the equivalent of multiple processors running inside a single chip, and at a comparatively low cost.

The DWA system also contains a 64-channel synthesizer engine, built into one of the FPGAs. This is currently used by functions such as fades and pans, as well as MIDI, but will feature much more strongly in future releases.

What we have here is some extremely clever hardware, but with a system that currently shows just the tip of an iceberg of potential. Of course, we can only judge by the tip, and hope that the rest appears shortly to fulfil its promise. To give you an idea of the power available, the Tomahawk cruise missile uses FPGAs, which are dynamically reconfigured depending on whether it is travelling over land or water, in a fraction of a second. Effectively, this means that it is reprogramming its own brain during use, which is a rather frightening thought.

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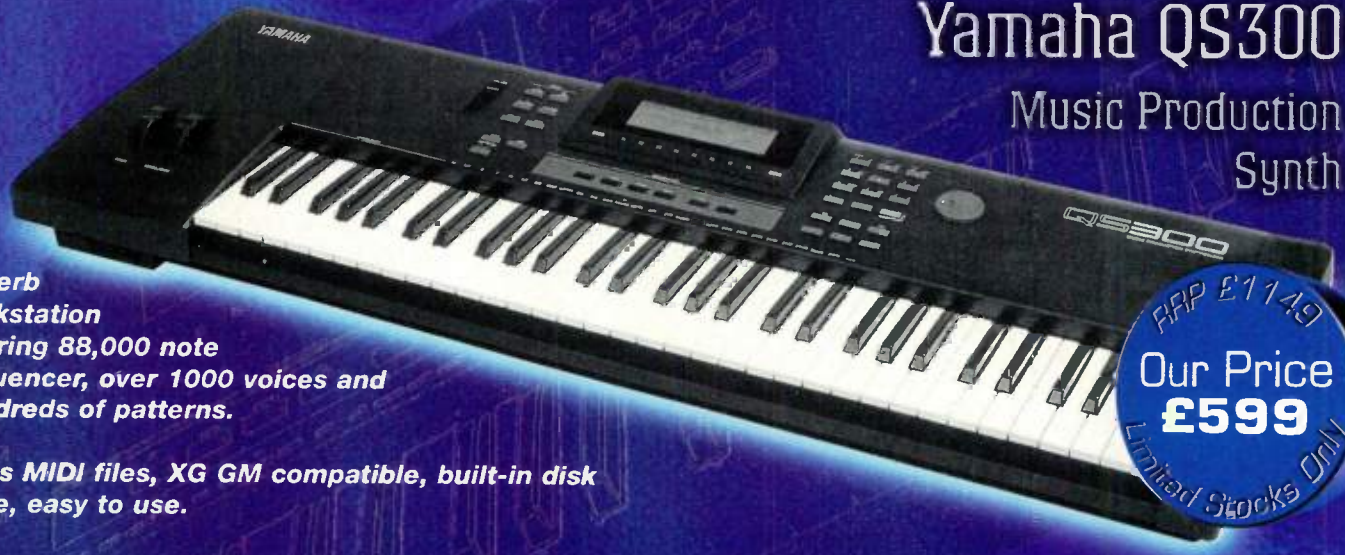

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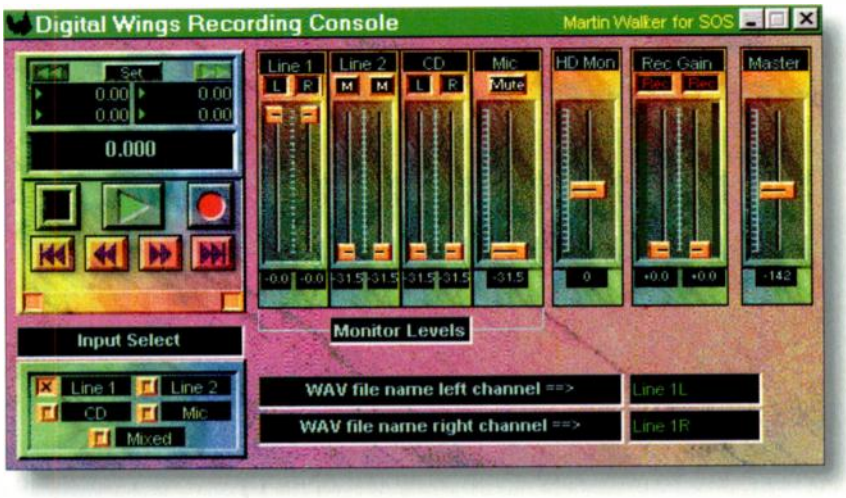

Figure 2: The Recording console provides a familiar graphic soundcard mixer interface, along with a comprehensive transport bar.

▶ the Project menus, and select a portion of your song, you can also Punch In and Out. DWA uses the fact that there are so many tracks available by creating a new part at the appropriate place in the first available track, rather than overwriting existing data. In a similar way, Loop Recording mode uses the next available track every time the selected region loops — this is something that will cause many smiles among musicians, since so many people tend to play round and round a loop when perfecting a solo. The beauty of the DWA approach is that each time your solo jumps to the next available track, the previous one is also muted. At the end of the recording process you're left with a series of takes to audition, from which the best ones can be kept, and the rest discarded.

"What we have here is some extremely clever hardware, but with a system that currently shows just the tip of an iceberg of potential."

EDITING

Editing can be carried out on individual parts, or several parts can be linked to form a group, which can, for instance, make it easier to deal with multiple tracks comprising a drum kit. Clicking on any part selects it, and shift-clicking allows you to add other parts to define the group. Once you have everything selected, clicking on 'Create Group' (using the F9 key, the button provided, or from within the Group menu) links these parts together, and from here you can deal with them as a single unit. Moving, copying and deleting parts (or groups) follows fairly standard procedures, but another useful option exists to save a group to disk, for later importing into another project. All editing operations are non-destructive, and undo and redo functions are provided. This sensible approach does tend to generate many temporary files, so the Purge command allows you to clear these permanently, once you're sure that your edits are final, as well as deleting any track data that has been removed from your project, but which still remains on the hard disk.

Right-clicking on a part brings up a context-sensitive Hot Menu of editing options, including Mute, Rename, Play (a single part), Editor, and Effects (see later for more details on these last two options). When you right-click on a Group, a similar Hot Menu appears, along with the extra options Mute Group, Play Group, Group Attributes, and Ungroup.

Time Marks and Snapping work in a similar way to Quantise in a MIDI sequencer — you can 'snap' one piece of audio to another, or to a Sync Track. When you move the cursor over any part (or group), a small additional horizontal arrow will appear if you are close to any Time Mark, either to the left (before) or right (later). If you click on the part while this additional arrow is visible, you can then move and drop the part anywhere in a blank area as normal, but if it overlaps an existing part, it will jump to the nearest Time Mark, to ensure that the drop is exactly in sync with this existing part. Sync Tracks allow you to create these Time Marks: from the Generate Sync Track option, you can select the length, tempo and time format (seconds or MIDI measures). If MIDI measures are selected, a fourth 'Rhythm' option can be selected, and then additional marks can be placed at every quarter, eighth, sixteenth, or thirty-second note spacing, by selecting from a drop-down menu. Once the new sync track has been placed exactly where you want it, you can subsequently edit it, by once again calling up a right-click Hot Menu. This brings up a new editing screen, where you can select any mark and then drag it to any new position.

WAVEFORM EDITING

Since you're dealing solely with audio, once you get beyond simple recording, moving, and copying of parts, you need to actually see the waveform in order to perform any more detailed edits. Double-clicking on any part shows it in Waveform mode, and holding down the Shift key when zooming in or out changes the vertical resolution of the screen, which enlarges the waveforms, making it far easier to view the details. Once in Waveform mode, you can click and drag to select any Region inside the part — for the purpose of adding a fade to the waveform at a particular point, for example. There are four options: fade-in with linear curve; fade-in with logarithmic curve; fade-out with linear curve; and fade-out with logarithmic curve. These fades are totally non-destructive (the audio data is not changed). Regions can also be used to cut, copy, paste, and replace portions of the waveform inside a part.

Far more extensive digital manipulation is provided by the supplied *Way Cool Edit* package (see Figure 3 on page 100), and this can be launched directly from the Project Editor by selecting a part and then selecting Effects from the Hot Menu, or by clicking on the dedicated Launch Cool Edit button. *Way Cool Edit* is essentially *Cool Edit 96* (see the full review in the July 1997 issue of *SOS* for more details), a very popular shareware package with extensive options. *Way Cool Edit* is fast and lean, and already has an enviable reputation in many circles. However, the publicity material claims that DWA "incorporates a comprehensive suite of DSP plug-ins". Good as *Cool Edit* obviously is, many people will find this description of it rather misleading, although it is still strictly true.

MIXING

The final parts of DWA relate to mixing, and there are two sections to this aspect of the package. The Mixing Console option allows you to select any ▶

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SOUND ON SOUND

PC Soundcard Buyer's Guide

PART 1: STEREO CARDS

If you're thinking of buying a PC soundcard specifically for HD recording, you'll find the market awash with models old and new. MARTIN WALKER provides an overview of what's currently available.

You might think it's easy to go out and buy a soundcard — after all, there are a lot of them about, and most claim to have superb audio quality, as well as a host of must-have features, from complete on-board samplers "rivalling stand-alone models worth thousands of pounds" to wavetable synths with 64-note polyphony, and digital recording and playback with up to 24-bit converters. The amount of choice available is a problem in itself. Worse still, after you've spent long hours debating the relative merits of the models on your shortlist, you might discover when you actually try to buy one that the advertising is six months ahead of the R&D department, and that none can be had for love nor money. And some hi-tech products have an alarming habit of being released before the software has had its final polish applied — it's not unknown to wait for six months after initial shipments for reliable drivers to appear. So here it is: the *SOS* guide to soundcards, to help you narrow down the options, steer you in the right direction, and point out possible pitfalls along the way.

Turtle Beach Pinnacle.

CHANNELLING YOUR EFFORTS

The first question is a major one, but not quite as straightforward as some people think — whether to buy a stereo or multi-channel card. If you just want to do general-purpose music recording on a budget, stereo will certainly be adequate, but what about the new breed of MIDI + Audio sequencers? Surely you need more than two playback channels to get the most from these? Well, not necessarily. The beauty of such applications is that they allow many audio tracks to be recorded separately, but then these are mixed down in real time to a stereo pair, which can be replayed using a stereo soundcard. The mixing is carried out internally, so as long as you only need to record a single mono or stereo source at once, you can achieve a multitrack software studio using only a stereo in/out soundcard.

> "If your ultimate goal is a DAT tape, DCC, or MD, look for a soundcard that provides a digital output."

So why are so many companies launching multi-channel cards? Because although it is theoretically possible to transfer all the impressive rack-mounting outboard effects into virtual equivalents in software form, to do it you would need a very powerful computer. Yes, there are some wonderful real-time plug-ins available to take over reverb duties, provide effects such as echo and flanging, and offer processes such as enhancement, compression and parametric EQ, but replacing even a small project studio's worth of effects would take more computer power than is affordable at the moment.

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What you need is a way to use whatever analogue gear you already have, so that you don't lose the treatments you love so much. The answer is to hang on to your mixing desk, internally patch individual PC-recorded tracks to the other soundcard multi-channel outputs, and then connect these to the mixer input channels. Then you can still use whatever effect units you already have. The MIDI + Audio sequencer will normally provide a way for you to record the final stereo output from the desk back into the PC's stereo inputs, so that you end up with an additional stereo pair of tracks. This can be added to your final stereo mixdown with the other digitally recorded tracks inside the computer. You only need a single stereo soundcard input to do all this, but you may want four or eight output channels. You can, alternatively, use some of the additional outputs as effect sends to external gear, which again can have their return paths mixed down to stereo and added to the computer mix (although you may need to tweak the relative timing of these tracks slightly to compensate for any digital delays).

"The first question is not quite as straightforward as some people think — whether to buy a stereo or multi-channel card."

Digidesign Audiomedia III.

SLOT MACHINES

Another big decision is whether to opt for an ISA- or PCI-format soundcard. All PCs built in the last few years contain a selection of both of these types of expansion slots — there are normally three or four of each. The older ISA-buss standard has been going a long time, but many of the recent soundcard releases are PCI. It has to be said that PCI is the standard of the future, since Intel seem determined to make our lives easier by trying to phase out ISA slots over the next few years. This would largely remove the installation problems that many of the older ISA cards have, particularly the ones that were designed before Plug and Play burst onto the scene to make our lives easier (allegedly). The buss frequency (how fast data can be moved about) for ISA cards is about 8MHz, and it has a data width (how many bits are transferred simultaneously) of 16 bits. Although this sounds huge, PCI has a higher buss speed of 33MHz, and a 32-bit data width.

DRIVING YOU MAD

Nearly all soundcards come complete with a comprehensive suite of software, ranging from full-blown hard disk recording packages to the latest joystick-controlled journey into another world (more commonly known as a game). However, the most important item of software is the soundcard driver, since it is this which interfaces between the hardware (the soundcard) and the operating system (Windows 95). Without this, you will not be able to use your soundcard at all. PCI cards can normally be used with both Macs and PCs, and many cards are initially released only with drivers for one or the other, but rarely both. If you're buying a PCI soundcard, make sure that the drivers exist for your computer platform before getting your credit card out.

For PC applications, the most usual type of driver is known as a Windows MultiMedia or WAV driver. This interfaces directly to the Windows 95 Multimedia system, and this is all that stereo cards need. If there are more than two channels available, a fudge is used, with each two channels appearing as a separate stereo pair — so, for instance, an 8-channel device will appear to Windows as four distinct stereo ones (more about this next month). Many cards now come with DirectX drivers, and these bypass the Multimedia layer to interface with Windows 95 at a lower level. DirectX was written by Microsoft to provide fast mixing of multiple channels of sound to a single stereo output, and they also minimise the delay between recording a sound and hearing it played back (known as latency). Once in place, they are transparent to the user. Incidentally, DirectX drivers are not the same as DirectX plug-ins, which use the DMSS (DirectX Media Streaming Services) standard to allow real-time streaming of audio, although they both use similar technology.

Separate drivers should be provided for other features on the card, such as MIDI interfaces, onboard synths, extra sampling synths, and so on (but it is not unknown for initial shipments to go out before these other drivers have been finished). Some special features may have specific PC requirements. For instance, Creative Lab's Waveguide synth is created entirely in software, but needs a true Intel Pentium CPU to carry out all the maths involved (IBM/Cyrix processor chips will not work).

The multiplicity of separate drivers (and the suite of small utility programs normally provided to set them all up) can be initially confusing, but writing a properly integrated driver set not only takes a lot longer but is also far more difficult to update — keeping the drivers separate allows manufacturers to provide bug fixes, in the form of small files which can easily be downloaded via the Internet, more rapidly. Bear in mind that soundcards with a huge array of different features may sometimes prove more difficult to install initially, simply because they need more of your computer's resources. It's worth pointing out that the famed Turtle Beach Fiji and Pinnacle cards, as well as initial shipments of the long-awaited Terratech EWS64 XL, had teething troubles and caused some people difficulties during installation. These problems have now been resolved, and installation is claimed to be "a breeze" with the latest drivers.

Another point to watch out for is onboard MIDI features that hijack the external MIDI output. Some daughterboard sockets (for adding complete wavetable synths, such as the classic Yamaha DB50XG) are wired to the same MIDI lines as the sockets used to attach other external MIDI devices. If this is the case, every time you play back a sound on an external synth, the daughterboard synth will play a note as well. If you can disable individual MIDI channels on both devices you can work around this, but it can cause a lot of head scratching.

Finally, try to cater for the future. Some cards offer the carrot of letting you add another card at a later date, to provide more channels and facilities. If your PC has the space for this, look for drivers that promise synchronisation for multiple cards, since otherwise you will have problems with sampled sounds played back by different cards gradually drifting out of sync with each other. Normally, if you have two cards from the same manufacturer the problems won't be as bad, but having the facility to lock multiple cards together is a far better option.

Product description

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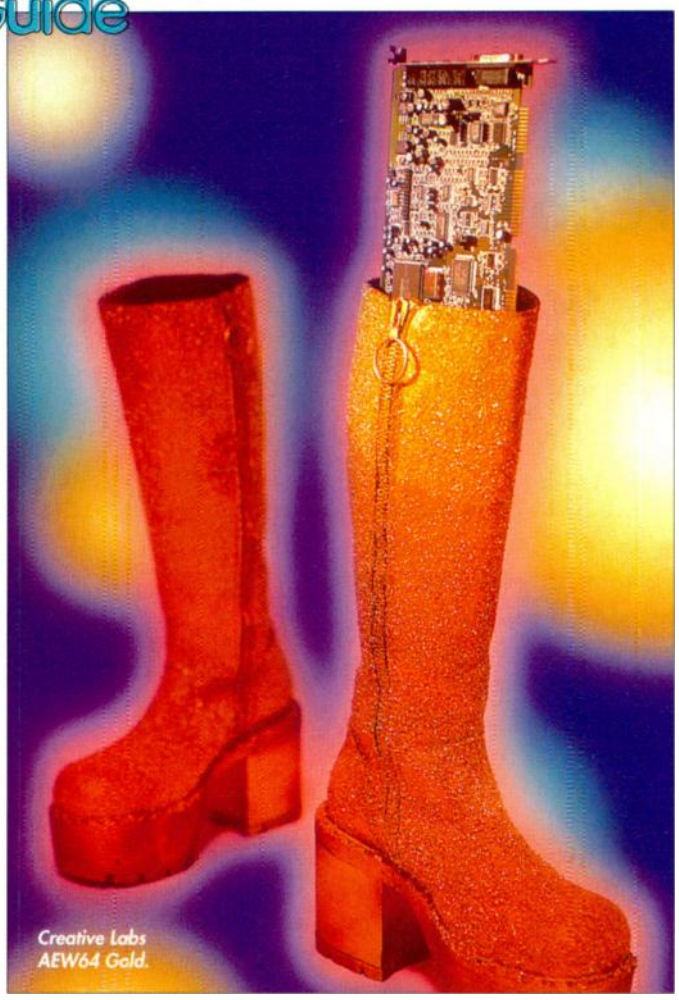

Creative Labs AEW64 Gold.

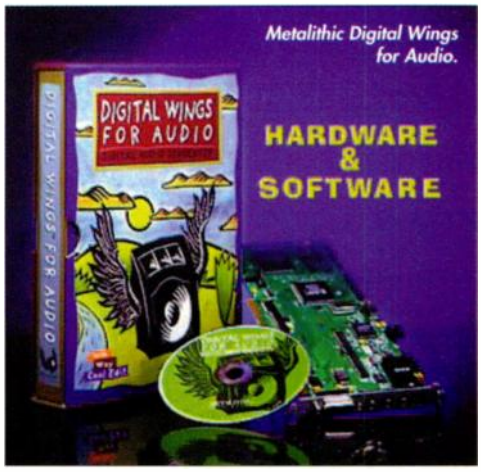
> "ISA soundcards can cope with multi-channel data, but PCI can move this data at a much faster rate."

ISA soundcards can cope with multi-channel data, but PCI can move this data at a much faster rate — and, obviously, anything that reduces the overhead of moving sound data about will leave more processor power for fancy reverb plug-ins. However, sound quality is unaffected by which buss is used, and there are lots of excellent quality stereo soundcards (most of those covered this month) that use the ISA buss. As always, we can only buy what is currently available, and anyone who waits for the ideal PCI soundcard to be released will probably still be waiting when the rest of us are releasing our tenth album.

GETTING CONVERTED

Some soundcards have converters (the bits of electronics that turn analogue signals into a stream of digital numbers, and back again) with more than 16 bits. Although there are a few cards and applications that allow recording at 20- or 24-bit resolution (which will give better audio quality), recording at bit depths greater than 16 is not an option in most cases. Even if it was, both 20- and 24-bit recordings take up 50% more hard disk space than 16-bit recordings, since 16 bits fit neatly into two 8-bit bytes of memory, but both 20 bits and 24 bits need three 8-bit bytes of memory to store each sampled point on the waveform.

The point of having 18- or 20-bit converters, even when only recording or playing back a 16-bit signal, is that they yield better resolution with quiet signals, and can give significantly lower background noise levels. When signal levels are low, the 16th bit ends up flapping on and off in time with the music, and this can give a gritty sounding background quality — a lack of transparency — especially when listening to quieter acoustic recordings. One answer to this problem is to digitally record with more than 16 bits, and then use techniques such as hardware dithering or noise-shaped dither. Dither adds tiny amounts of continuous noise, so that the signal can gracefully fade away to silence behind the noise, rather than dropping from the 16th bit to nothing, and noise-shaped dither improves on this basic technique by EQing the noise, so that most of it is at high frequencies that the human ear doesn't notice as much. The result is a 16-bit signal with clearer sound. So having 20-bit converters doesn't add bits to the recorded sound,



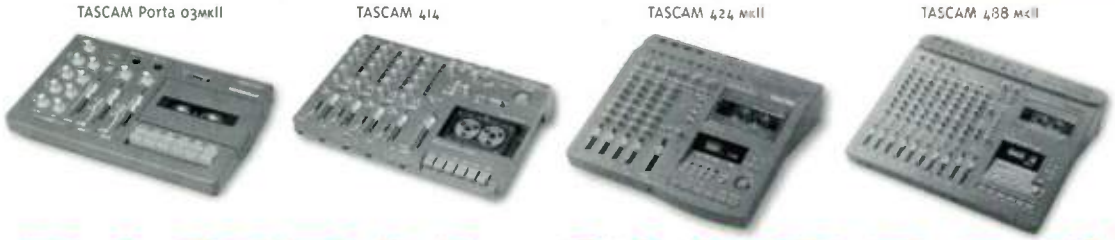
but it does ensure that the maximum amount of audio detail gets onto your digital recordings, and off again. Of course, simply having more than 16 bits in the converters does not guarantee a good soundcard, but it's a worthwhile step in the right direction.

LOSING A BIT IN THE TRANSLATION

Once you have these high-quality signals safely stored on your hard disk, it seems silly to master them by converting back to analogue, passing them through a mixing desk, and then recording them onto a DAT machine via a further set of A/D converters. If your ultimate goal is a DAT tape, DCC, or MD, the answer is to look for a soundcard that provides a digital output, and these can now be found even on budget models. The consumer standard is S/PDIF (Sony/Philips Digital InterFace), and two types are available. The more common is coaxial (also known as electrical) and this uses phono sockets. Although many people use a common-or-garden audio phono lead to connect soundcard digital outputs to DAT, this can cause problems (especially with

inspired

TASCAM



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longer cables), as a 75Ω cable should really be used. Audio cables give mismatching problems, because the digital signal reflects back from the far end of the cable, and this can cause errors. Fortunately, this doesn't mean buying expensive, exotic cables of the hi-fi variety, as 75Ω is the same standard used for video, and even Tandy have 75Ω video cable available for a few pounds.

The other consumer choice for digital I/O is optical (also known as Toslink — from Toshiba) and this uses fibre-optic cable, which makes light work of the signals (ho ho). If you're buying a soundcard and intend to use its digital facilities, do check that the sockets are the same as those on the equipment you wish to connect it to — you *cannot* convert between electrical and optical by using a cable with a different plug at each end (you need a converter box costing £50 or more).

Professional equipment features AES/EBU interfacing, which is a 110Ω standard using XLR plugs and sockets. You won't see any of these on the sort of stereo soundcards we're covering this month, but they will certainly put in an appearance in next month's exciting multi-channel instalment. For this reason, we'll leave TDIF and ADAT interfaces till then, as these are both for multi-channel use as well.

Maxisound 64.

GET YOUR CREDIT CARDS READY

Now that you know about stereo and multi-channel, ISA and PCI, the differences between converters, and the potential problems with drivers, it's time to narrow things down. Look at the facilities provided by each model in the accompanying table, as well as the more detailed reviews already published in *SOS* for certain of them. Many have family characteristics — for instance, the Turtle Beach Pinnacle is essentially the Fiji with extra features, and the AWE64 Gold is a more refined version of the AWE64 Value model. As far as noise goes, converters with more than 16 bits tend to be quieter, and the more you pay, the more features and higher audio quality you can expect (in general)!

First, decide just how many input and output channels you need, bearing in mind that it's easier

Manufacturer	Model	Price	Card Type	A/D	D/A	Digital I/O	MIDI I/O
Creative Labs	AWE Value	£80	ISA	16-bit	16-bit	No	In, Out
Creative Labs	AWE Gold	£149	ISA	16-bit	16-bit	1 Out	In, Out
DAL	CardD+	£599	ISA	16-bit	18-bit	add-on	No
Digidesign	Audiomedia III	£599	PCI	1-bit 128x delta-sigma	18-bit	In, Out	No
Metalithic Systems	Digital Wings	£299	ISA	16-bit	16-bit	add-on	In, Out
Maxisound	64 Home Studio 2	£149	ISA	16-bit	16-bit	No	In, Ext, D/B
Maxisound	Home Studio Pro 64	£249	ISA	16-bit	18-bit	1 in/ 1 Out	In, Out
Mediatrix	Audiotrix 3D-XG	£275	ISA	16-bit	16-bit	No	In, Out/DB
Midiman	DMan	£149	ISA	16-bit	16-bit	No	In, Out/DB
Terratec	SoundSystem Base 1	£35	ISA	16-bit	16-bit	No	In, Out/DB
Terratec	Maestro 32/96	£139	ISA	16-bit	18-bit	No	In, Out, D/b
Terratec	EWS 64 XL	£399	ISA	18-bit	18-bit	Coax In, Opt In, 2 coax Out	2 In, 2 Out
Turtle Beach	Malibu Surround 64	£120	ISA	16-bit	16-bit	Out	In, Out
Turtle Beach	Daytona PCI	£129	PCI	16-bit delta-sigma	16-bit delta-sigma	No	In, Out
Turtle Beach	Fiji	£329	ISA	20-bit delta-sigma	20-bit delta-sigma	Add-on	In, Ext, D/B
Turtle beach	Fiji+digi	£399	ISA	20-bit delta-sigma	20-bit delta-sigma	In, Out	In, Ext, D/B
Turtle Beach	Pinnacle	£449	ISA	20-bit delta-sigma	20-bit delta-sigma	Add-on	In, Ext, D/B
Turtle Beach	Pinnacle+digi	£529	ISA	20-bit delta-sigma	20-bit delta-sigma	In, Out	In, Ext, D/b
Turtle Beach	Pinnacle Project Studio	£599	ISA	20-bit delta-sigma	20-bit delta-sigma	In, Out	In, Ext, Synth1, Synth2

** See Comments*

to buy more than you need at the start than to attempt to add more soundcards later. Next, look at the extras — do you need synth facilities, or do you already have external MIDI synths? It's always useful to have a General MIDI synth inside your PC for general-purpose use when playing back other people's MIDI files, but if the soundcard has a daughterboard socket you can add any Waveblaster synth later with no problems. If you have several MIDI synths, you may want more than one external MIDI output on the soundcard, although a single MIDI input should suffice for most people. If you need sampling facilities on-board, make sure there's provision for adding more sample RAM (nearly all cards allow this). Here, PCI cards such as the Turtle Beach Daytona have another advantage, since they can use system RAM in this capacity. If effects such as reverb, chorus or surround sound are provided, some cards only let you add these to the on-board synth, and others may let your sampled sounds access these as well. By now you should have narrowed your choices down to maybe two or three models. Your final choice may be determined by the bundled software — although this is seen by many people as 'free', a wise choice of card can save you several hundred pounds if it includes the sequencer that you were thinking of buying anyway. SOS

Comments

- **General:** Some synths also include an on-board synth (generally using the Yamaha OPL3 chip, which has 20 voices). This can be used for games, but has been omitted from the main table since its quality is not suitable for serious music work.
- **Creative Labs AWE64:** Implements full-duplex operation with software drivers.
- **Maxisound Home Studio 64:** Also features 4-track WAV playback (8 tracks with minimum 4Mb RAM added) with any Windows application.
- **Mediatrix Audiotrix 3D-XG:** Uses its daughterboard socket to house the supplied Yamaha DB50XG card.
- **Metalithic Digital Wings:** Special hardware allows supplied software to play back up to 128 tracks of audio. Synth is promised as future software
- **Terratec EWS64 XL:** Features a 64-voice sampler using up to 64Mb RAM, 24dB/octave filters, three EGs and two LFOs.
- **Turtle Beach Daytona PCI:** DLS (Downloadable wavetable synth) uses up to 10Mb of PC system RAM.
- **Turtle Beach Fiji and Pinnacle:** Digital card can be added later, but it is cheaper to buy this with the soundcard itself (prices as shown).
- **Turtle Beach Pinnacle Project Studio:** Daughterboard socket is already used by second supplied Kurzweil synth, and this gives a total of 64 notes and 32-channel multitimbrality (32 notes and 16 multitimbral channels for each synth).

Contacts

Creative Labs, Unit 2, The Pavilions, Ruscombe Business Park, Ruscombe RG10 9NN. Tel: 01245 265265. Fax: 01734 828270.
Metalithic, Serious Audio Ltd, 96B Queens Road, Watford, Hertfordshire WD1 2NX. Tel: 01923 442121. Fax 01923 442441.
Turtle Beach, Et Cetera,Valley House, 2 Bradwood Court, St. Crispin Way, Haslingden, Lancs BB4 4PW. Tel: 01706 228039. Fax: 01706 222989.
Digidesign, Avid Technology, Westside Complex, Pinewood Studios, Iver Heath, Pinewood, Bucks SL0 0NH. Tel: 01753 653322. Fax: 01753 654999.
Maxisound, Ubi Soft Ltd, Bridge House 11 Creek Road, Hampton Court, Surrey KT8 9BE. Tel: 0181 944 9000. Fax: 0181 944 9300.
Mediatrix, RKMS, Freepost (NG6175), Nottingham NG4 1BR. Tel: 0116 961 1398. Fax: 0115 953 3802.
Midiman, Midiman UK, Hubberts Bridge House, Hubberts Bridge, Boston, Lincs PE20 3QU. Tel: 01205 290680. Fax: 01205 290671.
Terratec, Time & Space, PO Box 4, Okehampton, Devon EX20 2YL. Tel: 01837 841100. Fax: 01837 840080.

Wavetable Synth	Synth Polyphony	Effects	Sample RAM Standard/Max (Mb)	Playback Rates (kHz)	Daughterboard Connector	DirectX Drivers
1Mb	32	Yes	0 5/28	5-44.1	No	Yes
1Mb	32+32	Yes	4/28	5-44.1	No	Yes
No	-	No	None	22,32,44.1,48	No	No
No	-	No	None	11-48	No	No
No	-	No	None	n/a	No	No
4Mb	64	Yes	0/20	4-44.1	Yes	Yes
4Mb	64	Yes	4/20	4-44.1	Yes	Yes
4Mb Yamaha	32	Yes	None	5.5-48	Yes*	Yes
No	-	No	None	11, 44.1, 48	Yes	Not stated
No	20	Yes	None	4-48	Yes	Yes
4Mb	32	Yes	None	up to 48	Yes	Yes
*	64	Yes	6/64	up to 48	Yes	Yes
4Mb Kurzweil	32+32	Yes	None	5.5-48	No	nya
DLS	32	Yes	None	4-48	No	Yes
No	-	No	None	5.5-48	Yes	No
No	-	No	None	5.5-48	Yes	No
4Mb Kurzweil	32	Yes	0/48	5.5-48	Yes	No
4Mb Kurzweil	32	Yes	0/48	5.5-48	Yes	No
4Mb Kurzweil	32+32	Yes	0/48	5.5-48	Yes*	No

** See Comments*

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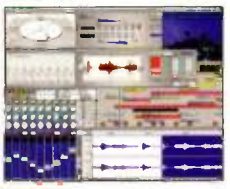

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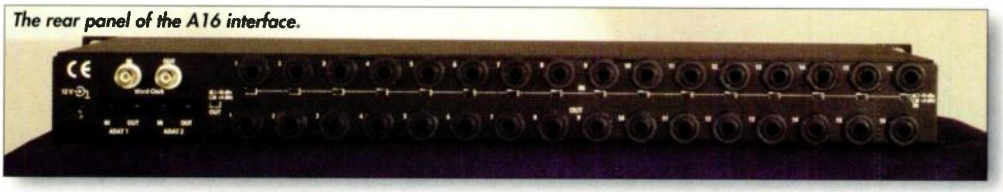

The rear panel of the A16 interface.

T-DAT 16 AUDIO CARD

The T-DAT 16 is a 32-bit PCI audio card that performs its 16-channel magic courtesy of the awesome calculating power of the latest Motorola DSP chipset, which runs at a staggering 80 MIPS (80 Million Instructions Per Second). Communication with the outside world is via two pairs of optical I/O connectors, and a stereo output jack socket is provided for analogue monitoring; a satellite PC panel provides BNC wordclock connectors and a 9-pin D-connector is used for ADAT sychronisation.

The configuration options for the optical I/O connectors are set in software, in the *T-DAT Tray* application. The default configuration is a twin ADAT format, which allows you to record and synchronise to two ADAT recorders, or to any pair of digital devices that supports the ADAT format — the Korg 168RC or Yamaha 03D and 02R digital consoles, for example, or multi-channel audio cards such as the Frontier Technologies Wavecentre and Korg 1212 — but the T-DAT 16 card can also be configured in a variety of ways to allow interfacing with various permutations of ADAT, S/PDIF, CD (SRC), DAC and DAT. The *T-DAT Tray* also includes error diagnostics, for constant automatic monitoring of clocks, S/PDIF activity, T-DAT 16 I/O status and current measured sample rate.

When it comes to installation, the card is economical with PC resources and requires only one interrupt setting (IRQ) and one memory address to perform all of its audio and MIDI functions. It installed effortlessly in my system, being recognised by the Windows 95 plug-and-play routines, and worked well. I was very impressed by its stability and experienced only two crashes in over 40 hours of use.

A16 T-DAT ANALOGUE INTERFACE

Analogue signals are particularly susceptible to hum, RF noise and other electrical interference emanating from the PC itself. To circumvent this, the A16 analogue interface houses its digital audio converters in an external hardware unit which can be positioned well away from the computer; the only audio connections to the PC are the two ADAT optical cables. The A16 is a well-built, black powder-coated 1U rackmount, fabricated from steel and featuring a well-laid out, clearly legended front panel, with switches for power, sample-rate selection (44.1kHz or the default 48kHz), and sychronisation options (Master, Optical and wordclock). All functions are flagged by status LEDs, and each of the eight stereo audio channels has an associated red LED that blinks off and on to indicate clipping.

The rear panel has two rows of 16 standard balanced jack sockets for the analogue inputs and outputs, switchable between -10dB and +4dB; two pairs of ADAT-format digital optical connectors; BNC wordclock I/O connectors; and an 18V power supply socket which attaches to a chunky 2 amp external AC adaptor. The A16 can also function independently of the T-DAT 16 card and can be used to interconnect other digital devices that support the ADAT format, but it will not recognise S/PDIF optical signals from devices such as DAT and CD recorders.

PC NEEDS

To get the most out of the T-DAT 16 system you need a powerful PC with an Intel Pentium 166 processor or better, and a minimum of 32Mb RAM ▶

pros & cons

CREAMWARE T-DAT 16 SYSTEM

pros

- Stable and reliable.
- Great value for money.
- Excellent audio quality.
- Versatile 16-channel I/O routing.

cons

- No DirectX support.
- Sample editing could be improved.
- Limited mix automation.
- Needs better use of colour.

summary

With 16 digital audio channels, flexible analogue interfacing, fast, powerful non-linear editing, real-time DSP effects, Red Book CD writing, and stable synchronisation, the Creamware T-DAT 16 system is a fine all-rounder — audio production on the PC has come of age!

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CD BURNING

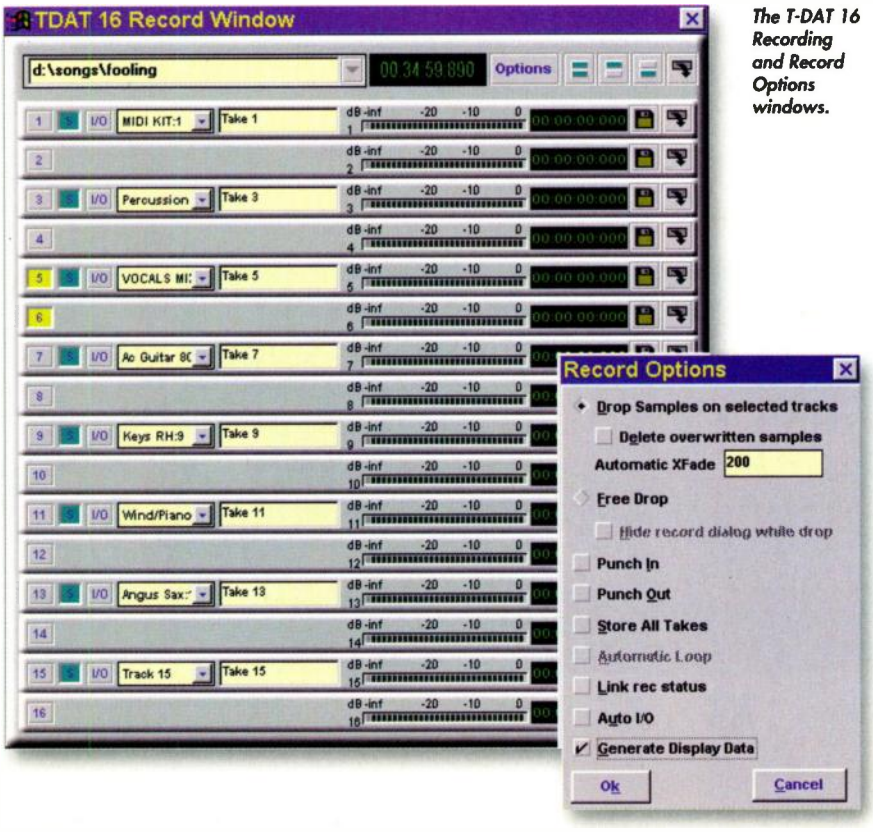
***TripleDAT* 2.5 can be used to master and burn Red Book-standard audio CDs that can be played on domestic CD players. The process is very straightforward, and discs can be created using either Track-at-Once or Disc-at-Once modes.**

(64Mb is recommended). My reference PC is an Intel Pentium 200 with VX motherboard, 256K pipeline burst cache, 80Mb RAM and a 4Mb Trio 64+ PCI graphics card, and this recorded and monitored eight tracks simultaneously and was capable of 24-channel multitrack playback. Considerably better performance should be expected from Pentium 2 or Pentium Pro PCs, especially if equipped with SCSI 3 or UDMA busses. Creamware recommend running at a screen resolution of 1024 x 768, and — as with all hard disk recording applications — it's best to disable screensavers and any utility applications that actively monitor PC activity, such as Norton *System Doctor* and Quarterdeck *Cleansweep*. This should avoid interruptions in the audio data flow.

COMPATIBILITY

Because the T-DAT 16 card is specifically designed to run with the *TripleDAT* 2.5 software, the compatibility problems that may arise when using hardware and software sourced from different manufacturers are avoided. The *TripleDAT* recording software enjoys a well-deserved reputation for stability and versatility, and is capable of adeptly performing everyday essential studio tasks such as track laying, soundfile editing and multitrack assembly.

From the hardware perspective, the T-DAT 16 card is full duplex, Windows MME-compatible and worked fine with both Steinberg's *WaveLab* 1.6 and Sonic Foundry's *Sound Forge* 4.0d. However, the situation regarding the use of the full multi-channel capabilities of the card with MIDI + Audio sequencing software is in a state of flux — not surprisingly, considering the newness of the card — and, at the time of writing, although *Cubase VST* 3.52 and *Cakewalk Pro Audio* 6 recognised the T-DAT 16 card in their hardware lists, both crashed the PC when I attempted to play audio! Creamware say that by the time you read this, free drivers will be available on the Internet for *Cubase VST*.



The T-DAT 16 Recording and Record Options windows.

Augmenting the onboard T-DAT 16's DSP effects are the optional Creamware *Osiris* sonic restoration and *Firewalkers* real-time effects plug-in applications (see sidebar). Sadly, though, DirectX audio plug-in architecture is not supported, and although the T-DAT effects are uniformly of a very high standard, they do not always have that extra special something that can be provided by the best DirectX plug-ins, such as the Waves *Native Power Pack*, the Steinberg range, or the recently released Sonic Foundry *Acoustic Modeler* and the fab Opcode *Fusion Vocode*.

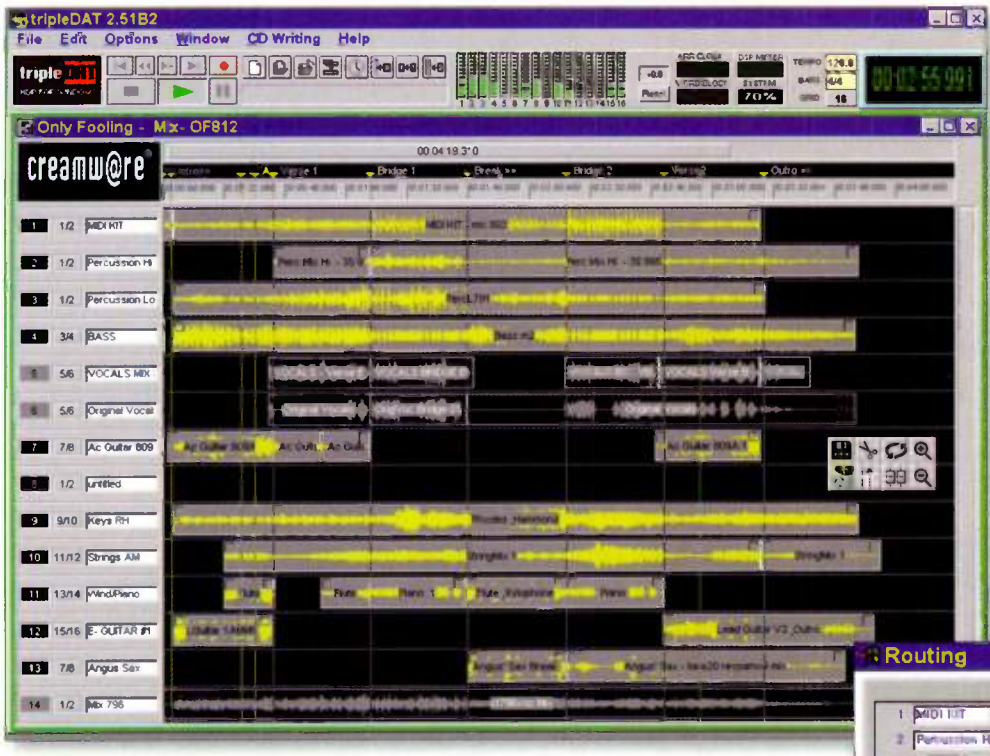
When Windows WAV files are imported, the audio data is copied into the *TripleDAT* proprietary soundfile format. The advantage of this is that edits are non-destructive, but vast amounts of disk space may be required for large projects: the song that features in the screen shots lasts three minutes and 48 seconds, and has 22 channels of audio configured as 11 stereo tracks, and these — together with backups and source files — occupied 1044Mb of disk space! Audio can be exported from *TripleDAT* in WAV format for archiving, or to enable additional processing in other PC audio applications.

SOFTWARE USER INTERFACE

The *TripleDAT* 2.5 software provides a classically functional front-page environment that is generally efficient in use, but has a rather hard-edged appearance, due to its minimal use of colour and austere, boxy screen design. This utilitarian design philosophy is bound to initially discourage newcomers, and even if you're an experienced user it can prove rather fatiguing, especially during long editing sessions.

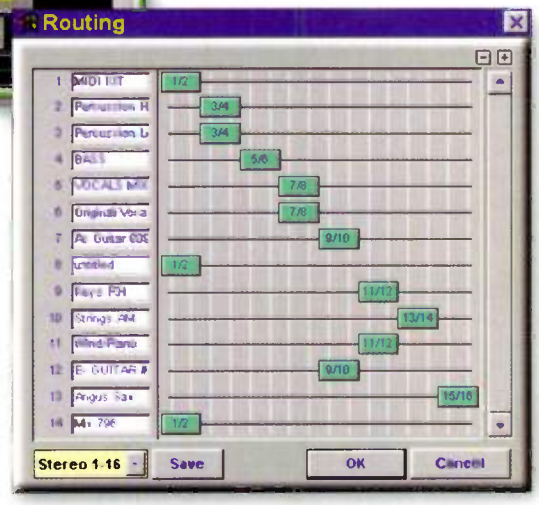
Extra keyboard shortcut 'hotkeys' have been added in *TripleDAT* 2.5, to facilitate input-channel handling, but the program is still highly mouse-driven, with most common functions appearing in context-sensitive right-mouse menus. Many users who are familiar with standard Windows keyboard editing shortcuts may initially find *TripleDAT* rather too 'mousy' for its own good! Although the playback and performance meters, the clocks and the time display can be repositioned anywhere on screen, the Transport bar cannot be moved from its position in the top-left corner, but it is possible to save a user screenset that will allow you to define the default sizes of the Arranger and Cutter windows that appear whenever you boot *TripleDAT*.

The new multiple Undo routine introduced in version 2.5 enables you to reverse previous edits. While this facility is welcome, it would be even better if the Undo history gave more details of the edit moves. (For a fuller picture of the architecture of the *TripleDAT* software, see my review of Creamware's Masterport 2.4 in *SOS* October 1997; the software is operationally very similar, although Masterport provides a more modest 4-track output, 16 virtual tracks with limited DSP effects processing, and no Red Book CD burner.)



Left: Creamware's T-DAT 16 system working in 16-channel mode.

Below: Any of the 256 virtual tracks can be routed to any of the 16 physical output channels.



THE ARRANGER

The main element in the *TripleDAT* workspace is the Arranger page, where audio files are assembled into a finished song or project. The Arranger is laid out like a spreadsheet, with Tracks appearing as horizontal rows containing rectangular Sample blocks that can optionally display the waveform graphic of the Sample. From the Track parameter panel you can assign each Track a name, a default volume and pan setting, accord it mute or solo status, and route it to one of the 16 physical output channels. All Samples (Creamware's term for blocks of audio that have been assigned to a Track, and equivalent to a Part in *Cubase VST*) used in an Arrangement must share a common sample rate — either 44.1kHz or 48kHz — and it is not now possible to have both mono and stereo Samples assigned to the same Track in *TripleDAT* 2.5, as you could in previous versions.

Below the *TripleDAT* menu bar are the Drive Control transport panel; the Control Panel, which contains shortcut icons for File, Synchronisation, the three Snap options (snap to marker, snap to sample and snap to grid); the 16 VU meters with peak hold readout; the Arranger and wordclock disolays; the DSP usage indicator; and the Time display, which may be configured to ▶

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▶ clock time, SMPTE time, measures or data words (ie. samples).

TripleDAT excels for live track-laying and multitrack assembly, with its outstanding front-page magnification power, markers and snap facilities. If you are laying down multiple takes of a lead guitar solo, for example, you can instruct *TripleDAT* to save all takes, or you can review each new take as it is recorded and then decide whether to keep it or not. If disk space is precious, this latter course will be preferable! You can choose between manual and automatic punch and/or loop recording, and associate virtual tracks with physical outputs in the Routings dialogue. Multiple instruments can be recorded simultaneously from any of the 16 input channels, and if you're recording over an existing Sample there's the option of replacing the overlapping region.

To quickly line up beats on adjacent tracks in the Arranger, first rescale the Arranger magnification, by dragging the top of the vertical scrollbar until the screen shows your two tracks at maximum size. Next, select the part you wish to reposition by right-clicking or drawing a box around it. Then place the cursor at your zoom point, and press the numeric keypad '+' to zoom in (go all the way

OSIRIS SONIC RESTORATION

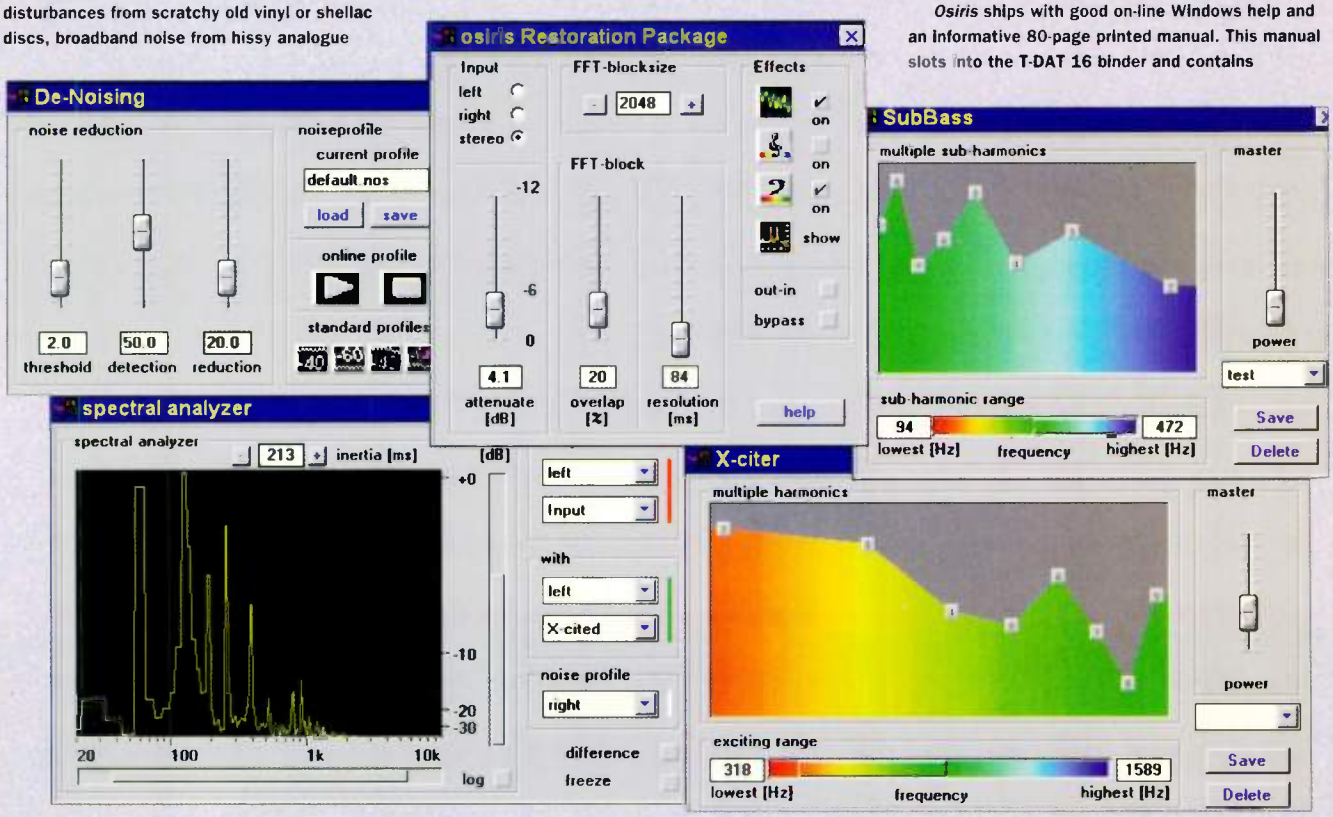
Osiris is a powerful suite of real-time audio renovation and enhancement applications that includes sophisticated spectrum analysis, DeNoising, DeClicking, a high-frequency enhancer, a sub-bass enhancer, and the only available budget-priced DeCrackler. The package is designed to provide a high-quality solution to the problems encountered when attempting to restore degraded or damaged audio recordings, whether they're affected by impulse disturbances from scratchy old vinyl or shellac discs, broadband noise from hissy analogue open-reel or cassette tape, or — in the case of more modern recordings that were made under poor conditions — constant interference such as acoustic noise from computers or air conditioning systems, or electrical interference such as mains hum.

The DeClicker/DeCrackler is designed to remove impulse disturbances such as clicks and scratches: the DeClicker is designed for impulses of less than 0.5 milliseconds (from 1-20 samples in length), while the DeCrackler is optimised for the removal of longer spikes and continuous crackle and static. Although different impulse identification algorithms are used by the modules, both — when they have identified and muted the disturbance — use similar routines to restore the damaged region, by interpolating adjacent audio material. The modules perform their tasks surprisingly well, but care must be taken not to over-process damaged audio and so induce undesirable aliasing. This sounds like nasty, ringy flanging and can be far more intrusive than the original noise!

The DeNoiser removes broadband noise and employs Fast Fourier Transform (FFT) routines written in Pentium-specific assembler code. Highly detailed frequency analysis creates a responsive, adaptive filter system that dynamically adjusts its parameters in response to the frequency spectrum of incoming audio. The result of broadband noise removal can be spectacular, and treated recordings often reveal significantly enhanced clarity and spatial characteristics, but care must be taken not to strip away low-level signals such as reverb tails.

The X-citer and the SubBass enhancer both use adaptive filtering to adjust the harmonic content of audio material in real time. The X-citer can be used to add sparkle to dull recordings by enhancing the harmonic overtone structure, and is useful for lifting the presence and articulation of solo instruments and voice; the SubBass enhancer boosts the sub-harmonic content of the audio, adding substance and generally fattening the sound. Both units feature an easy-to-use, brightly coloured graphic interface. Changes to harmonic content are achieved in real time by dragging the harmonic nodes with the mouse — very impressive!

Osiris ships with good on-line Windows help and an informative 80-page printed manual. This manual slots into the T-DAT 16 binder and contains fascinating background information on the theory and practice of audio renovation, as well as full descriptions of the modules and their associated parameters. Considering the vast complexity of the processing involved, the *Osiris* modules are relatively simple to use, but audio restoration is more of an art than a science, and once the basic routines have been grasped, experimentation and careful listening should yield good results. For more information, check out my article on Audio Renovation on the PC in *Sound On Sound* August 1997.

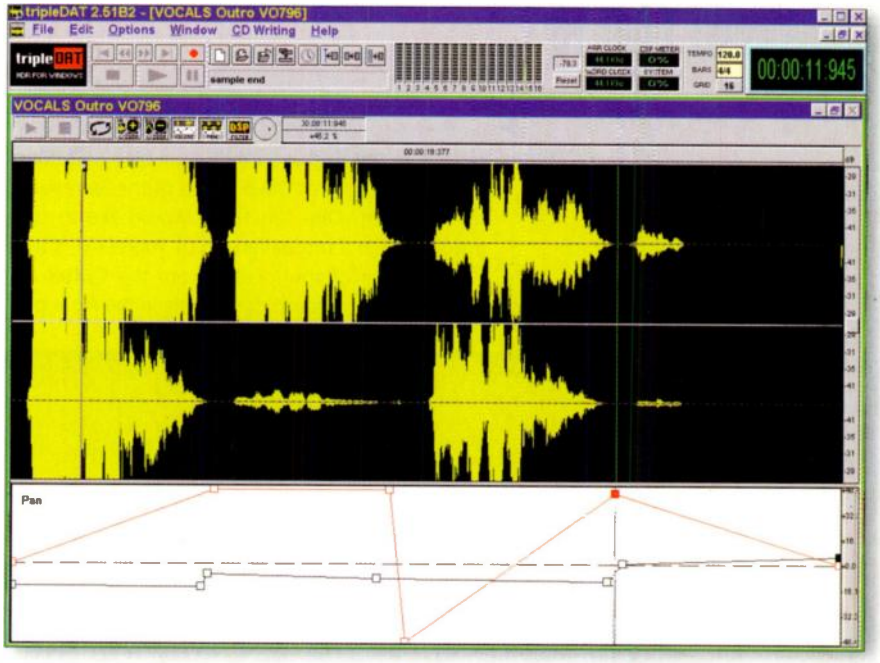


The optional Osiris sonic restoration suite adds powerful DSP processing: DeNoiser, DeClicker, DeCrackler, and high- and low-frequency enhancement.

down to one sample per pixel if you need to). Finally, reposition the Sample by dragging it horizontally, while holding down the right mouse button. Samples can be fixed, or 'frozen', to avoid accidentally being moved: simply select them and press Control + F, or select Freeze from the right mouse menu. Subsequently when the mouse pointer passes over the frozen sample, it changes into a little snowman (aahh!) to indicate its status.

Samples can be quickly and non-destructively edited in the Arranger: you can reposition the sample start point, or tweak its length to top and tail unwanted audio, and easily create fades and crossfades — *TripleDAT* even supplies a choice of envelope types. The default Sample play parameters — Level, Pan, Position, Freeze, Sample Name and Mute status — are defined in the Sample Settings dialogue which appears at the top of the menu list whenever you right-click on a Sample. One of the few bugs I encountered in *TripleDAT* 2.5 was in Sample Settings: if you unfreeze a Sample, type in a new start time, and then refreeze, the Sample start position reverts to the previous setting.

The *TripleDAT* software has a very good optional automatic clip-prevention facility, known as Perfect Volume, which can be accessed via the Options menu/Audio Settings dialogue. When the total volume level of an Arrangement exceeds the 0dB digital threshold, the output level is gently but effectively attenuated. Perfect Volume undoubtedly saves time when you're assembling Samples in the Arranger, but if you wish to mix down a group of Samples to a single new sound file and you're running in Perfect Volume mode, it's essential to first normalise their overall volume level with the right-mouse menu 'Adjust Group Volume' command before performing the merge, otherwise the Samples will be mixed at the sum of their original levels and clipping may occur, rendering the merged Sample unusable.



The Cutter acts as the sample editor, and also allows automation volume and pan dynamics to be defined.

THE CUTTER

The Cutter is *TripleDAT*'s sound file editor, where off-line destructive audio editing and effects processing takes place. Getting up to speed in the Cutter may require some perseverance — several aspects of its routines are a little fiddly, and users expecting the familiar Windows cut and paste edit routines could initially find the idiosyncratic editing routines of the Cutter somewhat baffling! For instance, cuts are performed by right-dragging over the area to be edited and then selecting Skip from the pop-up menu; previewing the cut is achieved by activating playback in Exclude mode, under the Loop icon. Audio can be processed using the suite of DSP effects that ship with *TripleDAT* 2.5, and edited areas can be added to a Track as a new region, or exported as a WAV file.

The Cutter is quite cryptic in the way it displays relative time points: it does not have a ruler *per se*, relying on a rather small time display box to show ▶

SYNCHRONISATION

The T-DAT 16 can act as the master or slave device in a system when using MIDI timecode. In an ADAT system it will only act as the slave. It supports MTC and ADAT sync, but as the T-DAT MTC implementation is a 'trigger sync', perfect synchronisation will only be possible if the devices are also linked via wordclock.

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current position information — and even this is relative to the Cutter Sample start time and does not take account of the position of the Sample in the Arranger. One function I would like to see introduced in a future version of *TripleDAT* is the easy transfer of the locator from the Cutter to the relative position on the Sample in the Arranger window — this is implemented in IQS's *SAW Plus* and can be of great help when lining up audio.

The Cutter window also features graphic envelopes for Pan and Volume control of the selected Sample; multiple Cutter windows may be manipulated on the fly during playback, and this, together with the Sample fade facilities, is the full extent of the mix automation in *TripleDAT* 2.5, as parameter changes in the onboard effects processors cannot be sequenced.

The Track Mixer provides an at-a-glance view of Track status and DSP effects routings.

EFFECTS

The *TripleDAT* software has a suite of onboard DSP effects that can be chained and assigned to Tracks for non-destructive, on-line, real-time processing or, alternatively, can be processed off-line in the Cutter. Real-time effect processing is very CPU-intensive, and may affect overall performance dramatically, causing the audio to stutter. It may also reduce the number of tracks that can be played. Consequently, it's good practice to commit the effects off-line, after first making a backup of the source audio, so that you can revert to the original if you change your mind. As the saying goes, 'Save Or Suffer!'.

Real-time effects are defined in the Effect Manager, then added to Tracks in the Trackmixer, the format of which resembles a conventional analogue mixing console, with optional routings that allow you to apply effects to Tracks individually, or as a group via the auxiliary buss. Incidentally, it's essential to enable Fast Volume Update in the Audio Settings dialogue, otherwise the effects will not be audible. As the auxiliary effects buss can be assigned to any output, it can be used to connect to your favourite hardware effects modules. This extends the capabilities of the T-DAT 16 system significantly — and, of course, outboard processing places little extra burden on the computer.

REAL-TIME DSP EFFECTS

- Compressor
- Limiter
- Expander
- De-esser
- Gate
- Parametric EQ
- Room Simulator
- Delay Processor
- Spectrum Analyser
- Correlator
- Time-stretch
- Pitch-shift

CONCLUSION

This system is a thrill to use, and it would be a very good choice as a 'one-stop' professional-quality digital audio workstation. My main niggles would be resolved by an updated graphic workspace design, and a few small but important updates — such as a less cumbersome method of Track re-ordering, finer tempo definition than the current 0.1bpm, and a time-based selection routine in the Arranger. Simpler edit routines in the Cutter, the adoption of WAV as the internal default audio file format, and DirectX support, even if only for off-line editing, would also be very welcome. Ah well, I can dream... Having said all this, I do like the Creamware T-DAT 16/A16 system very much, and I will miss it badly when it's returned. Highly recommended. SOS

info

£ T-DAT 16 (PCI card and *TripleDAT* 2.5 software) £1695; A16 (twin ADAT to 16-channel analogue converter) £995; A8 (ADAT to 8-channel analogue converter) £695; *Osiris* restoration and enhancement plug-in suite £395; *FireWalkers* real-time DSP plug-in suite £395. Prices include VAT.

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W Driver updates can be obtained from the Creamware web site: www.creamware.com

There's a special offer from Creamware to TripleDAT users: for £1116 they will be sent the T-DAT 16 card, with the bonus that they can keep their 4-channel Triple board.

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MAQ 16/3 - Sequencer (MIDI & CV)	£549
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Mixman Studio's slick graphic interface provides a neat way to access and mix up to 16 tracks of prepared audio phrases.

all MIXED UP

MIXMAN STUDIO PC PERFORMANCE REMIXING SOFTWARE

Every so often, a fun piece of software proves far more capable than its low price would suggest. MARTIN WALKER spins his virtual decks and gets funky...

We've all seen 'instant music' programs — press a few buttons to play a selection of musical phrases in a user-defined order, and Bob's your uncle. Most of them fall down because they're produced by people whose idea of a good demo is a small selection comprising cut-and-paste AOR guitar solos, a Country and Western hoe-down, and a Funk Rock workout. All very polite, but not very happening. *Mixman Studio* breaks the mould — from the moment you press the Play button on the demo mix, you're well into Orbital territory, and within a few minutes you just have to stop the demo to start mixing your own.

Part of the experience is in the parallel with a twin-deck DJ performance, although in truth you're mixing up to 16 Tracks, each containing a musical sound or phrase, without all the complications of lining up the right phrase at the right time. These Tracks are the building blocks, and are in standard PC WAV format. Each of the two decks can be allocated up to eight sounds, which are displayed as graphic LEDs on the 'records' themselves. Up to 16 of these can be loaded simultaneously, as a Mix, and each element can be further customised, with control over level, pitch, panning, tempo, time-scale, and time-shift settings. Once you've loaded in a Mix, you can create a Remix, which is a real-time performance using the Mix elements.

pros & cons

MIXMAN STUDIO £40

pros
- Excellent user interface.
- Real-time pitch-shifting.
- Lots of demos with attitude.

cons
- No post-performance editing available (yet).

summary

A seriously fun piece of performance software, which should help many musicians explore different avenues in pattern-based music.

SOUND ON SOUND

WHAT YOU NEED

The requirements for *Mixman Studio* are quite specific, and the main fly in the ointment is that your soundcard has to be DirectX-compatible. I talked about DirectX in July's PC Notes, but anyone without a full set of *SOS* (shame on you!) can find out whether they have DirectX, by carrying out a 'Find' for the file DSOUND.DLL. It should be in the C:\Windows\System folder. Many soundcards support the Microsoft DirectX system, but you will not be able to use *Mixman* without it.

Other requirements are quite modest: Windows 95, any Pentium processor (although MMX will boost performance considerably), 16Mb of RAM (again, 32Mb is recommended), and 7Mb of hard disk space. If you want the full install, which copies all the sample tracks from the CD-ROM drive as well, you will need 100Mb of spare hard disk space. The wearing of the traditional baseball cap on backwards is optional.

LIVE AND KICKING

As soon as you start recording with *Mixman Studio*, every subsequent button press is captured for posterity. Any of the Tracks can be started by pressing the appropriate key on the PC keyboard. Beginners can add a useful graphic overlay to the screen, which indicates which key controls each function, or use the mouse to point and click, but whichever method you use, every Track stays locked in sync with the rest, as playback is effectively quantised to a grid. This allows you to stab for a single-shot sound, or hold (for looping purposes), and, within reason, your timing will always emerge perfectly tight. When you first start out, it is tempting to try to control everything in real time, and this is fine if you enjoy playing Twister. However, once you look at the manual you realise that *Mixman* has many clever performance features which give more creative results, and far more control when attempting radical 'breaks'. This is a good thing, since there is a limit to the number of pressed keys that will register simultaneously on a PC keyboard.

Once you've started your performance, by pressing one or more keys, you can Lock these into permanent loop mode by keeping them held and pressing the space bar. Holding down the appropriate keys and then tapping the space bar again allows you to Unlock any sound from the loop. With dextrous keyboard work you can drop elements in and out of the mix fairly easily as you go, but for more clever breaks, stabbing the Ctrl key will cause all locked tracks to drop out. While the Ctrl key is held, you can solo any track by pressing the appropriate key(s), so it's easy to create the classic all-out dance mix that cuts to a silent bar, is followed by the re-entry of the kick drum, a rhythmic build, and finally the killer snare roll that heralds the return of the previous full mix (as soon as you let go of the Ctrl key).

There's a global Tempo setting (from 1 to 999bpm!), and it does start to sound a bit odd if you push a mix too far from its default settings, but within limits this works well. Each track can also be altered in real time: volume and pan adjustments are available on an instrument-by-instrument basis, but the interesting one is pitch-shift, which is available in semitone steps from -24 to +24. This sounds extremely good (and is why the program requires MMX for optimal performance, since there is some very clever programming going on), and enables you to not only to have key changes in your music, but also to use clever stuff like pitch-swept Rototom drum fills as part of the performance.

A snapshot of the current state of every real-time control can be saved at any time as a Macro, by holding Shift and pressing any function key from F1 to F8. Pressing a function key without Shift starts the macro, which restores the snapshot mix, and this provides the final weapon in your performance arsenal. By pre-setting up to eight submixes using the Macro facility, you can produce radical changes in mix from one bar (or even beat) to the next, or have pre-defined key changes available, as well as killer breaks — all this while still jamming as you go.

FUTURE POSSIBILITIES?

Editor Paul White had a look at *Mixman Studio* before passing it on for review, and his suggestion of links to MIDI is a good one. If you could import MIDI phrases as well as audio snippets, they could play back remixed MIDI data in real time on external MIDI synths, as well as allowing the option of recording the total performance as a standard MIDI file. Then this could be imported into a standard sequencer for further editing, allowing the performance aspect of *Mixman Studio* to be allied to a studio full of sounds. Another useful addition would be automatic 'topping and tailing' of sample CD loops, which often come in '1 Bar + 1 Beat' format. It should be easy enough to match the loop point up in software and remove the tedium of doing it manually.

Mixman creator Josh Gabriel says that MIDI support will be available at some time in the future, and that Mixman (the company) will be making their own sample CDs, 'SounDiscs', full of *Mixman*-ready samples, topped and tailed. A *Mixman Studio Pro* version is already expected within a few months, complete with a performance editor, and extra pages of software-based DSP effects. An easy upgrade path will be provided for existing owners.

RIFFERAMA

Of course, you can record your own WAV phrases from outside sources, as well as Importing other loops and beats in WAV file format. Once a track is looping continuously, you can adjust its 'Loop length' to make it trigger every beat, or only once every few bars, and you can time-shift any track relative to others, with 480 ticks-per-beat resolution. Once you have the definitive remix, the final icing on the cake is that, in addition to being able to save your performances using the Save function (which saves the key presses), you can also Export the entire remix as a stereo 44.1kHz 16-bit WAV file. This eats up hard disk space at the usual 10Mb per minute, but you could burn a CD directly from it afterwards.

Ideally, you'll need a more comprehensive WAV audio editor for adding effects, but there's already enough in the package to keep you going for ages, including a wide variety of style templates to get you started, ranging from Acid Jazz and Acid Synth to Bombay Mix, Funk, House, Jungle, Reggae, Techno, and World Groove.

MIXDOWN

Although this is primarily a product for instant gratification, you can get a lot of mileage from seeing just what you can create from a set of musical elements. It's obviously the performance aspect that is the strength of *Mixman Studio*. Some sequencers (notably Emagic's *Logic*) do allow easy looping of sound elements while you record on other tracks, but not in such a creative and flexible way as this. As it stands, *Mixman Studio* could be used as a scratchpad for 'serious' composition, as well as a fun tool for relaxation. The concept may have been tried before, but not with such panache (or real-time pitch shifting). At under £40, this is a bargain. SOS

info

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Software or

Although the answer is software, the **VST** experience lies somewhere between the two.

Steinberg's revolutionary **Virtual Studio Technology** is at the heart of the latest Cubase VST 3.5 for Mac OS and Windows platforms.

At first glance Virtual Studio Technology replaces a truckload of hardware, offering all the essential studio components in a reassuringly familiar format Mixers have long throw faders and bargraphs, effects processors have buttons, knobs and LED displays.

Plug-In to These

An ever-expanding range of Cubase-compatible software effects are available from manufactures such as Spectral Design, Waves, Arboretum and TC Works. VST for Windows supports the new Microsoft Direct X standard. Here's a couple of examples:

DeNoiser - RRP £299
Ideal for removing tape hiss or broadband noise this plug-in perform as well as equipment costing 50 times more.

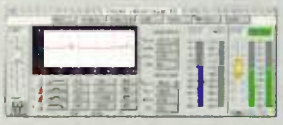
DeClicker - RRP £299
Pro quality real time audio restoration. Ideal for restoring vintage recordings, masking tape drop-outs, softening digital distortion and removing digital clicks.

LoudnessMaximizer - RRP £299
Loudness Maximizer can increase the subjective loudness and boost the 'punchiness' of even the most overmixed/ saturated material.

Spectralizer - RRP £299
Boost 2nd and 3rd harmonics with the Spectralizer and make your recordings sound crisp and clear.

Magneto - RRP £299
Magneto emulates analogue tape saturation to add warmth or compression to your recording. Who said digital audio has to sound sterile?

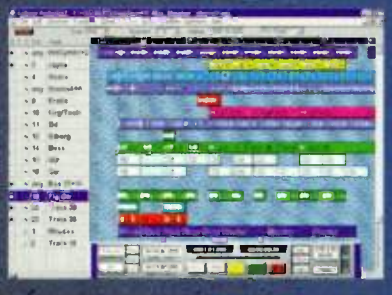
AudioTrack - RRP £169
High quality Compression/Expander /Gate/Eq in a single plug-in at a remarkable price.



For detailed spec and a full list of available plug-ins, please phone or fax for our catalogue.

The Arrange Page

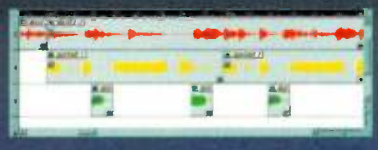
The award-winning Arrangement Page is what makes Cubase unique. Both audio & midi are easily edited with the tools from the toolbox, copied across the page and positioned accurately with a minimum of fuss. And once you are familiar with the tools in the arrangement page, you will find the same operation will create a similar result in all other midi & audio editors.



The Steinberg philosophy is don't stop the music. That's why the programmers have skillfully avoided endless sub-menus and ensured that whatever you want to do, you don't have to stop playback first. Cubase is a true realtime environment designed to aid the composer.

Audio Editing Made Simple

Just double clicking an audio part will open the audio editor. The toolbox



makes it easy to cut, copy, move or paste audio and best of all, its totally non-destructive even if you archive a composition for future use.

Quantize Your Groove

Analyse the rhythmic structure of one audio recording and apply it to another, or apply it to a MIDI recording, even apply the feel of a midi recording to your audio. Cubase

can do all this making the task of working with MIDI and audio easier than ever before.

More Ins & Outs

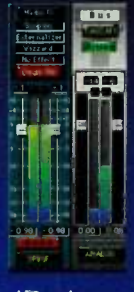
Cubase is a complete virtual recording studio. But if you need to mix

Hardware?

But take a closer look and you'll discover an advanced level of functionality only possible in a software based environment. Like total recall of every operation and setting, the ability to arrange MIDI and audio simultaneously and specs that would simply break the bank in hardware - Try costing 32 channels of CD quality digital recording and mixing with 128 real time eq's

It's this combination of software power and flexibility with hardware sound and feel that makes VST a uniquely productive studio system.

externally then choose one of the many brand name multiple I/O cards. There is compatibility with any card complying with the current Windows MME standard and special drivers are written for the Mac platform. For each available stereo in/output Cubase will create a stereo subgroup to which every channel can be routed. Even auxiliaries can be routed allowing complete integration of external hardware. Event, Korg, Lexicon, DigiDesign,



TimeStretching & PitchShifting

If a drum loop doesn't exactly fit or a vocal note is slightly flat then simply use

the built-in DSP facilities to solve the problem and the new natural-sounding Formant Algorithm consigns Pinky and Perky to the toy cupboard forever.

Native Effect processing

Native audio processing uses the computers own processor to perform all effects functions without the need for any additional DSP hardware. Cubase comes complete with a whole arsenal of high quality native effects. Choose up to 4 simultaneous Aux and Master effects from

- Reverb
- Chorus/Flanger
- Stereo delay
- AutoPanner
- Fuzz pedal
- Stereo Wizard
- Spatial Enhancer
- Oscilloscope

VIRTUAL STUDIO TECHNOLOGY
Leather, teak, flightcase and light module regrettably not included!

Cubase VST 3.5 RRP £329
Cubase Score VST RRP £499

System Requirements:

Minimum: Windows 95 • Intel Pentium 100 MHz • 24Mb RAM • 256 colours 800x600 • Windows 95 compatible soundcard • Fast E-IDE or SCSI hard disc. **Recommended:** Windows 95 • Intel Pentium 166 MHz • 24Mb RAM • High colour (16 bit) 1024x768

PowerMac or compatible computer • At least PPC 601/80 processor, faster recommended • Minimum 16Mb RAM, 24Mb recommended • Second level Cache required • System 7.5.3 or higher

Burn your own CD's

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
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Markers
Audio access database
Spectrum analysis
Realtime plug-in interface with 9 effects

RRP £329

Wavelab 1.6 for Windows

CUBASE VST 3.5
Steinberg

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pretty much the same from one sequencer to another — fiddly — but it's often worthwhile to fix one bad note in an otherwise well played section, rather than trying to play it all again.

I have mentioned just a few of what I consider to be the important aspects of sequencer software. Once you've trawled through manufacturers' literature, web pages, *SOS* reviews and, most importantly, have had a thorough demonstration at *your* pace of understanding, you will have chosen a sequencer and will be ready to choose a computer and other hardware. Note that this is usually considered to be the correct way of doing things — choose the software first and then the hardware on which to run it. Some sequencers are Macintosh only, some are PC only, some are available for both platforms. Where MIDI data only is involved, a sequencer doesn't really stretch a modern computer and most current models will be fine. It's always best to follow the software designer's recommendations, however, and preferably buy a computer at least a little bit faster and more powerful to allow for the inevitable software updates/upgrades in the future.

You'll also need to buy a MIDI interface. There's a wide range available, for both Macintosh and PC, and these were detailed in *Sound On Sound* in July and August 1997. They range from simple but effective models, with one MIDI In and Out, up to all-singing, all-dancing units offering up to 240 MIDI channels. Some include synchronisation to SMPTE/EBU timecode, so that you can link your sequencer to a multitrack recorder, digital or analogue.

AUDIO SEQUENCERS

A so-called audio (or MIDI + Audio) sequencer is a MIDI sequencer with additional audio recording facilities which will soon make the MIDI-only sequencer seem old fashioned. The idea is that you can combine guitar or vocal tracks easily with MIDI sequenced tracks, and move and copy segments in a very similar way. Audio sequencers rely heavily on the performance of hardware installed within or connected to the computer. I said earlier that you should select the software first and then buy appropriate hardware, but in the case of audio sequencers, you'll have to consider the capabilities of the software and audio recording hardware together, and then buy a computer that will suit both. Let's look at the hardware side first.

Macintosh computers have stereo audio recording hardware built in, which can be said to be of CD quality since it has the same 16-bit resolution and 44.1kHz sampling rate (in most current models). The audible results don't bear these figures out, however,

IT HAS TO BE ASKED...

Why do you want to have a computer in your studio? Four simple potential answers...

- I love computers!
- I want to record dance music.
- I want to create music that is new and wonderful.
- I want to sound like a band, and the computer can substitute for the other musicians.

There are many reasons why anyone might want to have a computer in their studio, but I guess these are the four primary motivators. If you don't have a computer in your studio, or you're thinking about an upgrade, don't rush out and buy one just yet, because you need to make a very carefully considered decision on whether you actually need a computer, and which type and model you should buy. Strangely enough, it's still possible to make music without a computer, so you may decide that the computerised studio is not for you. But computers have found their way into virtually every field of human activity, and they have the potential to allow you to make better use of our own abilities, and hopefully make better music, whatever your style.

• LOVING THE COMPUTER

The anorak-wearing computer nerd is a popular fantasy figure. Undoubtedly they do exist, and I think it's true to say that there is a little bit of the nerd — sorry, technology enthusiast — in all of us. Let's face it, if there wasn't we would be reading *Violin Monthly* instead of *Sound On Sound*! Not that I have anything against violins, of course. We want our music to sound modern, and to create modern music we need hi-tech equipment. This accounts for our interest in technology, which sometimes grows a little out of proportion into an interest in the technology for its own sake. I don't see any particular harm in this, but it's important to recognise that the urge to own and operate the equipment is a different thing to the urge to create music. It's possible to confuse the two and end up spending more time and energy on setting up a studio than on actually using it. Some people even end up writing magazine articles about setting up studios...

• DANCE MUSIC

However great your love of computers is, it can't be any greater than the love some people have for dance music. The sole intent and purpose of dance music — one might imagine — is to allow people to go out and have a good time. But I have met those who listen to dance music with an intensity that would put some classical music fans to shame. And the creation of dance music is as artistically challenging as any other style of music — perhaps more so, since it evolves so rapidly. In fact, you don't need a computer to produce dance music; a lot of dance music has been created using the Akai MPC60 sampling drum machine/sequencer, and the more recent MPC3000. Obviously, such equipment uses computer architecture internally, but there is no mouse, no monitor and no typewriter keyboard, and it's presented as a tool to fulfil a specific task. The latest MPC2000 may be similarly successful. But for most dance music producers, the computer will be seen as an essential element in the studio, alongside the twin decks and sampler.

• THE NEW AND THE WONDERFUL

New technology often leads to new musical styles. Let me tell you that there's something big on the way right now. I don't know what it is, or whether it will happen this year or next, but there is so much new technology in the form of software 'plug-ins' available that there could be a change in music that could amount to a revolution. As I have said elsewhere in this article, plug-ins are small software elements that can be linked to major sequencing and hard disk recording applications. They are relatively easy for software designers to create and market and they range from standard audio processes to weird, wacky and totally way-out. It's like the primordial soup all over again, where molecules randomly organised themselves into amino acids, then into proteins, then into life — and it's going to happen to music. You could be experimenting with a couple of plug-ins on an otherwise idle afternoon, when suddenly you realise that you have created a sound that has never existed before. It may be crap, but perhaps someone else is simultaneously discovering a combination of sounds that will form the basis of a totally new music!

• THERE IS NO SUBSTITUTE!

Computers may be versatile, but the one thing they can't easily do is emulate real live musicians. In my other life as a small-time music publisher, I receive demo tapes at the rate of one or two a month produced by people with a musical talent, a computer and a soundcard, who aspire to write film or TV music. Often the music has the potential to sound great if played by a band or orchestra, but the computer is, by nature, a machine, and the recording almost inevitably sounds mechanical rather than human. Having said that, if you really work at it, it's possible to inject humanity into a computer-produced recording, but I should advise that it is going to be very difficult and you would find it easier, if rather more expensive, to hire session musicians, who will give your music the human touch, amazingly enough, without any special instructions to do so! If you can't afford session musicians and you're going to try to create the sound of a band or orchestra with the aid of a computer, my first piece of advice would be to moderate your use of the quantise function; my second would be to consider at every stage whether your work sounds human or mechanical. Beyond that it's up to you — it can be done, but you're setting yourself a hard task.

Professional Audio

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Soundscape Version 2.0 BLUE SYSTEMS

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Pro Tools 24 is the newest and most advanced addition to Digidesigns award-winning Pro Tools family. Pro Tools 24 is a true 24-bit digital audio workstation - ideal for music production, audio post-production, or any setting where sonic quality is paramount. Main features: True 24-bit digital recording , editing, signal processing, and mixing. Up to 32 tracks per audio card. Up to 72 channels analog and digital I/O.

Due to the release of Pro Tools 24, the price on Pro Tools 4 16 track version has dropped. The 16 track version is now only £4110 inc VAT.
Macintosh G3 computers are now Digidesign approved.

Blue Systems also stock & demonstrate Soundscape V2, Emagic Logic Audio, Steinberg & Digital Wings products. Call for more details.

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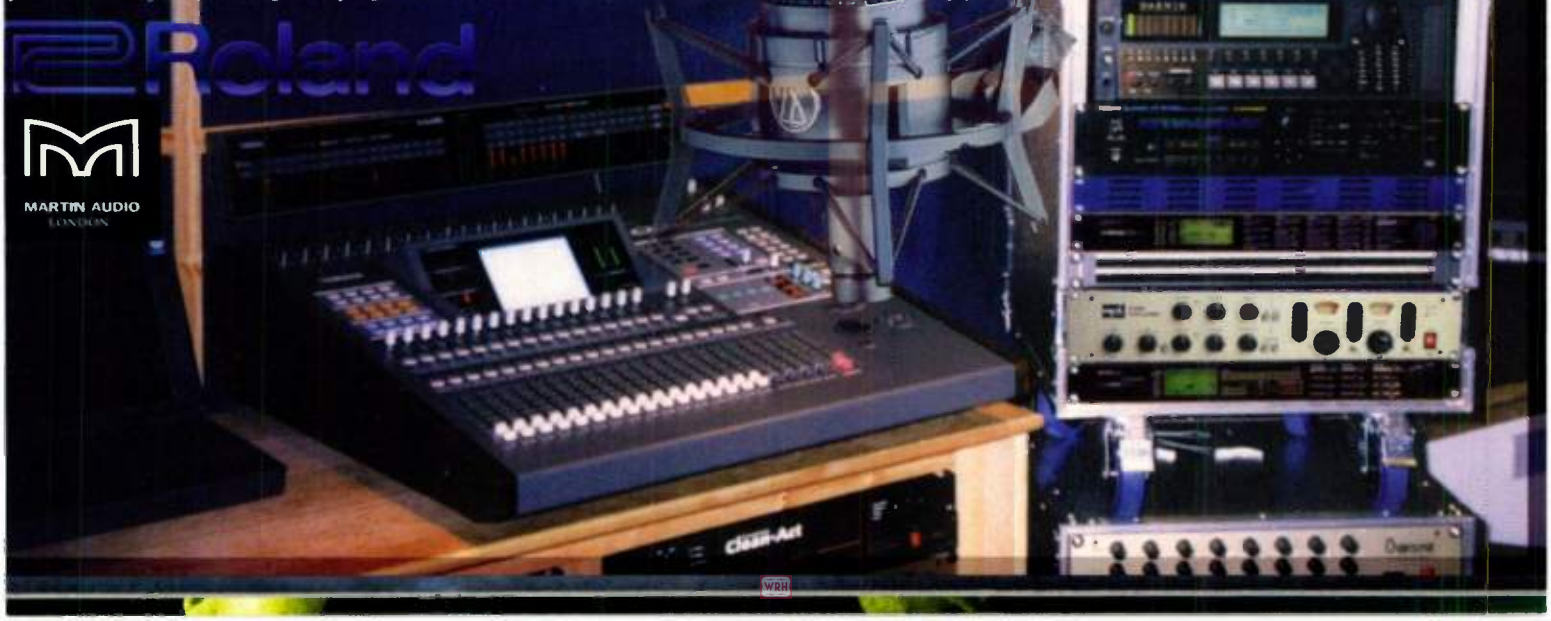
If you're considering starting off or updating your studio, be it digital or analogue then give us a call. Not only can we specify the system for you, we install, deliver then provide you with the essential technical support and back up that is needed.

We Supply all bands of recording equipment and all staff are musicians or engineers so we understand your needs. If your thinking of buying else where, DON'T. Give us a call and see how we can help you.

Roland

MARTIN AUDIO LONDON



suits your purposes, you need to find a sequencer that will support it, since, unfortunately, not all sequencers support all cards. As with MIDI-only sequencers, there are differences in operation which will, on demonstration, sway your preference. Audio sequencers now come with a selection of effects, such as equalisation, delay, chorus and reverb. The operation and quality of the effects will almost certainly be important to you. There are also differences in support for third-party effects in the form of software 'plug-ins' (see box, left). A thorough read of the software manufacturer's literature is called for.

HARD DISK RECORDING

There is a thin and blurred dividing line between audio sequencers and hard disk recording systems. It's easier for me to look at the top end of the market, where there is a small but growing number of systems which use a combination of cards and external hardware to process the audio, with the computer acting, for the most part, as a dumb controller. This is potentially the ideal situation, because audio, even in digital form, really needs its own environment and should not have to jostle for position with other types of digital information on the computer's data buss. Also, the computer is relieved of the strain of dealing with multiple streams of audio, and so does not necessarily need to be the latest, fastest or best model. Systems such as this major in audio, and MIDI — if available — is an extra; you may need to synchronise the hard disk recording software to a sequencer, which is often possible. In terms of audio, these systems are coming to the point where anything you might want, sonically, can happen within the system — an external mixing console and effects rack are almost becoming irrelevant. With some systems, it's also possible for the hardware to be controlled by an audio sequencer, so you get the best of both worlds. As with audio sequencers, you need to check numbers of inputs and outputs, the number of tracks possible, and the mixing and effects features.

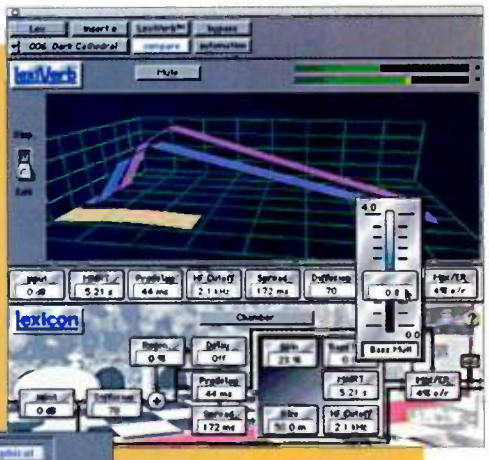
Hard disk recording and mixing, however well specified the system, are not really suited to control via a keyboard and mouse interface, and the current wave of products coming onto the market may also offer a physical knob-and-button interface as a controller. Ideally, controllers such as these should have motorised faders and knobs which have a ring of LEDs or similar indicator to show their position. Otherwise, you will frequently find that the fader or knob is in a different position to where the computer thinks it should be, which is an irritation.

Considering the incredible advances in technology over the last year or so, before long we might find that the computer itself almost disappears and becomes the powerhouse behind a controller and display interface which are totally directed to our needs as musicians and recordists. When this happens, the traditional recording studio may finally disappear.

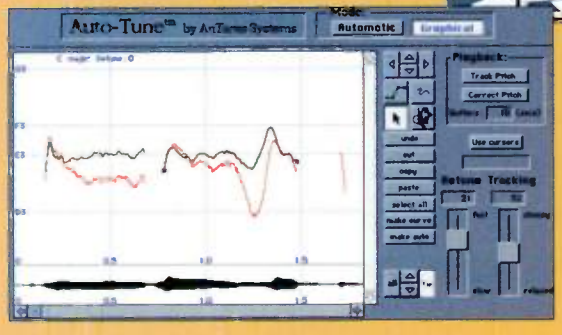
Next month — the 'traditional' recording studio (it hasn't gone away yet!). I'll return to computers later in the series, when I discuss mastering in detail.

PLUG-IN BONANZA!

Firstly, what is a plug-in? Plug-in is an inelegant name for a piece of software that you can use in association with a major application, to provide additional processes and effects. You could, for instance, buy a compression plug-in for your audio sequencer so that, in theory, an external compressor would not be needed. Plug-ins come in a variety of standards, of which the best known are TDM, Audiosuite, Premier, VST and DirectX. TDM (named after Digidesign's Time Division Multiplex buss, which links their cards inside the computer) is compatible with Pro Tools and with other software that can address the Pro Tools hardware, such as *Digital Performer*, *Logic Audio* and *Studio Vision Pro*. TDM effects take place in real time and any parameter changes are instantly audible, and automatable. Audiosuite is also a Digidesign standard, but it works without the special TDM hardware. Audiosuite processes are file-based, meaning that although you can get a preview of the effect, you can only hear the full result of the process by creating a new file and auditioning it. *Premier* is an editing application for moving images, made by Adobe, and as such you wouldn't expect to come across it much in *Sound On Sound*. However, the Premier plug-in format has become something of a standard and is supported by Macromedia's *Deck II*, BIAS *Peak*, and others, and offers file-based processing similar to Audiosuite. VST is, of course, named after *Cubase VST* and is similar to TDM in that effects take place in real time, but no additional hardware is required, given a suitable computer (and soundcard in the case of a PC). TDM and Audiosuite are Macintosh only, Premier and VST come in both Macintosh and Windows 95 versions. DirectX is Windows 95 only and is compatible with Cakewalk Music Systems' *Cakewalk* 6.0, Sonic Foundary's *Sound Forge* and Steinberg's *WaveLab*.



Above: Lexicon LexiVerb.



Left: Antares Auto-Tune.

Right: Opcode Fusion.

Below: Steinberg Magneto.

Just to whet your appetite here is a short selection of plug-ins:

- **Lexicon *LexiVerb* (TDM): a real Lexicon reverb inside your computer!**
- **Antares *AutoTune* (TDM and VST): no more out of tune vocals!**
- **Opcode *Fusion:Vocode* (Premiere and DirectX): fusing and morphing sounds together.**
- **Steinberg *Magneto* (VST): analogue tape simulation.**

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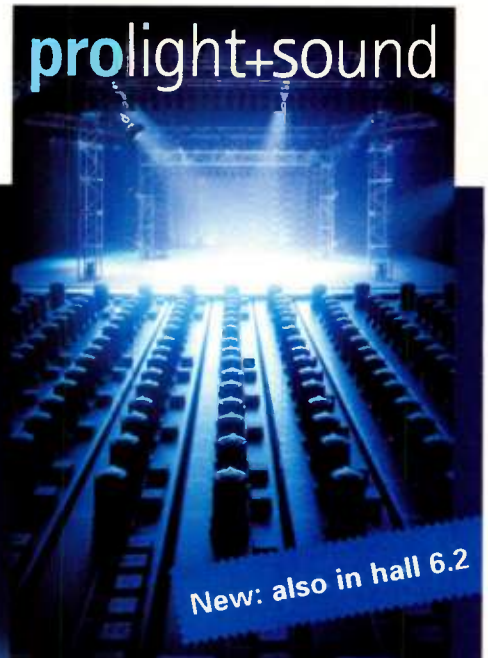

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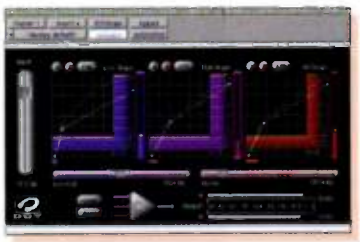

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jewel box?

BSS OPAL DPR422 COMPRESSOR/DE-ESSER

Does the DPR422 have the right combination of price and performance to break BSS into the project studio market, or is it an Opal-less cause? PAUL WHITE finds out.

BSS continue to enjoy their long and healthy reputation in the live sound business, but they're never done quite as well in the studio market, even though their products are equally suited to both applications. This situation is the reverse of that of Drawmer, another respected and well-established UK company that has compressors and gates in virtually every studio in the land, yet its products are relatively little used in live sound.

In an attempt to capture more of the project studio market, some companies are producing budget versions of their existing pro-audio products, but that's not the approach BSS are taking with their new Opal range. Instead they've maintained the quality and flexibility of their pro range at a lower price point, by streamlining the manufacturing process. The result is a cost saving to the end user of around 30%, but that still doesn't put the range even close to the budget price bracket.

On the surface, the DPR422 is a fairly conventional 2-channel, 1U device with mains powering, XLR inputs and outputs, and unbalanced jacks on the side-chain insert. There's also separate 0dBu or -10dBV operating level switching on both channels, but no jack alternatives to the XLRs. In addition to a fairly comprehensive set of controls, there's also an auto mode that optimises the attack and release time constants automatically, according to the input signal dynamics.

Less conventional is the inclusion of two different de-essing modes: one full-band, where any detected sibilance pulls down the gain of the whole signal, and a more elaborate mode involving the compressor section, which affects only the gain of high frequencies. If the basic de-esser is selected, both compression and de-essing can be used together, but in the frequency-selective HF mode, the compressor circuitry and controls are used together with the de-esser Frequency control, to apply gain reduction only to the top end of the audio range where sibilance occurs.

pros & cons

BSS DPR422 £582

pros

- Smooth, well-behaved compressor.
- Excellent metering.
- De-esser impressive in HF mode.
- Well engineered.
- Clear manual.

cons

- Still expensive when you consider how many low-cost, good-quality compressors are available at the moment.
- The basic full-band de-esser doesn't always produce great results.
- HF de-esser precludes using compression at the same time.

summary

A well engineered compressor from one of the foremost British manufacturers of audio processors, but in the project studio market it faces some very tough competition at much lower prices.

SOUND ON SOUND

CONTROL

Because this product is aimed at both pro and semi-pro users, the manual is particularly thorough in the areas of connecting up and basic operation, which is very welcome. Looking at the compressor section first, the control layout is fairly routine, with Threshold, Ratio, Attack and Release as well as the usual Gain control for making up any level lost by compression. Auto mode is selected with a single button press, and overrides the attack and release controls. Auto uses a dual-stage release function that restores the gain as quickly as possible after a transient has passed, but without making the process obtrusive.

In all cases, the compressor operates in a kind of variable soft-knee mode, which BSS refer to as progressive compression. Low ratio settings coupled with low levels of compression produce the most progressive transition from linear to compressed, whereas higher settings sharpen up the knee to the point where the unit behaves more like a hard-knee unit. In most situations this is the way you'd want the compressor to work, so the absence of a soft/hard button isn't a problem. Ratio is variable from Off to Infinite, and separate bargraph metering is provided to monitor the output level and the degree of gain reduction being applied. As with some other BSS products I've seen, the gain reduction meter also shows the level of the input signal compared to the threshold level, where a large yellow LED denotes the threshold. A non-latching front-panel button may be pressed to monitor the input signal on the output meter if required. Two illuminated semi-circular buttons close to the centre of the unit provide independent bypass facilities for each channel, and a stereo link mode links the side-chains of the two channels for stereo signal processing.

Side-chain access is via a pair of rear-panel jacks configured as normalised send and return points, and these may be connected to an equaliser for frequency-conscious compression, or used to input a control signal for ducking and similar functions. Unusually, the side-chain access points are balanced, but the manual shows the correct way to wire cables for unbalanced use of both the main and side-chain ins and outs.

USING THE DPR422

The compressor section of the DPR422 is wonderfully predictable in operation, and the BSS metering system, which shows both the signal level relative to the threshold and the gain reduction amount at the

TAKING THE ESS: DE-ESSING WITH THE DPR422

Only two controls are needed to access the DPR422's basic de-essing facilities: De-ess and Frequency. The De-ess control adjusts the amount of gain reduction applied when a sibilant sound is detected, up to a maximum of around 20dB. Green and yellow LEDs above the de-esser section provide simple metering, where green indicates that gain reduction is taking place and yellow shows that 15dB or more of gain reduction is being applied. The Frequency control is a user-adjustable filter that should be set just below the frequency at which sibilance starts, usually around 3kHz or above. Temporarily switching in the HF button and selecting side-chain listen allows the user to monitor the effect of the Frequency control at the unit's output while setting up.

Basic de-essing is broadband, so whenever a sibilant sound is detected, the whole audio level drops, which can result in a lisping quality being added to vocals. A more sophisticated approach is to select HF de-essing, though this requires the use of the compressor section, precluding combined compression and de-essing. Switching in HF de-essing necessitates the use of the Frequency control to determine the area where sibilance is occurring, but now the compressor only acts on frequencies above the setting of the Frequency control. All frequencies below are left unprocessed, so that sibilance causes only the top end to be reduced in level, rather than the whole signal. This reduces the lisping effect significantly. All the compressor controls, including Auto, may be used in this mode, to fine-tune the de-essing process, and activating side-chain listen once again allows the effect of the filter to be monitored. In HF de-ess mode, the De-ess control and the green/yellow meter LEDs are disabled — the degree of de-essing is controlled entirely using the regular compressor controls, while the Frequency control sets the break point above which detection and compression occur.

same time, makes setting up very simple. At modest settings the compression is transparent enough to use for routine gain-control jobs, even on complex mixes, while at higher settings the impression of compression increases without ever seeming out of control — a failing on some competing units, even very expensive ones. The compressor does everything a good compressor should do, without trampling the life out of high frequencies or producing excessive pumping, and if you are only able to have one compressor, this one will do a good job in most areas, including mix compression. I even tried it on my wooden American Indian flute and found it added a lot of definition and evenness to the sound, without making the end result seem processed. However, that's not so surprising — after all, Opal flutes are supposed to make your mouth water!

I have to admit that I had less luck with the basic de-esser (see box) because, although it works, if you try to apply too much ess-reduction or set the frequency control too low, distortion sometimes becomes audible, especially if you have a low-pitched voice. Perhaps clearer metering would have avoided this situation. To be fair, though, the manual warns of this potential problem. The frequency-dependent HF de-ess mode works far better and all but eliminates that lisping effect simple de-essers create, but of course you lose the ability to compress separately — in this mode you can only de-ess. However, when you're dealing with a rogue vocal track, you can always use one channel to compress and the other to de-ess, so this is still a one-box solution.

SUMMARY

In most walks of life, calling something predictable is often a thinly veiled way of calling it boring, but when it comes to signal processing you don't need any nasty surprises. The DPR422 compressor is as predictable as you could wish it to be, and the controls do just as they say, especially the Auto mode, which can take care of most programme material without stumbling. The simple de-esser is less impressive, but the HF de-ess mode is extremely good, even though it robs you of the compressor.

The DPR422 really is a first-class performer, combining good sound quality with intuitive operation, clear metering and smooth compression — but it's not a cheap unit. Those professionals who are already BSS fans will no doubt welcome the Opal range with open rack slots, though the project studio owner will probably take a lot more convincing when there are so many other excellent compressors around for the same money or less. SOS

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two decks are better than one!

DEREK JOHNSON finds Tascam's dual DAT deck, the first ever, is at least twice the fun...

TASCAM DA302 DUAL DAT DECK

It seems so obvious now: package two DAT machines together, with one remote control, and let them record simultaneously, sequentially, from one to the other — even allow one deck to record while the other plays back. Yet a format that's taken for granted when it comes to your standard analogue compact cassette has only just become available to DAT users: Tascam's DA302 is the first ever dual DAT recorder.

All the advantages of the dual-deck format are here, such as savings of cost and space, high-speed dubbing (a first for DAT recorders?) and so on, with, luckily, few of the compromises. When you think of a dual cassette machine, the picture you have in your mind is likely to be of one deck that records and has loads of features and another, less-well specified deck that simply plays back. While there are one or two exceptions (Tascam's own rackmounting 202 MkIII is notable) where both sides *do* record, they're not that common. There are no such concerns with the DA302's spec: both decks have a nearly identical feature set, both will record, and there are some nifty options that offer virtually the flexibility of two separate machines, but without using up two deck's worth of space.

pros & cons

TASCAM DA302 £1499

pros
- Unique dual DAT-deck package.
- Flexible recording, copying and playback options.
- Not expensive considering facilities.

cons
- Remote wired to back panel.
- Slighly confusing display.

summary

A machine like the DA302 should have happened years ago. If you can't see the advantage of two DAT machines in one box for under £1500, read the review again!

SOUND ON SOUND

DESCRIPTION

Physically, the DA302 is the size of a typical pro DAT machine: 3U high and quite deep. On the technical front, the DA302 uses 1-bit delta-sigma A/D and D/A converters; in practice, this means that it produces good, natural-sounding recordings.

The front panel is awash with controls, and no wonder: each deck has its own transport and track ID management controls. There's a single custom display in the middle of the front panel, but within the display are two level meters and two tape counters, along with various status icons — sample rate, dubbing mode, Auto ID, and so on. With two decks on board, headphone monitoring could be a problem: a three-way switch lets you listen to either deck separately, or both together.

Of course, a remote control is provided, and the provision of separate transport, ID and locate buttons for each deck means that it's one of the busiest I've seen. It's also wired rather than infra-red; the reasoning behind this is that if you have more than one machine (multiple DA302s can be linked together and operated via a single remote), various infra-red remotes could interfere with each other. A wired remote stops this problem. The one let-down here is that the remote's plug is at the *rear* — not the most accessible of locations, especially if your rack is full and totally enclosed.

The remote control has a battery compartment, with a lid that is actually very difficult to remove. There's a reason for this: the remote control doesn't actually need batteries! Just plug and play.

The rear panel sports all the unit's audio connections, and it's here that we encounter the first of the small number of compromises: the analogue connections are on unbalanced phono sockets, and there's only one stereo analogue input. If you're recording the same material on both decks at the same time, or are doing a continuous recording using both decks, then this single input is fine. It's simply not possible to make two completely independent recordings via analogue inputs. There are, however, separate stereo analogue *outs* for each deck. In addition, a Cascade stereo output pair is used when linking more than one DA302 together; this simply passes audio appearing at the analogue

inputs straight out of the unit untouched.

Independent recording on the two decks is possible digitally, however. Both decks have separate digital ins and outs, on phono sockets (plus a digital Cascade socket). The DA302 is preset to work with the consumer S/PDIF digital format, but can be switched to professional AES/EBU digital audio, albeit unbalanced and without that format's standard XLR connector (all you need is an XLR to phono cable with pin 2 as signal and both pin/and 3 going to the screen).

The so-called External Control I/O connectors are back here as well, and are used to link (via the special WR-7000 synchro cable) multiple decks together, for simultaneous or continuous recording or playback.

FEATURES

Let's have a quick look at the DA302's feature set. To get to the important points first, I'll note that it *will* record at a sample rate of 44.1kHz via the analogue inputs (this CD-compatible rate isn't available on some domestic DAT machines), as well as 48kHz and the long-play 32kHz. It'll happily respond to any incoming digital audio, and switch sampling rates accordingly. One question you'll want an early answer to is: "Will the DA302 infect my recordings with some form of copy inhibit, such as SCMS (Serial Copy Management System)?", to which the answer is "No... unless you want it to". As befits a pro machine, SCMS is disabled, but if you want your recordings to have the limited digital-to-digital copy protection offered by this system, you can choose to enable it.

Beyond that, both decks offer a familiar collection of facilities that make working with DAT recordings a relatively straightforward task. Management functions relating to track IDs and so on are comprehensive: when incoming audio is detected, an ID is written and the track numbered, but this ID can be changed, erased or skipped later. Although IDs are entered sequentially, they can also be re-numbered at a later time, and you can set up temporary programs so that tracks will play back in any order (like a CD player).

DUAL OPERATION

The way in which the two decks interact is pretty straightforward. Apart from not being able to simultaneously record different audio on both decks via the analogue inputs, practically anything you'd reasonably want to do is possible: you can record onto one deck; the same material can be recorded onto both decks at once; an entire tape can be cloned with a couple of button pushes (it starts to get really interesting when you realise that an entire tape can be cloned at double speed), and a new tape can be assembled from recordings off various tapes. The one restriction is that high-speed duplication can only be accomplished on one machine; it's not possible in a multiple-machine setup.

The current limit for DAT tape lengths seems to be 120 minutes (with 125-minute lengths available from suppliers such as HHB). This means two hours continuous recording at 44.1kHz and 48kHz, or four hours at 32kHz long play (the difference in audio quality here is not so bad — the frequency response of the latter is roughly equivalent to FM radio). But your DA302 has two decks, and yes, it offers a 'continuous' recording facility, whereby one deck will start recording once the tape in the first deck is finished. That means eight hours continuous recording at 32kHz, which is ideal for many purposes (conferences and festivals, for example). If you need more than eight hours, buy another deck and slave it from the first, or use the 'Loop' function. This lets you swap tapes when the first deck is finished; the first deck will then start recording *again* once the second deck has finished recording.

CONCLUSION

If there's one downside to using DAT as a mastering medium, it's backing up. Remember that data (and your digital masters are data, after all) is only as secure as the number of backups you have. Buy one machine and you'll have to do two mixes onto two separate tapes if you want a safety copy (and will those mixes be identical?). The alternative is the expense of another DAT machine or finding a DAT-owning friend who's willing to share. Enter the DA302. For around the price of two budget domestic DAT recorders, you get two pro machines (with a pro warranty) in one 3U package — one year of security, plus space, wiring and cash savings! Now it's now up to you: make two identical masters while mixing, or make your backups later. And it couldn't be easier to compile a production master, all digitally of course.

Pro users may well go for multiple DA302s: wire two or more together, and you can produce multiple DAT copies of a day's work in the time it would normally take to make one, allowing everyone involved in a project to have a DAT to listen to. Professionals of a different order — those in need of 'piped music' — can have up to eight hours of continuous high-quality background muzak, or two separate four-hour programmes for two different locations. Business types in need of records of lengthy presentations can forget their shorthand: even if it lasts eight hours, you'll have every last word on tape.

Sonically, the DA302 is easily on a par with Tascam's respected family of DAT machines, and when you combine this fact with the amazing flexibility of two decks in one package, what more could you ask of a mastering machine? SOS

ACHIEVING A BALANCE

After noting that I consider the DA302 to be a professional machine, you may be wondering where the professional balanced XLR audio connectors are. For many people who will buy the DA302 — and the asking price is set to include the serious bedroom or project studio owner — balanced connectors may not be a necessity; the phono connectors will suffice. But, should your studio be fully balanced, there is an option: the £85 LA-D302 balanced analogue I/O kit. The kit adds a single pair of balanced XLR inputs (shared, like the phono inputs, by both decks), and two pairs of balanced XLR outs. If you don't want or need balanced connectors, you don't have to pay for them. But if your studio goes upmarket, you don't have to scrap your DAT machine: it can be economically upgraded at a later date.

ON THE MENU...

Apart from the obvious functions accessed by buttons on the front panel and/or remote, the DA302 has two 'Menus' of global functions for you to play with. These let you decide whether the digital output format is S/PDIF or AES/EBU, adjust the brightness of the display, and decide whether recordings are free of copy-inhibit or not (free, one generation, or prohibit) amongst other things. Even more usefully, there is also a playback error rate display (for each deck) and an indication of elapsed head drum rotating time (great for keeping tabs on when you might need a service), again for both decks.

"For around the price of two budget domestic DAT recorders, you get two pro machines (with a pro warranty) in one 3U package."

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Making Arrangements

A ROUGH GUIDE TO SONG CONSTRUCTION AND ARRANGEMENT

PART 3: This month some of the people who actually get their hands dirty with arranging — often for the household names in popular music — pass on their thoughts, hints and tips.

DOMINIC HAWKEN

As well as writing for SOS, Dominic Hawken has composed hit songs, including a Christmas Number One, for East 17, and has written for and played keyboards on their last two albums. He's also involved with producing Ant & Dec, and working with up-and-coming band Alibi and Prodigy-esque girl duo Swallow. In the past he's worked with such famous entities as Malcolm McLaren, Donna Summer, a Tribe called Quest, and Errol Brown.

"In the early days of the pop industry, roles were more clearly defined. Songs were composed by songwriters, vocal and orchestral performances were extracted by producers, and the results recorded and mastered by audio engineers. The arranger's task was to translate the chords and melodies into an orchestral score, which could then be performed in one take by a team of musicians.

"Today, of course, the modern palette of sounds is no longer limited to classical instruments, and arranging is often an integral part of the songwriting and production process. An incredible array of synthesizers, samplers and other tools is now available to aid the creative process, and digital technology allows us to shuffle entire sections of music around until the perfect format is achieved. In pop music, above all, the role of arranger has merged with those of musician, programmer, producer and writer, to become a vital part of the creative process.

"For me, arranging is primarily about creating moods. A good arrangement should hook the listener from the intro, and hold their attention through the song as the parts and melodies develop. Sounds and chord structures should work together to surround the vocal and evoke the appropriate emotions. Everyone has their own way of achieving this, and there can never be an 'ultimate' arrangement for any track — experimentation is the key.

"Songs can evolve from a wide range of starting points. You may be working from a demo, with many of the parts already defined, or you may have just a title. Either way, it's good to start by taking an objective step back. Imagine how the song might sound on your car radio, segued between adverts as you negotiate a particularly tricky junction on the M25. What sounds would grab your attention, and make you turn the radio up? As the music continues, which melodies fill your mind and keep you enthralled? Try to translate your ideas into reality as quickly as possible. The more you work on a song, the less objective you become, and your first impressions are often correct. You might listen to a track thousands of times as you work on it, but the general public will be lucky to hear it a couple of times on the radio before it drops from the playlist.

"Start by developing a fundamental groove, which will underpin the entire song. I find it helps to work with a basic 'old-faithful' set of sounds — drums and percussion in the sampler, 'real' instruments from a selection of sample players, and an assortment of other synths. Using these familiar sounds, I can quickly build up the bare bones of an arrangement and test my ideas. As the groove begins to emerge, I begin to replace the original sounds with new and stronger versions. If you're stuck for inspiration, think of other great songs with a similar feel, and try incorporating some of the rhythms. You can use software tools like Steinberg's *ReCycle* to slice up beats and move sections around, or reverse them to add interest. The old adage "it's not what you play, it's what you don't play that counts" still applies — if you get stuck with a certain part that's not working successfully, leave it out and move on to another. Never confuse complexity with creativity; it's usually the simplest melodies and sounds that are the most memorable and have the greatest effect.

"From a listener's point of view, the two most important sections of any pop song are the intro and the chorus. The intro sets the mood of the song, while the chorus is the section that filters through into the listener's subconscious and delivers the ▶

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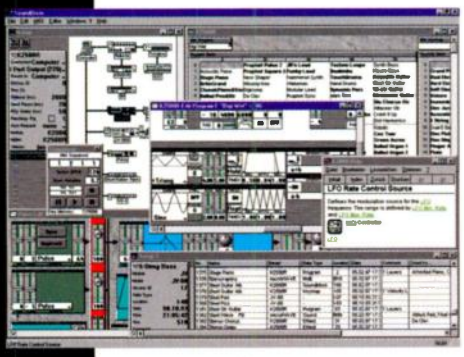

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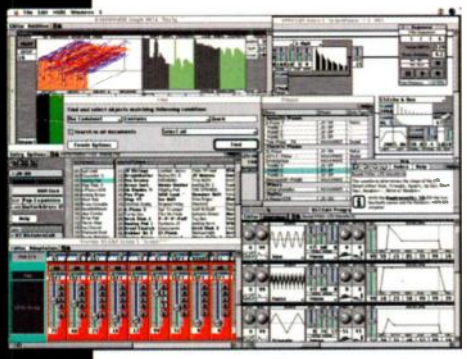

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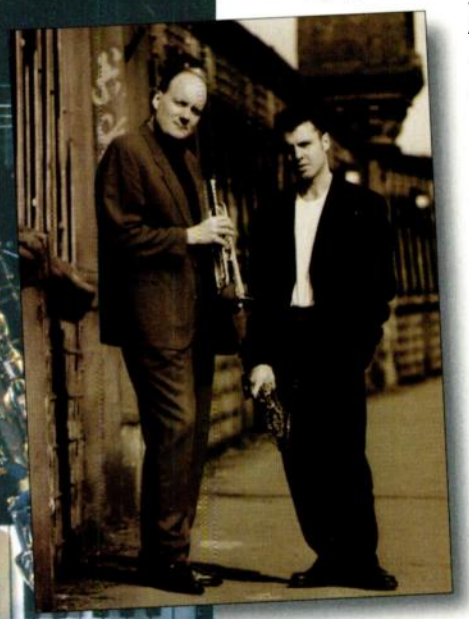
ultimate hooks. Often the intro is a cut-down version of the chorus, with some of the instrumentation muted. Use it to grab attention, preview the main riffs, and then drop down into the first verse. Work on these sections first, and then move on to tackle the second verse, middle eight and outro. It's always good to try and record a guide vocal as soon as possible, so that you can build the arrangement around the voice rather than leaving it to the end of the session. Remember that the voice is the most important instrument in any song and should be treated as such. Some musicians can get so carried away with producing their epic backing tracks that the vocal becomes totally swamped, or sits 'on top' of the track rather than within it.

"Try to ensure that the chord structures and sounds work together to generate emotion, and take advantage of the entire sonic spectrum, using sounds with frequencies that complement each other rather than compete. Clever panning and equalisation on the mix can also help in placing each instrument within its own 'space'.

"Above all, get creative. Keep pushing yourself to find new tricks and techniques to give your arrangements that extra edge. Take regular breaks while you work, to keep your objectivity, and always try to judge your arrangements from the perspective of a new listener. Oh, and that other vital thing I forgot to mention — enjoy it!"

ANDY BUSH

Andy Bush (trumpet, flugelhorn, French horn, amongst others) and Steve Hamilton (all flavours of saxophone and woodwind) make up one of the most in-demand horn sections on the British session circuit: Hook Horns. Working for artists including Tina Turner, Chaka Khan, The Brand New Heavies, Swing Out Sister and Blur, they know a thing or thousand about getting a tasty horn part onto a track.



Andy Bush (left) and Steve Hamilton (right).

"Our basic philosophy of how a horn section should be applied to a track is 'Musical Seasoning' — to be used sparingly to add some colour. When you enter the studio you have to leave your horn player's ego at the door. We're there to give the track the lift the producer or artist wants. It's not about how technically stupendous you are as a player; it's all about the groove you can add to the track, to give it the right feel. We're there to be sympathetic to the song, and as a rule the best horn lines are the most idiomatic to the genre of music you're working with. That's why it's essential to have a knowledge of the heritage of horn writing in popular music, to be able to use the style most appropriate to the track.

"Recommended tracks to listen to, for brass arranging and playing at its simplest and melodic best, are: The Average White Band's 'Pick Up The Pieces', which is basically a selection of riffs in the E-flat Dorian minor scale, Stevie Wonder's 'Superstition' an E-minor Pentatonic tune, and the middle section of Wilson Pickett's 'Midnight Hour', which shows that melody is everything — although if you want to know everything there is to know about four-part harmony and contrary harmonic motion, check out any of JS Bach's chorales — they are the gospel when it comes to harmonic movement.

"It's important, when writing harmony parts, to keep the notes of the higher voicings as close together as possible. This gives a dense, thick sound to the section. This doesn't apply to baritone sax parts, which are perfect to play an octave below, or for low counterpoint leads to the main section. The most powerful and expressive range of any brass instrument is generally the middle 60%. Think of a Fender Rhodes, which has a lovely warm sound in the middle range of its keyboard, but the highs and lows start to fall out of range, becoming thin at the top and muddy at the bottom. It's often the same with horns — with the exception of tenor sax, which has, at the top of its range, a very 'pokey' quality, excellent to sit below a top-line trumpet. The bottom extreme of the tenor sax's register is very ballsy, which is perfect for rock and roll hooks. Very high trumpets are also great, but often need support so that the texture does not sound 'spread' and full of holes.

"When it comes to lifting a song, there's nothing more important than percussion."

"A strong sound can be obtained from just a tenor sax and a trumpet playing in unison, or in simple two-part harmony, but adding an alto sax will give the section brightness and diverse harmonic possibilities — and it's in a register to fully support a lone trumpet player. Two trumpets and two saxes make up a full-on brass section and, if the budget allows, adding a trombone will give a real thickness to the sound and will allow for the accommodation of serious harmonic inversions.

"One of the most successful sections to blow their horns since the beginning of rock and roll are the Tower Of Power horns. They're made up of two trumpets, two tenors and a baritone sax, used for rhythmic counterpoint. One of the trumpet players doubles as a trombone player and one of the tenor players doubles on alto, giving them the ultimate combination of voicings.

"With regard to recording, it's important to get the high-energy sound of a brass section onto tape. Brass

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DIGIDESIGN PRO TOOLS 24 DIGITAL RECORDING & EDITING ENVIRONMENT

Pro Tools has made the leap to 24-bit, but does the increased theoretical quality really translate to a better sound, and is it worth the extra money? MIKE COLLINS finds out.

What did you get for Christmas, then? I got a brand-new Pro Tools 24 24-bit hard disk recording system (previewed in the last issue of *SOS*), a Power Macintosh 9600/350, and a Rorke Data AVR35 9Gb removable hard drive system with an Atto ExpressPCI SCSI accelerator card — on loan! This little lot arrived at my flat by Christmas Eve, just in time for me to put the system into my car and drive off to spend Christmas with my family.

Since I was going to be looking at the system over Christmas, I decided to bring a couple of guitars and an amp, so I would have something to record. I also took some mics and a Mackie 1604 mixer, plus a pair of small monitors.

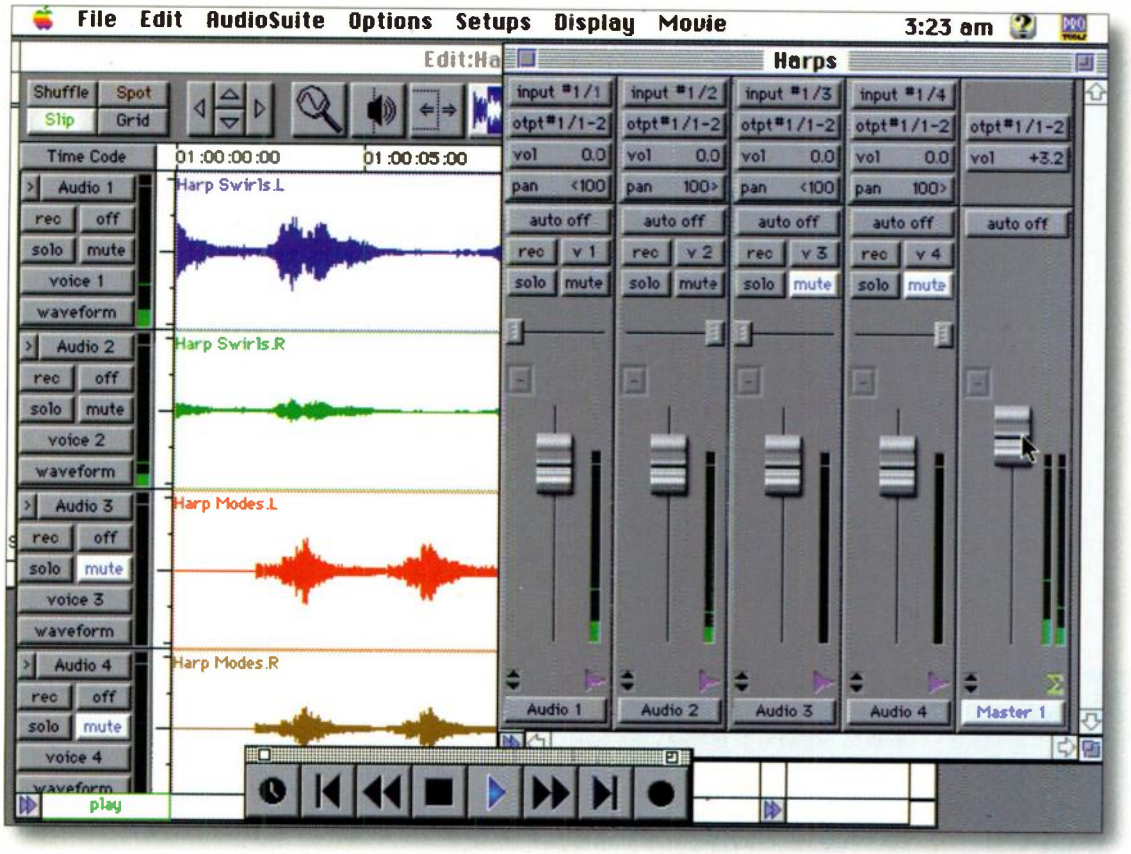
I'm on something of an anti-MIDI kick at the moment, so what I want from a DAW [*Digital Audio Workstation*] is something which will capture as true and accurate a representation as possible of the acoustic and electric instruments I love to play and record. Over Christmas there would be no shortage of raw material to record — my family and many friends in the area both sing and play various instruments. The main questions for me would be:

- How does the Pro Tools 24 system compare with the PTIII/888 combination I have in my studio?
- How natural a sound can I capture using the 888I24 interface?
- How suitable is the Rorke Data removable hard drive for use with PT24?
- How suitable is the Mac 9600/350 for the system, and how well does it compare with my 9500/132?

Since the new features of the *Pro Tools* 4.1 software supplied with the system were detailed in last month's preview, I won't be covering them again in this review; instead I'll be focusing on the above considerations.

THE REVIEW SYSTEM

The PT24 'core' system consists of the new d24 half-length PCI card, a DSP Farm PCI card, and the *Pro Tools* 4.1 software. The card can handle 24 tracks of 24-bit audio, although by the time you read this a DAE software update should be available which will enable it to handle 32 tracks. The 888/24 interface uses Crystal A/D and D/A converters (dynamic range of 110dB for the A/Ds and 102dB for the D/As, according to Digidesign). The new interface is virtually identical to the 888 interface in most other



respects, although it can now be used in stand-alone mode without being connected to the computer.

The computer I was lent for the review uses a 604 processor running at a clock speed of 350MHz and came fitted with 64Mb of RAM, a 4Gb internal hard drive, a CD-ROM drive and a Zip drive. The

processor speed of this computer means that users should have no trouble in working with many tracks of audio and carrying out intensive signal-processing with ease, while the internal drive has enough speed and capacity to provide at least 16 tracks of audio on reasonably-sized projects. The data rate necessary to achieve full 24-track, 24-bit performance is 3.6Mb per second of sustained throughput, and for this a SCSI accelerator card and a fast, 'Ultra-wide' SCSI hard drive are required. This last point means that a 6-slot PowerMac would also be required, because Pro Tools does not support the use of SCSI accelerator cards on 3-slot machines. In addition, 64Mb is the absolute minimum amount of RAM for *Pro Tools* 4.1 software. The PowerMac 9600/350 certainly seems to have the right specifications.

I immediately noticed that the 9600 was much faster and more responsive than my 9500/132. Microsoft *Word* opened virtually instantly, while the *Pro Tools* 4.1 software opened in about 13 seconds with just the standard set of supplied plug-ins. The case is a new design from Apple's in-house team which allows much better ease of access than on previous models, making it much easier to swap PCI cards around, add extra RAM and so forth, and the 9600 also features a much quieter cooling fan. The Mac II used to make an extremely annoying whirring and whining sound, while the Quadra 950 whined less annoyingly, but still whirred very audibly. The 9500 is a great improvement, but you would still be very reluctant to record anything in the same room with a microphone anywhere near the Mac. The noise of the 9600's fan is now so low that it would not bother me in anything but the most critical of listening situations.

The Rorke Data removable hard drive system has a very rugged 19-inch rackmountable metal case with space for a pair of drives; it came fitted with one drive, capacity 9Gb, which worked out to about 8.5Gb formatted. Running off the Atto SCSI accelerator card, this was extremely fast and had no trouble playing back 24 tracks of music. Unfortunately, the fan noise was so loud and obnoxious that I had to turn the Rorke drive off and use the internal drive for the quieter recordings.

IN ACTION

I had already tried out the microphones I had brought along with my PTIII/Yamaha 02R/PowerMac 9500 system at home, and knew that all three (the Neumann M149, the AKG C12 VR and the Calrec Soundfield Mk IV) were capable of feeding the highest quality of audio possible into the 888/24 interface. I used the C12 to record electric guitar, the M149 for acoustic guitar, percussion, harmonica and vocals, and the Soundfield as a stereo microphone for piano and harp.

pros & cons

DIGIDESIGN PRO TOOLS 24

pros

- You can now work at 24-bit resolution.
- 24 tracks are now available, and 32 tracks with the next software update.

cons

- Users upgrading from previous versions will probably have to shell out for more up-to-date, faster hard drives, on top of the upgrade price.
- Lack of multiple Undos.

summary

Pro Tools has come of age, in the sense that it is now a fully-fledged 24-32 track recording device. The sound quality of the converters has similarly been lifted to professional levels of excellence. The possibility now exists to run a complete recording/mixing/signal processing environment in software, especially with the addition of a hardware controller such as the Mackie HUI, which may well allow you to do without an external mixer.

SOUND ON SOUND

To test how many tracks the Rorke drive could support, I used a demo song supplied on the Pro Tools CD-ROM. This already had 15 tracks of audio, so I recorded a further nine tracks — five tracks of rhythm and lead guitar, a couple of tracks of maraccas, and a couple of tracks of tambourine. I did encounter a couple of strange happenings, such as the guitar take where the recording simply stopped after about a minute for no apparent reason, with no-one close enough to have touched the controls by accident or anything like that. But when I found myself playing back track 24 along with all the other 23 tracks, I was convinced! The Rorke drive and Atto SCSI card combination has to be one of the fastest systems I have actually used, and the Rorke drive is built like a tank.

A friend of mine plays blues and R&B harmonica, so I accompanied him on electric or acoustic guitar and we recorded several pieces. Listening back, it was obvious even through the small multimedia speakers I had brought along that the 888/24 had made a first-rate job of digitising the output from the M149 mic. The clarity and naturalness of the sound was simply superb, and the 888/24 acquitted itself very favourably as an A/D converter, capturing the recordings onto the hard disk faultlessly.

For some low-key recordings of solo harp, piano and voice I found the Rorke drive unbelievably noisy, so for these recordings I had to dispense with the Rorke and record to the internal 4Gb drive in the 9600/350. At this point I came to appreciate that Digidesign's decision to stop using

CRUCIAL QUESTIONS

Paul White primed me with a set of crucial questions to answer — or to ask Digidesign to respond to:

• *Why 24-bit resolution?*

There are various advantages to working in 24-bit. First of all, you get a much better signal-to-noise ratio. The rule of thumb is 6dB per bit, giving you 96dB for 16-bit, 120dB for 20-bit and 144dB for 24-bit. Real-world systems do not achieve the theoretical maximum S/N ratios at these higher bit-rates, but they do achieve significantly higher dynamic range than 16-bit systems. Naturally, if you're recording audio with a very wide dynamic range, such as classical music, you will value the extra dynamic range of 24-bit. But what if you work with pop music, which typically has much less dynamic range — in other words, it's loud most of the time? Well, the higher resolution of the 24-bit analogue-to-digital conversion will always give you a much more accurate representation of the original analogue audio — so it will sound 'truer' to the original than 16-bit audio. Of course, with more dynamic range available in the system, you can use some of this as 'headroom' above the nominal 0dB level, to cater for unanticipated peaks in the audio which would otherwise clip — another major advantage.

This extra resolution is particularly valuable on systems that support extensive mixing, because working with higher bit rates/resolution not only helps to create the most accurate image of the original audio source, but also keeps this image clearer throughout the various stages of processing. Complex calculation algorithms are used not only for mixing, but also for signal processing (EQ and the like), so the higher the resolution you start out with and maintain, the less rounding will be required, and therefore the less distortion will result from this.

• *Do you need to use a mixer with Pro Tools?*

Given that the mix window has its own very usable built-in EQs, dynamics and delays, and that plug-in software versions of many well-known and respected stand-alone effects processors are now available, Pro Tools systems will allow you to go into even more detail than conventional mixing methods. You also get truly total automation and recall.

You do need to keep in mind that low-level microphone or instrument signals will not drive the line-level inputs on the 888 interfaces successfully, so you will need DI boxes or pre-amplifiers for these. You can reach the point fairly quickly where it can be more cost-effective to at least use a small mixer with suitable microphone and instrument-level inputs — such as the Mackie 1604 or similar. You may also need to monitor other external equipment, such as a CD, DAT or cassette deck, or other instruments, and some kind of small mixer is pretty much essential for this.

There is already a large number of artists and producers, in both the semi-professional and professional fields, working on PT systems and not using large mixing consoles anymore, or relying on them only for monitoring purposes. Digidesign say they expect to see this kind of usage increase quite dramatically with the advent of the Mackie HUI (now shipping, and previewed in the last issue of *SOS*) and Digidesign's own forthcoming Pro Control. These controllers make PT's already existing mixing features much more easily accessible, giving engineers and producers the type of console control surface which they are already used to.

• *What are the ramifications of using standard hard drives?*

When you choose to work with 24-bit files you can only record two-thirds as many tracks for two-thirds the recording time as when you're working at 16-bit resolution — onto the same size of hard disk. And if you want to use 24 or 32 tracks of audio, rather than 16, your storage requirements will obviously increase. If you bought your drives last year or the year before, they're likely to be slower and of lower capacity than the latest crop of drives you can buy today for the same money. Also, your bandwidth requirements will increase substantially when working with 24 or 32 tracks of 24-bit audio, so you'll almost certainly need to use a SCSI acccelerator card, with large-capacity fast and 'Ultra-wide' hard disk systems, to achieve the required data throughput from the drives.

• *Can you split the audio over several drives?*

Yes, but it's better to keep all the fast drives together on your fastest SCSI buss, with slower ones on the slower internal and external on-board SCSI busses, remembering that the external SCSI buss is the slower of the two on-board busses.

DIGIDESIGN'S RESPONSES:

• *If someone is upgrading, will they have to get their plug-ins upgraded?*

"Updates for all Digidesign unbundled plug-ins and the Focusrite *d2* are included on the *Pro Tools* 4.1 CD-ROM. The Installer will automatically update these plug-ins (*DINR*, *DPP1*, *D-Verb*, *D-Fi*, Focusrite *d2*), if present in the Plug-Ins folder during your *Pro Tools* 4.1 installation."

• *Do the plug-ins work properly at 24-bit?*

Digidesign have tested all the third-party plug-ins of consequence and have determined that all these work with 24-bit resolution — except for Intelligent Devices *IQ*. Ed Gray, Digidesign's Development Partners Manager, explains: "We did not test the third-party plug-ins as fully as we would test a Digidesign plug-in such as *D-Verb*. Rather, our software engineers had a cursory chance to fire them up and look at them in PT24 systems. Remember, the DSP Farms on which the plug-in processing takes place have not changed, so all third-party plug-ins appear to work fine on PT24. *IQ* is the only plug-in we know of that does not exploit the 24-bit capability of Pro Tools 24. And since Intelligent Devices is no longer a Digidesign developer, they have no plans to upgrade either their *AD1* or *IQ*."

• *Are Digidesign including any alternative dithering algorithms with PT24?*

"Not at present."

• *Will Sound Designer II work on this hardware?*

"No."

• *Will the ADAT interface work with PT24, or will this need to be upgraded?*

"Pro Tools 24 does *not* support the Digidesign ADAT Interface. This is not possible because the new Pro Tools 24 system hardware uses a 24-bit system word clock. Unlike Pro Tools III, it is not switchable between 24- and 16-bit word clocks. The Digidesign ADAT Interface requires a 16-bit word clock for operation, therefore it cannot be supported with Pro Tools 24 systems. Digidesign will introduce the ADAT Bridge at NAMM with a product release within the first quarter of '98. This will address the need for ADAT/PT synchronisation and will also support the new 20-bit ADAT."

• *What about expansion chassis support?*

"PT24 supports both the 7- and 13-slot Bit-3 expansion chassis. It does not, however, support the Magma chassis."

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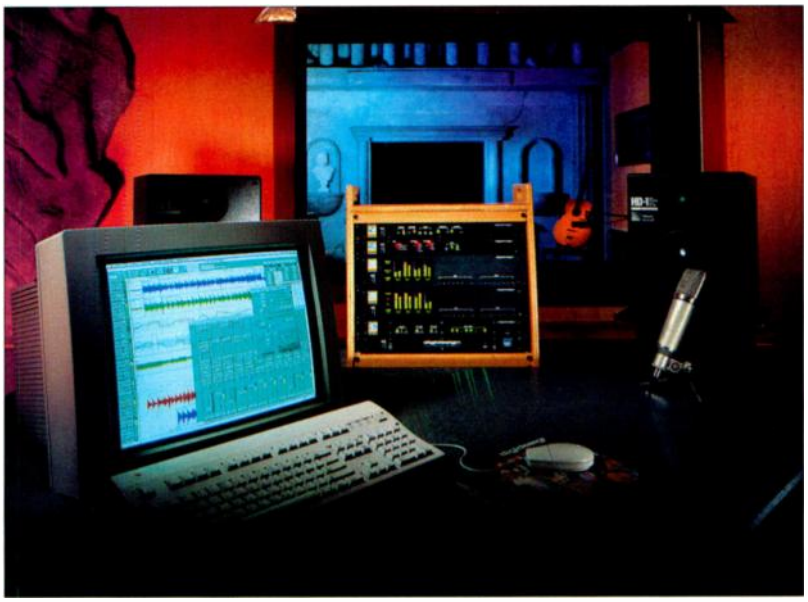
"...if you're recording audio with a very wide dynamic range, such as classical music, you will value the extra dynamic range of 24-bit."



▶ their own SCSI system on their Pro Tools cards — thus allowing any SCSI drive connected to the Mac to be used for recording and/or playback — makes the system much more versatile than it was while users were restricted to using drives connected to the Digidesign SCSI buss.

IS IT A WINNER?

In short, yes. Everyone who heard the results agreed that the recordings made with the PT24 system sounded very natural and transparent, with all the nuances of the harp, piano, acoustic and electric guitars, harmonica and vocals faithfully captured and reproduced. Compared with my 16-bit PTIII/888 system, everything sounded clearer and more detailed. The converters in the 888|24 interface were undoubtedly responsible for capturing and reproducing this fine sound quality, and, for me, there was no question that this new interface is a significant improvement over its predecessor. The PowerMac 9600/350 is a dream machine with the speed and expandability you need to run a Pro Tools 24 system professionally. The Rorke Data removable hard drive is ideal for studio use, especially if situated in a separate machine room, and appears rugged enough to take on the road, for use in mobile or live situations. It has plenty of capacity and bags of speed, and the only downside is the noise of the fans. Finally, compared with the PTIII/888 combination, which I own, the PT24 system now offers double the number of tracks, with 32 rather than 16, while the 888/24 interface will digitise at 24-bit and monitor at 20-bit, which accounts for the noticeably better sound quality. And it's comforting to know that I could save files at 24-bit resolution to help preserve the last ounce of quality right up to the transfer to a 16-bit medium. So would I like to upgrade as soon as I can afford to? Well, what do *you* think? SOS

Many thanks to Su Littlefield of Digidesign and David Millar of Apple UK.

MY WISHLIST

One of the first questions I was asked — by my brother, who is not involved in recording work — was why there was no reverb supplied with the basic system. He works as a DJ, occasionally does 'live' sound for bands and has come across audio mixers with built-in reverb, so he assumed that there would be at least a basic reverb supplied with Pro Tools. A fair question, I reckon.

It would also be nice if you could add stereo tracks rather than just mono ones. Currently, to assign a stereo plug-in to a stereo pair, you have to 'roll your own' stereo track with an aux input and a pair of busses, which is a waste of DSP and not very convenient.

Personally, I was hoping that *MasterList CD* might have been incorporated into the Pro Tools software. Perhaps it could be linked in as a plug-in, or something of the sort? And, for me, it would be much better if there was a list editor in Pro Tools which would allow you to quickly and accurately adjust the positions of regions numerically. This is available in all the MIDI + Audio software packages.

'Undos' are still limited to one level, and (more importantly) are not implemented for anywhere near all functions. Also, although the real-time features have been improved, so that you can now Save while playing back, you still cannot rename files while playing these back — which was one of the first things I wanted to do after a busy recording session where I had no time to name things as I went along. And you can't change the display in the Edit window to show a waveform instead of blocks, or a volume/pan graph, or access various other features, while the system is playing back.

info

£ Pro Tools 24 core system (software, d24 card, DSP farm card) £7131; 888/24 interface £3124. Prices include VAT. Contact Digidesign for upgrade prices.

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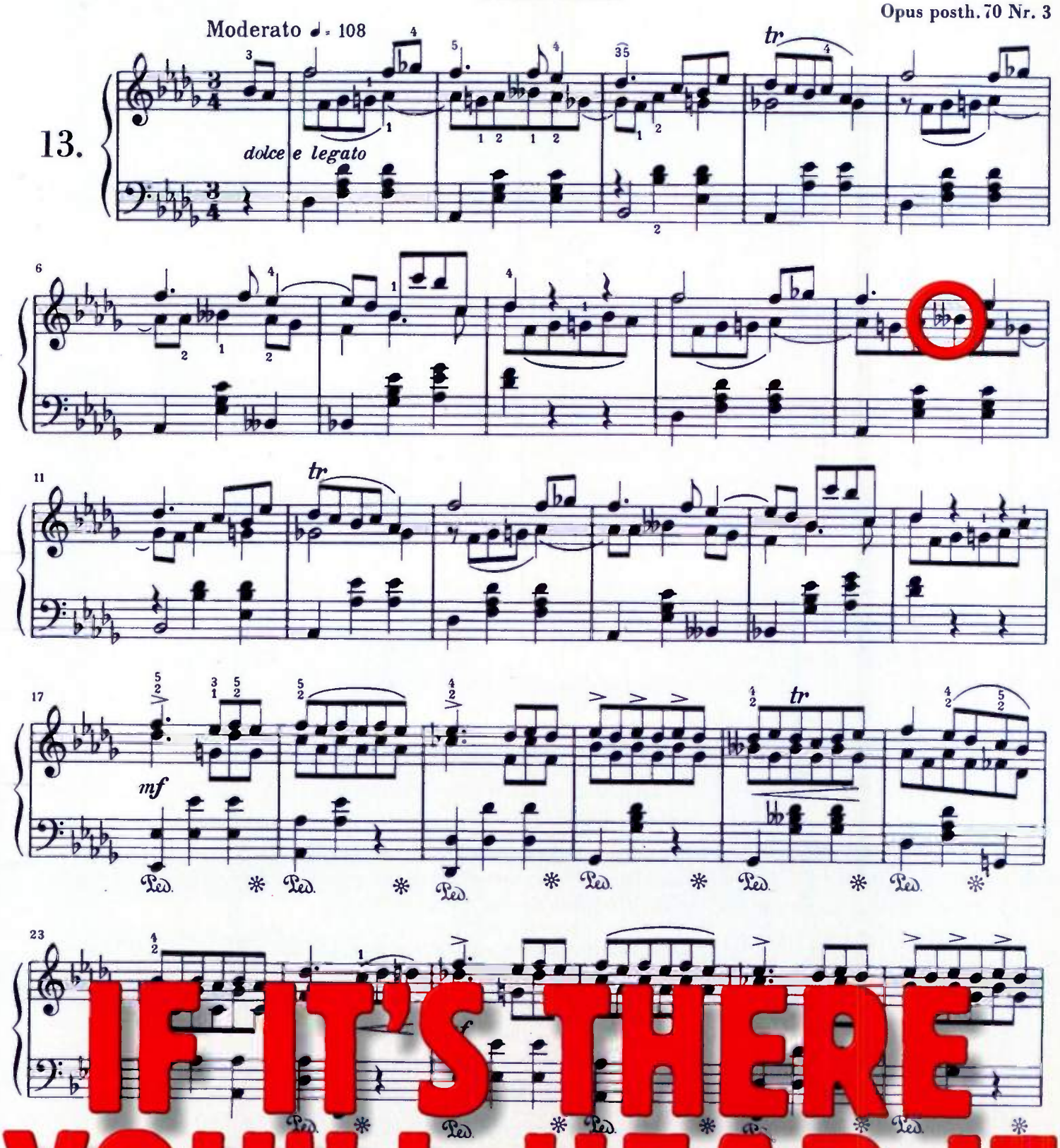

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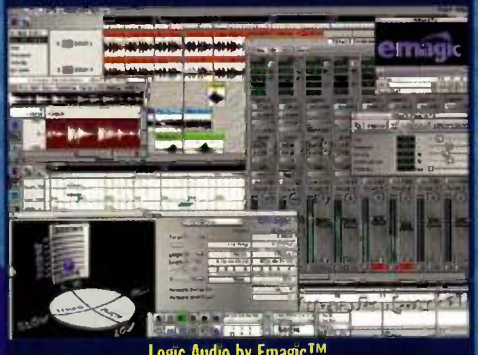

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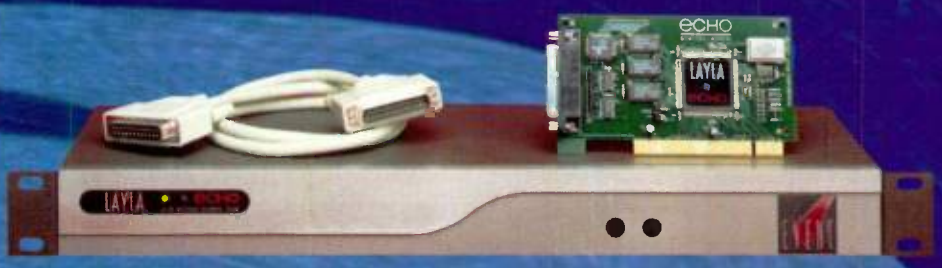

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MIDI IT: The on-board MIDI interface lets you create a powerful audio/MIDI multitrack recording system without having to hook up additional gear. And Layla is true Plug-and-Play™ - no jumpers to set, no IRQs to configure (in fact, only one IRQ is used for both audio and MIDI functions and no DMA channels at all are used.)

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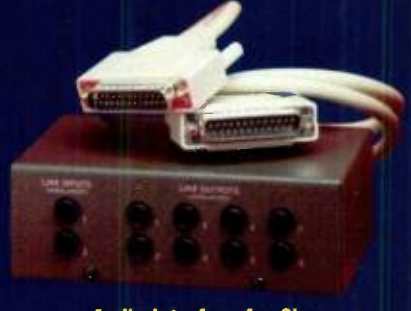

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Synth School

PART 6: BUILDING ON PCM — THE NEXT GENERATIONS

The ball of S&S synthesis had been thrown, and most of the big names in synthesis caught it and ran with it, scoring some notable goals in the process. PAUL WIFFEN continues his chronicle of modern synthesis with a look at the state of play from the late '80s to the present day.

When we left the PCM-based synth story in the last instalment of this series, Korg's M1 workstation had superseded the Roland D50 and was in a dominant market position. But technology marches on, and there were many new developments in sampled-based synthesis and hybrid systems still to come from Ensoniq and Yamaha (amongst others), but also from Korg themselves.

AN AMERICAN TALE

The next company to develop PCM-based synthesis was the American manufacturer Ensoniq. In fairness to Ensoniq, they were actually the first company to put sample-based waveforms in synthesizers. Back in 1985, the ESQ1 had a few small PCM samples built in to allow drums and strings to sound more authentic. In fact, these samples, combined with a built-in sequencer, made the ESQ1 a candidate for the title of first workstation synth.

Ensoniq's VFX-SD workstation.

However, the VFX was really the first machine from Ensoniq which could be compared with the Korg M1, in that it had quality samples and effects, multi-stage envelopes and multitimbrality. Introduced in late 1988, the VFX lacked only one thing to qualify it as a workstation — a sequencer. This was added in the VFX-SD the next year. As the suffix implies, Ensoniq added not only a Sequencer but a floppy Disk drive to this model, to enable saving and loading of sequences and programs.

The VFX architecture is well worth examining, because for the first time it made a PCM-based synth as easy to set up for live use as the split/layer keyboards of the late '70s and early '80s. Combining M1 Programs into Combis had always been a bit of an effort, and certainly not the sort of thing you tackled on stage halfway through a gig. For the VFX, though, a system was developed which made the process easy enough to contemplate in front of an audience.

LIVE OR PROGRAMMED?

Ensoniq achieved the task by adding a different section to the VFX, from which the combining sounds could be played live. This was separate from the setup used for multitimbral access by internal or external sequencer. The arrangement made perfect sense, because the parameters you need to change quickly when layering two or three sounds together live are very different to the parameters you might need to adjust during the playback of a multitimbral sequence. The VFX allowed the user to quickly select three different patches (the second and third by double-clicking) and then see and adjust their respective volumes, pan, keyboard range, effect amounts and other important parameters related to live presentation. This meant that VFX users could very quickly assemble a complex split/layer setup, with maybe two sounds under the right hand and a bass sound under the left, balance them, and position them in the stereo mix, without the minutes of parameter adjustment that would have been required to do the same with an M1 Combi, for example.

As a result, a whole new breed of players was ▶

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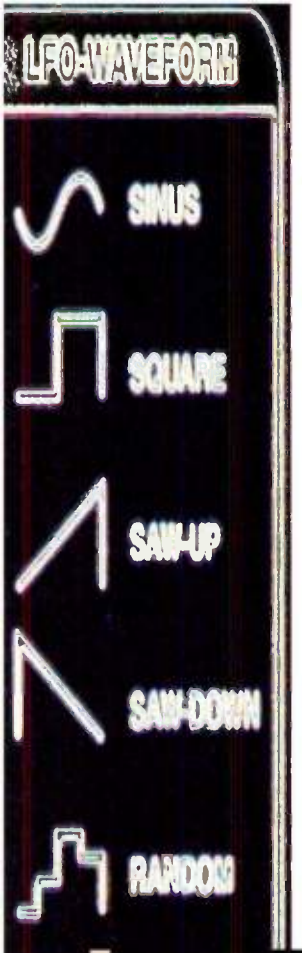

encouraged to start programming, because the surface layer of the VFX gave easy access to the combining of programs into performances without the need to develop an in-depth knowledge of how the machine worked. Whether any of them were encouraged by this to delve deeper into the machine's archictecture is open to debate, as the story of synthesis seems to be one of more and more user-accessible parameters being accessed by fewer and fewer users. It seems to have taken the return to popularity of simple analogue synths to encourage people back into knob-tweaking for themselves.

INSIDE THE VFX

Those intrepid users who did venture into the structure of the individual VFX patch were rewarded with a voice structure laden with possibilities. The VFX's voice architecture was actually more reminiscent of that of the D50 than that of the M1 (which had tended to sound OK with one or two base samples, so Korg's engineers hadn't needed to develop so complex a voice architecture). The VFX, however, now allowed up to six voice components instead of the four components (Partials) of the Roland machine. Not all of these had to be used, and many sounds used only one or two source waveforms, especially as the VFX did not split individual sounds into attack and loop segments. Using all six components meant that you could create some of the most complex, evolving sounds ever possible on a synthesizer, especially as the multi-stage envelopes available on the VFX could be used to control the level of each component individually. As a result, the VFX could produce sounds of such complexity that they made the D50 sound like an old two-oscillator synth. If three patches were layered together, up to 18 oscillators could be triggered from a single key. However, that many oscillators piled together can be rather overpowering in everyday sounds (not to mention the fact that they exhausted the synth's polyphony very quickly).

Within each component of a sound the possibilities were even more complex. In another ▶

YAMAHA JOIN THE PCM PARTY

So great was the success of Yamaha's FM (Frequency Modulation) synthesis in the early '80s that the company spent most of that decade 'trickling down' the technology into cheaper and cheaper synthesizers. As a result, they were the last of the 'big names' to introduce PCM-based technology into their synthesizers, and it was initially a supplement to their FM technology, not a replacement for it. This meant that the sounds which FM had proved very good at producing — electric pianos, tuned percussion and woodwind — could still be provided by the FM circuitry, but the sounds which were better produced from PCM samples, like acoustic piano, strings and other fuller sounds, could be generated using the more recent technology.

However, the reason why the SY77 (the first machine to combine FM and S&S) proved so popular with its more professional users was not the ability to produce sounds with one or other of the two complementary technologies, but the ability to produce hybrid sounds from the combination of the two. PCM's biggest weakness was still the difficulty of adding expression to the performance. The basic sample would sound very authentic but somewhat static. FM was the perfect antidote for this, as it has always been very responsive and expressive, although not the most authentic way of reproducing the fundamental timbre of sounds.

Of course, the two technologies did not necessarily always sit together well in the mix. Fortunately, the SY77 also had the necessary DSP hardware to produce effects. This meant that the same 'smearing' techniques as used on the Roland D50 (see December '97's Synth School) could be used to bind the two sounds together. The only difference was that, instead of using the effects to join together an attack with the sustain portion of the sound, both the FM and PCM parts would sound simultaneously but, being of different characters, they would stand out from each other. The effects would be used to blend the two sounds together.

Of course, many of the programs would only use one sound or the other so in this case the effects would be used just to add reverb or chorus, in the normal way. The SY77 also had the ability to sequence multitimbrally, but the effects had to be shared between all the different programs being triggered. It therefore allowed you to use the effect/s from whichever program seemed to need it most and then assign the other sounds to those effects where appropriate.

The SY99 took things a stage further, by adding a disk drive and the ability to load samples into RAM. This meant that users could actually take their own samples and combine them with the FM sounds. At the time, however, there was not much general cross-platform support for reading other manufacturers' disks, so unless you wanted to contend with MIDI sample dump, your main option was sample disks for Yamaha's own TX16W sampler (a 12-bit machine which had been able to do stereo samples but only at 33kHz, whereas mono ones were available at 48kHz). One of the interesting side-effects of this was that some use was finally made of a TX16W sample library which the old Yamaha R&D Centre in London's Conduit Street had given me a splendid budget to create. Yamaha distributors all over the world finally had a use for the piles of beautifully bound disk sets for the rather overlooked sampler, which had been in stock for years. For me personally, it meant the ability to load all these great sounds, which no-one else had ever given me a budget to record and edit properly, exactly as I had set them up, but in a synthesizer (without two hours wasted on MIDI sample dump and basic editing, which tends to de-motivate me seriously!). This isn't the only reason why the SY99 is my favourite Yamaha synth of all time, but it certainly goes a long way towards it. The SY99 certainly is unique in allowing you to combine FM, subtractive synthesis, and your own user samples all within a single machine.

Even when Yamaha eventually dropped the FM capability and produced their first purely PCM-based synthesizer, the SY85, they still kept the ability to load user samples into RAM, but using the much cheaper method of SIMMs (Single In-Line Memory Modules), just like modern samplers. As a result, a colleague (now the manager) at a certain retail store I used to manage was able to use his library of dance loops and drum samples to cheaply customise that machine for the evolving dance market. The rack version of this synth, the TG500, actually went a stage further, using Flash ROM to store samples so that they were retained in memory after power-down (I suspect because it had no disk drive to quickly reload from, so MIDI Sample Dump was the only way to get them in). Korg are now offering this as an option for the Trinity in the form of the PBS-TRI option, and it really expands the usefulness of a PCM-based synth, especially for live applications, where loading samples even from hard disk is altogether too long a procedure. Nothing beats turning a machine on and finding your own personalised samples already to go.

Yamaha's most recent PCM-based synths unfortunately no longer have the ability to load samples into RAM or Flash ROM. Despite the fact that they retain the DSP effects capabilities of all the previous Yamaha workstations and the ability to sequence multitimbrally, they're not as exciting, for me, as the glorious hybrids of the late '80s and early '90s. The really notable and innovative products from Yamaha at the moment are in the physical modelling arena.

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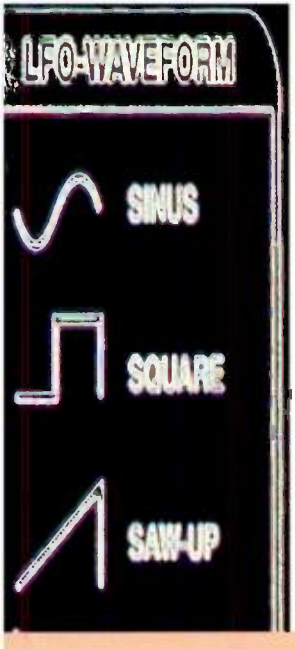

development reminiscent of the D50, a series of waveforms could be strung together to create a loop, and these were no longer fixed by the manufacturer as on the D50; users could now specify the starting and finishing source waveforms for their loops. They were, however, restricted to using them in an order defined by Ensoniq, so the best results still came from the serendipitous sequence of waveforms at the design stage. However, it was possible to add or take away waveforms from the beginning or the end of a sequence, or even to move to another part of the waveform ROM completely, giving a lot more control to the user than the D50's fixed loops did. Playback rate was, of course, still fixed, but at least the rhythmic patterns created could be changed to some considerable extent.

> "Yamaha's SY99 took things a stage further, by adding a disk drive and the ability to load samples into RAM. This meant that users could actually take their own samples and combine them with FM sounds."

As Ensoniq had also taken multi-stage envelopes further than before, with multiple rates, levels and loop points, the potential for creating sounds of unprecedented complexity was great (as were the chances of getting completely confused and giving up). However, in the hands of Ensoniq's creative team of developers astounding results were achieved, some almost qualifying as pieces of music in their own right. A selection of breathtaking programs shipped with the VFX, some still evolving and bringing in new components a couple of minutes after being triggered. This only led to one problem: how should you use them in a track? It was back to the old story of intros and quiet middle sections (where the synthesist in a band has too often been banished before). Problems with sync'ing rhythmic elements to the tempo of the song still existed, so keyboard players stuck to the basic pads and imitative instruments unless they were doing film, TV or ambient music where such restraints are less common. It would be left to Korg, a few years later, to solve this problem and allow complex changing timbres with rhythmic elements to be sync'ed to the tempo of the song.

PERFORMANCE CONTROLS

To make the VFX's six available components within the voice more versatile for performance (and to prevent enthusiastic programmers exhausting the polyphony too quickly), Ensoniq used an expanded set of real-time controllers to bring different voices in and out of play. So, instead of combining together voices with radically different elements, it was possible to group together voices which were very similar but with slight variations. Additional switches provided the means to mute and un-mute different components. For example, a flute patch might have a straight flute sound as one of its components, one with extra breath noise as its second, a third with a 'flutter-tongue' effect, and so on. Switching these in and out in different combinations meant that the user could circumvent one of the biggest problems with sample-based synthesizers, the fact that the source PCM waveform cannot be altered in real-time.

This was an important development in PCM-based synthesizers. It has been taken on by many other manufacturers, whether in keyboards which feature expanded performance controllers, like Korg's most recent PCM-based machine, the Trinity, or Emu's range of modules featuring extensive modulation routings, which allow the user to make the most of the standard MIDI Continuous Controller inputs. A raw PCM sample can only ever be a 'snapshot' of an instrument at one moment in time, played in one way. Only by mixing between different snapshots in real time can any sense of the motion and change that is part of the nature of real instruments be conveyed by a PCM-based synth.

The VFX also improved on the amount of multi-channel MIDI access that a user could have to PCM-based synthesis. Twelve patches could be set up very quickly to be controlled on any MIDI channels, with similar key range, transposition and controller setups to the performance mode. As computer-based sequencing became more and more important to the majority of users, it was a major plus that 12 of the VFX's programs could be used simultaneously on different MIDI channels. Hence, the Multi was born (as opposed to the Combi, a Korg invention). In general, these days, PCM-based keyboards tend to feature both a Combi-derived mode for performance (it may even be called Performance Mode) and a Multi-derived mode for internal or external sequencing (usually accessed by a switch marked 'Seq' or 'Multi'). The jargon may vary from manufacturer but the two are usually easily distinguished, as one gives quick access to a lesser number of sounds, while the other gives much more complete access to at least 16 different timbres (several manufacturers now have schemes, especially on PCM-based modules, for 32 different timbres to be used simultaneously).

ENSONIQ & EFFECTS

Of course, the old problem of different effects being an integral part of sounds and not being available simultaneously reared its head when MIDI was used to sequence multiple programs. Whilst Ensoniq didn't have the solution to this (which can only be the expense of the extra hardware to provide a separate effect circuit for

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each multitimbral voice, as on the Korg Trinity), its Copy routines did allow the most important effect in any combination of programs to be quickly copied to the effects buss of the Multi section. This meant that the procedure described last month when I talked about the M1's effects (for copying the effect of the sound most reliant on it and assigning some of the other sounds to it as appropriate) could not only be carried out on the VFX, but it could also be achieved more quickly. It is noticeable that nowadays most PCM-based synths allow this procedure; the main difference between synths is whether it is made easier or more difficult by the architecture of the machine in question.

This capability was equally useful on the VFX-SD, which had the necessary on-board sequencer and floppy disk drive to qualify it as a workstation. Now the chances were increased that the user might be trying to create his/her entire piece on the one instrument, it was even more important that the ability to share the two simultaneously available effects between up to 12 musical parts was as easy and flexible as possible. In addition, the sequencer could record any changes to this shared effects capability.

Although they have not made such a giant leap forward again since the release of the VFX, Ensoniq have continued to include the originally unique aspects of the VFX design in their subsequent synthesizers. After the VFX-SD came the TS10 and its 76-note keyboard variant, the TS12. These had even more complete sequencers and so took over the 'top-of-the-range' workstation mantle. They also added the ability to load samples from the Ensoniq library as source samples, allowing the user to customise the basic set of sounds in the machine. (One of the principal problems with PCM-based synths is that if you don't have a kazoo sample in the basic waveform ROM, you are unlikely ever to get a kazoo sound out of the machine.) For the smaller budget, Ensoniq also produced the SQ1 and SQ2, which came with a less powerful sequencer and synthesis architecture. Those who are interested in the combination of multiple sound sources within a single program, however, will still find the same ability in these machines.

"For under £1000, Emu's Proteus gave the user access to many of the sounds which had only previously been attainable from a £2000 sampler."

EMU EXPLOIT THEIR SOUND LIBRARY

Around this time there was a major change in direction from Emu Systems, who, until this point, had concentrated almost exclusively on samplers. Although Emu's samplers had much of the subtractive synthesis architecture of the machines we have already looked at here (in fact, the Emulator II was the first sampler which included a full complement of filters, envelopes and other subtractive standards), they could not really be called synthesizers because all source waveforms had to be loaded from disk into RAM. It should be noted, though, that Emu samplers come much closer to the traditional synthesizer than those from Akai or even Roland.

Emu had been making a big investment in sound sampling for their machines for more than 10 years by this stage, and they suddenly realised they had a marketable asset (outside the library disks which they been selling or bundling for their end users). They decided that if they were to design a small rackmount module which had the synthesis capabilities of their samplers, but with lots of short samples pre-loaded into masked ROM, they too could join the PCM synthesizer revolution.

Thus was Proteus born, named after the Greek god who could change his shape at will (a reference to the number of different instrument multisamples in ROM, which the user could instantly switch between). For under £1000, it gave the user access to many of the sounds (albeit in much shorter samples and loops) which had only previously been attainable from a £2000 sampler, and then only after waiting minutes for the sample data to load from floppy or hard disk. The result was an overnight success, and thousands of these modules are still in use.

But the real appeal of Proteus for those interested in synthesis was not the instantaneous availablility of quality Emu sounds but the very real synthesizer architecture of the machine. It inherited all the standard Emu synthesis capabilities, with proper filtering, enveloping, and a modulation routing system to die for.

Not only could Proteus change its shape from program to program, but also from machine to machine. Emu hit on the idea of selling their extensive library piecemeal, divided into categories for the needs of different users — so whereas the original Proteus gave you a wide sweep of sounds for general use, subsequent machines became more targeted to specific music styles. The first of these was Proteus 2 Orchestral, a big hit with film and TV composers who, even if they didn't use it in their final mixes, found it invaluable for composing and trying out arrangements and

Emu's Proteus 1.

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▶ orchestrations. Proteus 3 World satisfied a growing demand for ethnic samples after the influence of Peter Gabriel's Real World label started to make itself felt in the crossover markets, and the Procussion gave drummers and synthesists the same editable access to a huge drum library. The real payoff, though, came with the Vintage and Classic Keys models (by now the numbering system had been abandoned). These offered sampled synthesizer waveforms from classic synths of yore, which could be properly filtered, modulated and enveloped through a real synthesizer voice circuit. If you want an example of how Samples & Synthesis can be a really creative tool, take a look at these two modules.

"As computer-based sequencing became more and more important to the majority of users, it was a major plus that 12 of the Ensoniq VFX's programs could be used simultaneously on different MIDI channels."

Korg's T2 workstation.

The Proteus heritage still continues today in the UltraProteus (a sort of greatest hits with some extra filtering capabilities from Emu's own Morpheus, which we will look at next time) not to mention the increasingly bizarrely named modules (Orbit, Planet Phatt and Carnaval) which court the dance market. Other manufacturers have clearly learnt the lessons of marketing specific sound sets at different target groups (Roland and Akai in particular), but for me the joy of Proteus remains in the synthesis rather than the sample side, which is why those machines loaded with synth waveform samples give the synthesist the greatest creative potential!

KORG'S RESPONSE

After the success of the M1 and its rack relations, the M1R and M3R, the next series of synths from Korg, the T1, T2 and T3, addressed the growing criticism the M1 had started to suffer for the compressed nature of its more percussive instruments, such as piano and guitar. Korg did this by taking advantage of the continually dropping price of ROM and allocating twice as much memory to the storage of the PCM samples. This meant that the sample could be longer before the loop needed to start on sounds which decayed, and the loops could also be longer, if required, on sustained timbres. As a result, the piano and guitar sounds gained much more natural decays and so could be used for a wider range of music styles, rather than just the fast repetitive triggering of dance music, where subtlety was not required. The T-series appealed much more to the performer, and this was why the flagship T1 had a full-range weighted keyboard, to allow traditional pianists to feel more at home with it.

Of course, as Winston Churchill remarked, you can't please all of the people all of the time, and many people in the emerging field of dance music complained that the T-series didn't sound like the M1, and so didn't use them. The reason was simple. The compressed nature of the sounds in the M1 made them ideal for the no-holds barred sound of dance music, where everything needed to cut through and be louder than everything else. Pre-compressed sounds such as the M1 pianos and guitars were ideal, especially if the user didn't have the money — or the awareness of the need — for a separate compressor. As a result, Korg have made the orginal M1 samples available several times in more recent products to court the dance market (the X5DR and Trinity PBS options, as we shall see later).

Another key feature of the T-series was that the user could load his or her own samples into the machine for processing through the instrument's filtering and enveloping. Like the Ensoniq TS-series, this gave the user a way around the main limitation of PCM-based synthesis — that if the waveform ROM does not contain a multisample approximating to the sound you need, you'll be hard-pressed to drag said sound

out of the machine. Now Korg users could at least expand and customise the source waveforms with samples to take care of their less mainstream needs. On the T1 the sample RAM to do this came as standard, whereas on the T2 and T3 it was an optional extra.

The 0/W series added more refinements; the major step forward was the doubling of polyphony to 32 notes. The module version, the successful 05R/W, also helped develop the PCM-based multitimbral module into a commonplace item in any setup. One of the most important improvements that arrived with the 05R/W was the implementation of effects via a send amount system. This allowed you to remove effects from sounds like the bassline (which often didn't need them, especially if the effect was reverb) by setting the effects send amount on your bass sound to zero.

Next came the X-series, which made the concept more accessible at the low-budget end and gave more user control. The module versions, the X5D and X5DR, added some of the original sounds from the M1 because these had become so important for certain styles of dance music that they became a major selling point (despite being less authentic than the more recent versions of pianos and organs which used more generous allocations of RAM).

The M1 tradition culminated at the beginning of 1996 with the Korg Trinity, still using PCM samples as its main source of sounds (now at 48kHz sample rate, allowing this synth to be used in an all digital systems with the addition of S/PDIF or ADAT interfaces), but with the addition of separate DSP circuits to finally get around the problem of changing effects when it was being used as a multitimbral instrument. The Trinity comes in various versions, but nevertheless still uses the same fundamental technology that Korg introduced back in 1988 with the M1.

APART FROM PCM...

Clearly, other companies have made extremely good use of PCM technology in their synthesizers (including newcomers to synthesis Alesis, as well as Kawai, Roland, and Akai), but it is the quality and type of the source samples rather than the innovation of their synthesis archictecture which makes them useful. However, the mid-'90s saw several developments in synthesis, including Emu's Morpheus and Korg's Wavestation, and we'll focus on these transitive types of synthesis next time, as well as looking at some of the precedecessors, such as the PPG Wave and the Prophet VS, which inspired them. SOS

"The story of synthesis seems to be one of more and more user-accessible parameters being accessed by fewer and fewer users."

Dave Rossum

Creative Labs' Chief Scientist, Dave Rossum, looks into his crystal ball to predict the future of soundcards. PAUL WHITE listens in.

Dave Rossum's interest in synthesis began when he was a graduate student in biology and happened to help the music department unpack their new Moog synth. From then on he was hooked, and the following summer, he bankrolled a group of six students from UC Santa Cruz and Caltech to build a synthesizer. At the end of the summer of '71, his high school friend Scott Wedge joined him and the seeds of Emu were sown...

"Almost exactly 25 years ago, Scott and I got our business license to start selling the modular analogue electronic music synthesizer we'd been working on for the previous year. For the next 20 years I was Emu's primary technologist [*Chief Wizard — Ed*], and designed the Emu modular system, the Audity computer-controlled polyphonic analogue synth, the Emulator I, the Drumulator, SP12 and SP1200. I also led the design team for the Emulator II and Emax samplers. I designed the G-chip and H-chip, which continue (as G-chip 2 and H-chip 1.6) to be the primary DSP chips in many of Emu's products.

GETTING CREATIVE

"In 1993, when Emu merged with Creative Labs, I was appointed director of the Joint Emu/Creative Technology Centre. I continued to occasionally contribute to new Emu products, particularly in the design of chips, but was primarily focused on building a team of researchers and engineers to develop advanced technology for Emu and Creative.

"In 1996, I was promoted to the position of Creative's Chief Scientist [*still Chief Wizard! — Ed*], where I'm responsible for directing Creative's technological strategy. That's a fancy way of saying I pretty much do what I want. And I continue to primarily focus on audio."

CARD GAMES

To date, Creative Labs soundcards have offered exceptional value, but seem in some ways to be hampered by the need to maintain backwards compatibility (and lowest prices) for the games market. Is this a real problem in designing a card that will also benefit serious project studio musicians?

"Backwards compatibility is less a technological burden than a marketplace burden. There's no technological problem with designing a card which can work superbly for the musician, yet carry all the features necessary to keep the gamer happy. But the volume sales associated with such a card would be much lower than the majority of Creative's products, because to give the discerning musician the performance he craves costs lots more than keeping a gamer happy.

"Fortunately, the cost of silicon keeps plummeting. So we've designed the EMU10K1 chip, which does contain incredible features for the musician, yet can still support the needs of the gamer, and is low-cost enough to survive in both markets. The first card we're producing — the SoundBlaster LIVE! — will prove to be a real bargain for musicians. It may not have every feature they want, but I'm really pleased with what we can provide, and the fidelity is as good as the best of Emu."

Do Creative Labs intend to enter the high-end, multiple-output soundcard market, or is a broad market base of games users essential for all new products?

"Creative will continue to address products to

a broad base, which largely includes game users. But we firmly believe that even gamers care deeply about sound, and multiple outputs are not wasted on them. With the advent of PC-DVD using Dolby Digital (AC-3) and MPEG-2, we see that broad base of users as a great opportunity to sell multi-output cards as well as decent speakers. Serious project studio owners need multiple audio outputs to enable them to mix tracks externally — unless they're using something like *Cubase VST*, which needs a very powerful computer.

Is this something that you can provide, either as standard or as a hardware add-on?

"Yes. SB LIVE! can supply up to eight channels of 48kHz audio."

Nobody ever has enough MIDI ports. Is it possible to do a daughterboard-style add-on to your cards to provide multi-port support without the user having to buy third-party hardware or install additional drivers?

"In contrast to output channels, MIDI ports aren't of much utility to non-musicians. Of course, MIDI is dirt cheap, but frankly I doubt this one will get solved by our products in the immediate future. I'd add, however, that Creative are very interested in IEEE-1394 (Firewire), and that this is already a consumer interface, as well as being eyed by many music companies as a digital audio buss. So perhaps the MIDI problem will go away, and musicians will be using 1394 in the not-too-distant future."

FILTERS OR MODELLING?

Emu have made a number of genuine advances in electronic instrument design, not the least of which is Morpheus-style filters. Can these be integrated into a soundcard without making the result too complex for the typical user?

"One of the biggest problems with the Morpheus (H-chip) filters is guaranteeing stability under any combination of user parameters and excitation waveform. They sound wonderful, but inherent in that analogue sound is a certain tendency toward oscillatory behaviour. In Morpheus, we had to test each filter thoroughly, and many people don't know it but there's actually software which shuts down a voice if it detects its filter going into oscillation. These factors tend to make the software for this sort of thing pretty complex; I expect more maturity in the MI market is required before we'll put it in a soundcard. Also, in contrast to the G-chip technology, the H-chip technology is still somewhat expensive. But there ▶

> "We firmly believe that even gamers care deeply about sound, and multiple outputs are not wasted on them."

Dave Rossum

▶ are many of us who think putting this sort of technology in a soundcard will bring benefits not only to musicians, but also for 3D audio modelling and sound effects."

Do you see more applications for physical modelling on soundcards, or can you achieve similar results through the appropriate use of your complex filters?

"My take on physical modelling is that it's an ideal application for host-based signal processing. Since there is no 'generic' physical model in the way that a generic wavetable voice can make any sound you want, the software for each model is different, and continuous refinements are desirable. So I'm not a big fan of physical modelling on the soundcard itself, though I think we'll continue to support physical models in software synthesis. The complex filters can, indeed, produce very similar results in many ways with a general model, subject to the issues of stability I already mentioned. And a teaming of the two techniques is very powerful. In fact, looking into my crystal ball, I'd say a lot of the future of synthesis will involve new ways of combining the techniques that we are experimenting with today."

"Backwards compatibility is less a technological burden than a marketplace burden."

Is it practical to build a soundcard that functions as a multitimbral digital sampler at the same time as generating synth sounds and audio?

"Sure. That's why Creative acquired Emu!"

A typical soundcard comes with several separate pieces of software and a whole bunch of manuals. Can this be simplified?

"Of course it can be simplified. The question is, does the customer really want us to simplify it? The issue is the tremendous cost in time to market to really integrate a technology into the system. By having a bunch of little pieces of software, we can change them independently, and offer both great value (easy to negotiate when you can change content quickly) and the latest technology. Were we to integrate everything, it would be older, more stale technology. I can argue that such a vast majority of our customers don't really get in and make use of these hot programs and features because they are difficult to use. But to some extent, it's the sales guys and magazine reviewers who *do* get into the product that determine the sales, and these folks are into the hottest technology.

"My philosophy at Emu was always to offer a nicely integrated, highly useful product. This was successful largely because the people who use our gear really care about getting something done; if they can make more music in less time, they'll pick our product and pay for it. But in the more consumer-oriented world of Creative, we're selling more dreams and less productivity. So the product target is necessarily different. But still, I think if you look at how Creative's products have evolved since Emu was acquired, you'll see my touch in them."

Soundcard installation causes a lot of problems for some people (yours less so than most, I might add). Is it practical to include diagnostic software that can spot incorrect system settings or conflicts?

"That's a rather interesting area of research. We're working on it, but most of the time it's invisible because once the software has figured out the problem, it adjusts the functions accordingly and things work. You only notice when it doesn't work. The PC is a brutal playing-field in this regard, because there are so many motherboards and chipsets and add-in cards which were never designed with a strict specification and testing. That's why the Apple Macintosh is so good compared to the PC in this respect. But we

QUALITY IMPROVEMENTS

Last year we checked out the AWE64 Gold which had pretty good audio quality, but the synth sounds seemed quite noisy and grainy. What was the technical reason for this, and can it be eliminated in future low-cost products?

"Hmmm... The hardware wavetable synth in the '64 Gold is the same EMU8000 wavetable engine, based on Emu technology, that's been in the whole AWE family. I would be surprised at any problem with audio quality from that synth itself, though of course the quality depends on the samples, and I think there was a lot of room for improvement in the original General MIDI ROM for the AWE. It could also be that you were listening to the software synthesizer voices, and those are largely running sub-sampled at 22kHz, which would degrade the perceived quality. But in answer to the second half of the question, the EMU10K1 has even better math specs that the Emulator IV, so I expect you'll find the quality superb. And I expect to see it run down the cost curve quite quickly."

The noise performance of the audio side of soundcards seems to be heavily influenced by the environment inside the computer. Can anything be done, in the way of improved grounding or screening, to squeeze better signal-to-noise ratios from on-card converters?

"The best thing, of course, is to use S/PDIF or AES/EBU or, eventually, 1394 [*see main text*] to get the audio out of the harsh environment of the computer, then use external converters, perhaps even ones inside your speakers or amp. We continue to work on getting better in-box converters, and still have some tricks to use, but you'll always have the variations in power supply and grounding from the system manufacturer, to say nothing of the results of inductive peripherals like disk drives. One thing that I've found makes a world of difference is ensuring that the grounding screws on the card brackets are *tight*! Use a lock-washer, even. A little resistance in that chassis ground path can hurt the audio a lot."

continue to improve in doing this sort of thing. And to directly answer the question, yes, there is more we can do."

PCI ARCHITECTURE

What benefits and challenges arise when you move to PCI-card architecture?

"The biggest challenge in PCI is legacy compatibility. Since you don't have a DMA chip, and can't get specifically numbered interrupts, you need some way to fool the software into thinking these exist. The *best* way is to actually get hardware to do it, and the schemes for doing this — PC/PCI and Serial IRQ (SIRQ) — unfortunately require something called 'sideband signals'. With sideband signals you either have to mount the function on the motherboard, or run some separate wires up to the card in addition to the PCI connector. There are other schemes for the DMA function, including one called Distributed DMA (DDMA), which don't require sideband signals and work almost all the time. But since there is really no 100% reliable alternative to SIRQ, you really need sideband signals for 100% legacy compatibility.

"The PCI buss has a much wider bandwidth than the ISA buss, but this is really of no benefit if you're just playing 'legacy' audio as wave files, or using FM synthesis. But with wavetable synthesis and multi-channel audio, you want to be able to transfer many channels of audio at once, and PCI enables this. So PCI really opens up a lot of new capabilities."

FORESEEING THE FUTURE

What impending technological advances do you think will have the most impact on the future of computer-based recording and music production?

"Wow — that's the question, isn't it? It may sound clichéd, but I'd actually say I think the Internet may play a bigger role than anything else. And not because it will change the way music is made, but because it will change the way music is *sold*! Today, you need to sign with a major publisher to get into the CD players of the world via the record stores. But with a cheap PC and a CD-R, you can put up a web site which allows people to sample your music and order a CD which you can make one-off. If we get the bandwidth up, even the CD-R may become unnecessary. This is sort of the equivalent of the invention of the printing press for musical performances. I think it will spawn a new diversity of music, perhaps finally overturning the 'superstar' mentality of recent years. And as a biologist I'm very much in favour of diversity!" SOS

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Access all Areas

KORG TR-RACK EXPANDED ACCESS SYNTH MODULE

Korg's new module makes the synthesis technology of their flagship Trinity workstation range more affordable — but at what cost? SIMON TRASK accesses the TR-Rack...

Korg have traditionally augmented their synth workstation ranges with a rackmount model, allowing musicians to buy the workstation's synthesis technology without having to buy into the workstation concept or pay workstation prices. However, since its introduction two years ago, Korg's flagship Trinity range has been without a rackmount alternative, leaving musicians with the stark choice of going without or coughing up the readies for a workstation model. With the base model costing almost two and a half grand on release (now down to £1799) this has hardly been a cheap way to get the Trinity's underlying ACCESS (Advanced Control Combined Synthesis System) synthesis and multi-effects technology. However, at last the company have come up with a rackmount model, the TR-Rack. Not only does it make the Trinity's ACCESS technology available at the more, er, accessible price of £999, it also has 32Mb of sound ROM — that's 8Mb more than the Trinity — and provides twice as many built-in Programs, Combis and Drumkits as the workstation. Presumably this is why Korg describe it as Expanded, because the only expansion *option* retained from the several workstation models is the DR-TRI digital audio output board. But despite its extra sonic capabilities, is the new module a case of too little, too late?

OVERVIEW

The TR-Rack is an all-rounder, sample-based subtractive synthesis module in traditional vein, neither making GM/GS/XG compatibility its mission in life (unlike Roland's SC and Yamaha's MU modules) nor focusing on a particular musical niche (unlike Emu's Orbit and Planet Phatt modules). In this respect, it's more closely aligned to Alesis' QSR and Roland's JV2080 synth modules, which it sits between price-wise. However, like the Trinity it offers only 32-voice polyphony — half that of the Alesis and Roland modules.

Korg's new module imports the Trinity's synthesis and multi-effects capabilities wholesale, while providing an additional 40 Multisamples and 200 drum samples, together with additional patch memories to take advantage of them. Program and Combi banks A and B, which are the same as those on the Trinity, are augmented by new Banks C and D, while the Trinity's 11 Drumkits have been augmented by a further 11 new pre-programmed kits and a user kit memory.

Seasoned Korg users will feel at home with the TR-Rack's Program and Combi architectures. Like the Trinity and earlier Korg synths, the TR-Rack has three performance modes:

- Program (single part/channel)
- Combination (up to eight Timbres/channels)
- Multi (16 Tracks/channels, for use with MIDI sequencing)

For those new to the Korg architecture, a Combination (usually referred to simply as a Combi) allows up to eight Programs to be used together in a composite key and velocity split/layer texture. With their budget NS5R GM/GS/XG module, introduced since the Trinity's release, Korg enabled Combis to be assigned to Multi-mode Tracks for the first time, providing a convenient way to integrate pre-defined split/layer textures into a MIDI multitimbral context. However, disappointingly, they haven't taken the opportunity to add this capability to the TR-Rack (though you can, as always, use Combis MIDI-multitimbrally by assigning some or all of the Timbres to different MIDI channels).

EFFECTS

The TR-Rack employs a versatile multi-effects architecture, first introduced on the Trinity, which is built around a mixing desk-style arrangement of Master (ie. send/return) and Insert effects, with

pros & cons

KORG TR-RACK £999

pros

- Characteristic rich, full, dynamic Korg sound.
- Large PCM ROM.
- Generous number of Programs and Combis.
- Large lettering used in the LCD.
- Trinity editor/librarian software included as standard (for PC/Mac).
- ADAT digital interfacing option (DI-TRI board).

cons

- Full parameter editing only available via MIDI.
- Can't use Combis in Multi mode.
- Holding down front-panel buttons doesn't scroll through values or pages.

summary

An impressive module which will bring the top-quality, professional sounds of the Trinity workstation to a wider range of synthesists.

SOUND ON SOUND

14 Master and 100 Insert effects to choose from. The Master effects section consists of reverb/delay and modulation effect processors, which are common to individual Programs and to all eight Combi Timbres and all 16 Multi Tracks. Each Program/Timbre/Track has two effect sends per oscillator routed to the Master effects. Returns from these effects are then mixed in with the output from the Insert-effected signal and routed through master low and high EQ before being sent to the stereo outs. An individual Program, Timbre or Track can have up to three or four Insert effects, depending on whether the selected Program is in single/double or drum mode. These effects are configured in series, with the output from effect 3 routed direct to the main stereo outs and also sendable to the Master effects via two effect sends. Things start to get more complicated when it comes to assigning Insert effects — especially in Combi and Multi modes. Depending, essentially, on their mono/stereo configuration, individual Insert effects are classified as either size 1, size 2 or size 4. Insert effects for each Program, Combi or Multi can't exceed a total combined size of eight, which leaves you trading off number of effects per Timbre/Part against number of Timbres/Parts effected. At one extreme, you could have eight Timbres/Tracks, each with a single size 1 effect, while at the other a single Timbre/Track could use two size 2 effects and one size 4 effect.

FIRST SIGHT

Korg's TR-Rack is a standard 1U-high, 19-inch rackmount module in a not-so-standard silver casing, giving it an appearance that is both stylish and functional. Gone, inevitably, is the large graphical touch-sensitive screen of the Trinity workstation models. However, in its place a sizable 2x 20-character backlit LCD provides unusually, yet satisfyingly, large lettering, making it easy to read even from several feet away; not only is this an obvious advantage for a rackmountable module, it also makes the TR-Rack more readily accessible to partially sighted musicians. The Rack's front-panel buttons, on the other hand, are of the fiddly fingertip-sized variety, as favoured more usually by Yamaha — not the most comfortable in use. The volume knob, power on/off switch and stereo headphones socket are all conveniently located on the front panel, leaving a minimalist collection of buttons to the right of the LCD for mode selection, LCD page and parameter selection and editing, and compare, write, reset and note-play functions. The A4 button simply plays the currently-selected sound at pitch A4 when pressed — a handy function to have for trying out sounds when you don't have a connected keyboard to hand. A red pinpoint LED above the button acts as a MIDI indicator, flashing on and off when MIDI data is received.

Each Program and Combi on the TR-Rack is assigned to one of 16 sound categories, indicated in the lower line of the LCD in Play mode. The Rack's front-panel Cursor left/right buttons double as category-select buttons in Play mode, while its Page +/- buttons let you scroll through Programs or Combis in the current category — making it easy to try out, say, all the keyboard or all the bass sounds. The Yes/No buttons, meanwhile, allow you to step sequentially through all the available patches.

To edit Programs or Combis you just press the Edit button and use the Page +/- button to scroll through the LCD edit pages. There's no shortage of these — Combi Edit mode has 47 of them! Bizarrely, holding down the page, cursor or yes/no buttons doesn't have a repeater effect, so you have to press the relevant button once for each page or value change. Fortunately, combination button-presses allow you to 'jump' values in steps of 10 or 128, but overall there's still an unnecessary amount of button-pressing involved.

Despite the large, clear display, then, front-panel editing on the TR-Rack is a bit fiddly, so it's good news that the module comes supplied with two floppy disks containing Emagic's *SoundDiver* Trinity editor/librarian software and Korg MIDI driver software, both available for Mac and PC. It turns out that the *SoundDiver* software is essential if you're serious about Program editing, as the module itself doesn't provide full synthesis or effect parameter editing from its front panel; instead, this is left to the editing software and MIDI SysEx. Quite why this is the case isn't clear, as full editing would have entailed only some additional LCD pages. As it is, you're limited to adjusting the overall sound of existing patches (you can't, for instance, assign different Multisamples or drum samples to the oscillators). Incidentally, while we're on the subject of computer linkups it's worth mentioning that the TR-Rack's rear panel augments the standard MIDI sockets with a To Host serial port for MIDI communication. Using this port and a standard computer serial cable, you can connect the module to a PC or Mac without the need for an intervening MIDI interface.

"The quality of the effects is everything we've come to expect from Korg, while the sheer number and variety of Insert effects is nothing short of amazing."

RELATED REVIEWS

- Trinity preview: November 1995.
- Trinity review: December 1995 and January 1996.
- Trinity expansion options review: January 1997.

"The TR-Rack will delight anyone who has been waiting for Korg to make the Trinity's impressive sounds and effects available in a more affordable rackmount form."

SYNTHESIS AND SOUNDS

With the TR-Rack, Korg have eschewed the multi-synthesis approach of their Prophecy monosynth and Z1 polysynth, in favour of more traditional sample-based subtractive synthesis. It's worth remembering that the company helped pioneer the sample-based approach a decade ago with the M1. Over the years they've steadily improved and fine-tuned it, and the ACCESS synthesis technology of the Trinity, and now the TR-Rack, represents the most highly developed version. The Trinity has acquired a reputation for superior sonic quality, clarity and presence, thanks not least to its use of 48kHz samples; the desire to maximise signal quality was apparently also the reason why Korg stuck with 32-voice polyphony.

The TR-Rack's Program architecture provides two oscillators, each of which is routed through its own filter and amplifier sections with associated five-stage pitch, filter and amplitude envelopes and pitch and filter LFOs. For each Program you can choose between single/double and drum oscillator modes; the latter allows you to assign any of the Rack's Drumkits to a Program. Korg introduced a number of new developments with their ACCESS technology, to enhance the Trinity's sonic flexibility (all now found also on the TR-Rack). For instance, you can assign two Multisamples to each oscillator and velocity-switch between them, with user-definable switch points. Drumkit programming has been similarly enhanced, with user-definable velocity switching between two drum sounds on each key; other parameters you can set per individual key include filter on/off (but not individual settings), pan position, master effects send levels, and Insert effect routing (off, 1-4). A Start Offset parameter allows playback of Multisamples and drum samples to begin from within the sample. This is typically used to soften the attack characteristic of a sample, and can be particularly useful on drum and percussion sounds.

Korg's ACCESS technology brought up to date the filtering on their sample-based synths, with a multi-mode resonant filter that the company first introduced on the Prophecy. Two filters per oscillator, a choice of low-pass, high-pass, band-pass and band-reject filter types, filter

SPECIFICATION

Polyphony:	32 oscillators (single-oscillator Program: 32-voice polyphony; double-oscillator Program: 16-voice polyphony)
Multitimbrality:	16 parts (in Multi mode); 8 parts (in Combi mode)
Sound ROM:	32Mb
Synthesis method:	ACCESS sample-based subtractive synthesis
Programs:	512 (128 x 4 banks)
Combis:	512 (128 x 4 banks)
Effects:	100 insert effects, 14 master effects
Display:	2 x 20-character backlit LCD
Connections:	L/Mono and Right stereo audio jack outs; two separate audio jack outs; stereo headphones jack; MIDI (In, Out, Thru); To Host PC/Mac serial interface; digital audio out and 48kHz wordclock in (require optional board); AC power input socket
Option:	DI-TRI digital audio interface board
Weight:	2.8kg

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resonance, and the ability to modulate resonance from velocity are all features of the Trinity (and now the TR-Rack) filter section. Also introduced by the ACCESS technology was a sophisticated matrix modulation system which Korg called AMS — Alternate Modulation Source. This provides 26 control sources, routable to 27 destinations, with the ability to assign the same source to more than one destination.

I've already described the TR-Rack's sophisticated Master/Insert multi-effects architecture. The quality of the effects is everything we've come to expect from Korg, while the sheer number and variety of Insert effects is nothing short of amazing. Probably just about every effect you can think of has been included — and remember that you can mix and match effects in series, within the limits imposed by the effect size system. If you love working with effects and exploring effect combinations, the TR-Rack will keep you happy. Dynamic modulation of effect parameters is also provided, with a choice of 26 modulation sources, so you can do clever tricks like controlling Doppler effect pan depth from aftertouch. Insert effects typically have two or three parameters that can be modulated dynamically, though some have four or even five, so there's plenty of scope for live (and also MIDI sequenceable) effects control. Also controllable live via MIDI are Program, Timbre and Track effect-send levels for the Master reverb/delay and modulation effects, as well as selected Master effect parameters.

The TR-Rack's rear panel.

The 40 new Multisamples in the TR-Rack provide a mixture of keyboard, bass, brass, guitar, hit and and noise sounds, and include a stereo-sampled acoustic piano which improves on the existing offerings. However, the bulk of the new samples contained in the extra 8Mb of sample ROM are drum samples, and around half of these are new bass and snare drums. Korg have always been both generous and adventurous with their drum and percussion samples, and the TR-Rack continues satisfyingly in this tradition.

The new samples are put to good use in the new Drumkits, which extend the Trinity's range impressively. The new Programs and Combis, meanwhile, maintain the high standards of programming we've come to expect from Korg, and provide plenty more of the sorts of sounds that Korg fans have come to know and love — not the least of which are rich strings, shimmering pads, punchy basses, crisp keyboards and evocative atmospheres. Check out Program D03: Bells in Motion, and the charmingly titled D83: Chasing Comets, for some classic smooth, shimmering, tinkling pads. Program C23: Old/Dark EP is a lovely swirling old mellow Rhodes sound which makes good use of the Phaser + Tremolo Insert effect (and remember that this effect can be retained in Combi and Multi modes), while C16: Vintage Grand is a '70s-style electric grand with a very appealing warmth to it. Program D13: Double Strings and D06: Dance Piano provide classic Korg smooth strings and bright, percussive piano respectively, while D01: SinisterDrug@3AM and D21: Drub Square are good examples of the sort of deeply atmospheric sounds that Korg synths do so well.

CONCLUSION

Unlike the MOSS multi-synthesis technology of the Prophecy and Z1, the TR-Rack's ACCESS technology makes no attempt to move beyond the familiar territory of sample-based subtractive synthesis. At the same time, while the Trinity range can be expanded with an attractively-priced Prophecy Solo board to complement the sample-based sounds, the TR-Rack has no such provision — a fact which will no doubt disappoint some prospective Rack purchasers. According to Korg UK, accommodating a Solo board option in the TR-Rack would have meant turning the module into a more expensive 2U unit, and they decided instead to keep the price as attractive and the size as compact as possible. Still, the TR-Rack's generous 32Mb of PCM sample ROM, 512 Programs, 512 Combis and 24 Drumkits — 8Mb more ROM than the Trinity, and double the number of patches and drumkits — mean that you're hardly being short-changed in the sounds department. Not being able to assign Combis to Tracks in Multi mode is disappointing, while some users might wish for more than the Rack's two separate outs for external effects processing. The absence of full front-panel editing is also a little disconcerting, though the included PC/Mac editing software does at least provide computer users with the means to get at every parameter. On a more positive note, the module does retain the Trinity's DI-TRI board option, allowing its four audio output signals to be transmitted in the digital domain using Alesis' multitrack digital audio format.

The TR-Rack will delight anyone who has been waiting for Korg to make the Trinity's impressive sounds and effects available in a more affordable rackmount form, and will also, no doubt, re-establish the company as a major presence in the professional synth module market. SOS

SOUND CATEGORIES

- **PROGRAMS**
  - Keyboard
  - Organ
  - Mallet
  - Bell
  - Strings
  - Vocal/Airy
  - Brass
  - Woodwind/Reeds
  - Guitar
  - Bass
  - Plucked Synth
  - Synth Lead
  - Motion Synth
  - Sound Effect
  - Drums/Percussion
- **COMBIS**
  - Pad & Lead
  - Bass
  - Splits
  - Breathy/Airy
  - Bell & Mallet
  - Motion Synth
  - Keyboard Synth
  - Strings
  - Orchestral
  - Horn Section
  - Guitar
- Bass
- Ethnic/Trad
- Organ
- Complex
- Drums/Special FX
- **DRUMKITS**
  - Standard
  - Processed
  - Jazz/Brush
  - Analog/Club
  - (Mega-Mix)!
  - Psycho
  - BassDrum&Snares
  - Toms&Cymbals
  - Percussion
  - Orchestra&Ethnic
  - 01/W Total
  - 01/W Producer's
  - Vintage Kit
  - Ezer Goodie
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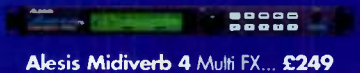

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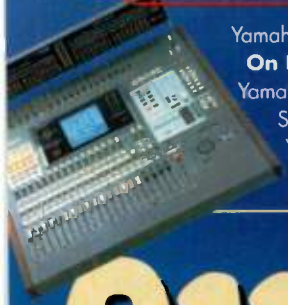

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AN AUDIENCE WITH DAVID BYRNE

David Byrne must surely be one of the most individual and iconoclastic musicians of the late 20th century and, six years after leaving Talking Heads, he's still fusing different musical styles and forging new musical alliances. SUE SILLITOE does at least some of the talking...

Ask anyone who remembers the music of the 1980s what they think of when they hear the name 'David Byrne' and the chances are they'll give you an impromptu rendition of either 'Road To Nowhere' or 'Days Gone By' — the two Talking Heads songs everyone seems to know.

Given that Byrne was responsible for fronting the seminal New York new wave band for 16 years, it isn't surprising that public perception still has him stuck firmly in the last decade. One can't deny that it is hard to separate him from his past — especially when the Talking Heads legacy includes 11 hugely influential albums, such as 1982's *The Name Of This Band Is Talking Heads* and the classic 1984 release *Stop Making Sense*, which was both an album and a tour movie directed by Jonathan Demme.

But come on folks: isn't it time we gave the guy a break? After all, Byrne left Talking Heads more than six years ago and since then he's been incredibly busy developing parallel careers as an artist, photographer, film score composer and figurehead of his own record label, Luaka Bop. And let's not forget his four solo albums, which have explored a multitude of musical styles, while pulling in plenty of critical acclaim along the way.

In many respects the most current solo offering from David Byrne — the album *Feelings*, which was released last year — is the one most likely to re-establish his identity with a broader music-buying public. While his initial diversification into ethnic music was sufficiently esoteric to cost him mainstream sales, *Feelings*' clever synergy of styles such as drum & bass and Cajun fiddle playing do indicate the possibility of mass-market appeal. The album is lyrically strong, too, even if some of the lyrics are ugly enough to be disconcerting. But at least they offer a welcome return to Byrne's renowned weird wit, so perfectly exemplified by the promo video for the track 'Miss America' in which the world's most excessive consumerist country is personified as a supermodel with her pants round her ankles!

THE MAKING OF *FEELINGS*

Feelings is an interesting album that was recorded almost by committee, given the number of collaborators David Byrne collected along the way. Not only did he collaborate with unusual producers and musicians, such as Morcheeba in London, The Black Cat Orchestra in Seattle, Devo in Los Angeles, Joe Galdo in Miami and Hahn Rowe and C'n'A in New York, but he also recorded the vast majority of the tracks in other people's home studios, where he was able to capture a vibe and atmosphere that might not have been possible anywhere else.

"I have a home studio, but it's pretty basic," he says. "Not good for much more than writing and demos. But after writing a bunch of songs and doing some demos, a few things occurred to me: that home studio recordings now sound as good as big name studio recordings and that, often, the vibe in that environment is more conducive to creativity. Also, the songs appeared to be in a wide variety of styles that might best be interpreted by different groups of musicians."

Byrne adds that, in writing, he mixed musical styles freely. This, he says, is always good for a laugh. "One song — 'The Gates Of Paradise' — developed into a blend of jungle and country and western, with a slight punk attitude. Another song, 'Daddy Go Down', mixes Cajun with Indian drones and sitars."

According to Byrne, none of this was intentional or premeditated. "We all seem to have all these musical styles and reference points floating around in our heads, things we've heard at one time or another that rub off on us — sometimes in small ways, as a feeling in a melodic turn of phrase, other times in the overall style of a song. There's a subconscious cut and paste going on in our heads that doesn't seem strange at all. It seems like the most natural thing in the world. It's the way we live now. It's certainly what things look like and increasingly what they sound like — ad hoc, patchwork. Borrowing from both the past and future, from here and there."

Byrne adds that this cut and paste approach was something he had heard in Brazil on Chico Science's record, and in Argentina through the work of Illya Kuryaki — not to mention Björk, Portishead, Beck and Cibo Matto. As a result, he began working on a few songs at a time with Hahn Rowe, a DJ, programmer and musician in New York. They took up residence in Byrne's home studio, mixing live instruments with samples, loops and effected sounds, and recording on fairly minimal home equipment which included a Soundcraft 600-series console and a couple of Tascam DA88 digital 8-tracks. At this stage of the project a number of tracks were in the pipeline, but only one — 'Soft Seduction' — was actually completed.

DIVERSE PARTNERS

Then Byrne was sent a tape by Meredith Chinn, his A&R contact at Warner Brothers (which distributes all Luaka Bop product worldwide). The tape was an advance copy of Morcheeba's *Who Can You Trust*, which was certainly unusual

enough to make him sit up and take note. [*See the interview with Morcheeba in the December 1997 issue of SOS.*]

"At that point Morcheeba's cassette was being passed around by their label, China, because they needed a distributor," he explains. "It was quite early days, but I had already heard of them — and heard all the usual record company comments about them being another Portishead because they were using similar techniques, although, in my opinion, coming up with very different results.

"They were mixing new samples and loops and beats with regular instruments, which wasn't unique, but was at least different from the way artists like the Chemical Brothers work, where the closest you come to a real instrument might be a sample of something. The latter style of working is fine by me, but it's not where I was at. I wanted to mix samples with real instruments, and I was attracted to Morcheeba because I heard that in their own loose way they were still working within a song structure. They were also coming out with a lot of dance music influences, which is similar to work I've done over the years, so there was a strong link between us."

Given this similarity, Byrne decided to call up the three-piece from South London and see if they wanted to work on a few songs with him. Needless ▶

A DOLL OF A SLEEVE

The only way one can forgive Byrne his dreadful choice of title for his last album is to check out the sleeve design, which is stunning.

"I had the idea of having a doll of myself, because I thought it would be fun to poke fun at my image," he says. "It also seemed so obvious that I was surprised no one else had done it. I thought I'd better do it, quick, before someone else does, because it's one of those things that can only be done once."

The creation of the doll was first attempted with computers. Byrne had his head scanned with a laser in Emeryville, California, but wasn't happy with the computerised results.

"It looked too cyber — like a Kraftwerk album cover — so in the end the Luddites won. The designer Stephen Sagmeister and I went to see Yuji Yoshimoto who lives in Brooklyn and makes giant super-realistic plastic candy bars and Cheerios for Saturday morning commercials. We asked him to sculpt real dolls of me, expressing four of my typical moods — pissed off, crying, stupidly happy and dull gaze.

"I really wanted the doll to look like a toy or product, and actually it was a great deal more complex than we envisaged, although no more expensive. I also got to take home little dollies of myself, and they're now in a shrine. Everyone who comes to see me has to bow down to them..."

Was he joking? Actually, he was — they're really decorating the Byrne mantelpiece.

to say, they said yes, so he took a couple of guitars and some pedals over to Clapham and holed up in Morcheeba's home studio for a few weeks.

"The time went really quickly and we got on really well," he says. "We all loved the results. In the next few months, when they had breaks from live dates, I'd show up and we'd cut a few more songs, until we'd done half the album."

Moving on from Morcheeba, Byrne turned his attention to The Black Cat Orchestra, who he'd come across in Seattle. "They naturally came to mind when I imagined the way 'They Are In Love' might sound," he says. "So I flew out there with my Dobro — which we never used — and we recorded the tune pretty much live."

He also did a couple of album tracks with Andreas and Camus (C'n'A) whom he had worked with previously on a duet with Brazilian singer Marisa Monte for the *Red Hot and Rio* album. These were recorded in the pair's Brooklyn apartment, where they also had a home studio setup.

For the track 'Miss America', Byrne teamed up with Joe Galdo, who had previously worked with artists such as Anjelique Kidjo, and achieved the kind of Afro-techno results he was looking for.

Then it was on to yet another home studio — this time the one belonging to Mark Mothersbaugh, of Devo. To Byrne, the album track 'Wicked Little Doll', with its obsessive, twisted, robotic riff and mechanical rhythms, seemed particularly Devo-esque, so working with Devo was an obvious next step.

Overall, Byrne describes *Feelings* as a dream record to make. "It was like picturing in my mind how a song should sound and then hooking up with a group who did just that," he says. "Sometimes it worked. And sometimes it was beyond painless — fun even."

Underlying the entire project — no matter which track he was working on — was Byrne's contention that what really matters is the groove. "This was certainly an incentive for working with Morcheeba," he says. "They were particularly good fun, and I think they are great record producers, even though I'm not sure that's how they see themselves. I really thought of them as musicians first and felt it would be great to hang out with musicians who do things the way I do when I'm making music.

"I tend to work with getting a groove going — a groove, or a little bit of melody, or a few guitar chords, or something like that. Then words usually come last.

"Occasionally I've worked the other way round, where I put the lyric first, and sometimes that can turn out really well. You end up writing with more feeling because you're not waiting for inspiration of some kind, and often the original melody you come up with is simple and direct as opposed to something that's clever-clever."

Ever since the early Talking Heads days, David Byrne has earned a reputation for lyrics that make you sit up and listen. So does this mean, when he listens to a song by someone else, that he hears the lyric before the music — or is it the other way round?

"I'm kind of borderline between the two," he

> "I think the reason why some of the home recordings people do work out so well is because a home studio has a lot less wiring than a professional facility."

David Byrne with Morcheeba.

LUAKA BOP AND THE INTERNET

Apart from his own recording projects, Byrne is also heavily involved in Luaka Bop, the label he set up in 1989 as a vehicle for some of the ethnic influences for which he wants an outlet.

Luaka Bop signs external artists that Byrne either discovers for himself or picks up from other labels for the American market. One example of this is the band Cornershop, which mixes hip hop with indie and punk. The band are signed to Ouija in the UK but handled by Byrne's label in the US.

"We occasionally do this, but more often we hear something we like and sign it for the universe," he laughs. "We are distributed through WEA, so part of our job is also to hassle them in various territories so that they work on our material. Often it's a case of nudging, haranguing and cajoling from our end, but for the most part they like what we do so we don't have to push too hard."

Luaka Bop is currently setting up a web site which will be used to promote its artists. "It will have the usual label stuff — songs you can listen to from each artist, video samples, interviews, lyrics," he says. "There will also be a facility to buy our material over the Internet by using a credit card. That may not seem much if you live in the middle of London or New York, but if you are somewhere like Iowa and the only record shop is a Woolworth's you might find it pretty handy."

Apart from the obvious, Luaka Bop also hopes to expand into what Byrne describes as 'crazy stuff' — art galleries, magazines, and so on. "Sometimes I find the Internet exciting because it's great when you can get information from anywhere in the world at the push of a button, but I'm not sure if it will change the world in the way people think. It has been subjected to a lot of hype, although undoubtedly it will change marketing and information services.

"It is thrilling, though. I was in New York recently and wanted to find out more about a band called Lamb from the UK. As I was going over to London I thought it would be interesting to see if they were playing live anywhere. I looked them up on the web and sure enough, there was a list of all their dates — one of which I was able to catch. That was pretty great. Without the Internet I'd have had to scour New York for a copy of *Time Out*, and even if I had found one it might well have been out of date."

says. "I can not love the lyric and still love the song, but if I really dislike the lyric then it's gone too far — gone over the edge into something I can't bear, particularly if the lyric is really cheesy. When that happens, no matter how much I like the music, I know the song is so far over the other side of the fence that I just can't bring myself to listen to it.

"Ideally, though, when I'm writing songs, I like the musical and lyrical content to gel together so that at least the end result sounds as though you've had a simultaneous experience. Of course, actually having a simultaneous experience is very rare, but when you get lucky and that does happen you usually find the song is great."

BYRNE'S STUDIO

Even before he recorded *Feelings*, David Byrne says he was aware of the growing importance of home studios, particularly as a means of creating opportunity for everyone.

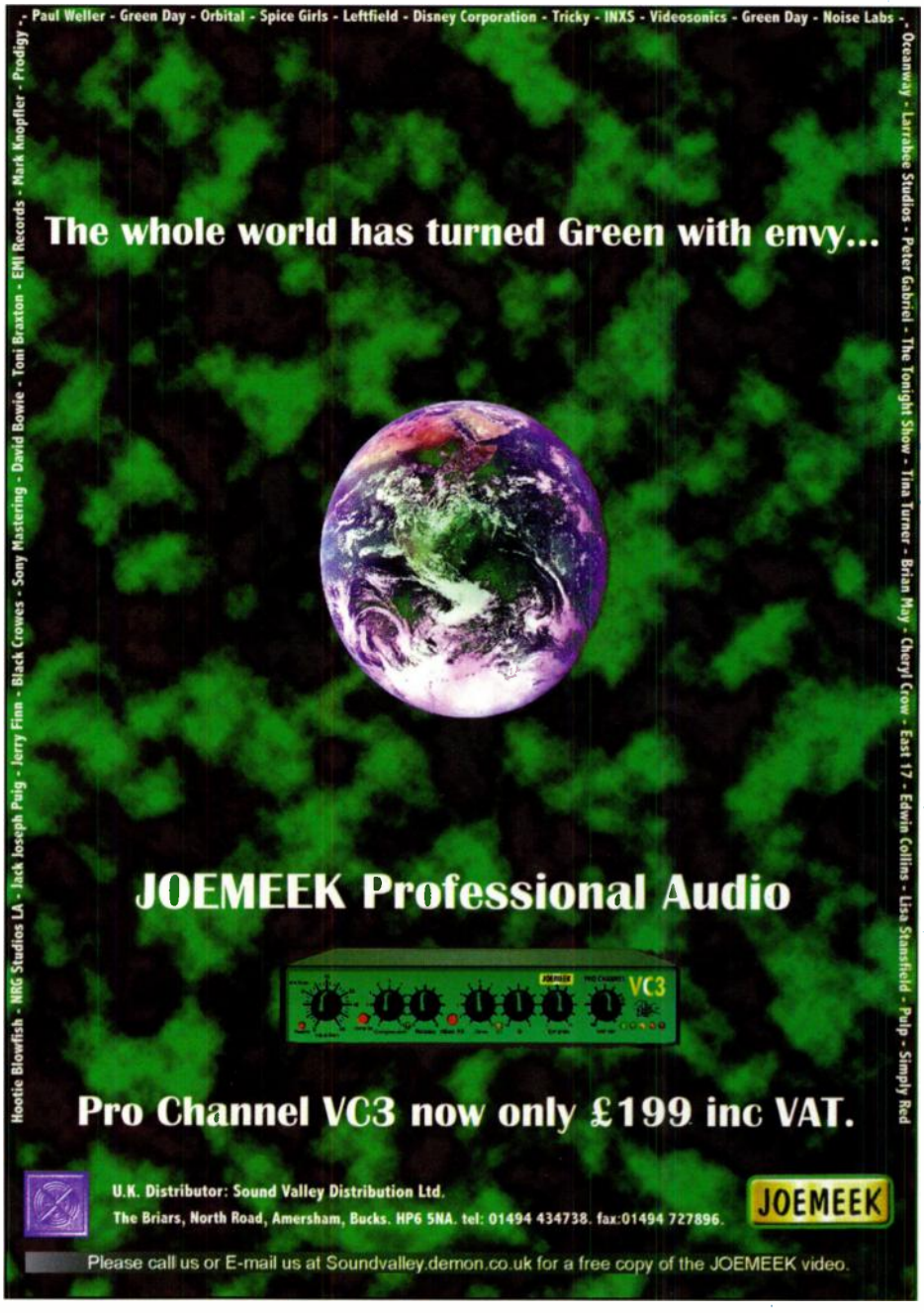
"It seems to me that, with the recent advent of relatively cheap home-type recording equipment with studio-quality sound, not only will anybody with two turntables and a microphone be making records, but everyone else too, in an incredible variety of styles and approaches — and everywhere. This stuff is going to put musicians all over the world on an even more equal footing with Western pop/alternative/urban musicians. They were always equal as far as playing and writing went, but now more and more of them will be able to express what it feels like — the global media atmosphere that we breathe every day."

Byrne is disparaging about his own home setup. "I have a studio — sort of," he laughs. "It's really a few bits of gear in my apartment that I use when I want to get away from everyone. Not too many people have the phone number, so it's peaceful and quiet and I can cut myself off from external distractions.

"The equipment I have is pretty basic. There's an old 16-channel Soundcraft 600 Series desk, two Tascam DA88s and an old tube compressor, a tube limiter and a tube preamp. I really like the warmth of valve gear and I mix it with affordable digital equipment like the DA88s, so that I can get as warm a sound as possible. I think the reason why some of the home recordings people do work out so well is because a home studio has a lot less wiring than a professional facility. Also, the atmosphere is more immediate and in your face. It helps being in an environment where you're relaxed and comfortable and where no one is telling you how something is supposed to sound."

"I really like the warmth of valve gear and I mix it with affordable digital equipment like the DA88s, so that I can get as warm a sound as possible."

As befits its basic nature, Byrne's home studio is equipped with a pair of Yamaha NS10s for monitoring. He admits that they're not ideal but seems to be muddling along fine anyway. "I suppose eventually I will get something a little louder," he says. "I would like a pair of monitors that are bigger and offer more bass so that if I'm playing instruments along with loops I can have ▶



david byrne

the mic amp off in another room — in a closet or some place — and can crank up the speakers so that it still feels like I can groove on the beat and the instrument. I certainly need more powerful monitors, but I don't think I'll go for the giant, wall-mounted ones that some of the commercial studios have. Sure, if you really want to hear what's going on then it's useful to have big monitors, but although I find big monitors exciting I also find easy to lose all perspective when I listen to them, because they don't sound like the speakers you listen to at home — and nor do they sound like club systems because they're not EQ'd in the same way."

Although Byrne recorded his album on a wide variety of home setups, the final mixing took place in a commercial studio — Room With A View in New York, where he worked with UK producer Mark Saunders.

"It was basically a mix room with an SSL and some outboard gear. Mark had some of his own gear with him, which meant that if he thought we needed a particular sound in a particular place, he could just fly it in from his own samplers and computers. It was a nice, relaxed way of working and we generally got one track done a day — sometimes more. The studio had a couple of nice-sounding old limiters and compressors that we could put the mix through if we wanted that extra bit of warmth on a track."

> "I have to ask myself: what kind of record would I love to put on right now, or later, or first thing in the morning? And if I can't find that record, because nobody has made it, then that's the next record I want to make."

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- Soundcraft 600-series 16-channel desk
- Tascam DA88 digital 8-track (x2)
- Valve compressor
- Vox AC30 amp

Byrne adds that there isn't really any piece of recording equipment he feels he must have with him wherever he works. "When I write I have to have something that will give me a groove, but usually that's something as simple as an old drum machine," he says. "Granted, mixing in some samples and loops gives me more texture, which is a little more inspirational, but if I had to work without them I could certainly do it. I like to feel I'm not chained to a piece of gear, although the more bits and pieces you use the more you get used to having them around."

He isn't a great hard disk enthusiast, either — mainly, he admits, because he has had little experience of recording in this way. "Mark has a hard disk system that he used during the mix for a bit of editing on some tracks, but we didn't use it for recording — just for messing around, really."

WHAT NEXT?

With his last album now long past the recording stage, David Byrne has been concentrating on touring in the US and Europe. Later this year he will also take in South America, before finally returning to his home studio to start work on some new material.

"I've put together a band that can also play some of my older material live, although I didn't expect anyone to be able to play all of it," he says. "I think it's difficult to make the transition from studio to stage if you try and replicate exactly what you put down on the recording. There's a fine line you have to tread. You want the live music to keep the same feel in terms of the vibe you captured on record, but you do have some scope to make changes, and maybe you end up with some part of some songs transforming into something quite different, so that you're giving your live audience a new experience.

"Obviously you want to capture the energy and emotion of the track, and, of course, the melody and lyrics have to say the same thing. But some audiences do expect to hear what's on the CD, even though it's almost impossible to recreate that in a live setting — even when you use samplers for some of the sounds.

"A good example of how you can make changes is the live version we did recently of 'Road To Nowhere'. All the drums bar one were samples and loops, which left the drummer to play marching snare drum along with the samples. We also made some other changes, substituting the accordion part we originally had on the track with a pedal steel player doing exactly the same melodies and riffs. After the show someone reviewing the performance said he was astounded, because the song had sounded exactly like the record. I was surprised by that, because there had been quite major changes and substitutions, but I gather what he meant was that the feel of the song had remained the same. We had succeeded in catching the vibe.

"It's really not important to duplicate everything. People hear what they want to hear. You have to know where the most important elements are so that you can retain those while letting other things slide."

FINAL WORDS

Byrne says his inspiration to write and perform music came from a desire to hear more of the music he liked on the radio. "When I was starting out, there were a few records around that I liked, but not enough. I had to make my own records and put my own band together so that we could hear what we wanted to hear.

"I imagine that's the same impulse that has always been there. I guess even now I have to ask myself the same thing: what kind of record would I love to put on right now, or later, or first thing in the morning? And if I can't find that record, because nobody has made it, then that's the next record I want to make — the one that doesn't exist."

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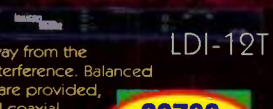

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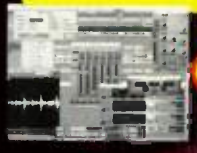

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RED SOUND SYSTEMS VOYAGER 1 BEAT XTRACTOR

It's a small, curiously-shaped shiny chrome box with just six buttons and no LCD screen, and it claims to be the future of DJ-ing. Intrigued? PAUL FARRER goes on a voyage of discovery...

pros & cons

RED SOUND SYSTEMS VOYAGER 1 £249/£299

pros

- A truly unique and well designed product.
- Good MIDI tracking.
- Has a very wide number of possible applications.
- Stylish but uncomplicated and user-friendly design.
- Solid (gig-proof) build quality.

cons

- Tempo-tracking software limits its use almost exclusively to music with clearly defined rhythm tracks.
- The Beat One Reset button triggers on release.
- LED displays may not be to everyone's taste.

summary

Despite a few minor niggles, and the fact that it only likes certain kinds of music — mainly those with consistent and repetitive beats — Voyager 1 must be seen as a major breakthrough in bringing the worlds of the dancefloor and the studio closer together. If you're a DJ and the word MIDI means anything to you, miss this box at your peril!

SOUND ON SOUND

As the lines between the DJ, the studio engineer, the remixer and the producer become increasingly blurred in today's modern studio, it seems only natural that Red Sound Systems (a new British-based company) should have launched themselves on the world with a product which claims to be able to accurately analyse and calculate the tempo of any audio input from a turntable, CD or tape source (the staple diet of the DJ and some remixers) and turn it into real-time MIDI bpm clock signals readable by any sequencer in the studio.

CHROME SWEET CHROME

Despite its relatively small size (180 x 132mm) the Voyager 1 is a visually striking piece of kit. The review model is part of the limited edition Cool Chrome range, and in a world of black lettering on a dark grey background, it's refreshing to see a device that, instead of lurking innocuously in a corner of the studio, looks great and has genuine feel appeal. The unit is powered by a familiar 9V DC external power supply (supplied) and its rear panel features an on/off switch, a single MIDI Out socket and two sets of input and output phono sockets for connecting up to two different stereo audio sources. These are switchable between CD/line and Phono inputs, and the output sockets allow your audio signals to go through the unit and onto your mixing desk.

Moving onto the front panel, there are two smallish LED displays on either side of the unit, and these provide (in a somewhat limited way) information that has been calculated about the tempo of the incoming signal on each of the input channels. I say "limited" because although the

manual claims that the unit can track tempos to a resolution of 0.01 of a bpm, the 3-character displays only show you the calculated tempo to the nearest beat per minute. In their own way, though, and despite their meagre size, the screens manage to squeeze a fair bit of data in. Three flashing decimal dots, for instance, mean that the Voyager 1 is having trouble picking out a discernible beat and has entered what it calls free-wheeling mode. In this state it keeps spitting out MIDI clock messages at the most recent tempo while it searches for more up-to-date beat information — useful if there's a 2-bar pause or instrumental break in a track.

Below the displays are the two channel-select buttons. With two audio sources coming into the unit you have to decide which one you want your MIDI sequencer to follow. As the unit is constantly analysing the tempos of both audio inputs simultaneously, you can switch between channels at any time and the software does its best to speed up or slow down its outgoing MIDI clock information accordingly.

All the other control options are handled by the four large red buttons at the base of the unit. As with all but one of the other buttons, these have clear and fantastically bright LED indicators built into them, which, when active, pretty much illuminate the whole button. These LEDs are a great help in the studio, but behind the decks of a DJ's setup in a dark and smoke-filled club they become absolutely essential.

Starting from the left of the front panel, the Run/Pause button, as you might imagine, sends start and pause MIDI clock information to your sequencer. Even when not active, the button's LED blinks in time with the calculated tempo. Next to that is the Cue button. This allows you to preset the tempo of the Voyager 1 prior to a performance. Once you've set the right tempo you can hold the unit in Cue Ready mode, where it waits and won't transmit any clock data until it detects the start of an audio track. Effectively, this kicks your sequencer off at the right bpm setting without you having to wait a few seconds for the unit to recalculate and lock back into the right tempo — very useful for cueing up the start of a MIDI sequence to the exact beginning of a specific track.

The next button along allows you to re-align the start point of the MIDI bar or pattern with any beat of the audio input. This is done on the fly, and is usually needed during the brief periods when Voyager 1 is trying to recalculate a bpm and loses the first beat of the bar (after a tempo change, for instance). If you press and hold this button, your MIDI sequencer will stop and reset itself to beat 1 of bar 1 and will only re-start once you take your finger off. I found this 'trigger-on-release' approach a little awkward to begin with — after all, there aren't many pieces of studio equipment from which you trigger the start of a drum loop or sequenced pattern with the *release* of a key, and sample users, in particular, might find this function a touch strange.

The Tempo/Tap button on the extreme right of the unit has two main functions. The first is to send MIDI stop signals to your sequencer, and the second is the manual entering of tempo information. You can do this in two ways — either by tapping the new tempo in time with the track (about which more later), or by entering a specific bpm setting using the Cue and Beat One Reset buttons as increment/decrement switches.

At the bottom of the front panel lies the MIDI clock indicator. This display has eight LEDs that blink in time with the individual quavers or semi-quavers (depending on the chosen tempo) of each bar of the transmitted MIDI message. They're configured in a sort of circular planetary orbit that rotates around a central LED. This latter LED indicates the first beat of the bar by blinking slightly more brightly than the other seven. Despite the curious layout, this actually works very well — and it's not only surprisingly simple to follow, but looks great too!

The only other display on the front panel is made up of three LEDs that show how well the beat-tracking software is coping with analysing the audio signal. The software continually updates the transmitted MIDI signal by making fine adjustments to the bpm as it goes along. This constant pushing or pulling of the tempo to fit is central to the unit's operation, and once the tempo is locked up and working correctly the central LED lights green, to show you that it is successfully tracking the incoming audio.

TEMPO TRACKING

As you might have guessed from the funky design and snappy name, the Voyager 1 Beat Xtractor is aimed firmly at DJs and dance music producers, which is where its strength lies. Obviously, any device which is going to accurately work out the tempo of a track is going to get most of its information from the percussive elements of the audio, and fortunately this is what most dance music has in abundance. Having tried all sorts of music styles over the past few weeks, I've been able to build up a picture of the kind of tracks that work best. Bearing in mind the fact that the unit's internal software is looking out for clearly defined bass drums and snare drums to work from, music by bands such as The Prodigy and Underworld work extremely well, as do nearly all contemporary dancefloor mix styles such as house, techno and R&B, and I only ever had any real problems sync'ing up to some very fast hardcore jungle loops that had been mixed with lots of other ambient sounds.

The time Voyager 1 takes to lock up and the quality of its MIDI beat tracking throughout a song really depend on the kind

of music you ask it to follow and, perhaps more importantly, how that track was recorded. With non-dance tracks that were obviously recorded using live drum kits and no click-tracks, the unit seemed to fare less well. I did even try to synchronise a simple click track in time with some of Haydn's string quartets and — perhaps not surprisingly — succeeded in baffling the unit completely. Clearly it's with dance music or, indeed, any music with strong and consistent rhythm tracks, that this unit scores: I found it could be as little as three or four seconds between the point when I initially started the audio and the point when Voyager 2 had worked out the tempo and transmitted the right bpm signals.

You can see from the channel bpm display and the three Beat Tracking LEDs how well the unit is coping with extracting the correct tempo and occasionally, as I have said, it can get confused. If this happens, you can point it in the right direction by tapping the tempo in time with your audio, using the Tempo/Tap key. This effectively helps Voyager 1 to hunt in the right area, and very often after only three or four taps it has found the beat and has locked up steadily.

Voyager 1 can also cope with following tracks that have gradual tempo changes, or following subtle changes in the varispeed controls of a turntable. Problems, however, tend to arise when working with audio sources that have either numerous tempo changes (like 'Bohemian Rhapsody', for instance), or long periods where the rhythm section (more specifically the bass/snare) stop, or are very quiet.

CONCLUSION

There's a lot to be said for Voyager 1's hands-on approach to what it does, and this is reflected in its incredibly fast learning curve. Within literally minutes of taking it out of its box, I had successfully used Voyager 1 to lock up some drum loops in my Emu Orbit module to Michael Jackson's *HIStory* album and was happily experimenting with some jungle beats over 'Billie Jean'. The user interface is as uncomplicated and un-fussy as it needs to be, and the well written manual (or 'Mission Guide', as it calls itself) talks you through every step of the operational process in a relatively painless and straightforward way. The inclusion of two switchable audio inputs, and the fact that Voyager 1 calculates separate beat information for each of these channels, makes mixing between any two audio sources — which could be, for example, turntable, CD player, tape or MiniDisc — and a MIDI sequencer a piece of the proverbial cake.

"Despite a few minor niggles, Voyager 1 must be seen as a major breakthrough in bringing the worlds of the dancefloor and studio closer together."

Although it's aimed primarily at the DJ and dance market, there are numerous other uses for this powerful little unit (see 'Possible Applications' box left), and given its relatively low price Voyager 1 deserves to do well. With the standard (non-chrome) version available for £249.50 and the Cool Chrome model selling for a mere £50 more, I can see DJs, remixers and many studio owners rushing to get their hands on the Voyager 1, and for the most part they won't be disappointed — especially with the reassurance of a 14-day trial period, with money-back guarantee, that Red Sound Systems are offering to their direct customers, as well as a three-year parts and labour warranty. It looks as if this new British company has come up with an extremely useful and unique product that not only deserves to succeed but looks set to carve a significant niche for itself in the DJ/production world. SOS

POSSIBLE APPLICATIONS

Although similar bpm-calculation facilities have been included as part of some higher-end computer-based MIDI + Audio sequencer packages for a while, Voyager 1 is the first device to take such a feature and market it in an easy-to-use, stand-alone unit. The first and most obvious group to benefit from the ability to generate MIDI clock from an audio signal is club DJs and remixers. DJs looking to synchronise loops and phrases from units like the Roland MC303, Quasimidi Rave-O-Lution 309 or Emu Planet Phatt/Orbit modules will find this box a real lifesaver at gigs, and it makes triggering pre-programmed MIDI loops on the fly an absolute doddle.

Another application that sprung to mind while I was using the Voyager 1 would be as a form of simplified MIDI sync, to lock up to a multitrack tape in a studio in the absence of any other form of recorded timecode. If your SMPTE/FSK code track is damaged, or you're working with a pre-1980s master recording, feeding an existing click-track or selected parts of the rhythm section into the audio input should provide an accurate way of locking the master tape to your MIDI sequencer.

Programmers of MIDI files might also find this box a big help when trying to accurately re-create parts of an existing recording. Not only will it give you a very good tempo template to work against, but checking your track in sync alongside the original could be invaluable.

info

£ £249.50, or £299.50 for chrome version. Prices include VAT.
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WRH

Northern Exposure

PAUL NAGLE

Writer and electronic musician Paul Nagle successfully combines a day job with live performance and regular CD releases. PAUL WHITE zooms up the M6 and comes in for a landing at his well-stocked studio.

The name Paul Nagle will be familiar to many *SOS* readers, as he's a regular freelance contributor to the magazine, with an obvious penchant for analogue-style synths. But Paul is also a very prolific electronic music composer, with a number of album releases to his credit. When he's not planning one of his live appearances, he can usually be found either in his studio working on his next album project or talking to his pet iguana, Worf.

Paul's first significant cassette release can be dated back to 1981, though apparently there were some even before then that he isn't keen to admit to. More recently, he's released the Elements series of CDs, comprising *Wavemaker* , *Firedancer*, *Skyrider*, *Earthshaper*, and *The Live Element*, the last recorded live at Jodrell Bank planetarium in 1997. Paul first played live at UK Electronica in 1983, along with Hawkwind, Ian Boddy, Mark Shreeve and Robert Schroeder. Since then he's played at a number of other electronic music festivals. More details of Paul's work can be found on his web page, where he's also happy to enter into discussions on the relative merits of various vintage synths or exchange information, patches, *Cubase* mixer maps, and so on.

I was naturally curious as to how Paul had become so interested in electronic music, so I asked the obvious question.

"I took some piano lessons as a child, but I soon lost interest in it because of the type of music I had to play. It was years later that I began dabbling on an electronic organ that I was allowed to play while babysitting. At that time, I was listening to people like Bo Hansson, a Swedish player who composed music based on *The Lord of the Rings*. Of course I heard TD's *Stratosfear* in 1976 and Mike Oldfield's *Tubular Bells*, and it was those things that set me in the direction I'm still exploring now.

"The first instrument I bought was an organ, which I used to record onto cassette, but then the organ shop got in a Korg Micropreset synthesizer, so I had to get one. From then on I was on the perilous slope to an empty credit card. I had to try every new synth that came out, and I bought many of them."

IS IT REAL OR IS IT MIDI?

How do you go about creating music now? Is it entirely synthesized?

"I try to involve as many 'real' musicians and instruments as possible, because I think synthesizers sound more interesting when heard in the context of other instruments. My studio is in a converted loft which is accessed via a lightweight ladder, so getting drum kits up here isn't really an option. The percussion I use includes African Djembe drums or Indian Tablas. Guitars and wind instruments are recorded here quite regularly, and my new project will have a lot of guitar and flute in it."

In what is essentially a MIDI studio, what do you use to record real sounds?

"The Roland VS880. Prior to that I had to use other people's studios (I've never had much of an affinity for tape). The VS880, which has the effects board fitted, is sync'ed to *Cubase* running on a PC, and that's the master clock for everything. I've made a *Cubase* mixer map to drive the VS880 from the computer, so I hardly ever need to touch the thing. I can do EQ, effects, patch changes, and almost everything else, from *Cubase*. On the whole it's been a wonderful machine, and there are only a couple of things I don't like about it. One is that the display is, criminally, not backlit, and the other is that there are no on-board mic preamps (because of this, I often send things through my little Mackie desk first). Other than that, it's probably the single best bit of kit I've ever bought. It's easy to use and the sound quality is really very good — the 2:1 data compression is not an issue for me."

THE COMPOSITION PROCESS

"I don't have any hard and fast rules for writing, except that I don't start to record until I have a definite idea of what I want to do. Once I've started I usually work the piece to completion. Often by developing an idea that seems to be going nowhere you can drive yourself into something wonderful. It's then an easy matter to get rid of the naff idea that led you there. If you always just give up you get nowhere, but the trick is to realise when something is not special enough to release. I guess that's one reason I produce CDs: it gives

> "The concept of being able to distribute material from home, directly to the public, is one that's going to grow and grow."

me a goal to aim for, a deadline to finish by and a standard to reach. I use the whole thing as a learning process, formulating techniques of performance or composition to refine again and again. I'm afraid I still write 'concept' albums. Underneath, most of my stuff is actually *about* something, although different people get different things from it. Quite often I get my ideas when not in the studio, and many scruffy bits of paper contain my scribbled ideas, which I attempt to transform into something later. I think that if you compose at your instrument your fingers tend to find their old favourite positions and everything starts to sound the same. Similarly, I don't believe that mindlessly improvising for hours on end, then chopping out all the bits that don't work, makes for an interesting album either. You *can* get ideas from gear and software, though. I recently bought the shareware program called *Seq303*, a step-time MIDI sequencer that can generate sync'ed loops (each loop can be a different length), running several synthesizers at once. Better still, it's possible to sequence MIDI controller changes so that, for ▶

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Paul Nagle

Paul in his loft-based studio. Amongst the gear visible in shot are his Roland XP80 and Korg Prophecy.

example, I can flip through different filter types on my [Access] Virus synth, select different start-waves on my [Waldorf] Microwave II, speed up the LFO on my [Waldorf] Pulse, and so on. When I've created something I like, the whole thing can be exported into *Cubase* as a MIDI file. For a born 'messer' like me, this is great!"

> "I like a synthesizer to sound like a synthesizer — I want to be able to hear it and not be confused into thinking that it's a normal instrument."

RECORDING METHODS

"During the recording of *Earthshaper*, I needed a violin for the slow, haunting melody of the track 'Going Grey'. I managed to find a classical musician, Steve Barnes, who had both an acoustic violin and a Zeta electric model. Being classically trained, he needed sheet music to work from, so I recorded the violin solo into *Cubase* myself using my Korg Prophecy. For the recording session we connected the Zeta directly to the VS880 and Steve read the music from the *Cubase* score page as the song played through. The secret for me is utilising the talent of other musicians — we completed the whole thing in just two takes, added a little reverb from the VS880, and Steve said that it was the best he'd ever heard his violin recorded.

"You can't beat involving other musicians. During the recording of my new album, I was beta-testing *Cubase VST*, so I created a track with lots of changes, on which I performed all the complex edits I could think of. I added a drum loop created by a freeware program called *Hammerhead*, and processed it via *Cubase VST*'s real-time effects. After I'd tinkered with this song for several weeks it was starting to take on a life of its own, so I asked Matt Shepherd and Andy Boland to come round and add some flute and guitar. These were recorded on the VS880, and it is to both of these guys' credit that they coped easily with the weird scales I'd generated using *Cubase*'s 'Transpose to Raga Todi' function. Various types of flute, lead guitar, bass and acoustic guitar all made this track far more than the sum of the parts, successively replacing many of the synthesizer sections."

Old blends with new in the Nagle studio — pan pipes and ethnic drums mix with the likes of the Roland JD800.

GEAR HEAD

As a regular *SOS* reviewer, you're clearly used to expressing your opinion about equipment, so perhaps you could talk me around your studio and tell me what you like about the instruments you use?

"I like a synthesizer to sound like a synthesizer — I want to be able to hear it and not be confused into thinking that it's a normal instrument. If I need a saxophone, I'd rather get in a real sax player. Although I have a few standard S&S synths, I try not to use them predictably. My favourite albums come from the late '70s to mid-'80s, when synths had a certain sound, almost organic.

"My main keyboard is a Roland XP80, though I started off with an XP50. The reason I went for the '80 wasn't the keyboard length, but the extra sequencer memory. It's also got a few extra sliders and an arpeggiator, which means I can do some cool things when I play live. When I'm gigging I don't want to take a computer with me, so I prepare everything on *Cubase*, save it as a MIDI file, then tinker with it on the XP80 as the mood takes me."

How do you get on with the combined pitch-bend and vibrato lever, as opposed to traditional separate wheels?

I don't like it. It's OK for pitch-bend but it's useless for modulation — it's either on or off, really. I have a Korg Prophecy mounted directly above the XP80, and this has a much better control interface. I think it's a great instrument. It's as good as a controller as it is a sound source. There are so many one-handed synthesizer players who leave their other hand doing nothing, whereas with the Prophecy you can put it to good use modifying ▶

THE UK SYNTH MUSIC SCENE ACCORDING TO PAUL NAGLE

"A small bunch of people who mainly like Tangerine Dream, *The X Files* and probably *Star Trek* (but not *Voyager*). I feel I know most of them personally, which is nice. Since 1983 the scene hasn't really grown. I guess one problem with synthesizer music (or whatever you call it) is that it is superficially easy to make it, but it's bloody difficult to be as good as Jean-Michel Jarre! The standards are pretty low now that Tangerine Dream have descended into shallow pap for the American market, and fans can easily get a bunch of synths and produce something that sounds very similar with very little musical training.

"Some people are seeking 'the answer' by looking backwards, and several TD in 1975' bands have sprung up, the best of which are Redshift. But I want to move on, assimilating what has happened since 1975 while keeping my awareness of my heroes — Vangelis, Jarre, Camel, Colin Towns and Yello. There are some great talents in the UK — such as Ian Boddy, Mark Shreeve, Andy Pickford and Asana — and it's a real shame that these hardworking musicians don't get more recognition. I don't know why instrumental music is still such a no-no in the UK, but becomes OK when you add a drum loop somebody else made for you and a couple of samples taken from just about anywhere."

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Paul Nagle

PERFORMING ARTS

Everything looks pretty permanently wired in, so how do you go about taking gear out for live performance?

"Live work is one of the reasons I have the keyboards: I take the XP80, the Prophecy and the JD800, and I'll start to take the Virus soon. The Waldorfs stay at home, because they don't have built-in effects, and it would be a pain to have to take them out of the studio system every time."

What kind of controllers do you tend to use?

"I do a lot of tone shaping as I play. With the Microwave II, I've created patches which respond to the four assignable MIDI controllers, so I might change the filter resonance, the position in the wavetable, the rate of attack, and so on, from just a single controller, then tweak a different bunch with another — the kind of thing that the Prophecy's performance knobs are ideal for. The synthesizer isn't the most expressive instrument when just played from the keyboard, so you need to do this kind of thing to give it depth. People brought up on traditional keyboard instruments such as pianos or organs seem to have trouble adapting to synths, either because they'll play inappropriate 10-fingered chords, or they won't use any performance control. You have to learn to get more out of the instrument. Just being able to flick through 1000 sounds on an XP80 is enough to blow your mind — as fellow UK musician Nick Rothwell once said: 'That isn't synthesis, it's cable TV' — but if you concentrate on fewer patches, and spend more time tweaking your favourites to work just how you want them to, you'll feel the benefit when you come to perform with them."

▶ the sound. Immediate control is the key to making an instrument feel and sound alive. The only thing wrong with the Prophecy is that the five real-time knobs above the display are hard to grip, so I've changed the knob caps on mine to make them more usable. I can use these knobs to control any synth I like, and at the last gig I did the Prophecy was controlling the Access Virus.

"I've created a lot of sounds by just using the regular synthesis part of the Prophecy, rather than the modelling side, and it has a good bass end too. I also like the way the effects are properly integrated, so you can set an envelope to affect not only the filter cutoff frequency, but also the amount of reverb. Mostly I'll use the Prophecy from its front panel, but I have a couple of *Cubase* maps, one for editing the arpeggios, and also a basic synth editor for it."

It's not all Waldorfs, you know... a fair mix of gear from Alesis to Zoom units fills Paul's rack alongside his Pulses and Microwave II.

WAVETABLE SYTHESIS

Looking into your main rack, I notice a very strong Waldorf presence. What's the attraction of these machines?

"I didn't really know much about Waldorf until I got one of their synths to review. I was so impressed with the strong analogue sound of the Pulse that, when I heard it, I sold a lot of my old gear, including my Jupiter 6, and bought one. I've got three of them now — I pestered the guys at Waldorf for ages to change the operating system so that they could be linked for polyphonic use. They did it, and now that I have version 2.0 of the operating system in there, I can play three-note chords using the three linked machines. In this mode, the master machine sends out the appropriate controller information to make the slave machines play the same patch, though you can tweak them independently afterwards if you want them to be slightly different. In time I may get more of them; they're particularly good for bass, lead and sequence patterns — actually almost too huge-sounding to be polyphonic! The Pulse not only has good fast envelopes, but you can also tweak anything via dedicated MIDI controllers — so that, for example, a little rolling pattern in *Cubase* can change the envelope decay as you play.

"The other Waldorf I have is a Microwave II, and it's probably the single most accessible digital synth I've come across. It's very well thought out, though I was a little upset when they announced the bright orange, knob-laden Microwave XT, complete with integral effects. Now I want one of those instead! The Microwave has a pretty strange sound, and the factory patches don't really show what it's capable of (though the latest ones are much better). You have to spend a little time programming it and then it really starts to cook! It's got a tendency towards 'spiky grunginess'. The original wavetables are made up from only 8-bit waves, which gives it quite a distinctive sound, especially when processed via its powerful resonant filter. ▶

SELECTED GEAR LIST

SYNTHS

- Access Virus
- Emu Vintage Keys Plus: "Cool sounds, easy to program."
- Korg DSS1: "Best filter Korg ever put on a synth."
- Korg EX8000: "An old favourite."
- Korg 03R/W: "My piano sound."
- Korg Prophecy: "Just can't leave this baby alone."
- Korg Wavestation A/D: "Superb synth despite shite architecture."
- Roland JD800
- Roland XP80: "A 'do it all' synth that manages to be very useful and musical."
- Waldorf Microwave 2: "Gritty, muddy, swirly monster of a synth."
- Waldorf Pulse x 2
- Waldorf Pulse Plus: "As above, but with filter input and CV/Gate connectors."

COMPUTING/RECORDING

- Akai ME80P MIDI Patchbay
- Alesis Microverb
- Alesis Monitor Ones: "Good when you're used to their bass response."
- Alesis Parametric EQ x 2
- Behringer Composer
- Behringer Noise Reduction
- Boss SE50: "Nice effects unit."
- Boss DE200 digital delay
- Creative Labs AWE32 card
- Fostex 16:2 submixer: "Useful for gigs."
- Mackie CR1604 16:2 mixer: "Brilliant. Clean, reliable, beloved."
- Mackie Mixer Mixer: "Combines my CR1604, RacPac and VS880."
- Peavey PC1600 MIDI controller with sliders: "Jolly useful."
- Pentium 133 PC, twin hard disk, 32Mb RAM, running Windows 95, *Cubase VST*, Steinberg *WaveLab*, MOTU *Unisyn*, Turtle Beach *SampleVision*: "Well, it's working until I tweak it again..."
- Roland CF10 MIDI volume/pan sliders.
- Roland VS880 hard disk recorder,two hard disks, internal effects: "Excellent."
- Sony DTC690 DAT
- Sony TCD-D7 portable DAT
- Spirit RacPac submixer: "Great value."
- Zoom 1202 multi-effects: "A rather grainy reverb, to my ears, but it's OK."

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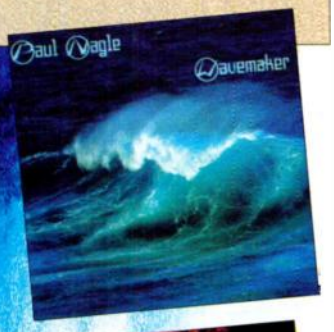
Paul Nagle

DISCOGRAPHY

- *Wavemaker* (1993)
- *Firedancer* (1994)
- *Skyrider* (1995)
- *Earthshaper* (1996)
- *The Live Element*

Paul's next gig is on March 21st 1998 at the Alpha Centauri Festival, Holland. His hyperspace co-ordinates are www.softroom.demon.co.uk



"I also have a Korg Wavestation A/D, which has quite different strengths. You can create a wave-sequence using any of the internal waves, in any order, with any pitch transposition, level and duration. It's very versatile for creating swirly, evolving textures, whereas the Microwave produces a harder, more 'in your face' sound. The Wavestation is superb for backgrounds and pads. There's also a vocoder in the Wavestation A/D, which I sometimes use with external sources. Vocoding a drum machine with a choir can be interesting."

AND ALSO...

I notice you have an Emu Vintage Keys synth module, which seems very down to earth after the more esoteric things in your rack.

"There was a time when I had mainly Korg PCM-based synths, and the Vintage Keys just sounded totally different. It also has a resonant filter, and I really like some of the raw samples, particularly the Mellotron strings. And it's very easy to program. In fact the only gripe I have is that the envelopes are too slow; you can't do a good snappy sequenced line with it.

"I've had my Korg EX8000 for years, and it has a kind of analogue/digital character that I really like. I know it well now, so I can program it very quickly, and it makes sounds that people are less likely to recognise. I also have a Korg 03R/W, which is used almost exclusively for piano sounds these days.

"My Roland JD800 is particularly nice, not least because of its sliders. It's almost the best synth ever made. On stage you just call up a patch and then use the faders to change it — you hardly even have to worry about calling up memories. It's a very immediate instrument — almost as easy to program as the old analogue synths, and arguably more versatile. Another favourite is the Korg DSS1, which I'll keep until it dies. It's a very basic sampler combined with a great synthesizer. Its superb filter and oscillator sync give you a rich palette to work with — those resonant sweeps are as good as anything I've got."

Most instruments these days come with effects thrown in. Does this simplify your external effects needs?

"I'm a big believer in using the on-board effects with instruments, because to me it's a part of the sound of the patch. I hardly ever use synths multitimbrally because I have so many to choose from, so the restrictions you get when you start trying to share effects between the different parts of a multitimbral bank don't apply.

"My Boss SE50 is my main studio effects processor, but I also use the effects in the VS880 a lot. I wouldn't mind another SE50, or even an SE70. Although the SE50 has a vocoder I've never used it; I tend to use the one in the Wavestation."

LOOKING TO THE FUTURE

What would you like to add to your system?

"I mentioned the Microwave XT, which looks interesting, and if I'd known it was coming, I'd have held off buying the Microwave II. The XT comes in a 5U package, but it has a 3U section full of knobs, plus on-board effects... It has almost everything I want in a synth, but I'm not sure yet if I'll trade up for it. The Virus is pretty cool but I'd like to check out the [forthcoming Quasmidi] Polymorph too, for its built-in sequencer. I hear rumours of other similar instruments springing up all over the place, but I guess you can fall into total inactivity if you're forever waiting for the next big thing. To be honest, I don't actually *need* anything else."

What's your next musical project?

"The working title is *Lore* and despite its drum loops you shouldn't expect to hear it on *Top Of The Pops*. It will also have ambient swirling synths, squelchy sequences, flutes and guitars, grungy Microwave textures, treated vocals, naturally recorded sounds and a bunch of other stuff that reveals I've been tinkering with the much-abused 'ambient dance' genre, but blending in my own electronic style. At the moment I've only completed one track, and when anybody asks me what style it is, I really struggle to come up with an answer."

I would imagine that the main problem for instrumental music in the UK is that you either get categorised as a Tangerine Dream wannabe or put on the New Age shelf. Presumably you're keen to avoid either fate?

"For me, New Age has its place, but it's not really what I want to do. At the same time I don't really rate Tangerine Dream so highly these days, as the music has become very shallow. What I want to do is produce something that works on a number of levels, follows some kind of compositional structure and, of course, has real melody. I've also been listening to a lot more varied music from world to dance — acts like Banco de Gaia and Future Sound Of London — and though I wouldn't say I've moved in that direction, I've taken on board some of the elements of what they're doing."

How are you planning to distribute the forthcoming album?

"That's a good question. I've had a couple of offers from small labels, but I'd actually like to have a go at doing everything myself this time, keeping total control, including designing the label, the sleeve artwork and everything. I've had a lot of encouragement and the traditional mail order people have already shown interest. I've also had a lot of success selling my existing music via the Internet, using my web site. I have audio samples of tracks that people can listen to, and I do get orders from a variety of countries now.

"To me, the most exciting development is the ability to produce your own CDs at home. At the moment I'm using the VS880 with an external CD burner to produce discs, so if I just want 10 copies of an album I can do it fairly quickly. Creating the first copy takes ages, as you have to make a disk image file first, but then you can copy it to CDR fairly quickly. With the current VS880 software you can't save your image file either, but I'm sure they'll sort that out. However, the concept of being able to distribute material from home, directly to the public, is one that's going to grow and grow. The sooner the greedy record companies disappear up their own arses, the better!

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REVIEWS: *"A very impressive source of creative loops... Clearly & logically grouped... Excellent for the off-beat samplist... Loops are generally highly usable... Well programmed patterns... Superb FX loops... The use of effects is interesting & imaginative... Plenty of moody arpeggios... Perfect atmospheric ambient layers."* (Future Music, UK)

A.M.G. (England)

Keith LeBlanc Vol. 3: FRESH KILLED MEAT - PRIME FUNK
Keith's previous CD's have all received 5 star reviews all around the world. This is his finest work to date - there's nothing to touch it. In fact, drum legend Keith LeBlanc sets new standards for the whole industry with this sample collection. Some of the hottest loops you'll find anywhere - you're going to love it! *"This CD was produced with programmers in mind. There are many dubs on this CD to choose from. I have also included lots of combinations of the beats and always the striped down drums themselves. This volume is like having a funky drummer with his own varied sound library plus a DJ at your disposal. I HAVE USED THIS PRODUCT IN PRODUCTION AND IT HAS ALREADY SAVED MY BUTT MANY TIMES."* (Keith LeBlanc). £59.95.

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REVIEW: *"Absolutely monstrous...Love the heavily filtered and EQed drum loops. They're trashy and funky, with attitude that goes on for days... manipulated and mangled in all sorts of sick and attractive ways... The processing is so thick it's tasteful, and the hooks are infectious... Overall there's a storehouse of treasures to be found on the Terminalhead CDs. They're equally strong."* (Keyboard, USA). Two Audio CDs: £59.95 each.

Spectrasonics (USA)

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NEW! BLACK II BLACK Vol. 3 (AMG). Steve McIntosh & Joe Charles have done it again! Another mindblowing set 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 house, Slo jamz, Rap, Guitar licks, Bass lines, Garage, Disco, and more. REVIEWS for Vols. 1 & 2 said: *"Monstrously funky, soulful rhythm loops... highly recommended for teachers of contemporary arranging."* (Keyboard, USA). ☆☆☆☆☆ 3/4" (Sound on Sound). Volume 3 is even BETTER! Audio CDs : £59.95 each volume, or Akai CD-ROMs : £149 each volume.

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Big Fish Audio (USA)

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A.M.G. (England)

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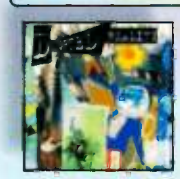

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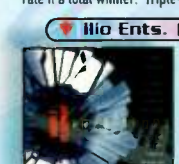
EXTREMELY HOT dance vocal sample collection from ZERO-G (UK), performed by some of the hottest session singers from the UK! Totally original pro samples for all your music productions: Gospel choir, Ad-Libs, Melodies, Harmonies, and Backing Vocals. Styles featured include: Dance, R'n'B, Soul, Rock, and 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 arranged 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

Ilio Ents. (USA)



DOUBLE PLATINUM ROCK PIANO
Finally, a piano that doesn't require tons of EQ, compression and effects to be heard. The one & only true Rock piano disc, with all of the natural brightness and depth you need to speak through your tracks. The piano is a rare and famous vintage Steinway B, custom rebuilt & maintained strictly for studio recording. Its contribution to Rock history is etched in stone (incl. multi-platinum records from Elton John & Tom Petty to Carl Perkins and Johnny Cash). Chromatically sampled (all 88 keys), three velocities, looped & non-looped, up to 64 MB banks. The best two-fisted piano sound in the world captured on one easy-to-use CD-ROM. *"The best piano sample I've ever heard. This is really great!"* – Matt Rollings, legendary US session keyboardist. CD-ROM £99.00. (Choose from: • Roland • AKAI/EMU/ASR • SampleCell • Kurzweil)

Best Service (Germany)

SOUND ENGINE PLUS
3 PROGRAMS + 600 PC MUSIC SAMPLES (16 bit WAV). 4-Track Audio & 32-Track MIDI Sequencing for Beginners and Pro's. Includes 'XFloorBasic' - the Interactive Dance Floor Workshop (easy hands-on learning!) & 600 ready to use WAV-Sounds: Drums, Basses, Synths, Rave & Dance Vocals and Rhythms. Sound Engine Plus is the ultimate Tool for everyone who wants to make professional songs only with a PC, Soundcard, MIDI and Audio Files. Powerful user-friendly editors included. Connect a MIDI-Keyboard for your own performances! 3 programs let you create & record really cool tracks easily & quickly: • Steinberg Cubasis Audio LITE SE : 4-Track-HD-Recording, 32-Track-Midi. Record Audio Files on your Harddisc! • Sound Lab Fun Tool - a complete new audio tool for editing your Sounds & Grooves: Timestretching, Filter Sweeps, Chorus, Flanging, Delay. • Circle Elements - The multimedia music machine! Infinite multitrack recording. The legendary Audio Groove Tool for your own hits. • Also: note editing and printout. On-screen editing of your songs. Change MIDI-Pitch, Velocity, Tempo! Sound Engine Plus is a limited edition by best service and SONY Germany. £39.95

Zero-G (England)

JUNGLE WARFARE
NEW! Volumes 2 & 3! If you need Jungle these 3 CDs from 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 even BETTER! REVIEWS of Volume1: *"Excellent fidelity, balance & punch, & variation in feel & sound... there's no serious competition. Rated 5 stars out of 5 ☆☆☆☆☆"* (Sound on Sound). *"Kicking grooves... a wide range of styles... highly useful... AS UP-FRONT 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: £59.95 each. Special offer for limited period only: Get Vols 2 & 3 together for only £99.00 - AVAILABLE NOW!

Best Service (Germany)

TERRAPAC
TerraPac contains the most comprehensive library of dance sounds for the Terratec EWS64 audio system. It's a 3-CD-Set with 7000 samples! All sounds are pre-looped and ready to use on all MIDI-Keyboards. Drum & percussion single hits (complete sets, acoustic & electronic) plus drum grooves for all different tempi. Pianos, synths, guitars, brass & kicks, basses. Orchestra, solo strings, string ensembles, dance vocals & classical choirs, symphony grooves. All you need for up-to-date dance production! CD-ROM for PC computers with Terratec EWS-64 Soundcard audio system. £ 79.95 (available Nov/Dec '97)

SYNCLAVIER LIBRARY (AUDIO)
The five-CD-ROM Synclavier Library from Ilio (USA) has been compiled into two audio CDs containing over 2000 samples.
VOLUME 1: "ESSENTIAL" covers Electric and Acoustic Guitars, Electric Pianos, Synths, and Drums & Percussion.
VOLUME 2: "ORCHESTRAL" covers Strings, Harp, Brass and Woodwinds, Grand Piano, Orchestral Percussion including Timpani, Bells, Chimes, Gongs and more! Accompanying manual gives loop points for every sample so it's extremely easy to loop samples quickly and effectively. Each Audio CD: £69.95. (See also our Catalogue, or call us, for full details of CD-ROM versions).

SOUND SAMPLING PRODUCTS

Exclusive UK Distributors for: AMG, Best Service, Big Fish Audio, E-Lab, Ilio, Invision, Masterbits, Music Mind, Sounds Good (excl.SSS series), Spectrasonics, Zero-G, and more...

Zero-G (England)

NEW! VIDEO SAMPLE CDs

THE VIDEO CREATIVE ESSENTIALS SERIES

(ZERO-G). *Yes, VIDEO!* NOW YOU HAVE ALL THE MATERIAL YOU NEED to create STUNNING futuristic visuals to accompany your music. The state-of-the-art video clips on each CD-ROM in this pioneering series will open in a variety of programs and applications that are compatible with QUICKTIME movies. For example: Use them with Adobe Premiere, Real Video, Media Studio, Steinberg Cubase, Logic Audio, Steinberg X-POSE, Pro Tools, After Effects, Cinema 4D etc.

FREE video editing software is included (Adobe Premiere® Tryout Version for Mac or PC). Also you get a FREE Audio Creative Essentials Sampler Disc included in the package!

(includes 300 pro audio samples). All video clips are at a resolution of 320 x 240 pixels and use Apple Video CODEC which will give excellent results on Mac or PC. These video samples have an incredible variety of uses - e.g. Demo videos, Textures in 3D Rendering Programs, Clips for Web sites etc. **The first FIVE titles to be released are: 1. Bio-Feedback, 2. Flow Motion, 3. Fruit Salad Rain, 4. Speed Out, 5. Trance Spotting.** This series will grow and grow and the video samples are of the highest quality and originality. So pack some visual punch into your productions NOW and be at the leading edge of sampling technology in VIDEO as well as in audio! **Each volume (2 CD-ROM Set) is only £29.95** (Mac or PC Compatible).

OLD SCHOOL FLAVOURS

A new 4-CD series of loops/samples from ZERO-G. These are resources for TODAY's music! Today's Drum & Bass is based on the rare groove breakbeat sound. Nu Classic Soul is really slightly updated 70's soul: the new crossover hiphop sound of artistes like Puff Daddy incorporates that early 80's soul & electro influence, and the new house "Speed Garage" has a strong breakbeat disco influence, and R&B has gone back to the early 80's. 'Superfunk' (vol.3) has lots of good source material for jungle producers as well as hip hop. **WHAT'S ON THE CDs:** On each CD, each of 9 vintage kits plays 5 AUTHENTIC song patterns, each at 2 different speeds, 10 BPM apart, for maximum flexibility. Each song is divided into 3x4 bars of groove. •Main groove/chorus). •Simpler version (verse). •Full on Syncopated Breakdown, with each section ending with it's own fill. Grooves are authentic in both playing style and the sound of the kits. Over 1000 bars of grooves on each CD. Each kit also presented as individual hits. **RARE GROOVIN':** Classic Rare Grooves of late 60's /early 70's. BPM's from 86 to 120bpm. KITS INCLUDE. •POLYRHYTHMIC •DUSTY •BLUEFUNK •HIP •ORGANIC •COOL •BASEMENT •FREESTYLE •SOULJAZZ **SUPER FUNK:** Classic Funk sound of the 70's. BPM's from 82 to 116 bpm. KITS: •GODFATHER •SOUTHERN FRIED FUNK •KOOL FUNK •JB73 •FUNKMACHINE •PLAYER'S GROOVE •STREETFUNKER •GOODGROOVES •MUTHASHIP. **VINTAGE SOUL:** Classic Soul sound of the 60's and 70's. BPM's from 72 to 134bpm. KITS: • DETROIT • MELLOW • MARVELOUS • SUNDAY • SOUTHERN SOUL • MIDNIGHT • LATE 70'S • SUPAFLY • WONDERSOUL. **HOUSE PARTY:** Classic Disco and Dance Soul sound of mid 70's through to early 80's. BPM's from 104 to 128 bpm. KITS. •PHATJAM •DISCO VINYL •WEEKENDER •STUDIO 54 •PHILLY DISCO •HUSTLE •BOOGIE GROOVES •SATURDAY NIGHT •JAZZ FUNK.

REVIEWS: *"Deserve to sell by the bucketload"* (The MIX, UK). *"Right on target... impressive selection... A must-have... Sent us into a sampling frenzy... Even if you own a monstrous record collection spanning 3 decades you won't be able to resist this"* (Technologica, UK). *"Will provide instant gratification... Superbly performed... Gives a real and believable feel to any track... Highly authentic."* (Sound on Sound, UK). *"If you want a convincing funky feel & sound, you really needn't look further than Superfunk"* (Future Music, UK) **Choose from 6 vols. CDs £29.95 each. (includes interactive demo for Mac/PC on all 4 for £139**

Music Mind (Denmark)

Wave It Gold

The Ultimate Sound-Blaster Companion, the CD-ROM that all SoundBlaster users have been waiting for. Following up on the acclaimed MicroWavelt, Wave It Gold takes your SoundBlaster SB-32/AWE-32/AWE-64 or compatible soundcard to new heights. Features: •Hundreds of SoundFont compatible soundbanks, ready to load into your soundcards RAM, covering all major instrument groups •All the 512Kb soundbanks from MicroWavelt. •Larger versions of all sounds giving you even greater realism, and expression •Tons of groovy drumloops, to give your songs that extra edge •Brand new sequencer program from Emagic •SoundFont editor, with power-features like global editing, automatic pitch recognition, .WAV-export and much more. Wavelt Gold is truly the Ultimate Sound8laster Companion, no serious PC-musician should be without it. **£59.95**

Best Service (Germany)

JAMBOX ELEMENTS

(CD-ROM for PC). The jungle house trip - sounds from the personal library of producer, DJ and remix-workaholic Mousse T. (e.g. Backstreet Boys, Quincy Jones, Ann Nesby, Ruffneck, Bootsy Collins). Everything you need to create a complete house-, jungle- or trip hop song. Drum- and Percussion-Loops, Vocals, Adlibs, Shouts, Bass-, Guitar-, Brass- and Sax-Licks, Pianos, Organs, Rhodes, Synthesizers, Chords, Strings, Effects, Breaks, Special 3-D-Vocals, 3-D-Percussion-Loops/Samples, Drum- & Percussion-Samples. CD-ROM for PC: Only £19.95

TRANCE'N' AMBIENT ELEMENTS. (CD-ROM for PC).

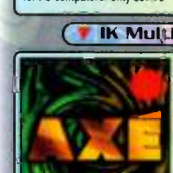
A staggering variety of hypnotic sound pads/layers, sequencer lines from outer space, filtersweeps & electronic sounds which match perfectly. Analogue & digital synth sounds refined by professional studio FX. Provide excellent audio quality in the construction of your own fantastic sound worlds for Dance or Trance. Also included on this CD-ROM: Free audio arranger and intelligent audio file browser. PC CD-ROM £19.95

PROFESSIONAL MUSIC CONSTRUCTION SOFTWARE - USE ONLY YOUR PC COMPUTER TO ASSEMBLE PRO MUSIC!

MEDIA DJ

Fast real-time Song Construction! Includes 2000 brand new WAV-Samples on 2 CD-ROMs (PC-WAV & AIF-format, 16 bit stereo). 8 Track Recording and more... The concept of Media DJ is revolutionary!! You can load the sequences in all other professional sequencers (e. g. Emagic and Steinberg). Fast arranging is one of Media DJ's specialities. Are you ready for the ultimate sound experience? Media DJ can also be used perfectly for stunning stack and multi effects, filter sweeps, pitch and scratch figures to control by using the "Dynamo" or "Shredder" in your Realtime Song! You can make e. g. the hi-hat changing in the stereo field, interrupt with rhythmic breaks, rearrange your drum groove, voice line, synth sequence or brass shot in a completely new way. Apart from choosing your song tempo, Media DJ offers an automatic Time Stretch Tempo Adaption to any chosen tempo *as you are loading the sample.* Software & sounds for PC computers. Only £39.95

IK Multimedia (Italy)



AXE. Innovative sampling CD-ROM for Mac or PC. 817 Brazilian percussion loops, plus an easy-to-use "Auto Groovemaker" 8-track interface to compose your own combinations of the samples. Loop collection includes individual components of complete Brazilian Batucada set at tempos from 60 to 160 bpm, precisely edited and tempo-tuned. "Auto Groovemaker" supports save-on-the-fly with a beautiful and easy-to-use browsing system. A great tool for professional and non-professional musicians alike. Available in audio format (loops only) or interactive CD-ROM for £59.95

Zero-G (UK)

CREATIVE ESSENTIALS Vol.4: DANCE VOCALS

Vocal Ad-libs/Hooks/Phrases. Features the talents of Moya Ruskin, Eliza Emery, Kaz Lewis, Martin Stanesby and Conroy Ellis. Performed with real commitment and feeling. Almost 600 pro-quality soulful vocals including the odd gospel touch. *"Value for money, in a genre where one good throatful can make all the difference"* (Future Music, UK) AUDIO CD / Mixed-mode CD-ROM for PC or MAC - only £19.95

CREATIVE ESSENTIALS Vol.23 TECHNO PRISONERS

This construction kit will keep even the most dedicated techno-head xstatic for weeks. "Hard as nails" loops & samples, kicks, snares, sound effects, industrial perc, noises, vocoders, basses and synths, tweeter-torturing sweeps and woofer-shattering sub-basses, industrial bangs & crashes and heavy machinery grooves. *"Wide variety... Exactly right for the genre... If you want to be your own Chemical Brother, this might be a good disc to start out with"* (Sound on Sound). AUDIO CD / Mixed-mode CD-ROM for PC or MAC - only £19.95

CREATIVE ESSENTIALS SAMPLER DISC FREE!*

including 300 samples (10 hot samples from each of the 30 volumes in the Creative Essentials Series). Plus! - an amazing interactive journey through the sounds of the whole series.

It's FREE* when you buy any Zero-G sample CD or any three volumes from the Creative Essentials series, or any single title from the Voice Creative Essentials Series! AUDIO CD includes CD-ROM part for PC or MAC)

- Or you can purchase this Disc for only £9.95 *(*Offer limited to one per household, while stocks last)*

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e-Lab (Sweden)

VINYLISTICS 3

NEW!! Featuring Ruff-style Breaks which have crossed over in all styles, from HipHop to House to Tekno & Jungle - Vinylistics 3 is an important source of Groove inspiration. Loops (with variations) plus their component drumsamples. UltraMonk5 - an experimental trip hop duo, together with DJ Toby, have made the loops as Funky & Rough as possible. Edited & mastered with SP1200 sample simulations & Valve EQ's - so the beats are phat & "dirty" to the bone. Often the loops have 2 variations to make them even more varied. Special Filtering gives you that Hihat/Top Loop microphone sound which makes the loops even more creatively useful as "Groove Backrounds". Use them behind a programmed beat to increase the "live" feel for Your Rhythm. This CD, like the others in the Vinylistics series, utilise the "LoopMap™" system developed by e-LAB for the X-Static 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

STRICTLY HOUSE

NEW RELEASE!! Are you a Remixer? A House DJ? A PRODUCER? Maybe you are still looking for the Perfect Beat? STOP SEARCHING NOW!!! THIS IS "THE CLUB" SAMPLE CD!!! PUMPIN' HOUSE & GARAGE LOOPS 2 DA MAX. A COLLECTION OF TUFF & DEEP HOUSE LOOPS (120-130 BPM) plus the Loops come WITH VARIATIONS and their component drum SAMPLES. INSPIRED TO CUT SOME RUFF & GROOVY HOUSE TRAXX!! Audio CD: £59.95. *"Spot on. You can't really fault this CD"* (Future Music)

X-FILES OF JUNGLE

Coming soon - Another in the new X-Files series from E-LAB in Sweden (makers of the X-Static Goldmine series). X-FILES of JUNGLE features Drum'N'Bass & Jungle LOOPS & SAMPLES.

These Rollercoaster beats will set off your system like nothing else. Super-Fast beats for anyone looking for the underground sound of Jungle or Drum'N'Bass. Loops, Samples, FX - they're all in there. Please call to check availability - scheduled release date of this HOT new title is Jan/Feb'98 (Call for latest news). Audio CD: £59.95

X-FILES OF TECHNO

NEW! - and in stock NOW: Another unmissable CD from the makers of the X-Static Goldmine series.

X-Files of Techno features ACID/ HARDCORE/ TEKNO LOOPS & SAMPLES - the styles which have been dominating Europe's underground scene for Years.

The TR909, TR808, TR303 are all in there - Distorting like crazy. These are the hard beats of the The Underground Charts that set the Trends which others need to follow. Created by a succesful Producer of this underground rave phenomenon. Audio CD: £59.95

X-FILES OF MOUSE

This one's a Goldmine of Deep & Progressive House loops & samples. To give you an idea, the loops and samples 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 to stop moving your feet when you hear 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 "Masters at Work". OVER 1000 PHAT LOOPS AND SAMPLES. Audio CD: £59.95

STRICTLY 12-INCH

This classic from E-Lab features Dance/Remix/House LOOPS & DRUMS. WHAT VINYLISTICS IS FOR HIPHOP, THIS CD IS FOR DANCE. The idea is similar: Loops, with variations, together with separate hits. This is a Remix CD for anyone in the need for good STOMPING House & Garage Loops. Very much DJ sounding, & produced by a Remix/Dj team. If You want the sound of the dancefloor - get this one. All Loops have been tested for reaction on the floor! Audio CD: £59.95

VINYLISTICS 1

From DJ/Producer PHAT FABE (Neneh Cherry, Shaba Ranks, Cherno, Tayo etc) HOT Loops & samples from Jungle, breakbeat/techno to R&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 MIDI-files of the loops (specify Atari/PC or Mac). REVIEW: *"A real bargain... a CD that any r&b/ hiphop/ soul producer will be pleased to own."* (The Mix, UK). Audio CD: £59.95. Akai CD-ROM: £99.00

X-STATIC GOLDMINE 1

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 S1000 CD-ROM version is the same price! 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' challenge, nothing else comes close."* (Sound on Sound, UK). Audio CD: £59.95. Akai CD-ROM: £59.95

X-STATIC GOLDMINE 3

A journey into the clubs of the world. House, Tekno, Rave, Garage & Jungle. Over 500 stereo & mono loops - all made to fit with LoopMaps™. Plus over 1000 samples cut from extensive programming & vinyl manipulation •Sub/Synth Basses •Acid tones/loops •Tekno riffs/stabs •Vintage analog seq hooks •Strings •Tekno FX •Perc & drums. •Optional MIDI-file floppy disk (specify Atari/PC 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 dissapoint." (Sound on Sound). Audio CD: £59.95. Akai CD-ROM (Over 3000 samples): £99.00

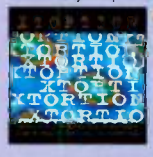
e-Lab (Sweden)

X-STATIC GOLDMINE Vol. 5

Another winner from the 5-star producers at e-Lab. Electro, Techno, Trance, Ambient, House - whatever Your angle is, this CD is an unbelievable resource. 1500 Loops & Samples with incredible crossover potential. e-Lab Used & Abused all kinds of Electroninc gear to create the widest possible variety of Synthetic Loops, Patterns & Samples. Tons of Computer Generated Trancey Synth & Acid-like Tones. Loops & voices. Plus a Massive Dose of Vintage Old Modulars - producing Zapping Blips & Twangy Bleeps, Sweepy Synthetic FX and Artificial Electronic Drum & Percussive Samles - all made to fit with the LoopMaps™, developed by e-LAB to enhance the intermixing of Loops with different BPM's. The clear links between 70's bands (like Kraftwerk) & todays techno/electro innovators (like Aphex Twin, LFO & Carl Craig) shows that electronically produced music is vital to keep the "innovative" Dance styles up-2-Date with the next Millenium. So get this CD if You want the Ultimate in Artifical, Analogue & Xperimental Loops & Synth samples. "Pure Artificial Intelligence" - or as Kraftwerk put it - "It's more fun to compute". Audio CD (plus bonus demo CD): £59.95

SYNTHASIA 3 - LOOPLAND

LOOKING FOR SYNTHLOOPS? ACID TONES? EXTENDED FILTER SWEEPS? SLIDING SLURS? ACCENTED POPS? Here's 1800+ BARS OF ACIDSQUEAKS & FILTERPEAKS !! Roland TB 303 + CLONES & MODULARS. This CD captures the No 1 AcidHouse/Tekno & Trance Machine - The Roland TB 303 & some of all the Clones of this Machine! The producers also Used & Abused old Modular Synths to Create a wide variety of TeeBee-like Loops & FilterSweeps, plus many hot Trance-like Patterns. The classic silver box was recorded clean & also forced thru a variety of Exclusive & Cheap FX, from Expensive Valve Eq's to LoFi Fuzz boxes. e-Lab achieved the Best Variety of Loops & Sweeps possible! Audio CD: £59.95 Out now!



XTORTION 1

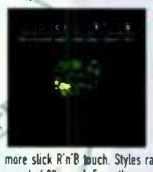
Warning! Only for the HeadStrong! Are You ready for an Adrenalin Kush ? Are You ready to be kicked by the hardest Loops & samples ever ? Pounding, Fast, Hard Techno/ Gabber/ Jungle /Industrial Loops that Bang the hell out of Your Braincells like nothing ever did before. Rough Pounding Kicks, Hysterical Transformed Vocals, SuperDistorted Heavy Synth Loops & Tones/Pads, Metallic Crunching Guitar Loops - the list is endless. Only buy it if You have the Guts to create harder stuff than Prodigy or NineinchNails. Otherwise stay away !!!! Xtortion is a Killer's Nightmare. Audio CD: £59.95

SYNTHASIA 1

Welcome to FUNALOG and SYNTHASIA ONE. Analog dance / Remix sounds & samples (no drum loops, only samples). The perfect compliement to all E-Lab's dance loop CD's. Analog dance samples made for Dance Producers by Dance Producers. Many dancelnip CDs lack good clean, solid & deep synth sounds. This CD will solve your problem of finding the right fun & inspiring analogue synth sample. •Tones •FX •Basslines •Arpeggios •Chords & lots more, from new (like the Nordlead) to vintage (the phat Prophet 5). Also: TB 303, TR 909, JUNO 106, JUPITER 8, KORG POLY 6, OBERHEIM M6, & many more. Over 1100 CLUB samples! Audio CD: £59.95

SYNTHASIA 2: Back2Bass

"Back2Bass" is the FOUNDATION for all kinds of Club Music: House, Techno, Dub, Soul, HipHop - You name them. You're bound to find a Bass that fits Your Track. Many Sample CD's miss this important part of ClubMusic but now this CD is here to help. Stop fiddling with inferior bass samples - instead get the real thing. Includes all kinds of Phat Bass tones & Loops - both single sampled & multi-sampled. To mention a few, equipment used includes SH101, Prophet 5, Matrix 12, CS70, Oscar, K2000, MKS 50, Jupiter 8 and many many more. Audio CD: £59.95



STRICTLY R'n'B

NEW! Prepare yourself 4 NU Classic Soulbreaks: 600+ X-Clusive Swing & Soul loops & samples (no instruments - only loops & hits). Black traxx from the sons of Soul. Swingbeat & Hiphop loops all with variations plus the component drum samples. A very black-sounding CD, perfect for anycoe in need of phat/slow Rumpskaker beats. Like 'Vinylstics', but with a more slick R'n'B touch. Styles range from Hiphop's rougher side to the slicker sound of 90's soul. From the same DJ who produced "Strictly 12-inch", this loop CD must be on top of your list! A great mixture of slo & groovy loops (60-100 BPM). Are you ready 2 make some slick blakk traxx?! Audio CD: £59.95

VINYLISTICS 2

The best-selling sequel from DJ/Producer PHAT FABE (Neneh Cherry, Shaba Ranks, Cherno, Tayo etc). Incredible loops and samples in styles ranging from Jungle, breakbeat/techno to R & B and hiphop. Once again, the extended variations of many of the loops make this CD superb for club DJs as they provide the opportunity 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

X-STATIC GOLDMINE 2

A journey from the JB's to Snoop, from East Coast to West Coast, a steady stream of phat loops, Grooves & ol' Skool Funk Samples. Deep Bass Tones & Grooves, Funky Guitar Riffs, old Clavinets, Dusty Rhodes & Organs, Horny Horns & Saxes, Cheesy Synths, Jazzy Flutes, Vinyl FX, Rolls, Fills, Drums & Perc. - OVER 1500 KICKIN' SAMPLES. (over 3000 on the Akai CD-ROM). •Optional MIDI-file floppy disk (Specify Atari/PC or Mac). *"One of the most complete funk/hip-hop sample discs you can buy."* (Future Music). *"Well composed and exciting... a wonderful resource... Buy this one for its loops - they're tough to beat."* (Keyboard, USA). *"As phat and funky as they come and incredibly phlexible."* (The Mix, UK). Audio CD: £59.95, Akai CD-ROM: £99.00

X-STATIC GOLDMINE 4

E-LAB have done it again! Over 1500 Ambient and Chill Out Loops & Samples from the dark side of the Moon, TRIPHOP & CHILL-OUT LOOPS, SPEEDY JUNGLE BEATS & SMOOKIN BASS BOOSTERS, ETHNIC CHANTS & BUBBLE BATH DIDGERIDOOS, WET CHILL OUT CHORDS & XPERI-*MENTAL* SYNTH VIBES, ANALOGUE SEQ FX & ENO-STATE VECTOR LOOPS, PSYCHADELIC DELAYS & DUB-ECHOES, AMBIENT BIRDS & JUNGLE WEATHER. SPOOK FX AND LOTS MORE! *"I will say this just once: GO OUT & BUY THIS ONE!... Absolutely brilliant."* (Musiker Magazine, Sweden). Audio CD: £59.95

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No Noise is Good Noise

PRACTICAL STUDIO SOUNDPROOFING

PART 1: Waking up the neighbours with the latest turbo folk masterpiece is a major concern for many project studio owners. PAUL WHITE explains that monitoring with headphones and moving house are not the only solutions...

While making music is enormous fun for those actually doing it, it's often the case that other members of the household and neighbours are less appreciative, so it's often necessary to consider some sort of soundproofing to maintain the peace. The purpose of the first part of this series is to explore problem areas and establish a few basic physical facts about soundproofing. From next month, I'll be looking at solutions to the most common soundproofing situations.

EGG ON YOUR WALLS?

The story still circulates that sticking egg-boxes to walls will work as soundproofing, but this is quite simply not true — I tried it in my college days, and though it makes a slight improvement to some aspect of the acoustics of a room, it has virtually no effect at all on sound leakage. However, there are practical measures that *will* have an effect in a typical project studio, although in most situations the word 'soundproofing' is rather misleading — the best you can hope for is to improve the situation. Eliminating all sound leakage is virtually impossible without a custom-designed building.

Most of the practical measures I'm going to describe are within the scope of a competent DIY enthusiast, and nearly all the materials are available from your local builders' merchant. There are some specialised materials that must be purchased from speciality suppliers, but I'll include some addresses for you to contact before the end of the series.

SOUND THEORY

Sound is essentially a form of energy that propagates by mechanical vibration through gases, liquids and solids. Energy cannot be destroyed, only converted to another form, so to 'lose' sound energy you have to make it do work that will convert the energy to heat. The reason why sound doesn't simply continue forever is twofold:

- Firstly, the so-called inverse square law means that sound reduces in level the further it travels from the source (simply because it is being shared over a larger area).
- Secondly, sound is progressively absorbed (and converted into heat) by any surfaces that it encounters and by the air that it passes through. ▶

Even a well-equipped studio such as this, housed in a converted garage, needs some kind of effective soundproofing.

AIR STUDIOS?

A soundproof room is an airtight room, so you need to think about how you'll get fresh air into the studio. Can you get by with opening the doors between takes, or will you have to install an air-conditioning system? Simple air conditioners just cool and recirculate the existing air, but a serious studio air conditioner that brings in fresh air from outside needs silencer baffles, large ducting, anti-vibration mountings and so on. This is likely to cost more than most complete home studios, so a compromise approach is most likely.

(By the way, because we don't need a lot of acoustic energy to produce a subjectively loud sound, the heating effect of sound absorption in a typical studio can be considered to be negligible.)

The challenge in designing effective soundproofing is to convert as much of the unwanted sound to heat as possible. The simplest way to attenuate sound is to put a solid wall in its way, and one of the fundamental rules that you should try to remember is that every time you double the mass of a wall you'll roughly halve the amount of sound transmitted. This means that to halve the sound leakage through an existing wall you'd have to double its thickness.

Another keystone of acoustic theory is that as the sound frequency is reduced, the isolation provided by a structure also falls. In fact, for every octave drop in pitch, the sound isolation is halved. From this, it's easy to see that soundproofing against high frequencies is not too much of a problem, but deep bass is very difficult to contain. You only have to walk past a nightclub to hear the amount of bass that can escape through solid brick walls!

Because attenuation is frequency-dependent, the effectiveness of a particular sound-absorbing partition design or material is generally measured in dBs, for a set of frequencies averaged over the range 100Hz to just over 3kHz. This figure is called the Sound Reduction Index, or SRI. A single brick wall might, for example, have a quoted SRI of 45dB, while a double-thickness wall made from the same material might be rated at around 51dB. This latter figure represents a lot of attenuation, but if you're producing levels of around 100dB on one side of the wall, around 50dB will still make it through to the other side — and remember that this figure will be worse at the bass end. If you're directly adjoining a neighbour and have just a solid brick wall between you, it's unlikely that the degree of isolation will be adequate if you monitor loudly, and lightweight partition walls or breeze block will fare rather worse.

To give an example of typical SRIs, a light panelled internal door has an average SRI of around 15dB or less, and at low frequencies it will be significantly worse. On the other hand, a brick cavity wall, plastered on the inside, can have an average SRI of better than 50dB.

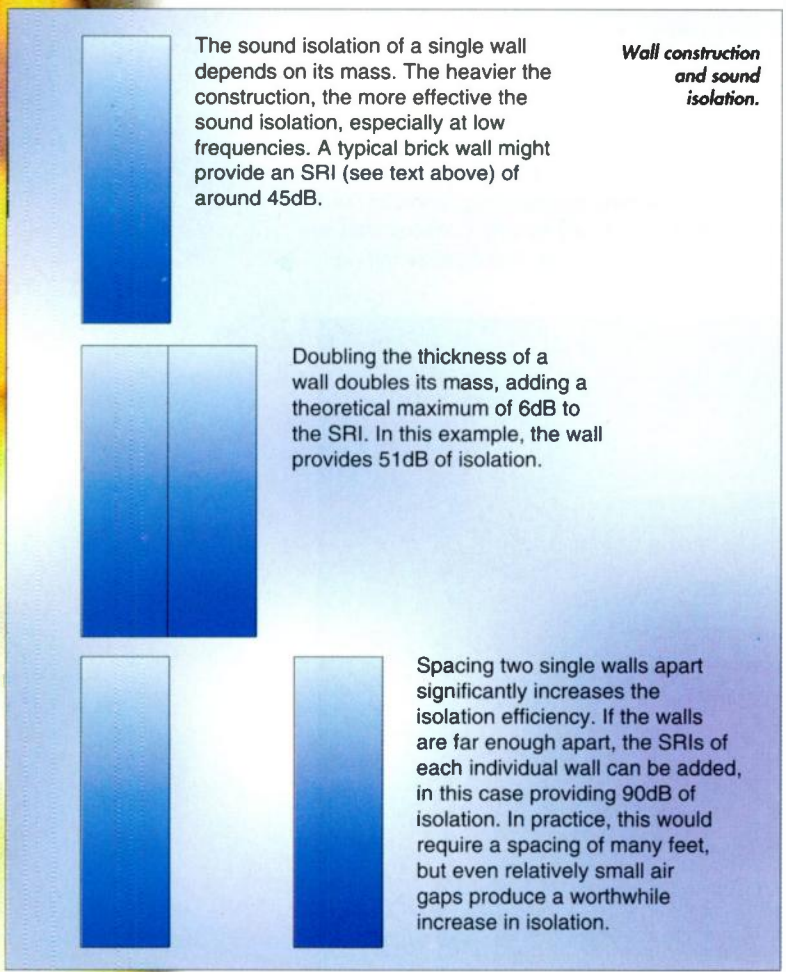
DOUBLE BENEFIT

If a single wall can reduce the sound leakage by 45 or 50dB, what happens if we use two walls separated by an air gap? You might, not unreasonably, think that 45dB for one wall added to 45dB for the next would give a 90dB figure, which would be terrific. However, the maths doesn't work out quite so simply, and, furthermore, unless the walls are separated by a considerable gap, 'air loading' between the walls reduces the efficiency of the isolation. Even so, approaches to sound isolation based on multiple barriers separated by air gaps tend to be the most successful, and a double structure will invariably perform significantly better than a single-layer barrier of similar mass.

PROBLEM AREAS

It's all very well looking at how to build soundproof walls, but in most real-life situations the walls are the best-designed parts of the room from a sound isolation viewpoint. There's little point in trying to improve the walls if the doors and windows leak like sieves. Even double-glazed windows offer only a limited amount of sound isolation compared to a solid wall, though they are far better than single-glazed units. DIY improvements in this area might include extra internal glazing with a large air gap and heavy glass — or, if you don't need the light at all, you could fill the window space with sandbags and board it up. Heavy curtains are a minor help, but the difference they make isn't great, especially at low frequencies.

If you don't need to open a window, at least you can make it airtight very quickly by using a mastic gun and some frame sealant. Doors, though, *have* to open, and it's surprising just how much sound gets through and around a typical internal door. Modern interior doors are very light, and significant improvements can be made by increasing the mass of the door, either by replacing it with a heavier one, or by adding material to one or both sides and fitting good door seals. However, even the heaviest single door will perform significantly worse than a double-door structure with an air gap in between.



Wall construction and sound isolation.

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FLOORS AND CEILINGS

Concrete floors are good news from a sound isolation viewpoint because of their mass, but wooden floors can be a real problem. Even if you build a 'floating' floor above the original, the sound leakage will still be worse than that through a solid brick wall. Without major structural work, it's very unlikely that you would be able to use a real drum kit in a wooden-floored room without causing some disturbance to those below. This can be a major problem in commercial premises or flats, especially if there isn't room to accommodate the additional floor height, but in your own house, where some noise leakage may be acceptable, there are strategies that can be used to improve the situation without too much structural upheaval.

If floors are a pain, ceilings are 10 times worse, because whatever soundproofing material you add, you're going to have to find some way to hold it up there — with floors, at least gravity is on your side. Short of suspending wood-wool or sandbags over your head, or building a substantial false ceiling below the original, there's not a lot you can do that's really effective, but a couple of layers of thick underfelt below the carpet in the room above can help a lot.

THE PRO APPROACH

One studio designer I know always tells me about the story of the guy who didn't want to spend much on soundproofing because he only used cheap musical instruments in his studio. Sadly, physics is no respecter of budgets, and 110dB of sound obtained by hitting a dustbin is just as loud as 110dB from a top-of-the-range guitar amplifier.

Just to illustrate how difficult the problems can be, a professional design would usually involve building a completely separate inner room inside an existing room, isolated from the original floor by blocks of neoprene rubber. Aside from the obvious cost factor, most people who have home studios simply don't have the space to do this — but just in case you're in a position to try it, I'll be covering the basics of room-within-room construction later in the series. A further advantage of this system is that adding internal acoustic treatment is often simplified, as a properly designed inner shell makes room acoustics more predictable.

THE PRAGMATIC APPROACH

The laws of physics are most definitely on someone else's side when it comes to keeping sound in or out, but don't let that put you off. Various sound-isolation methods lend themselves to a low-cost, DIY approach, and it could be that tackling just the weakest areas brings about sufficient improvement. By taking a common sense approach to applying the principles outlined in this series, you should be able to make noticeable improvements at minimal cost.

At its most basic, to achieve good sound isolation you need structural mass and airtight seals around doors and windows, but you also need to consider structure-borne sound and find ways to avoid it. This is important because sound travels very efficiently as mechanical vibrations through solid structures, such as wooden joists or steel girders. There's little point in getting everything else right if your soundproofing is rendered ineffective by an ill-considered structural feature.

> "A soundproof room is an airtight room."

If you're lucky enough to be deciding on new studio premises you can save yourself a lot of time and money by taking particular note of the existing structure of the building. You also need to think about its location and any noisy industrial activities that may be taking place close by. Perhaps the easiest location to deal with is a ground-floor premises in a heavily-built brick or concrete building with a solid floor. However, if the ceilings aren't heavy, you'll need to know what is going on above you in the building, and whether its use may change to something less studio-friendly in the future. Also listen for low-frequency rumble from traffic or trains — even with a solid concrete floor, you may have to resort to building a floating floor to keep outside noise to a minimum, and if this is the case, does the room have the necessary height?

If you're looking at an upstairs room, find out what is happening above, below and to either side of you. Some businesses may close down at night when studios are traditionally busy, but can you afford to have your hours restricted, and are any of the neighbours likely to go in for sudden extended overtime? If you are planning to do any serious acoustic treatment or build a 'room-within-a-room' inner shell, you must allow plenty of space for the acoustic treatment. Even a simple inner shell will need a couple of feet of free space above it to work effectively. A simple floating floor may be between three and six inches deep, depending on how you build it, and most rooms will stand this. However, if you're putting in a false ceiling, you need to allow almost as much room as for an inner shell room, and certainly not less than about 18 inches.

For most project studio owners, major construction is out of the question, so you'll need to rely on uprating what already exists. You may also need to compromise on the amount of noise you make. If you can't get the noise down as much as you want by soundproofing, you may have to find a compromise that keeps all parties happy. For example, the majority of private studio owners record part-time, so it may be possible to record drums or other loud instruments when the neighbours are out or, at any rate, not at night when they are trying to sleep.

Next month we'll make a real start, with details on how to improve your room's weak spots. SOS

SOUND REDUCTION INDEX

It's possible to work out the approximate Sound Reduction Index, or SRI, of a single solid wall if you know the mass per square metre of the wall material. The answer is frequency dependent, which is why frequency has to be fed into the formula.

$R=20 \log(fm)-47dB$

- f is the frequency of the incident sound.
- m is the mass of the wall measured in kg per square metre.
- R is the Sound Reduction Index (in dBs), we are trying to calculate.

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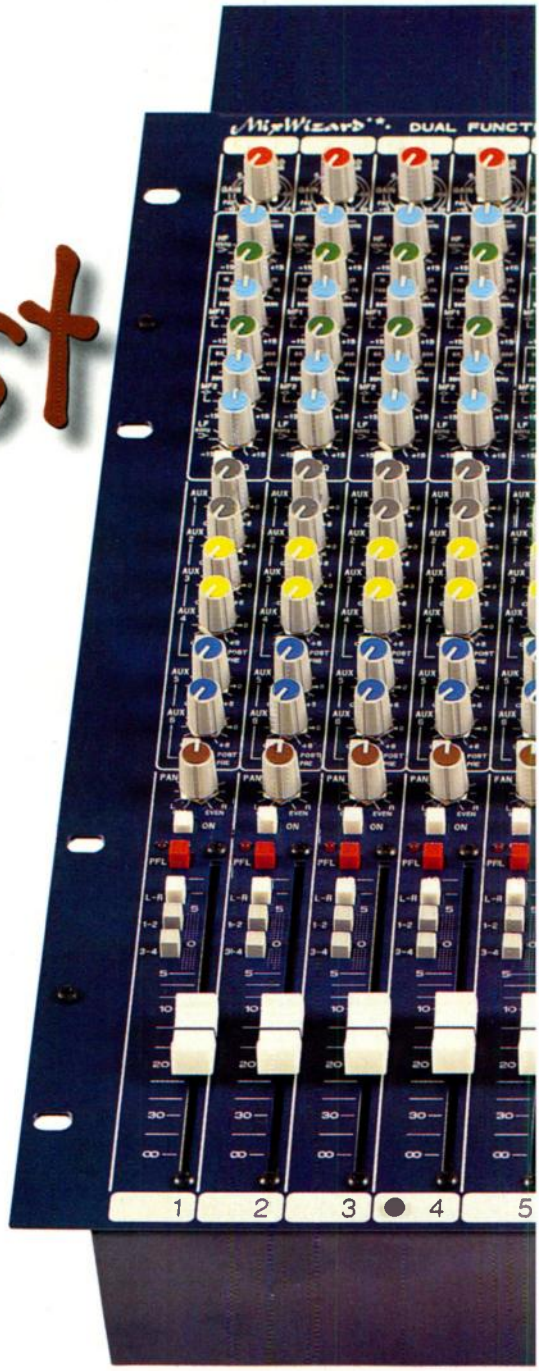
ALLEN & HEATH MIXWIZARD 14:4:2 MIXER



There is an element of magic in any audio design, but the Allen & Heath MixWizard series may have more than most. MARTIN WALKER uncovers the latest MixWizard's dark secrets and listens carefully as it fades to an inky silence...

Perhaps burning the midnight oil is part of the design procedure for the MixWizard range. Just a couple of months after the introduction of the first model in the series (a 16:2 with plenty of frills) around June of last year, the WZ20:8:2 version was launched, and was reviewed by *SOS* in the September 1997 issue. Just four moons later, yet another model has appeared. This Wizard has a 14:4:2 configuration, with a total of 28 inputs on mixdown, and A&H suggest that it's suitable for FOH and stage monitoring applications. To this end, they've built in a Dual Mode which provides some radical routing changes to optimise for these applications. However, I'm quite sure that many people would find this model eminently suitable for recording too, since it has six aux sends, four stereo effects returns, and four group outs. Just like the other two models, the WZ14:4:2 features 4-band EQ, with two swept mids, and slinky 100mm faders. Let's see if it has any more tricks up its sleeve.

ON THE RACK

From a distance you might mistake the 14:4:2 for one of its predecessors. It comes in the same rugged blue steel rackmounting case, 10U high, and features individual circuit boards for each channel, secured to the front panel via rotary controls. If you ever get a noisy channel in the future, this will make servicing very easy — not that A&H don't already have an enviable reputation where reliability is concerned.

The socket-panel assembly has a quick-change connector which allows the panel to sit in two basic positions. You can either swivel the sockets right round to the back, so that they will be 'inside' and out of harm's way when rackmounting, or rotate them so that they end up at right angles to the front panel, and can be used as a 'leg' when mounting the mixer on a desktop. I still think that someone should make a conversion kit for rack mixers used in the latter way, to add a couple of screw-on wooden side-cheeks and a padded armrest for the front — if for no other reason than to remove the pointy corners from so near the engineer's hands. However, this is an inherent drawback of all such convertible units, and not a specific criticism of the MixWizard range.

CHANNELLING THE SPIRITS

The 14:4:2 has 10 mic/line channels, very similar to those on both the stereo and 8-buss models. However, A&H have managed to squeeze in even more than they did on the previous models. Starting at the top, there's a 30dB pad switch (for line-level use), and a Gain control, variable between 20 and 60dB (or -10 to +30dB when the pad is switched in). As usual, 48V phantom power is available for the mic inputs, but rather than having a global switch for this, along with the option of disabling individual internal links for each channel (as on both previous models), the WZ14:4:2 features individual switches for phantom power on each of inputs 1-4, plus an additional switch to simultaneously disable the same for inputs 5-10. A small but useful improvement there.

There's also a subtle difference in the EQ section. It still features the same four bands, each with a +/-15dB range, LF control at 60Hz and HF control at 12kHz, and the same two swept mids, with sweep frequency ranges of 35Hz-1kHz (centred at 180Hz), and 500Hz-15kHz (centred at 3kHz). However, where the 16:2 (tailored more for multiple mic inputs) had a steep 100Hz low-cut filter switch, and the 20:8:2 (intended for 8-buss recording) replaced this with an EQ In/Out switch, the WZ14:4:2 manages to cram them both in.

The generous complement of six aux sends is

pros & cons

ALLEN & HEATH WZ 14:4:2 £960

pros
- Up to 28 inputs during mixdown.
- Group/Aux reverse switching.

cons
- Poor visibility of fader markings on mono channels.

summary
Another useful addition to the MixWizard range that should suit those interested in more comprehensive FOH and stage monitoring solutions, as well as those doing 4-track recording.

SOUND ON SOUND

"It looks cool, sounds clean, and is surprisingly sophisticated — which is more than you can say for a lot of musicians!"

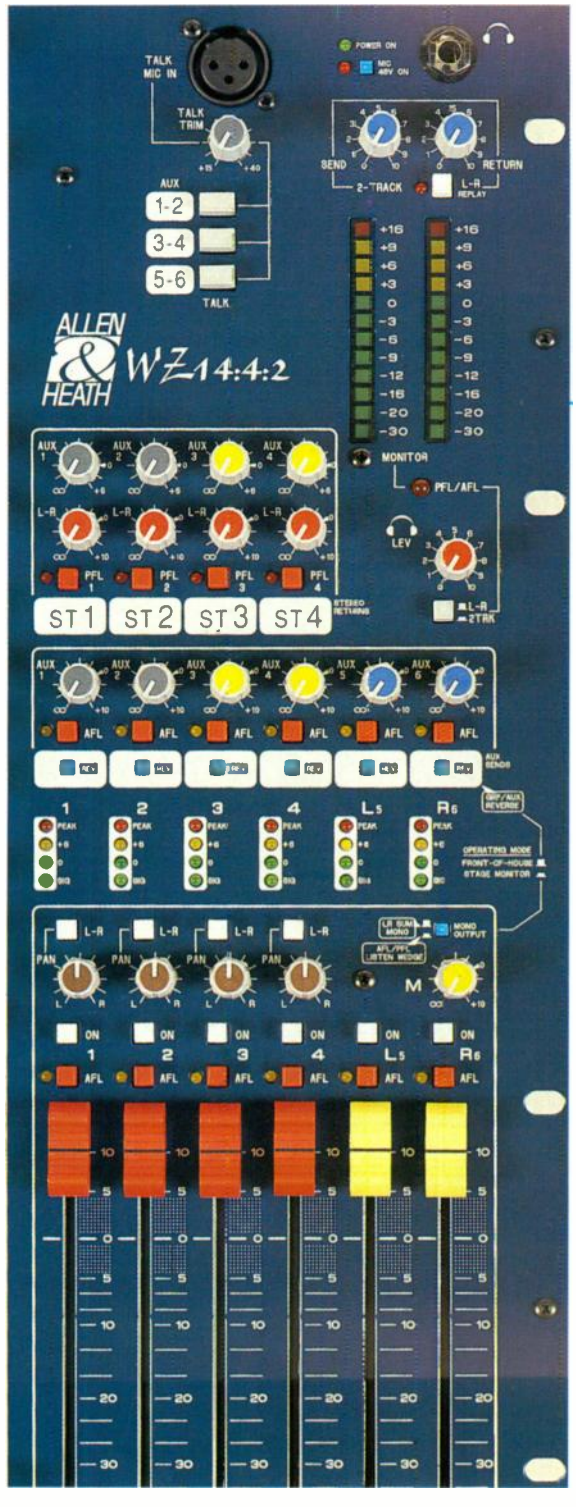
still present, but auxes 1-4 can be switched globally between pre-fade and post-fade, and auxes 5 and 6 have a Pre/Post switch. This allows all six to be pre-fade or all six to be post-fade if required, and allows the user to have six pre-fade sends for live use where multiple foldback is required. (As we shall see later, there's more clever switching in the master section that allows the aux sends to do even more.) Below the aux sends is the smooth main 100mm fader, plus a Pan control, channel On switch, and a latching red PFL switch with associated red LED which doubles as a Peak indicator (post-EQ, pre-fader and 5dB below clipping) when not in PFL mode. Finally, three routing buttons are provided for the main L-R mix, as well as the 1-2 and 3-4 output busses.

STEREO CHANNELS

There are only two stereo channels, but these feature some neat touches. First, each has two sets of inputs — A and B — with the A set having phono connectors (for connecting CD or DAT players), and the B set having the more standard quarter-inch jacks for effects returns, keyboards and synth modules. Both A and B stereo inputs can be used simultaneously, and they feature an On switch, so that you can leave both connected but select either or both at will. They also each have their own gain control — at last you can properly line up your stereo signals, rather than having to rely on the ubiquitous -10/+4 switch that most other mixers give you. This is a handy feature: how often have you had to re-patch a couple of stereo inputs to temporarily connect a cassette deck, or attach another effects unit with flat EQ? In my book, having two extra stereo inputs is extremely useful, despite the fact that they do not have separate EQ. Well done to the A&H design department.

Next on the stereo input channels is a slightly cut-down EQ, still with four bands, but with fixed mid frequencies instead of the swept ones of the mono channels. However, there is also an EQ In/Out switch, and a Mono switch. This is a curious feature, whose purpose, according to A&H, is to "mono the keyboard for stage monitors, or if your FOH ▶

"For exactly the same price as the WZ20:8:2 model, Allen & Heath have produced a very different balance of features with the WZ14:4:2"



The Master section.

▶ speakers are too widely spaced for its stereo image, or to feed one-legged signals both left and right." I particularly like this last suggestion (it might prove useful for hip-hop music) and it's true that it might be useful to be able to add four mono signals to your mix. The aux send arrangements are identical to the mono channels and, with the exception of a differently coloured fader cap, the remaining routing and level controls are also identical.

MASTER SECTION

The Master section contains quite an array of controls, and since some of them can function in two ways I'll describe the controls first, and then explain their different functions once I've covered the basics.

First up is the Talkback area, at the top of the section, with a front-panel mic XLR socket, Trim control for gain (+15 to +40dB), and three momentary buttons to route the mic to Aux 1-2, Aux 3-4, or Aux 5-6. Alongside this is a power-on LED, a quarter-inch jack headphone socket, and a global 48V phantom power on/off switch, for those mic channels that have this enabled on their back-panel switches. Headphones have their own rotary level control, and monitor the same signals that are sent to the twin 12-segment peak-reading LED meters. This is normally the main L-R mix, but it can be switched to a 2-track return signal, or the PFL/AFL line (if any PFL or AFL buttons have been depressed elsewhere on the mixer). For 2-track use, both Send (the L-R mix) and Return level-controls are provided — the 2-Track Return can also be routed to the L-R mix, as well as the headphone monitor. There are rear-panel connections with two pairs of phono sockets, which should suit most DAT or CD machines.

Four stereo returns are provided (ST1 to ST4), each with rotary level controls to the L-R buss and a PFL button. ST1 also has an Aux 1 send, while ST2 has one to Aux 2, ST3 to Aux 3, and ST4 to Aux 4. This makes it easy to route each return to a different monitoring buss for FOH use. With the 2-track return input, this gives the WZ14:4:2 a total of 28 possible inputs.

Below this point there are two sets of six outputs. Uppermost are the Master Sends, labelled Aux1 to Aux 6, each with level controls, AFL button and yellow LED. Below these are six mini-meters, which are always associated with the main output faders. These have four LEDs (Signal present, 0dB, +6dB, and Peak) and are normally associated with the four Group outputs (1, 2, 3, 4) and Main outputs (L5 and R6). The reason for this unusual nomenclature will shortly become clear.

Below the mini-meters lie the six 100mm output faders, also labelled 1, 2, 3, 4, L5, and R6. All have On/Off switches, plus green LEDs and latching AFL buttons. In addition, the first four (normally group outputs) have L-R buttons to route them to the main Mix, along with associated Pan controls. The L-R outputs are also summed (L+R) to provide an additional mono output (emerging at the rear via a balanced XLR socket), which A&H intend for a centre fill, sub-bass speaker, mono recording or broadcast feed. A recessed switch, with associated level control, allows you to select between L+R or AFL/PFL (to send to a wedge monitor).

Having listed every control, I'll move on to the clever bit. Between the six upper Aux Send masters and the six main output faders are six additional buttons labelled REV. These are recessed to prevent inadvertent operation and provide Group/Aux Reverse functions. The Master Section actually functions in two completely different ways, depending on whether you wish to use it for Front Of House or Stage Monitor work. When the REV switches are in the FOH 'out' position, the four groups are routed to faders 1-4, and the L and R outputs to faders L5 and R6 as normal.

When the REV switches are in the Stage Monitor 'In' position, the group and L-R busses are routed ▶

SHURE
THE CHOICE IS CLEAR

"If you want a compact rackmounting mixer with very flexible routing, excellent sounding EQ, and all the little extras like Talkback and 2-Track support, put this on your shortlist."

instead to the Aux Send Master controls (balanced TRS outputs), and the aux busses are routed to the main group faders (Aux 1 goes to Group 1, and so on, whilst Aux 5 and 6 go to the L and R faders respectively). This can be done individually for each of the six outputs, and this configuration allows you to have up to six monitor mixes controlled by the 100mm faders. These fader outputs have balanced XLR outputs (for long cable runs) and a TRS insert point, so you can also add signal processors such as compressors, enhancers, and external EQ for really comprehensive stage monitoring. Now A&H's reason for allowing all six aux sends to be configured as pre- or post-fade (rather than sticking with the more usual arrangement of two pre-fade, two switchable, and two post-fade) becomes clearer.

A&H provide a block diagram of the whole mixer which helps to explain its routing. An example of a combined configuration is given in the User Guide, and this has input channels 1-6 routed to Group 1-2 for drums (panned L and R and routed accordingly). Meanwhile, Aux 3 and 4 are set to pre-fade and the 3 and 4 Reverse switches depressed, so that you can control two stage Monitor sends from Faders 3 and 4. Aux 5 and 6 are left post-fade and used for effect sends, leaving the L and R faders being used as normal.

IN USE

As with the other mixers in this range, the sound quality of the WZ14:4:2 proved clean and transparent, with the Minimum Signal Path (MSP) design proving its worth by ensuring that the audio signal does not pass though more components than it needs to. The 4-band EQ provides a huge amount of sonic variation, along with a wider mid-frequency sweep range than many other mixers of this size and general performance. It's surprising that so many other manufacturers still don't provide the ability to cut mid-range below about 250-300Hz — the A&H design goes all the way down to 35Hz!

I like the fact that the stereo channels still have 4-band EQ (although the two mid-range controls are reduced to fixed frequency), as this means that you have much more control than the typical 2-band EQ found on other mixers. Although stereo inputs often end up being fed from multitimbral synths, these can often benefit from having a little mid-range removed, to leave more space for lead instruments — it's useful to have the choice. Having EQ In switches for all the main input channels makes in/out comparisons so much easier, and helps to prevent excessive use of EQ. With a high-quality set of monitor speakers it's often possible to hear a tiny difference between the in and out positions in any mixer, even when the EQ is ostensibly flat. This is partly because of the tolerances of all rotary controls, but also because even when set to flat, the signal is passing through the EQ circuitry, which can still have a subtle effect. It's best to play safe and switch it out altogether when not required.

During general use, the only untoward thing I noticed is what I also reported for the 20:8:2 model — that the close proximity of the mono channel-routing switches means that the fader caps totally obscure their calibrations between the 0 and +10dB positions, but this is a minor cosmetic point. If this is all I can find to grumble about, A&H have done an excellent job.

SUMMARY

For exactly the same price as the WZ20:8:2 model, and with the same total of 28 possible inputs during mixdown, Allen & Heath have produced a very different balance of features with the WZ14:4:2, and for a rather different type of application. The emphasis here is much more on live use, with the possibility of controlling six monitor mixes from the main faders. The reverse switches are a clever idea first implemented on the GL2 model (reviewed way back in the May 1994 issue), and they will no doubt appeal to all those whose monitoring requirements remain the top priority.

If you want a compact rackmounting mixer with very flexible routing, excellent sounding EQ, and all the little extras like Talkback and 2-Track support, put this on your shortlist. It looks cool, sounds clean, and is surprisingly sophisticated — which is more than you can say for a lot of musicians! SOS

info

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LOOM WITH A VIEW

The rear panel of the WZ14:4:2 has significantly more on offer than the previous two models in the range. On the mono mic/line channels, both the XLR and jack sockets are balanced, and since the pad comes after them both, you can use either socket at either mic or line level, although you shouldn't use them both together. With the pad out, input impedance is 2kΩ, and 10kΩ with it in. A quarter-inch jack insert is provided after the gain control (pre-EQ), and there's an impedance-balanced direct out which comes post-fader (although an internal link can be removed on a channel-by-channel basis to make this pre-fader, if required). As previously mentioned, phantom power is individually switchable for channels 1, 2, 3, and 4, with a further global switch for channels 5-10. The stereo channels have a pair of phono sockets for the 'A' inputs, and an additional pair of quarter-inch jack sockets (unbalanced) for the 'B' inputs. These are wired in the standard L/mono and R arrangement, so that both stereo and mono signals can be accepted.

On the Master section, all six main fader outputs have identical balanced XLR sockets at +4dBu level, as well as jack insert sockets. The other six outputs, wired to the Aux Send masters, are also balanced, but emerge on jacks at a level of +4dBu. The four stereo returns each have a pair of unbalanced jack inputs, with the same mono/stereo socket arrangement of the stereo input channels. The remaining sockets are for the 2-track send and return (two pairs of phonos) and the mono out (a balanced XLR). There's also a standard IEC mains socket and power switch.

Finally, two blanked-off 25-way D connector cut-outs show where an optional SYS-LINK option can be installed. This consists of an internally fitted circuit board and two sockets, and allows up to five A&H consoles to be electronically connected, for more inputs. Another option is to have another internal circuit board fitted to the 'A' phono input pair of the stereo input channels, which provides RIAA equalisation for a record deck.

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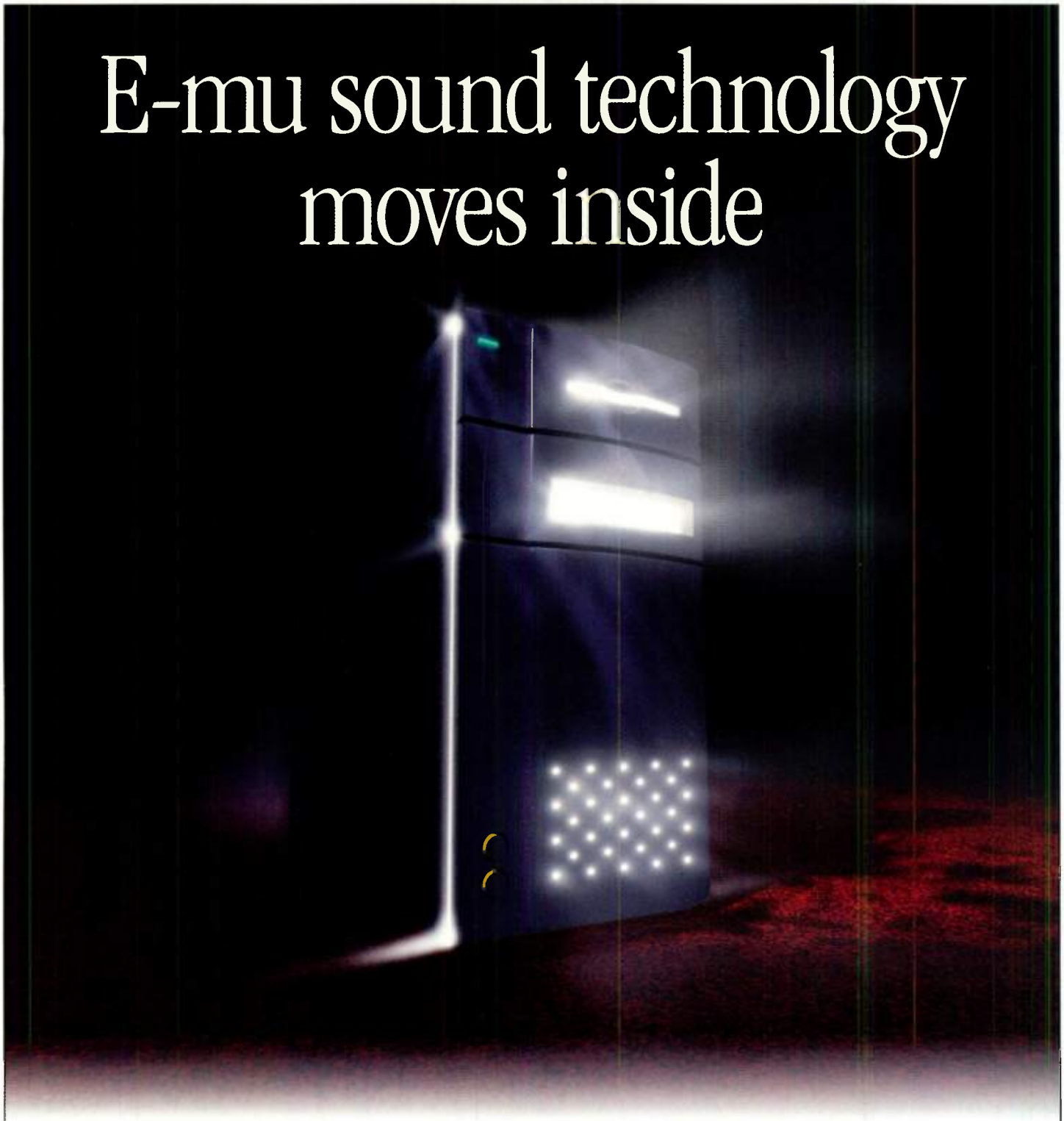

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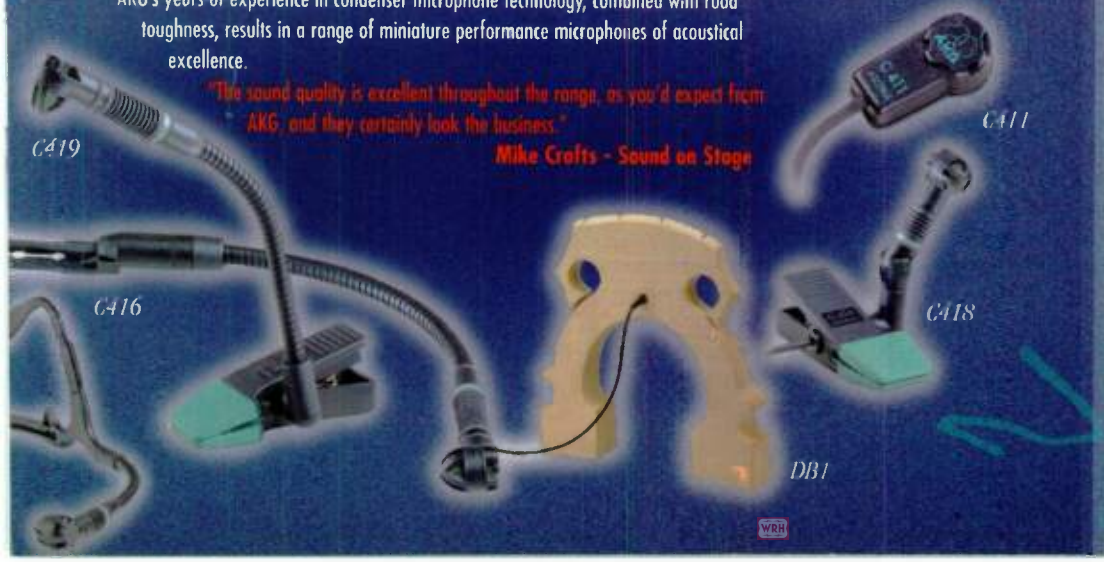

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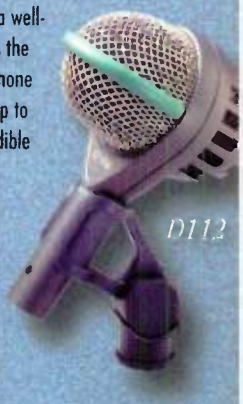

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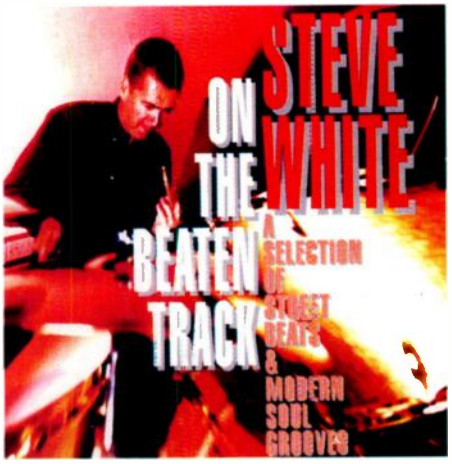

STEVE WHITE: ON THE BEATEN TRACK

(AUDIO CD)

Steve White is no stranger to the worlds of funk and soul drumming and this 99-track, 72-minute audio CD is both a great showcase for his considerable talents and a scorchingly useful collection of loops and breakbeats.

When not creating sample material, Steve plays with the likes of The Style Council, Galliano, the James Taylor Quartet, Carleen Anderson and, perhaps most notably, Paul Weller. Steve's work with the former Style Council front man is a big feature of this disc — indeed tracks 89 to 99 are listed as the 'Weller Beats Section', and present a comprehensive run-down of the most influential and recognisable drum styles that have resulted from a long-time collaboration with him.

There is a fair amount of tempo variation to these loops, which range from 85 to 186bpm and, as you might expect from one of the UK's most respected drummers, the performances are all spot on. Throughout, the loops have a strong acid jazz and British R&B flavour and, while there are a good number that could easily be called laid back, the overall emphasis is on seriously funky precision playing. From intelligent, mellow, acoustic soul right through to fast and frantic lunatic drumming that jungle freaks will be aching to get into their samplers, this release delivers both variety and authenticity.

The kit sounds seem to vary quite a lot as well, and just the right snare and kick types have been selected to fit with the theme of each loop. These range from snappy and often ludicrously over-compressed 'thwacks' through to a flappy and ambient 'one mic for the drums and off we go' type of feel.

There are, however, a few minor niggles, the most obvious being that the track listings, although they provide bpms for each loop, seem to follow no coherent order, making searching for a particular beat or style of beat a very, very, *very* drawn-out process. Also the recording techniques used, although reflecting the playing styles well, do occasionally produce levels of background ambience and distortion verging on the unacceptable, and — as I've already mentioned — this disc features some of the nastiest levels of compression I've heard since Phil Spector became a recluse.

Of course, it's all subjective and, depending what type of music you're making, these may be great attributes. Absolutely nothing, though, can detract from the actual quality of the drumming, which is near perfect and very original. Unfortunately, unlike many other drum sample CDs, there are no individual samples at the end of the disc, and as far as I know this release is currently only available in audio format, which may not be to everyone's taste. Having said all that, these loops sample extremely well and for new wave/acid jazz/R&B drumming with a relentlessly hard and convincing edge, most of what you need you'll find on this release. *Paul Farrer*

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MEDITERRANEAN INSTRUMENTS

(DOUBLE CD-ROM)

This double CD-ROM set comes from Univers Sons in Paris, and takes an approach which is is split roughly into two halves: disc A features a series of multisampled musical phrases and disc B generally deals with shorter phrases, single-note multisamples and percussion tracks.

The list of traditional instruments used will mean little to all but the dedicated Mediterranean music freak, so I won't bore you with all the names here — except to say that the Baglama, the Bouzouki, the Tzoura and the Saz are pretty much the order of the day.

The overall idea behind this release seems to be to present many of the instruments (almost exclusively plucked and strummed) playing a series of traditional phrases (some only a few seconds long, some much longer) and organise them across a single octave of the keyboard. This means that once you have found a phrase that works for you, playing the same phrase in a different key, but keeping the same tempo, is easy. These multisample groups, or 'Chromazones', as they're called, work extremely well and form the strongest part of this release. Of course, providing all these phrases in 12 or 13 different semitone groups tends to eat up the available ROM space very quickly.

Disc B concentrates less on musical phrases and more on musical effects produced by the large battery of available instruments. Chords, tremolos, glissandos and pizzicatos of many of the instruments are sampled and presented in a

number of different keys and across numerous playing styles. Disc B ends with a few well chosen and wonderfully performed percussion loops. These take the form of complete 4-bar, and sometimes 8-bar, phrases which deconstruct themselves into their constituent percussive elements as you move up the keyboard. As with all the other partitions on the disc, they are helpfully listed with their bpms and their size in Mb.

The recording quality and the musicianship is faultless throughout, but when using the samples I found myself wishing that the scope of the release was wider. Baring in mind that this release consists of two CD-ROMS packed to the brim with supposedly 'Mediterranean' material, you would perhaps expect there to be a wider variety of source recordings. There's a wealth of historical instruments and musical styles to be found in the thousands of miles of coastline between Gibraltar and Israel, yet I didn't hear a single flute or vocal sample.

Yes, the material presented is great, very ▶

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authentic and well played, but releases such as *Heart of Africa* and *Heart of Asia* covered a much wider variety of sounds within their areas, albeit in slightly less detail. This is certainly a unique and commendable product, but if the producers had considered a wider range of instruments and included vocals it could have been spectacular. *Paul Farrer*

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MADJEF'S BLACK BUTTA

(MIXED-MODE CD)

Forget UK dance mores. Jeff Taylor programs drums for Jam & Lewis. His credits include the Jacksons (Mike and Janet, that is). Need I say more?

I must remember always to read the sleeve notes before I put on any new sample CD these days. The trend towards 'Mixed Mode' is as unstoppable as it is tedious. I used to get MIDI files on a separate floppy, not as the first track of an otherwise audio CD, thank you. Admittedly, the data and audio are less likely to get accidentally separated if the data is burned onto the CD, but why not put the data track at the end, with plenty of warning to turn down the volume?

Post-demo, we're treated to what the producers call Construction Kits. For the uninitiated, this means "I've dashed off a bunch of short pieces of music. Now I'm going to show you how to build these up from the individual elements." How relevant this approach is to creating new music is debatable, but as a learning tool it can be illuminating. Sometimes incredibly so. Sadly not here.

Tracks 3 thru 43 adopt a similar format. Several bars of rather cold, slow soul, typically comprising all or some of the following: a drum loop, electric piano, Moog or live bass, a subtle 'atmosphere' track, voice, a guitar figure and top synth line. These are then followed by each instrument solo'd. I note in the sleeve that these parts are to be assigned to certain keys in order that the associated MIDI files play them properly.

On the subject of MIDI files, these are most useful if they enable you to edit sequences to add your own variations to someone else's programming. Those on this CD are merely triggers for long samples.

I try not to let UK value judgements impede my appreciation of this product, but I can't avoid the criticism that the whole is merely the sum of its parts in just about every case. By this I mean that the break-down products are pretty much exactly what you would predict from listening to the completed music. Where's the educational value in that?

However, at around track 44, I started to hear some interesting grooves. This sudden alteration in my perception of the music necessitated further investigation. Had the product picked up,

or was I finally succumbing to the mood? In order to find out, I went back to the start for a second helping. A few tracks did improve on a second listen, but too many did not.

There are many more dynamic soul sample CDs out there. *Black Butta* has its moments, but overall I felt it to be a little tired and surprisingly middle of the road. Consequently my S770 was left in its flightcase. *Wilf Smarties*

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DOPE HEADZ

(MIXED-MODE CD)

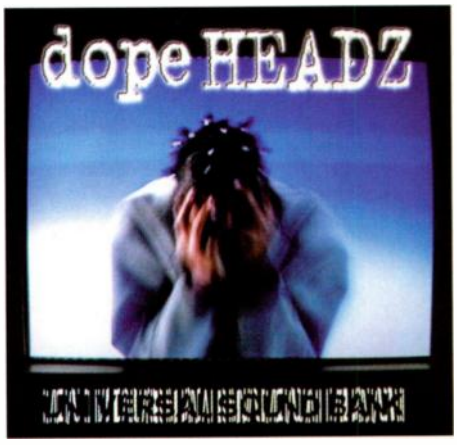
'Joe le Taxi'. 'Je t'aime.' The French language has never been up to the angular twists and turns of any type of music with a strong beat. It's much too fluid, poetic, er... wet. Therefore French pop and dance music has always been regarded with something less than contempt by the Brits. All this is about to change. Already hip clubs are cottoning onto the fact that the French dance music scene has a fresh sound, with music that is no longer hampered by language barriers. In fact, where language is used at all it tends to be English.

I took to *Dope Headz* right away, and have been using samples from it for some time. What is it? Simple. It's all about live drums. Clangy, bashy, slightly amateurish, in-your-face, sloopy, slurpy, energy-encrusted beats. Jazzy, busy, brushy, clangy and — above all — dubby. What I hear is a drum kit with no damping, being played in a room. Stereo is particularly wide. Effects are sometimes applied — echo, reverb, but most commonly (and spectacularly) compression. The latter gives a wall of noise effect. Very pleasing and very fresh.

Tempos are all over the place. Well, to be more precise, they're in several different, widely-separated places. The feel is very much on the half-tempo side — slow but with irresistible force.

On the minus side, I hate those bits of drumming on the CD which use distortion to create energy. The distortion just isn't nice. Also, some kits are drier — nice-sounding, but not nearly as distinctive as the dubby, ambient ones. Incidentally, watch out for some spurious high-frequency noise that crept into samples on track 76. An engineering error, surely?

Don't buy *Dope Headz* unless you have an open mind. But if you do, you'll have a lot of fun. I found some beats inspirational, by which I mean that they engendered new song ideas. Also, I



found that loops could add a new spin to an existing track, often in tandem with dry jungle beats (from another source, which, for the sake of argument we'll call *Jungle Warfare* volumes 2 and 3). Blending beats with a tempo multiple of two enables a wide variety of feels to be supported, from spacey, dubby ballads with just a hint of cross-rhythm, to full-on rampaging junglist creations with atmospheric added ambience from the half-tempo backdrop. Recommended. *Wilf Smarties*

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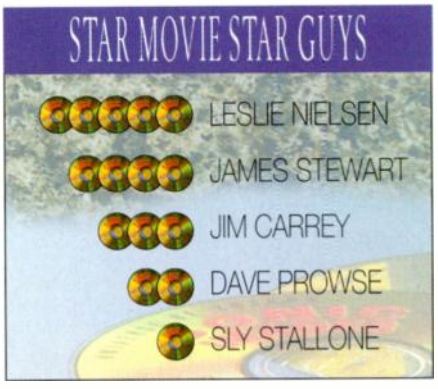

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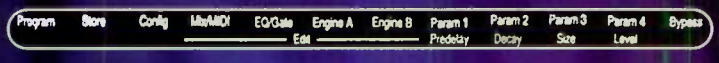

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Learning process

WHERE TO USE PROCESSORS AND WHY

Delay, originally called echo, is one of the oldest artificial effects, yet it can still be one of the most impressive — if used with care. PAUL WHITE explains the potential problems and how to avoid them.

Delay, in its analogue tape guise, was one of the earliest special effects to be used in audio recording, often to add interest to guitar or vocal sounds. With modern digital delays we have much more control over decay time and tap (repeat) spacing than with tape delay, not to mention a much better frequency response and a lower noise floor. However, as regular readers of this series will appreciate, even the best effects can detract from a recording if they're not used very carefully, and digital delay is easy to misuse.

MUSICAL DELAYS

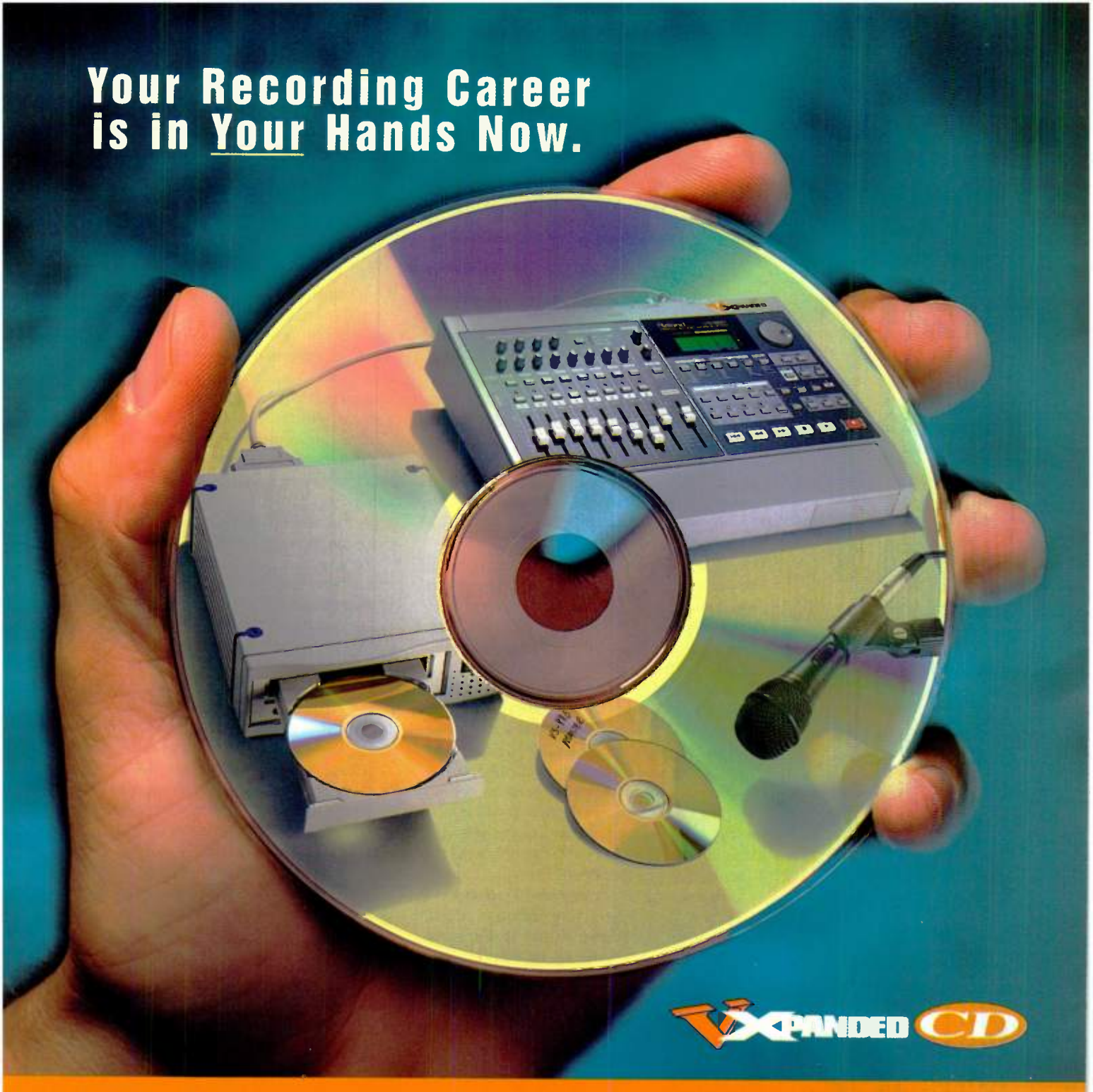
Most of us know what a delay unit does, but what exactly is a delay in musical terms? A delay device repeats the original sound one or more times, so the musical outcome is to add more notes to the performance, at time positions later than the original. This highlights a potential problem right away — if you have a very pronounced delay and the delay time doesn't fit in with the tempo of the music, the delay may upset the musical timing of the piece. If the piece has a fixed tempo it's easy enough to calculate the delay time needed to get the repeats to fall on the beat (for example, if you're working at 120bpm you need 60/120 or half a second), and you can double up or halve the delay time without going out of time with the song. Even so, you can still run into trouble, because now the delayed note might clash musically with the new note it coincides with.

Part of the problem is that digital delays produce almost perfect copies of the original sound, whereas tape delays had a spectacularly poor frequency response which made the delays seem more like natural echoes. We're in the realms of psychoacoustics here — if the delay is quieter and duller-sounding than the original, we accept it as an echo, but if it's equally loud and just as bright, it's simply a note in the wrong place. Echoes that occur in nature get duller every time they reflect from a new surface, so to get the same result from an electronic delay line we need to try to emulate this. Simply feeding the delay return back through a mixer channel with the top rolled off doesn't produce exactly the same effect, because every delay will be equalised in exactly the same way, but it's still a lot better than nothing. However, to really do the job properly, the EQ needs to come after the delay line, but before the feedback path used to create multiple repeats. Some of the better multi-effects units provide a delay damping parameter to simulate this, but there is a dodge you can try if you're using a very basic DDL (Digital Delay Line). See the 'Delayed Gratification' box for details.

COMPLETELY TAPPED

Multitap delays are useful in situations where you don't want to be forced to make the delay time match the tempo of the song. If you time the various delay taps so that they are not exact multiples of each other, the delay pattern should be complex enough that the listener's brain gives up on trying to match it to the tempo of the music. (For a good example of this, listen to the echo used on '60s instrumental guitar music. The echo gave the guitars a big sound, but there was enough apparent randomness in the effect not to upset the listener's perception of the tune's timing.) Feeding the output of all the delay taps back into the DDL input causes the repeat pattern to rapidly build in complexity as it decays, rather like a very coarse reverb effect. By the same token, if you need to create a multitap delay that reinforces the tempo of a piece of music, all the tap times must be multiples of the tempo — though, of course, you could set some taps to straight time (quarter-notes, eighth-notes and 16th-notes) and others to triplet time.

What happens if your song contains tempo changes? Obviously, if you have a fixed delay time this will throw out the synchronism between the delays and the music, but if you're using a programmable effects unit you can create a new patch at the new tempo and switch to this, either manually or via MIDI, at the appropriate time. Unfortunately, many effects units fail to change patches smoothly, so how well this works depends a lot on the make and model of your ▶



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▶ effects unit. Ironically, the cheaper ones often change patches more quickly than the expensive ones, as they're running less complex algorithms.

A much nicer way to tackle the sync problem is to use one of the increasing number of effects units that allow you to sync delays, LFOs, and so on, to incoming MIDI clock. Providing you have a sequencer running, you can force the delay timing to precisely match any tempo changes you might make.

"If a delay is quieter and duller-sounding than the original, we accept it as an echo, but if it's equally loud and bright, it's simply a note in the wrong place."

TOO PURE FOR COMFORT?

Those old tape delays had terrible technical specs, but they still produced a wonderfully warm sound, and their limited bandwidth was only one of the reasons. Another reason was the rather poor stability of the tape transport — musicians would leave their echo units in the band's van for days, with the rubber pinch-roller pressing against the capstan all the time. Often this would create flat areas on the pinch-roller, and the result was slight speed unevenness in the transport — so instead of producing super-clean repeats, the tape delay unit would apply a tiny amount of vibrato to them, pretty much by accident. You can simulate this sound with a multi-effects unit by placing a chorus or vibrato block before your DDL, but keep the effect very subtle, otherwise the 'chorusing' will be too obvious.

In a real tape echo, every time a repeat is fed back and re-recorded, more vibrato is added, making each repeat messier than than the one that went before. To emulate this exactly using a digital DDL, you'd need to put the chorus effect between the feedback loop and the delay line input, but many algorithms don't permit you to do this. That being the case, just a little chorus before the DDL will get you close enough.

MORE PSYCHO-ACOUSTICS

In real life, there's no such thing as a clean echo — each echo will have some ambience because of the multiple reflection paths the original sound creates. To emulate this electronically, we need to add a hint of reverb to each echo. The easiest way to do this is to place a reverb block after the delay block. You don't necessarily need a very long reverb to make this technique work, but as a special effect a reverb of up to three or four seconds can sound quite spectacular. By varying the reverb mix parameter, you can adjust the balance of clean delays against reverbed delays, and in music that is sparse enough to let you appreciate these subtleties, the added sense of space can be very worthwhile.

Yet another complication when using delays is that, when there's a lot going on in a given piece of music, delays can just clutter up the sound, yet in a less busy section the echoes may not be dominant enough. One answer to this is to use ducking delay — a delay that drops in level when there's a strong signal, and comes back up in level during pauses or quiet passages. You can achieve this by setting up a compressor or gate in ducking mode, then feeding the delay unit through the ducker, triggering the ducker from the dry signal. [*If you don't know how to set up a compressor as a ducker, take a look at the article on using compressors that we ran in the April 1997 issue of SOS. This features a box and diagram to explain how it's done — Production Ed.*] These days an increasing number of effects units now include ducking delay and reverb as standard, and having the solution already inside your effects unit makes life a lot easier and saves patching. It also means that you don't have to tie up a gate or compressor that might be better used elsewhere in the mix.

DELAYED GRATIFICATION

If you're using a simple delay line and you want to simulate delay damping (see 'Musical Delays' section in main text), instead of bringing the DDL output back into an effects return point on the mixer, bring it back into a spare channel and roll off the appropriate amount of top. Now, rather than using the feedback within the DDL to create multiple echoes, turn the feedback off completely and instead use the aux send control on the channel you're using as the delay return. For example, if your DDL unit is being fed from Aux send 1, use the aux 1 control on the channel you've chosen as a return to feed some of the signal back to the DDL input. This setup is illustrated in Figure 1. Every time the signal is fed around the loop, it will pass through the channel EQ again, so each repeat should be slightly duller than the last. The return channel fader is used to control the overall effects level in the usual way.

Note that if the aux send on your return channel is set to post-fade, as effects sends usually are, the amount of feedback will change as the effect return level is adjusted — which is not ideal. A better option is to use an aux send that is switchable for either pre- or post-fade operation so that you can use it in post-fade mode on the channels carrying your mix, but set it to pre-fade on the channel that's handling the effect return. This way the effect won't change as you alter its level (this should all make more sense if you look at the diagram on the right). It's also important not to make the echoes too loud in the mix, or the brain will no longer accept them as natural. Where a stereo effects unit is being used, two mixer channels will be needed as returns.

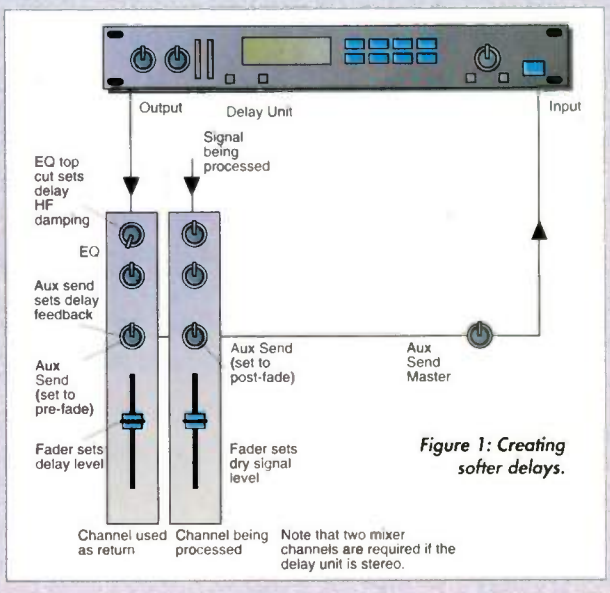

Figure 1: Creating softer delays.

DELAYING TACTICS

I seem to have got to the end of this month's instalment, but the bottom of the page is still some way off — so to avoid leaving a long and embarrassing expanse of white paper, I'd like to share with you one of my favourite effects patches, which relies on some of the principles discussed so far. This is an interesting delay-based multi-effect that can be used to create a sense of space and distance, without making the mix muddy. It works best on percussive musical sounds such as piano or acoustic guitar samples, though it also suits electric guitar pretty well. The block diagram is shown in Figure 2, but I'll talk you through it anyway.

- The signal chain starts with a high-pass (low-cut) filter to attenuate everything below 500Hz. Most multi-effects units now feature a selection of filters, and if yours does you should choose a simple shelving low-pass type and set maximum cut at 500Hz. If you don't have this option in your effects processor you can always patch a hardware equaliser before the effects unit.
- Next you'll need the slightest hint of chorus, vibrato or pitch detuning, depending on what your machine has to offer, after which you feed the signal into a stereo delay block. It's important here to use a delay block which allows the two sides to be set up separately, as one side needs a 1ms delay, to give a sort of static flanging effect, while the other side can be set anywhere between 300 and 700ms to produce the necessary echo.
- Set the feedback for both at between 60 and 70%, then finely adjust the feedback on the 1ms side so that you can just hear a metallic filtering effect colouring the sound. Play solo piano notes to check this.
- Now take the delay outputs and feed them into a stereo reverb, set for around three seconds decay time with between 50 and 100ms of pre-delay.
- Set the reverb mix to 50% and you're in business. If you've got it right, a single piano note should bounce away into the distance in a pleasingly ethereal manner. This effect works particularly well with an Alesis Quadraverb, but I've also set up a similar thing on the Lexicon MPX1, and the result was almost as charming and significantly cleaner.

Next month, it's the turn of valves to come under the hammer. Will they stand up to it? SOS

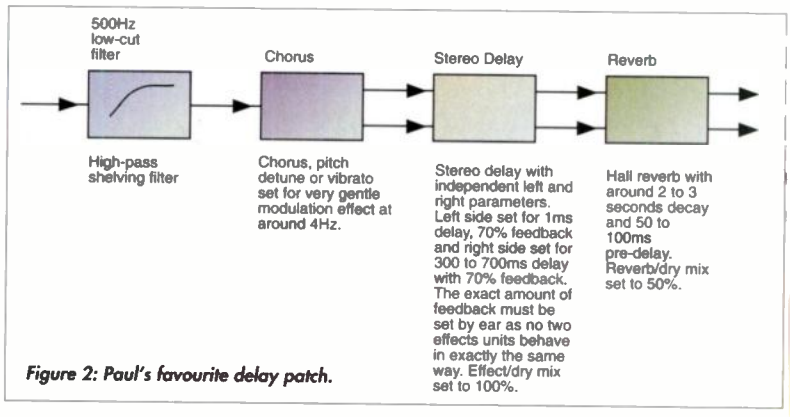

Figure 2: Paul's favourite delay patch.

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USING AN OPTICALLY CONNECTED MULTI-CHANNEL DIGITAL SETUP

Although the eight-channel optical digital audio interface employed on Alesis's ADAT digital recorder has been in use in studios for several years now, it's only during the last few that manufacturers other than Alesis, such as Yamaha, Emu, Kurzweil, Soundscape and Korg have begun to offer it on synths, mixers, digital multitrack recorders and digital effects units, making an entirely digitally connected multitrack recording setup a reality.

The real advantage of the ADAT optical connections (as I explained in detail in my December 1996 *SOS* review of the Korg 168RC digital mixer, back in my pre-Korg days) is that up to eight channels of 48kHz digital audio can be sent down a single fibre-optic cable. This makes it much more efficient than Sony and Philips's Digital Interface (more commonly known as S/PDIF), which can only transmit two channels, normally a stereo pair, down the same cable. I have been extolling the virtues of an all-digital system connected in this way for some time now, both as a free agent and during my time at Korg, but no-one who has benefited from my attempts to convert them to an all-digital setup has had quite so high a profile as Paul 'Wix' Wickens, who I helped with his keyboard setup for the huge star-studded *Songs and Visions* concert at Wembley last autumn.

The spread of the ADAT 8-channel optical digital interface to studio equipment of all kinds has raised the prospect of a revolution in multitrack digital recording. Self-confessed digital evangelist (and Korg UK product specialist) PAUL WIFFEN explains how the optical digital interface and several fibreglass cables made keyboard session player Wix Wickens' life easier at last year's prestigious Songs and Visions concert at Wembley.

Paul 'Wix' Wickens, ready for the Wembley show with his all-digital keyboard rig. The 168RC mixer is visible behind him, and the all-important optical connection can be seen to the left of the Korg logo on the rear panel of the Z1, in the foreground.

WIX VS WEMBLEY

Earlier in the year, Wix, (who, in case you haven't heard of him, is famous for his programming, playing and production for artists as diverse as Paul McCartney, Swing Out Sister and Tasmin ▶

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Key audio systems

Archer) was looking at getting into PCI-based hard disk recording on the Mac. I've been bumping into Wix for many years now (and often had my name confused with his), and he managed to track me down at Korg for some advice. He wanted to "pick my brains" on the various available HD options, and as we talked, I declared my vested interest as Korg's new Soundlink/Trinity/Z1 demonstrator. We agreed to meet up for him to check out Korg's 1212 multi-channel I/O card, which he was looking to integrate into his Mac-based *Logic Audio* setup.

However, when he next rang, it was to tell me about a gig he had just landed at Wembley Stadium, playing behind a list of stars as long as your arm and organised by Tribute, the people behind the Berlin Wall concert and a huge East-meets-West affair in Japan earlier in the decade. It was to be a sort of live *Rock & Roll Years*, with huge screens showing newsreel footage behind a song from each of the last 40 years, and sounded like it could be pretty stunning. As a result, all talk of the upgrading his production setup with a 1212 card had to be put on hold.

"It's a bit of a crusade, trying to persuade musicians to abandon cables that buzz in favour of fibre-optics."

GETTING INVOLVED

What Wix wanted was not to have to pull his now-busy production studio apart to do the gig, and would Korg be interested in lending him a couple of keyboards to do the concert with? I had a chat with the powers that be, and organised a Trinity Workstation for him as his main keyboard, which I got ready for him to check out at Korg's HQ. .

When he arrived, I was actually working on my demo material for Korg's most recent synth, the polyphonic, physical modelling Z1 (reviewed in *SOS* October '97), and naturally Wix wanted to try it out. Needless to say, a player of his calibre was soon making the thing sound much better than my humble efforts, and he very quickly established that some of the sounds were just what he was after for the forthcoming gig — the Clavs from the Plucked String model fitted the bill for Stevie Wonder's 'Superstition', one of the songs already decided upon, and another, Chaka Khan's 'Ain't Nobody', would really benefit from the Z1's multitimbral analogue-style synthesis. The only problem was getting hold of one for Wix in time for the concert — the only two machines then in the country were needed for promotion and reviews in *Sound On Sound* and other technical mags. I made Wix no promises, but decided to see what I could do.

That afternoon, I did my Digital Evangelist bit on Wix. It's a bit of a crusade with me, trying to persuade musicians to abandon cables that buzz, hum and twitter, in favour of the fibre-optic connections that the ADAT optical interface uses to pass audio channels around in the digital domain, without any possibility of interference from power cables, unshielded audio or video monitors or the various other electro-magnetic sources in the modern music-making environment. Wix listened patiently as I described how he could hook the separate outputs of the Trinity (and maybe the Z1, if I could get him one) into a digital mixer such as a suitably-equipped Yamaha 03D or a Korg 168RC and keep everything pristine, with automated scene changes as often as he liked on the mixer. Although clearly not inclined towards a full digital baptism on the spot, he agreed to try it out with a 168RC mixer and see if it would be a feasible working setup. He was, however, quickly sold on using the PBS (PlayBack Sampler) option for the Trinity, as he already knew he might need to play back Akai samples at some point in the show. As he didn't want to drag his Akai out of

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DISTRIBUTION

Wix in rehearsal for the concert, with the optically-connected Trinity, Z1, and 168RC.

the studio and rely on floppy or hard disk loads, 8Mb of Flash ROM inside the Trinity (so the sounds would stay there even if the power was temporarily interrupted) seemed like just the job.

Wix left with a 76-note Trinity Pro loaded with the PBS-TRI Playback Sampler and DI-TRI ADAT optical I/O options, and the 168RC mixer, and I promised to keep on the Z1 case for him.

PUTTING IT TOGETHER

When rehearsals for the Wembley concert started, at Olympic studios in Barnes, I still hadn't managed to assign a Z1 to him permanently. There were machines *en route* from Japan, but no-one could be sure when they would land. So I arranged for him to use my prototype unit whenever I wasn't demoing with it and we kept our fingers crossed that the production units would land in time for the gig. The Trinity's PBS-TRI was loaded with Akai samples for 'Another One Bites the Dust', which Wix had set up across the keyboard on his sampler. Both keyboards were being fed through the 168RC using the fibre-optic connections, so that Wix was able to use four outputs from each machine, with some sounds bypassing the internal effects of either the Trinity or the Z1 and instead being processed by the dual effects of the 168RC. All this was achieved with just a single optical cable from each keyboard to the desk. The four analogue outputs of the Trinity could all be sent digitally down a single cable, and on the Z1 which only has two analogue outputs, four outputs can be derived digitally. This means you can take some sounds out without effects and add effects or a different EQ on the mixer. As a result, just two optical cables (one from each synth) were feeding eight channels on the 168RC mixer.

The only additional connection needed was a BNC cable from the mixer's wordclock Out socket to the Trinity's wordclock In, to pass the wordclock from the Z1 master onto the Trinity, so that the sample rates of all three units were synchronised. Most *SOS* readers will have sent a single digital signal from one device to another at some time (say a hard disk recorder to a DAT machine), and in this case the DAT machine can sync directly to the incoming digital signal. With a digital mixer, however, *several* digital signals are being combined simultaneously, and these need to be mixed together into a single digital datastream. To prevent the interference of clicks, pops and other nasty artefacts caused by unsynchronised digital clocks (not to mention the full-level white noise which can occasionally occur), you have to make sure that all devices in the system are taking their digital clock from one source. This is done by feeding wordclock from one of the sources, in this case the Z1, to the other source(s), in this case the Trinity. However, as the Z1 doesn't have its own wordclock Out socket, the 168RC mixer (which was set up to take its clock straight from the Z1's optical cable and which does have a wordclock Out) was used to pass the wordclock on to the Trinity's wordclock In.

At the couple of early rehearsals I attended, this system was working well for Wix and he was warming to the idea of the all-digital keyboard rig. The only potential problem area I had foreseen was that, when using the optional DI-TRI outputs, both the Trinity and the Z1 ignore the setting of their master volume controls (because this analogue control comes after the D/A converters — on all devices with a hardware volume control after the main stereo converter the *digital* output level is

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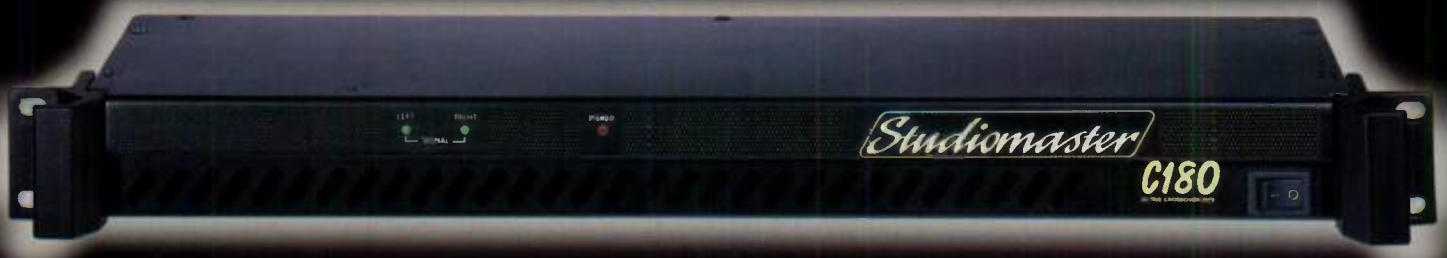

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unaltered). I had worried that this might cause him to want to hook everything up with analogue cables, so that he still had the 'safety net' of the main volume controls on each keyboard. However, Wix was using CV pedals on both instruments, and by routing these to individual program volumes he was able to use these pedals as standard volume controls for both keyboards — which is how he usually controls volumes in a live situation anyway. So the change from an analogue to a digital setup didn't even affect the way he deals with live volumes.

Of course, the one fly in the ointment was that Wix was still using the prototype Z1 and as the week of the gig went by, it was looking more and more like he would actually have to use the prototype machine on the big day itself, the Saturday. However, late on Thursday afternoon, the container with the first production Z1 turned up at Korg HQ. On the very evening before the gear was broken down and shipped out of Olympic studios, ready for the 5am load into Wembley the next morning, we were finally able to get a production Z1 unit to Wix. After a quick MIDI dump of all the programs he had tweaked and multis he had setup from the prototype, he was able to use it in the final Olympic rehearsal.

AFTER THE FACT

Come the day of the gig itself, the digital keyboard setup performed flawlessly, but in the usual way of things, the keyboards got a bit lost behind a 20-piece string orchestra, brass section, drums, percussion, and so on. Still, the entire thing was recorded on multitrack, ready for later release as a documentary and video, so hopefully, the keyboard parts on these releases will be restored to their proper place in the mix.

When I caught up with Wix a couple of weeks later, I asked him for his thoughts on this historic gig and the historic first use of an all-digital keyboard rig live. Here are his comments:

"I first made the phone call to Korg in pursuit of an easy life, as I wanted to leave my studio setup alone and not be pulling gear in and out. However, as soon as I played the Z1's Clavinet sounds I knew there was a place for it in the gig — and I found the concept of an all-digital live rig for the first time ever quite intriguing. When Wiff first mentioned it, I decided I wanted to get the constituent parts at my home to try it out and make sure it didn't create more headaches than it solved. The whole project was very much a 'suck it and see' venture, but because I had the time to get used to it, first at home and then in rehearsals, it turned out to be a very clean and neat solution.

"My only reservation was that the fibre-optic cables looked a bit delicate for the on-stage environment, because it's not the safest place, but we didn't have any problems, despite having a couple of 5-metre cables which were, if anything, too long — all 3-metre fibre-optic cables had apparently disappeared off the planet overnight! The real advantage is, of course, that you can have really long cable runs, even though I didn't need this capability at Wembley, where I had to keep my rig as compact and neat as possible, so it didn't spill into the brass section or off the riser into the guitarists.

"There was a bit of a learning curve for me, because I wasn't familiar with the 168RC mixer and obviously at that stage only Wiff knew the Z1. The mixer I found fine, but then I do have a few years' experience of finding my way round new gear. There wasn't even a manual for the Z1, but I got on fine with it for what I needed to do. I did a fair bit of subtle sound editing, changing effects, filter settings, and envelopes, and had no problems. By the time a manual actually appeared, I'd already found the way to change anything I needed to. Obviously, things might have been different if I'd had to make sounds up from scratch, but then Wiff had shown me the Mac editor, which I could have used if needed."

"On the day however, in the pressure of a live gig before thousands of people, the most important thing was that there was no real difference operationally between the all-digital setup and a conventional analogue mixing situation. Sure, there were far less cables between the keyboards, and those cables were made of glass, not metal, but as far as using the rig was concerned, when I wanted more of the Z1 in the mix, I moved a fader labelled 'Z1' and the same for the Trinity. Obviously, the ability to pair channels and move a single fader is an advantage over an analogue desk, but the main thing for me was that I didn't have to change the way I work to accomodate the technological advance I was enjoying the benefit of. For this reason as much as any other, I would recommend this way of working to anyone."

Clearly, Wix was being truthful here, as a few weeks later he used exactly the same rig for Sir George Martin's *Music for Montserrat* concert at the Royal Albert Hall, playing alongside Eric Clapton, Mark Knopler, Phil Collins, and host of other stars.

THE WAY FORWARD?

For those of you reading this who are interested in getting into the same kind of setup, all you need is keyboards which have the ADAT optical interface (including Alesis' own QS range, the Korg keyboards mentioned here or any of Kurzweil's K-series synths fitted with the multi-channel interface option) plus a digital desk from either Yamaha (fitted with the optical option) or Korg. Both the Yamaha and Korg desks have analogue inputs, so any bits of gear which you cannot interface digitally can be added in in the conventional way. Clearly, this way of working is ideally suited to the home studio, but there is absolutely no reason why it shouldn't form the basis of a live setup as well, as Wix's experiences prove. As far as Wix's misgivings about the fragile appearance of the fibre-optic cables are concerned (and an optical cable hasn't failed on me yet), I noticed when I was at Studiospares the other day that there are now several companies making much more robust optical cables for live use, so they clearly think this way of working has a future in the stage environment as well as in the studio. SOS

"Clearly, this way of working is suited to the home studio, but there is no reason why it shouldn't form the basis of a live setup as well."

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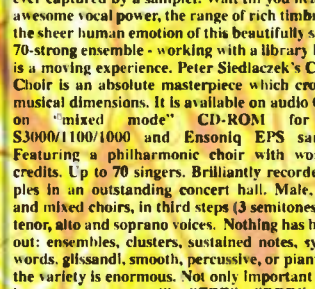

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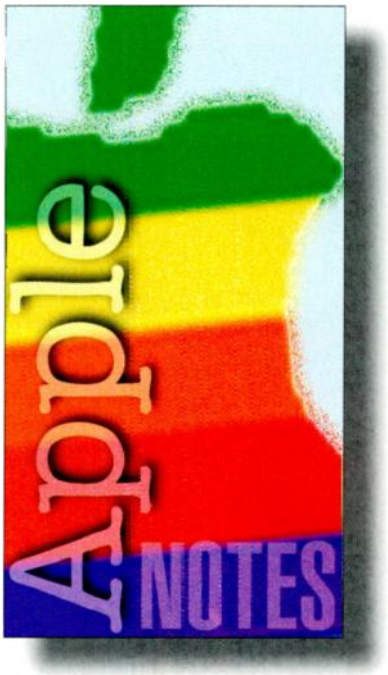


This month, MARTIN RUSS turns traitor and investigates an alternative to the MacOS.

Over-confidence is a terrible thing. Mix it with assumptions and you have a dangerous combination. I'm ashamed to have to admit that I finally cured the problems that I was having with installing BeOS last month. The source of the trouble was not the Macintosh hardware, nor the operating system. Nope, it was something which has always worked so perfectly for me that it came as a complete surprise to be tripped up by it: SCSI, the Small Computer System Interface used by the Mac to connect to peripheral devices such as hard disks and CD-ROMs.

I've seen, heard and read about people having problems with their SCSI connections, and always felt smug because it had never happened to me, secure in the knowledge that whilst PC users seemed to have considerable problems, Mac users didn't. Oops.

TROUBLESHOOTING

As I've mentioned several times before, when you have problems with your setup, the number one rule is to be suspicious of anything non-Apple which sits in your System Folder. Conflicts with extensions, INITs, startup items, screen-savers, and more, are all waiting for the unwary.

Then there's the hard disk itself. Checking and defragmenting it with something like *Norton Utilities* should not only speed up operation, but it should also catch and repair all of those files with minor quirks which seem to infest every disk after a while.

After that there's the clean install of the operating system, followed by a search through the current cover CD of a Mac magazine to see if there are any recent system updates. Finally, there's always Micromat *TechTool*'s 'Analyse' button, which looks for anything wrong with your system files. (*TechTool* can be bought from many Mac suppliers). These strategems tend to catch most problems, and the problem can then usually be isolated by doing incremental re-installs of all those extra goodies.

So, faced with a clean, Apple software-only Mac which crashed doing the most mundane of tasks, what should you do next?

It turns out that the standard answer is to power down the Mac hardware, disconnect the SCSI plug (thereby isolating the Mac from the peripherals) and power up again. If the Mac still crashes, the problem is somewhere inside (software or hardware), but if it no longer crashes mysteriously, the SCSI connections are suspect. And guess what? Yep, *my* problem went away when I removed the SCSI stuff, and re-appeared when I reconnected it. 'Fascinating, Captain', as Mr Spock would say.

At this point, there are two alternatives. Either you consult the many guides on SCSI, which point out marginally useful but ever so slightly obvious things like...

- Always power things down before changing cable connections.
- Always use the shortest SCSI cables you can.
- Keep the total cable length to less than 6 metres.
- Always put a terminator on the end of the SCSI chain.
- Use the same type of SCSI cables for all connections.

... or else you work with the alternative recommendations from the pragmatic school of 'trust no-one, and assume nothing':

- Unplug all the cables, then connect them back again.
- Connect first one peripheral, then another, and so on.
- Try removing the terminator, and using a long SCSI cable at the end of the chain of peripherals instead.

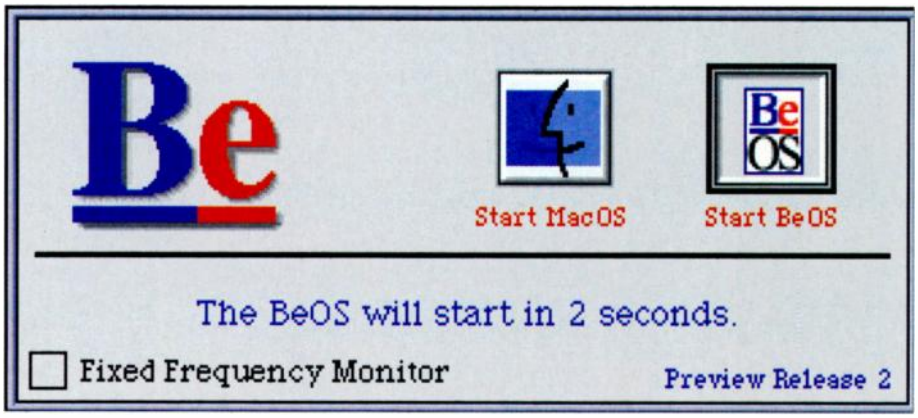
- Use the thickest SCSI cables you can find.
- Throw away any all-plastic SCSI connectors and replace them with those with a solid metal D-shaped bit.

As you might guess, I tried both. Curiously, it turned out that just reconnecting the cables worked remarkably well, so the suspicion would seem to be that one of the many connections in the SCSI cables was sub-optimal. I wasn't able to make the problem re-appear.

BEOS REVISITED

With my new 'much less prone to crashing' computer system, installing BeOS worked like a dream, after a few minutes of frantic CD-ROM and hard disk activity whilst it copied across the files, and then a reboot. Just after the usual Macintosh welcome screen I now got an Operating System selector dialogue box, which gave me the choice of either MacOS or BeOS, although it remembers the last one you used as the default, of course.

When the screen came up in BeOS it was quite a shock to me, mainly because it defaulted to 640 x 480 pixels, which looks slightly wild on a 17-inch monitor! But a few judicious mouse-clicks gave me a cool 1152 x 832 pixels again, and all was well.



The Operating System selector box which appears following installation of BeOS.

BeOS looks like some mutated offspring of a marriage between the MacOS, Windows 95, X-Windows and several other GUIs [Graphical User Interfaces] , but the transition for a Mac user is not that traumatic, and I was soon ▶

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clicking around and doing things without having to think too hard. Being a suspicious so-and-so, the next thing I did was to choose the 'Restart' option and select the MacOS in the OS selector — just to check that the MacOS was still there and working. It was, of course. I now had two machines in one. Merely by restarting, I could choose between either of two operating systems. Cynics might like to wallow in self-congratulation here by reminding everyone that this was always touted as being one of the advantages of the PowerPC chip, but for some reason Windows NT never quite made it across the porting process...

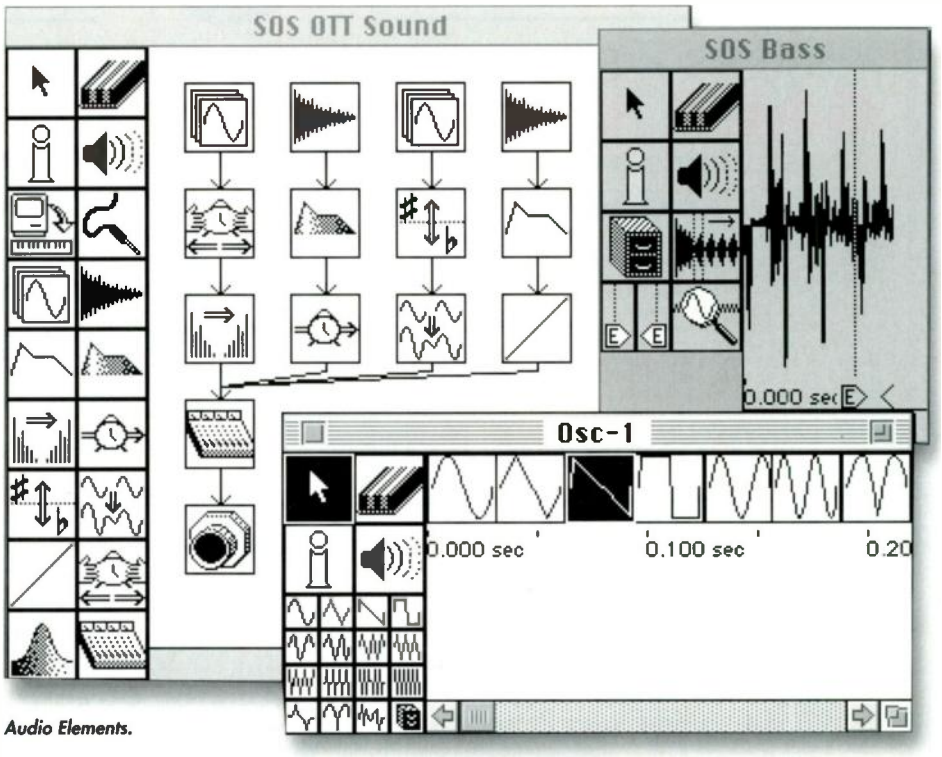
Apart from being smooth and clean, and having one or two little extras, like being able to do several things apparently simultaneously, there's one major goodie in BeOS that I've always wanted on the Mac: a command line. Now that you've gasped in shock, let me explain that there are some occasions when repeated clicking of the mouse is a little tedious, and where a simple typed command

> "BeOS looks like some mutated offspring of a marriage between the MacOS, Windows 95, X-Windows and several other GUIs."

to copy only specific files from one place to another would be much easier. But the BeOS command line is capable of rather more than that: in fact it's an enhanced version of one of the standard UNIX shells (its parent was the Bourne shell, for any interested UNIX gurus) and so is capable of some remarkably sophisticated scripting.

BeOS is available from Computer Warehouse/TSC, although it is possible to buy it over the net too — but mine took over a week to arrive, so I'd definitely recommend the significantly faster Computer Warehouse mail-order method for UK readers. Contact Computer Warehouse on 0181 400 1234 or TSC on 0181 400 9400, or on the web head for www.tsc@mcm.co.uk or www.computerwarehouse.co.uk.

You may remember from last month's Apple Notes that I started this whole process of BeOS installation because I wanted to run a program which had been specially written for BeOS. Well, now I could finally read the *Audio Elements* CD-ROM I'd been itching to try (*Audio Elements* does not run on non-BeOS-equipped Macs) and after more copying onto my BeOS hard disk partition, I had the long-awaited software running.



Audio Elements.

AUDIO ELEMENTS

About 10 years ago, Digidesign had an application for the Macintosh called *TurboSynth*. It was a software synthesizer, sample player and manipulator, and out of its concepts have grown many of the sample editors and software synthesizers that we have today. Adamation's *Audio Elements* is a bit like a modern reworking of some of the same ideas. It can be a sophisticated 'modular' software synthesizer, or an AIFF sample-based S+S synthesizer/processor, but there are two major pluses: it works in real time, and you can extend what it does by writing your own processing bits in C++.

Audio Elements provides a 'drag-and drop' method to place the various processing elements onto the workspace, and then uses the 'point-and-click' technique to connect them togther. Once you've assembled an 8-operator FM synth, for example, all you do is click on the play button and you hear the sound. Alternatively, you could use MIDI to trigger the same sound, or you could have FM plus an S+S synthesizer, or even a classic dual-VCO monosynth. Not all of the elements that you would expect to find in a modular synthesizer are present, but after all this is version 1.0 of an application which runs in the second Preview (did someone say 'just beyond a beta'?) of a new Operating System. Overall, though, I was impressed, and I look forward to seeing this one grow and grow.

The Internet is a good way to find out about Adamation and *Audio Elements*. You can also buy it from the company direct: $95 plus $13.50 shipping gets you delivery in two or three weeks; pricier shipping gets it to you faster. SOS

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A3000 SUPPORT FOR *PEAK*

As mentioned in last month's *SOS* news, Yamaha's A3000 sampler (reviewed in *SOS* July 1997) is now supported in v1.62 of BIAS *Peak*, enabling comprehensive waveform editing and sample manipulation. Contact your Yamaha Hi-Tech Main Dealer for further information on the A3000, or check out Yamaha's web site at www.yamaha.co.uk. The BIAS web site is at www.bias-inc.com.

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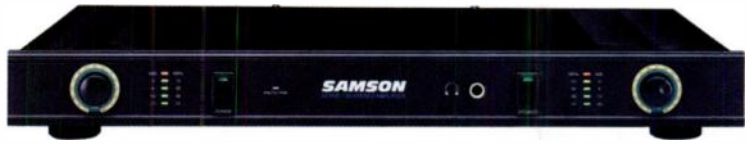

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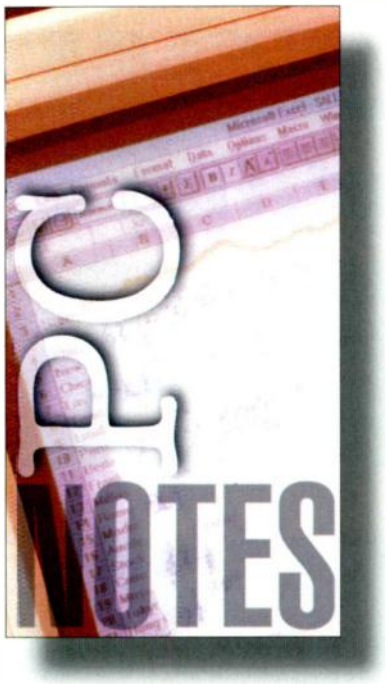

Just when most of us have finally optimised Windows 95 for hard disk recording, Microsoft release the Beta version of Windows 98. MARTIN WALKER sticks his head in the sand.

Many of you will have seen the rumblings about the Windows 98 operating system in the computer press; sadly, the overwhelming opinion is that it will offer very few carrots to encourage huge numbers of people to upgrade (although that won't stop people doing it). Although the Beta version has been widely circulated, I would advise you to stay well clear of it, and at least wait for the official release, currently destined for mid-1998. Windows 98 is aimed at consumer rather than business users, and the new features tend to reflect this. Since it is likely to be pre-installed on all PCs sold from the second half of 1998, it is inevitable that most people will upgrade eventually, so let's look at what it has to offer.

WINDOWS 98 FEATURES

The biggest change is that *Internet Explorer*, which many of you may already be using to browse the net, will be firmly integrated into the desktop. *Internet Explorer* 4 (the version to be included as part of Windows 98) is already falling off those PC magazine freebie CD-ROMs, and I know several people who have installed it quite happily, as long as they avoid any temptations to also install its full Active Desktop features. These turn your desktop into an extension of the World Wide Web — your desktop shortcuts, files and folders all become underlined hyperlinks, requiring just a single click to activate, and individual folders are viewed like web pages, with even a choice of background graphics. In essence, Windows Explorer and *Internet Explorer* become merged into a single entity. However, overall performance is reported to be bogged down, and the integrated browser 'shell' means that if you crash while on the net, your PC may need completely rebooting. These features are largely cosmetic, but it is possible to disable them (if you look hard enough). Incidentally, if, like me, you prefer Netscape's *Navigator* for web browsing, you're going to have to consider changing over to *Explorer*, since it's almost impossible to totally disable Microsoft's browser once it's installed as part of Windows 98.

Some of the other 'new' features of Windows 98 are also available elsewhere, either through service releases, or the later OSR2 version of Windows 95, which has shipped with most new PCs for the last year or so. The FAT32 format for hard disk storage becomes an integral part of Windows 98, and this allows you to forget about the 2Gb limit imposed on hard drive partitions, and is more efficient when storing small files, due to its smaller cluster size (the minimum pigeonhole available for file storage — see September's 'Driving It Home' feature, on installing a new hard drive, for more details). However, it also slows file access down slightly — I have received reports from several readers that the maximum number of HD recording tracks, as reported by Event's excellent *Echo Reporter* utility, altered significantly after changing to FAT32. This is likely to be because although it's more efficient in terms of using space, the File Allocation Table (FAT) becomes much larger in the process, which gives a slightly greater overhead when accessing files.

Looking at the more positive aspects of Windows 98, multiple screen support is finally with us (Mac owners have had this for years). Imagine being able to run your sequencer on one monitor and have your synth editor on another screen alongside, or running Soundscape and *Cubase VST* and being able to see both at once, or splitting a single huge window across two screens. All these things are now possible. You'll need a separate graphics card for each monitor to do it, but these are now very cheap. Up to eight monitors will be supported, and they can function as a single large desktop — you can drag things directly from one monitor to another using the mouse.

USB (Universal Serial Buss) and Firewire support (much mentioned in these pages) will also be provided by Windows 98, so peripherals might finally start to appear, to halt the current 'chicken-and-egg' situation. To help people over the initial hurdles, a host of new wizards are being provided, such as the Tune-Up Wizard, which examines your hardware settings looking for bottlenecks. The Update Wizard will allow registered Windows 98 users to automate downloading of the latest files and drivers from the Microsoft site. However, as all PC musicians already know, the settings that optimise our PCs for hard disk recording have very different settings from those of other users.

VST SNIPPETS

As mentioned in this month's news, there's an update to the PC version of *Cubase VST* now available from the www.steinberg.net/ web site. The patch files will update versions 3.50 and 3.501 of *Cubase VST*, *Cubase Score VST* and *Cubase Audio VST/XT* to Version 3.502, although since the update comes in at 2.8Mb you'll need a reasonably fast modem if you want to keep your phone bill down. A few people have been previously unable to use the *Cubase* 'Save As' option, and this is now cured, but, ironically, the other reason for this update is to cure crashes when launching any DMSS plug-in if you have installed Microsoft's *Internet Explorer* 4.0. Now what was I saying about installing the latest software? (See main text.)

An independent site for Windows *Cubase* users can also be found at www.instanet.com/~thedusk/, and this has an updates section which is a lot easier to navigate than the Steinberg one. Finally, if you fancy jazzing up your *VST* backgrounds and are running your screen at 24-bit resolution, Pekka Saarinen's Home Page features downloadable textures for *Cubase VST* (www.sci.fi/~contacts/vst_textures.html. Very nice they look too!

LOOK BEFORE YOU LEAP

Installing a completely new operating system is never something that should be taken lightly, certainly not until other software developers have had a chance to check compatibility with existing applications, and to write patches, if necessary, to ensure reliable operation — after all, it's nice to have the latest bells and whistles, but not if your favourite sequencer crashes every time you try to run it. I suppose I'm a cautious sort of person, partly because, having developed software myself, I know that there is no such thing as a 100% debugged program — there are always obscure combinations of hardware and software that may require patches to be released. At the risk of putting you off completely, I must also point out that uninstalling Windows 98 to return to Windows 95 is an unlikely option. If you decide that you prefer what you had previously, apparently the only course is to completely re-format your hard drive, and then re-install Windows 95 from scratch.

You've probably got the impression that I'm not very enthusiastic about the prospect of installing Windows 98. Well, you'd be right, and the reason is that I now use my PC on a day-to-day basis, both for music, and when writing for *SOS*. When I upgraded to Windows 95, I did it against the advice of my local dealer, who carried on installing the (by then) well-debugged Windows 3.1. Now that the health of my PC can affect my livelihood, I am beginning to side with the dealer. Yes, I'm fascinated to see what bells and whistles Microsoft have for our ▶

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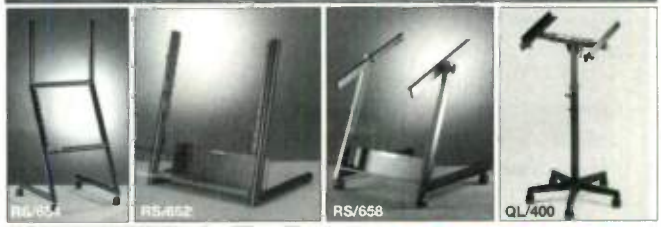

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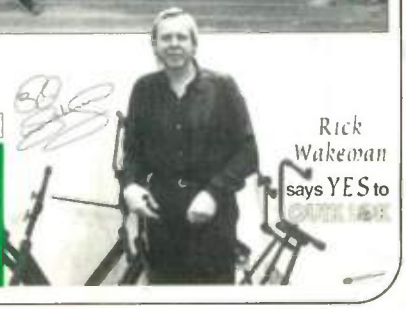


Rick Wakeman says YES to

delight, but musicians, sadly, are a tiny minority of PC users, and if performance suffers after the upgrade we'll be a tiny voice crying in the wilderness. I can imagine the size of the potential *SOS* mailbag following the official launch of Windows 98, and it gives me a case of the shudders — I expect that some of the patient souls who sit at the other end of the manufacturers' helplines are starting to have sleepless nights as well. Excuse me while I go and lie down for a few minutes.

WAVE SAFE

Having cast a pall of doom and gloom over the proceedings, I'm delighted to restore harmony and balance by mentioning a product specifically designed to protect your musical data. *Wave Safe*, from Calistan Solutions, is a sound file protection application which claims to "actively monitor the integrity of audio data and protect sound files from corruption". *Wave Safe* is designed to enable you to salvage your audio data despite chewed DAT tapes, power cuts and surges, ageing floppy disks, or scratched CD-R and CD-ROM disks. Bold claims indeed! It does this by building a database from your files, and comparing this information as and when you next retrieve the files. If there are any problems, an advanced set of 'fixing algorithms' can re-build audio waveforms.

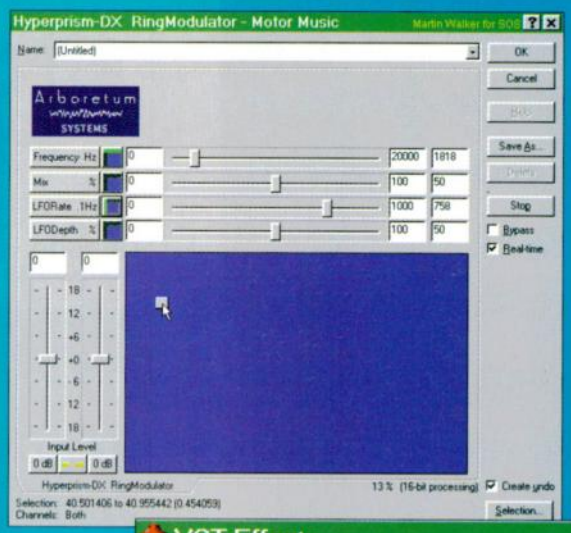
Although it initially sounds like an advanced form of de-clicking software from this description, *Wave Safe* does not 'guess' at missing or corrupted sections, but deals with much more fundamental problems. Even a single corrupted byte in a WAV file can result in the data not loading at all. With computer data, this hard-nosed approach is a must, since allowing corrupted bytes to be loaded could crash your PC in a microsecond. However, audio data is much more forgiving, and by 'protecting' your data, by analysing it when in tip-top condition, *Wave Safe* can re-build the majority of files using its Salvage function, even if there are a few corrupted sections. If you've ever faced the nightmare scenario of trying to load a WAV file that has been corrupted in some way, you'll find *Wave Safe* a blessing, although it shouldn't be used instead of a regular backup regime.

A fully functional Shareware version is available for download from the Calistan Website at www.calistan.demon.co.uk/, and this provides a generous allowance of protection sessions. The Registered version allows unlimited use, and the Pro version also allows you (amongst other things) to attempt to rescue files from damaged CD-Rs, hard drives or floppy disks. Playing around with some of the demo WAV files makes you realise just what a potential time bomb we're all sitting on. I hope to have a more extensive review of this intriguing utility in due course.

PLUG-INS

Also spotted whilst browsing the Steinberg web site was a pair of Freeware plug-ins for PC Cubase VST, written by one Dave Brown, which can be downloaded from http://www.dbrown.force9.co.uk/. Dave, a software engineer for Hewlett Packard, has written the plug-ins in his own time, as "a few simple toys to keep the *VST* user on a budget happy." The total download size is only 74kb. If there were a few more people like this out there, the world would be a happier place. Thanks Dave! See this month's news pages (the 'Plug-in Corner' item) for full details of the two plug-ins.

Finally, such is the rate of development with DirectX plug-ins that, two days after uploading this month's PC Musician feature, I discovered yet another Mac developer with a PC product shipping. Arboretum's new *Hyperprism-DX* features a suite of a couple of dozen effects, including a host of reverbs and delays, echoes, filters, phasing, and flanging, plus some more unusual ones such as ring modulation. You can download a free demo version of several of the effects from www.arboretum.com.



The Hyperprism-DX Blue Screen provides draggable 'joystick' control of any parameters in this plug-in suite.

Dave Brown's Freeware plug-ins for PC Cubase VST are a cheerful reminder that the home-enthusiast programmer is not dead.

Better Wave Safe than sorry! Having protected an album's worth of files, you can check their integrity at any time to see that every file is still perfectly intact.

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CS1X	RRP £599	NOW £469
P150	RRP £1695	NOW £1149
SU10	RRP £299	NOW £229
MD4	RRP £799	NOW £599
QY700	RRP £999	NOW £799
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VL70	RRP £499	NOW £275
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MPX1	RRP £1295	Now Only £695
Reflex	RRP £449	Now Only £189

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8.02 Mixer	£129 (*No Misprint*)
26.42 Mixer	£365
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Fostex D80	£129	£48.75
Fostex DMT8VL	£99	£37.50
Fostex XR7	£49	£18.75
Fostex XR5	£39	£15
Fostex D5 Dat player	£87	£32.83
Tascam 564	£109	£41.25
Tascam 424 Mark II	£53	£19.83
Tascam 414	£35	£13.08
Yamaha MD4 Mini disk	£80	£29.95
Yamaha MT4X	£49	£18.75
Alesis Adat XT	£190	£74.83
Roland VS880!	£235	£88.49
Akai DR16	£399	£150
Yamaha 03D Mixer	£285	£106.87
Yamaha 01D Mixer	£149	£56.08
Fostex D160	£249	£93.75
Tascam DA38	£199	£74.83
Akai DR8	£199	£74.83
Korg Soundlink	£117	£44.08
Korg 1812 1/0 Card	£59	£22.50
Mackie 24.8	£249	93.75
Soundcraft 168	£99	£37.50
Spirit Folio SX	£47	£18
Mackie 1604	£90	£33.75
Behringer 26.4	£49	£18.58
Tascam DA30 II	£117	£43.87
Tascam 564 Minidisk	£109	£41.25
Sony MDXM4 Minidisk	£70	£26.20
Sony DTC A6 DAT	£79	£30

SAMPLERS

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Akai S3000XL	£149	£58.25
Akai S2000	£79	£30.00
Akai S20	£49	£18.75
Akai CD3000XL	£169	£63.58
Akai MPC200	£119	£45
Emu ESI4000	£119	£44.83
Emu E6400	£195	£73.12
Emu 4K Turbo	£403	£150.91
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Yamaha A300	£119	£44.83

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DR8 } *On Demo POA Cheapest UK Guaranteed!*
DR4 }
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MEQ 23C	RRP £299	£225
DM5 Drum Module	RRP £399	£299
QS8	RRP £1895	£1250
QS7	RRP £999	£VERY CHEAP
QS6	RRP£899	£575
SR16 Drum Module	RRP £269	£189
Nanoverb	RRP £169	£135
Nanocompressor	RRP £149	£99
Nanopiano	RRP £349	£Call for Best UK
Nanobass	RRP £349	£Call for best UK
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Studio vocalist	RRP ~~£999~~	£795
Vocalist Workstation	RRP ~~£795~~	£595
Digitech RP1	RRP ~~£329~~	£215

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VC1 - Compressor ..... RRP £1468 } *Call Best UK Price*
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JANUARY SALE

Our amazing January sale is now on!! Here are just a few of the incredible bargains now on offer!!!!

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Yamaha 03D Digital Mixer	~~RRP £2999~~	£2250
ART FXR Multi FX	~~RRP £259~~	£89
ART SC2 Compressor/Limiter	~~RRP £295~~	£109
Behringer Ultracurve	~~RRP £749~~	£349
Digitech Studio Quad	~~RRP £399~~	£335
Yamaha REV100 Multi FX	~~RRP £299~~	£129
Yamaha MT4X Multitracker	~~RRP £499~~	£335
Roland MC303	~~RRP £599~~	£469
Audio Technica 4033 A Mic	~~RRP £695~~	£310
Behringer 26:4:2 Desk	~~RRP £729~~	£365
Digitech MIDI Vocalist	~~RRP £399~~	£299
E-MU E6400 Sampler	~~RRP £2499~~	£1650
Yamaha Pre Mix 01	~~RRP £1695~~	£999
Yamaha SU10 Mini Sampler	~~RRP £299~~	£239
Novation Drum/Bass Station	~~RRP £399~~	£319
Fostex D16 + Free		
Fostex D5 DAT Machine	~~RRP £3895~~	£2499
Sony MDX4 Mini Disk Recorder	~~RRP £999~~	£595
Lexicon Reflex	~~RRP £399~~	£195
AKG C3000 Mic	~~RRP £369~~	£199
Korg X5D Keyboard	~~RRP £599~~	£395
Harbeth 'X'Pression Monitors	~~RRP £369~~	£329
Behringer 28:4:2 Mixer	~~RRP £649~~	£299
Tascam DA38 Out of box once	~~RRP £1195~~	£1495
Yamaha AN1X	~~RRP £999~~	£699
Yamaha VL70	~~RRP £499~~	£275
Cubasis VST	~~RRP £329~~	£249
Behringer Composer	~~RRP £299~~	£169
Fostex DMT8 Digital Multitracker	~~RRP £999~~	£799
Yamaha CS1X	~~RRP £599~~	£465

All the above deals and many many more are available on up to 48 months finance at an APR of 28.9%

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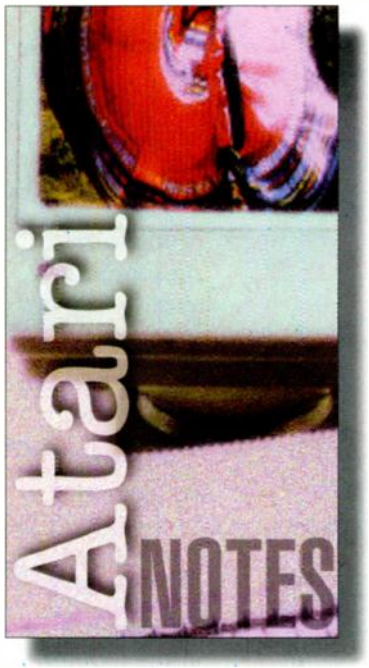


An Atari ST with 16Mb of RAM? It's now possible, as DEREK JOHNSON reports.

Tightly written software and a ROM-based operating system mean that most of us are quite happy with the 4Mb RAM limit of our basic Ataris, especially for MIDI purposes. Memory upgrades rumoured to break this limit have hovered on the horizon in the past, but nothing has really materialised — until now. The Magnum ST card from16/32 Systems, utilising memory management techniques developed for the Falcon, allows a total of 16Mb of RAM to be installed in your ST.

The mod is relatively straightforward: if your computer has a socketed processor, remove it and insert Magnum ST into the socket; then plug the processor into the socket on the card. If your processor is soldered (as in many STFMs) it's slightly trickier (and slightly more expensive), as you will know if you've got a standard 4Mb upgrade in your STFM.

Even though the ST's memory-management unit (MMU) can actually only handle 4Mb, the Magnum card supplements this, working in tandem with the ST's MMU to access the full 16Mb. For ST users working with DTP, graphics, or lots of sequence files at once, this upgrade is ideal, and costs little more than some 4Mb upgrades of a few years ago. Pricing ranges from £69 for a bare card to £84 for a card with 4Mb, £94 for 8Mb and £114 for the full 16Mb. It's compatible with virtually any ST, current exceptions being STe and Mega STe variants. Note, though, that you may need an operating system upgrade — Magnum ST requires TOS v2.05 or higher. If you don't already have the upgrade, Magnum ST provides sockets for the necessary EPROMs and 16/32 Systems can supply TOS v2.06 for £53.99. You could also use *MagiC*, a popular alternative operating system.

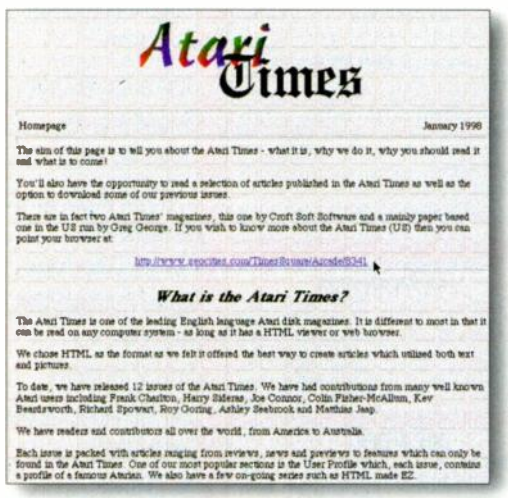
A 16/32 Systems, 173 High Street, Stroud, Kent ME3 4TW.
T 01634 710788.
F 01634 295895.
E 16-32@premier.co.uk

SEE THESE CDS?

Fed up of being surrounded by piles of floppies full of PD and shareware software? Want even more software, but in a tidier format? Check out volumes one and two of the *Atari Software Treasury* CD-ROM from Suzy B's Software. Priced at £25 (plus £2 postage) each from Floppyshop, the CDs are packed with around 1Gb of archived software apiece, of all types, for the ST, STe, TT and Falcon. You, of course, need a CD-ROM drive (plus de-archiving software), but that's a small price to pay for such convenience and variety. If you do invest in a CD-ROM drive, these aren't the only disks available to you. A variety of suppliers, including 16/32 and Floppyshop, stock CDs full of more software, MIDI files, fonts and clip art, so get a few catalogues and see what's available.

A Floppyshop, PO Box 273, Aberdeen AB15 8GJ.
T 01224 312756.
F 01224 586208.
E sdelaney@steil.wintermute.co.uk

The Atari Times Internet home page.



'ZINE SCENE

On the magazine front, look out for new title *ST+*, a fanzine which was due to be launched as we went to press. The net-connected amongst you can get a taster at www.users.zetnet.co.uk/paxton/stp/index.html. *ST+* aims to be a monthly, A5 mag, produced entirely on Atari (using *Pagestream* DTP software), and costing no more than £1.50 (to cover copying and distribution) to UK readers. Apparently, subscriptions won't be offered: if you want an issue, send in your money, and they'll produce enough to cover demand. *ST+* is a continuation of the *ST+ Diskzine* that lasted for 24 issues; the first issue of *ST+* will therefore be number 25. Contact Dave Hollis, 43 Spenfield Court, Lings, Northampton, NN3 8LZ (email tinman@zetnet.co.uk). American readers can contact Terry K Ross, 101 First St. #3, Bangor, ME 04401, USA (emailtross3@ hamtel.tds.net, web page www.geocities.com /SiliconValley /Peaks/ 6320).

We'll also plug *Atari Times*, an established disk mag whose issue 12 appeared towards the end of last year; their web site is at www.users.zetnet. co.uk/ polonowski/atimes /index.htm. (But don't get them confused with the US paper mag of the same name, whose site can be found at www.geocities.com /TimesSquare /Arcade/8341). The UK *Atari Times* can be downloaded from the *Atari Times* web site, or obtained from Floppyshop. SOS

FILE FACTS

Italian company EmmeSoft have specialised in supporting the Atari since 1985. Their latest release is *Live Player*, a dedicated MIDI File player by Luca Stocco. *Live Player*, as the name suggests, will play back General MIDI format 0 and 1 MIDI files, which are arranged in a list of up to 512 files; you can set composer name, tempo, transpose value and MIDI Volume level for each entry in the list. When you start a list playing, the program moves to a playback page, which provides even more feedback. Here, each track in a file has a voice name, and assignable values for program change number, bank select, volume (which is variable over the course of a song), reverb, chorus and delay, pan position and controller 11 (expression). The software features on-line help, keyboard shortcuts, a kind of word processor for words and chords (the software can play back lyrics and chord names), and a certain amount of control over MIDI files. It's not a full sequencer exactly, but if a file needs a bit of tweaking, *Live Player* will oblige. It's even possible to control playback remotely, via MIDI. The manual of the demo I tried was in the form of a Read Me file; the English is adequate, but has a few idiosyncrasies in the translation from Italian. Pricing is unclear at the moment — the software is brand new — but should be in the £60-£70 vicinity. Contact Emmesoft for full details before ordering.

A Emmesoft, Via San Donato 49, 10144 Torino, Italy.
T 0039 11 484309.
F 0039 11 4374311.
E emmesoft@venturanet.it
W www.espero.it/emmesoft/

The Live Player Play Page on the Web.

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ROLAND D110 MODULE	£149
ROLAND VS880P	£1499
ATARI ST 1040 + COLOUR MONITOR	£149
ATARI ST 1040 + MONO MONITOR	£149
AKAI RIF-O-MATIC	SPECIAL £119
ART FXR MULTI-EFFECT	£85
ALESIS 0.7 MONITORS	£185
ROLAND MKS100 SAMPLER	£149

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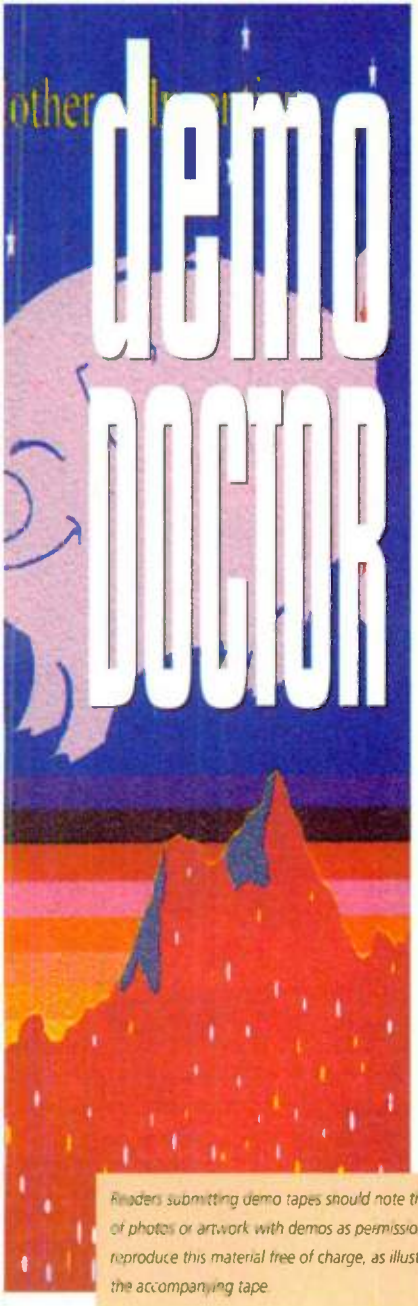

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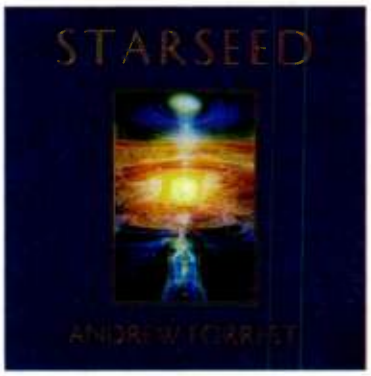
ANDREW FORREST

Recording Venue: Home.
Recording Equipment: Spirit Studio 16:8:2 mixer, Alesis ADAT digital 8-track recorder, Alesis Quadraverb effects, Electrovoice microphone, Casio DAT recorder, Alesis power amp, JBL Control 5 monitors, Roland W30 sampler workstation.



Andrew's CD album, *Starseed*, features two long compositions lasting nearly 30 minutes each! I have to confess that, although I heard the full length of the CD, I actually played it while I was doing other things about the house, before coming back and listening to various sections in more depth. This is sometimes how I listen to my own mixes anyway, so it's not a bad listening test from me!

The general and somewhat off-putting label 'New Age' springs easily to mind, but where Andrew's CD is head and shoulders above the rest is in its recording quality, which is generally excellent. The development of the compositions is also important, and Andrew avoids the pitfall of taking a single idea and running with it (or, in this case, floating with it) for 30 minutes. At the same time, the movement from one part of the arrangement to another in this type of contemplative music must not jar — a smooth segue is what is required, and this he achieves with ease.

Sonically, the clarity in the high-frequency range is great, as revealed by the frequent bell and gong sounds — some real, some synthesized. I always had difficulty with my Casio DAT machine in the upper-mids, so I take my hat off to a man who can avoid these frequencies sounding just a touch harsh! Andrew's skill at layering sounds is also well developed, with a soundscape rich in presence — the aforementioned bells, a mid-range occupied by expansive mellow string and voice chords, and the expected use of slow-attack sounds and burbling, echoed arpeggios and loops.

Drones play a large part in this kind of transcendental meditative music, but fortunately Andrew has avoided over-using them. Low-frequency synths tend to work well within a string arrangement, and their low, growling tones are treated with reverb, which shifts the sound effortlessly within the stereo image.

Although this CD doesn't really acknowledge the presence of the '90s in terms of its production, the mixing is nevertheless faultless. I think my favourite piece is the second, which offers more light and shade by cutting to piano for part of the composition. ❑

JONATHAN WILLS & CHRIS SHAW

Recording Venue: Home.
Recording Equipment: *Cakewalk* 3 for sequencing, Fostex 380S cassette multitrack, Alesis Midiverb 4 effects, AKG C1000 mic, Emu ESi32 sampler, Ensoniq ESQ1 synth.

It's a shame that Jonathan and Chris did not enclose photos, as the description of themselves in the letter as "fat baldy men on Mabelthorpe Beach" sounded like fun! This is a demo I have to confess I took an instant liking to, not just for the decent recording quality, but for the general vibe of the songs.

The vocal of the opening track, 'Honey Pie', is so far up front that it can't fail to catch the attention. It's backed by a cheap-sounding synth reminiscent of early Casio, but the rest of the sound has been lovingly constructed on much more expensive kit. Similarly, a very basic-sounding, low-bandwidth beat begins the song and lulls us into a false sense of security, before being added to by something a bit more clever, in terms of both rhythm and tone, as the track builds. Later, heavily reverbed piano is revealed, and though this is a tad over the top the idea still works.

Another thing I like about this opening track is the contrast between the low-bandwidth backing and the vocal. This latter is full of presence and energy, even though the performance was deliberately laid-back. The juxtaposition of light and shade in the sound is therefore effective whether it's intended or not!

The second track takes a different approach, by using electric guitar and retaining the click track — which is, fairly typically, a cowbell sound. While the cowbell works later on in a more full-sounding mix, it's exposed for what it is here and no amount of reverb disguises its primary function. I think it was a mistake to leave it in. Sonically, the track develops into a rather pleasant backbeat, with some slide guitar panned hard right and electric guitar hard left. Slide guitar is also used to good effect on the third song, and has a great dry, close-miked feel, full of the sound of the wood that creates the impression the player is in the room with you.

Mixing acoustic guitars and hip hop, as on the final song, is not new but does work extremely well. The vocal for this one is given the John Lennon treatment, which I believe could have been improved with a shorter delay time and possibly some modulation.

In all, this is a demo with some good material on it, as well as a good mix. The sparse but well chosen instrumentation has undoubtedly also contributed to the clarity of this demo, and I should also include the fine vocal performance in the general praise. ❑

STEVE CROOKS

Recording Venue: Home.
Recording Equipment: *Cubase Audio* MIDI + Audio sequencing software, Spirit Folio Si mixer, Spirit Absolute 2 monitors, SPL Vitalizer enhancer, Behringer Composer compressor, Akai S2800 sampler.

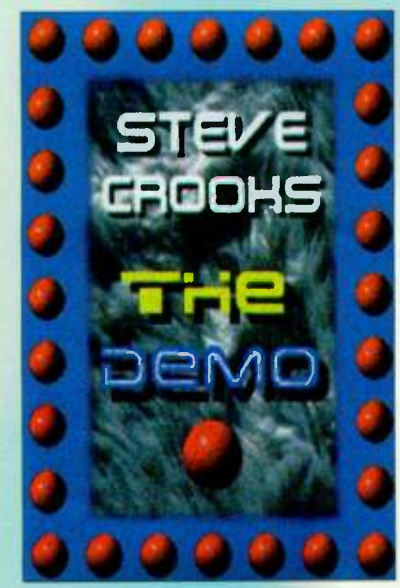
Steve's tape is the product of nearly a year's work experimenting with different sounds and samples, to arrive eventually at material ranging from techno to ambient. Before this, he (like many others who have made the move to dance) played in small-time local rock/pop bands. He is looking for a recording or publishing deal.

'Moved' is the title of the first song, and this grabs the attention by quickly building to a crescendo, using a sampled vocal over a background of filtered strings, soft cymbal crashes and a rising arpeggio. It's not long before the atmospheric opener gives way to the expected heavy four-on-the-floor and techno hi-hat pattern. I could say that the piece becomes a tad busy here, and that the heavy beat could have continued for longer before hitting the more ambient sections. It's all a question of timing, and although the mix is rock-solid and punchy I'm afraid that all this chopping and changing is too much too soon and rather loses the plot for the dancefloor.

To talk about the recording quality for a moment, the demo sounded excellent over my monitors, played at both loud and quiet volumes, with a wide stereo field as a result of effective panning of both sounds and effects. No doubt it sounds even better on a big club system.

The second track shows Steve's rock background creeping in, as Carlos Santana meets garage. The heavily overdriven funk riffing that develops into some teasing guitar soloing gives it away, and some more ingenuity on the guitar part would have been welcome here. A bit of chopping and changing on the guitar part, making it more machine-like (easily achieved with *Cubase Audio*), would have kept the track in the dance market. The mix is a touch heavy on the bass end but maintains energy and groove. This could easily have developed into a song, but stays in instrumental vein.

My fave has to be the third composition, with its tremendous opening and extremely interesting use of guitar sounds. The backwards effects on the clean guitars were great, and I just loved the bass guitar part. It's hard to tell whether the guitars are reversed, or whether Steve has simply used a reverse reverb effect, but it all works, whatever the method. At one point in the mix the sub-bass is overcooked and distorts the cassette, but this is exactly the sort of thing that could be prevented by effective use of a good compressor.



In conclusion, this is a demo which is strong instrumentally but possibly needs some more vocal involvement to break into the larger commercial market. ❑

MOTHER OF INVENTION

Recording Venue: Home.
Recording Equipment: Steinberg *Cubase* V2 sequencing software, Allen and Heath GS3V mixer, Yamaha TX16W Sampler, Lexicon LXP1 effects, Tascam DA20 DAT, AKG C3000 mic.

Les Camsell must be one of the few people on the planet who has wrestled with the intricacies of the Yamaha TX16W sampler and lived to tell the tale. Even armed with an idiot's guide I found it hard going when it was launched in the late '80s!

The material on this tape was written and produced by Les himself. Given that he doesn't appear to have a multitrack, I can only assume that he's recorded the vocals live and, like the previous demo, the vocals certainly grab the attention on the opening track, 'Mother of Invention'. The song is well performed, in relaxed manner, against the backing triggered by the *Cubase* sequencer. LXP1 reverbs always sound nice on vocals to me, and while they're more dense-sounding than their more expensive brethren, they give a nice warm tone to a vocal. The presets without the sibilant high-frequency bandwidth are always the best, and I would guess that one of these is just what Les is using here. The reverb enfolds the vocal without obscuring it — something that Lexicons are very good at. My only criticism of this track would be for the programming, which sounds a bit wooden. This is possibly down to the quantisation chosen — the piano and hi-hat parts, for example, could certainly have done with more swing.

'Sleepless' is the title of the second composition, which kicks off with an interesting pattern bouncing up and down the keys from the B note on a triggered Hammond organ-style sound. Unfortunately it soon becomes sleepy instead of sleepless, as the pattern repeats interminably and the piece fails to develop into anything more than a poor workout over a good riff idea — shame.

Les redeems himself on the third track, 'Mission to Mars', which begins with a piano voice treated with an ambient reverb — a large hall with pre-delay — that suits the part admirably. Later the track develops in sections and morphs into something else, but for me this was the best part of the journey.

Although Les is unadventurous with sounds, the quality of the mixing is, in general, pretty good, with no obvious technical weaknesses apart from the ubiquitous reverb in some passages. ❑

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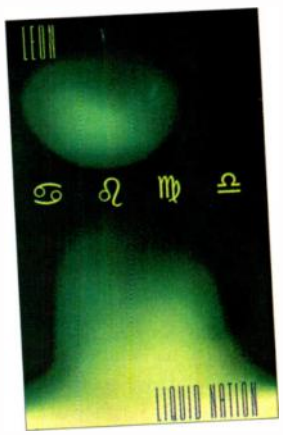
demo DOCTOR

QUICKIES

LEON is an experienced musician who has performed at many of Cambridge's prestigious venues. Mood and ambience are the stuff of his compositions, which are definitely aimed at playback on the big sound system as well as the small. In terms of choice of sounds (from a wide range of sources — although he professes to favour Roland) and mixing quality, this tape is a winner, from the opening



few bars of 'Bejour' to the equally *Star Trek*-inspired 'Borg'. Resistance is futile...

LORDRYK: Just when I'd begun to believe that the Glastonbury festival was actually a figment of my imagination, up pops another Celtic Revival band to remind me of summers of mud and sun. Undeniably, Lordryk have honed their art to please the festival masses, but they should find a better cassette-copying company and therefore avoid sibilance on all the vocals. And while we're on the subject of the singing, the vocals are occasionally lost in the mix because they lack bite in an often busy backing. However, instruments such as live percussion, fiddles and frantically strummed acoustic guitars, which can sometimes be spiky and peak in a problematic fashion, are kept well in check by what sounds like a large dose of compression somewhere along the line. I particularly like the percussion sounds on this album, which are natural and quite hard, possibly due to some ambient miking, and this allows them to sit well against the softer bass and acoustic guitar sounds. Favourite tracks were '13' and 'Beguiled'.

OLIKO: I'm honestly not favouring Cambridge this month — but here's another demo from a Cambridge-based person (although it was recorded in London). The emphasis is on atmosphere and groove, but it's moving closer than Leon's work to trip-hop and borrows heavily from the work of Portishead, in style at least. Technically, the cassette has been recorded at a very low level — peaking at -4dB — which doesn't do any favours for the signal-to-noise ratio. Yet musically I was impressed by the live singing and performance from Oliko — only minimal mixing was required here, as she simply sang to the triggered backing.

ROBIN FIELD confesses that he's at entry level when it comes to recording, but he does have 50 years of classical composing experience! His demo consists of William Wordsworth poetry, read by himself and put to a synthesized musical backing. He puts the music together well, but the vocal sound is thin. Undoubtedly this is a result of using a budget microphone to record the spoken word. Shure SM58s are currently a steal with some companies, although to get a truly professional 'BBC' sound, a more expensive condenser microphone would be required. If funds don't allow this, a little post-production equalisation of the voice would help. This would not be possible with the mixer that Robin is currently using, but a local studio

should be able to do this relatively simple job for a small fee. I would suggest cutting about 5dB at 8kHz and boosting a little at 400Hz. This would take some of the harshness out of the tone and also make the sound more full bodied. When it can be afforded, a slightly better mixer with a swept mid-frequency EQ would help.

MANTIS enclose a questionnaire, which suggests that they may take their music seriously. The questions are loaded, though, because you only have a choice of four answers to each one. Question 1 is a general 'What do you think of the demo?' question, to which the answer would be: good for some tracks, such as 'Beats and Toxins', and fair for others. The recording quality is not bad, but needs EQ-ing, which answers question 2. I would seriously try remixing some of this material to remove the overload from some of the sub-bass sections — although I would leave the distorted bass on the aforementioned 'Beats and Toxins'. To sum up, this demo has lots of good ideas, but some care needs to be taken to avoid harshness in the overall sound. The best mix is 'Fat Journey'. Use this as a yardstick.

PETER MICHAEL ROSENBERG: The Nexus Effect is Peter's project, and after my last review he's sent in some demo material of music in a different vein. This time the instrumentals are of a more obvious dance nature. On the opening track he's been tempted to put room reverb on the dance kick and snare, which recesses them in a mix already treated with what sounds like a similar reverb, and also makes the general feel less contemporary. 'Kyoto' is the title of the second composition, which features a synthesized Koto playing the melody for some of the time. I would take issue, once again, with the drums on this piece, which are quite complex and vaguely military in style, when a much simpler half-time rhythm would have suited the chordal and melodic structure. The best composition, for me, was 'Overdrive', which has some nifty synth soloing, but watch out for that room reverb, which is applied liberally and too often in the mixes!

MARTIN COPEMAN has mixed his tracks bass heavy, which could be an indication that he is mixing on small speakers or even headphones. Some bass roll-off in post-production could help this, and I would suggest a gentle slope from 80Hz, using EQ or a high-pass filter on a noise gate. However, some of the problem, as shown on the second mix, 'Pulse II', is really that the bass synth is too high in level. On the upside, the detail in the mids

and the upper frequency range is impressive, with some neat '80s-style sounds — Martin goes in for quite a lot of synth pad washes with plenty of filter sweep. Pizzicato-style 16th-note loops also play their part, dancing across the stereo image and keeping the listener interested. The best mix is the third, 'Pulse III', which features some nice use of in-tempo echo and an old-fashioned disco rhythm. The almost Latino chord part gets the foot tapping, and the mysterious-sounding melody gives the whole piece a more interesting flavour. ❑

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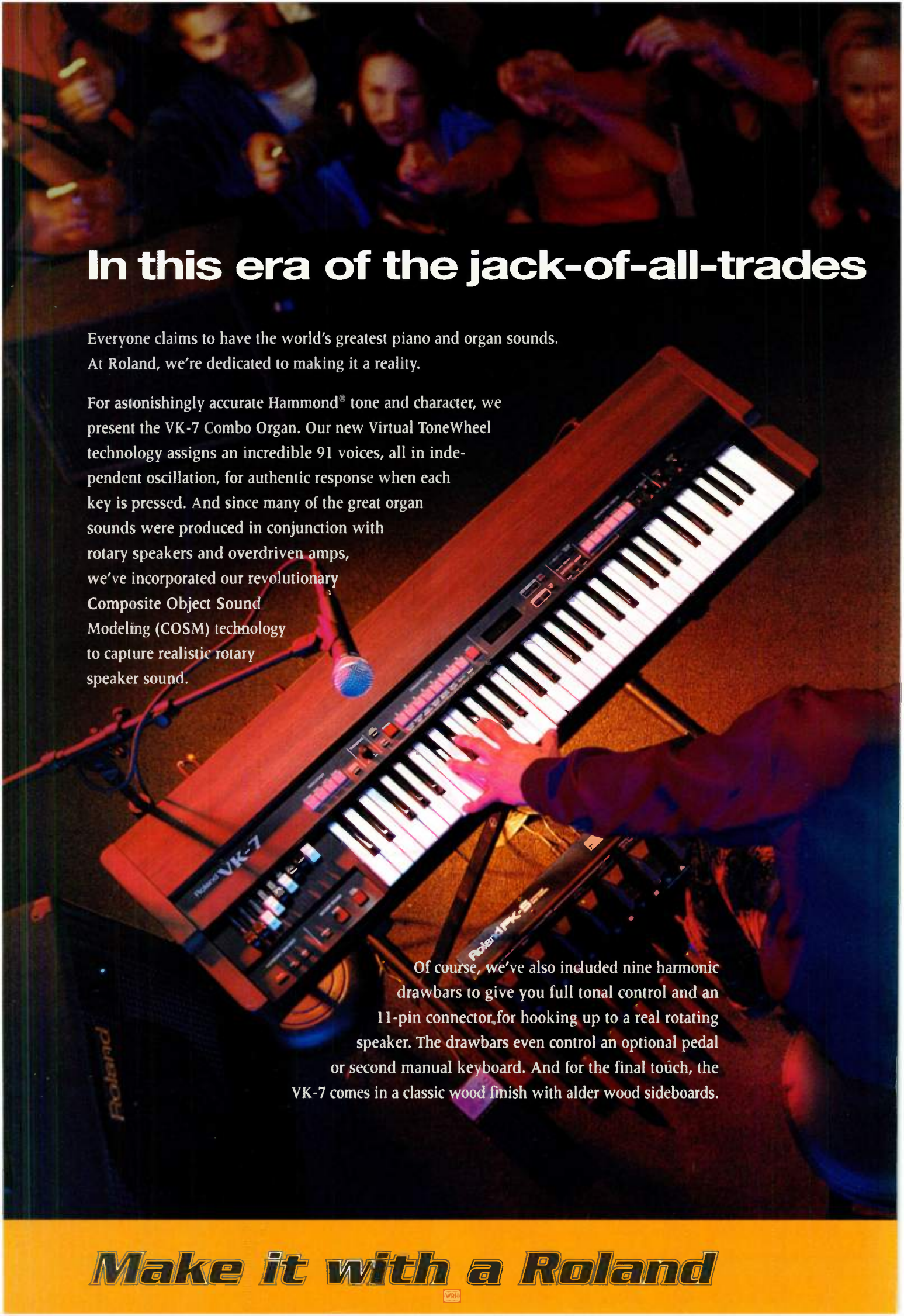
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GORDON REID planet rocks...

Do you remember 1978? Flares were *in*, John Travolta was *in*, the Bee Gees were *in*, cheap Hammond impersonations, weedy string machines and ghastly electronic pianos were *in*, and Roland were *out*. Surprisingly, the world survived, but it was in this year that Roland started their metamorphosis from obscure manufacturer of unremarkable monosynths into the world leader they had become 10 years later.

THE JUPITER 4

Released in 1978 as part of Roland's 'Compuphonic' range, the Jupiter 4 (JP4) was one of a family of instruments, partnered by a programmable monosynth, the Promars, and a range of bleepy analogue drum machines such as the CR5000. It was born into a world dominated by the Yamaha CS80, the Sequential Circuits Prophet 5, and the Oberheim OBX. If Roland hoped that their new polysynth would compete against these, they were to be sorely disappointed. With but a single VCO per voice (compared to the Prophet's and Oberheim's pair) it was always going to be the poor relation. And so it was. Most untreated JP4 patches are thin and uninspiring, and the JP4 was a bit of a loser in the keyboard department too: its four octaves compared poorly to the Americans' five. Furthermore, its 4-voice maximum polyphony was half the Yamaha's eight, and was utterly dwarfed by the 48 of the Korg PS3300! It also lacked the CS80's velocity and aftertouch sensitivity. As a final straw, the Jupiter 4 offered just eight memories which, even in 1978, was a meagre allotment. Whichever way you looked at it, this Roland was a bit of a lightweight.

On the other hand, the JP4's secondary facilities put its competitors to shame. It sported what was to become a Roland trademark — a superb chorus that thickened up the sound far more than Pulse Width Modulation or merely detuning the oscillators of the Prophet or Oberheim. It also featured three Unison options that made it a powerful monosynth. The *coup-de-grace* was an excellent arpeggiator, perhaps used most famously by Nick Rhodes of Duran Duran. But it wasn't only the electro-pop bands of the late '70s that adopted the Jupiter 4, and a list of its aficionados now reads like a *Who's Who?* of the era: Kitaro, Gary Numan, Tangerine Dream, Stevie Wonder, and Tomita all proclaimed their use of it.

The JP4 had one more trick up its sleeve: its price. At just £1800, it was much cheaper than its competitors, and appealed greatly to those for whom Prophets and OBXs would forever remain unobtainable dream machines. In retrospect, though, the Jupiter 4's home-organ styling and sonic under-achievement guaranteed that it would never become a classic. That accolade was reserved for the synth that was to come...

THE JUPITER 8

Three years on, the world was still awash with American synths. Sequential Circuits had remained the market leader, with Oberheim running a close second. As for the Japanese... well, everybody 'knew' that they couldn't make real polyphonic synthesizers. The Korg PS series (which had eventually included three models, the PS3100, PS3200 and PS3300) were commercial flops, and the cheaper PolySix lacked the kudos to be taken seriously. It was into these hostile waters that Roland launched an 8-voice Jupiter, the JP8. Unfortunately, it made very little impact. A few bands adopted it, but only to supplement their American synths, not to replace them.

Yet right from the start there was something a bit special about the Jupiter 8. Prophets and Oberheims were always heavy-sounding, thick and imposing. In contrast, the Jupe seemed capable of much greater clarity and transparency. Unlike any other synth of its era, it didn't impose its own character upon a sound: if you wanted 'fat', you could have it; If you wanted ethereal, you could have that too. Indeed, the Jupiter 8 sounded as it looked — beautifully sleek and polished — in exactly the way that the American synths didn't. Why this should have been so is one of life's little mysteries. After all, later Prophets such as the Prophet 10 and Rev3 Prophet 5 used Curtis oscillator chips, as did the Roland. They all shared two VCOs per voice, a 24dB/octave low-pass filter, a pair of traditional ADSR envelope generators, and a wide range of modulation

options. But there it was: Prophets were fat, imposing, and dominated a mix, whereas the Jupiter 8 would happily complement other sounds without overpowering them.

Furthermore, the Jupiter 8 bristled with features its competitors lacked. It had a split keyboard and numerous keyboard assignments, so that you could, for example, play unison lead lines above left-hand pads, or electric pianos above grunting basslines. It offered oscillator sync, cross modulation, switchable 12dB/oct and 24dB/oct filtering, and polyphonic portamento. It saved and loaded voices reliably via its cassette interface, and it incorporated a superb arpeggiator that featured what is still my favourite Jupiter facility — 'random' mode. This added instant 'sparkle' to almost any track. Finally, there was a comprehensive complement of analogue interfaces that controlled the arpeggio speed, portamento, sustain, filter cutoff, and the VCA. Add the CV and Gate outputs (with the pitch CV derived from the highest note played), and the result was an impressive package of features.

Released in 1982, a full year before the appearance of MIDI, an upgraded Jupiter 8, the JP8A, offered a number of improvements, with greater tuning stability, and an updated LED screen. It was also the first synth to take a credible stab at talking to another instrument polyphonically. The interface that made this possible was called DCB, and it almost certainly was the most important factor in ensuring the synth's success. The early 1980s were the heyday of electro-pop, and, long before the arrival of MIDI and the Atari ST, bands were writing songs based upon short programmed musical sequences. The machines they used for this were Roland's MC4 and MC8 Microcomposers. DCB allowed the Jupiter to communicate with each of these, as well as with the Juno 60 and a range of 'JSQ' sequencers. Suddenly polyphonic sequencing was an affordable reality. The pop community was convinced: 'Relax', by Frankie Goes to Hollywood, was dominated by a Jupiter 8, Nick Rhodes relied heavily upon his 4s and 8s, and players such as Steve Luscombe (Blancmange), Vince Clarke (Erasure), John Foxx, and Martyn Ware (Heaven 17) were soon adopting the JP8. Roland even took care of owners of the original model by releasing a DCB add-on board, the OC8, that could be retrofitted to early Jupiter 8s. Indeed, another Roland box, the MD8, eventually made it possible for DCB to talk to MIDI, so the Jupiter 8 became one of the first big analogue synths with MIDI, years before retrofits became available for many of its contemporaries.

The Jupiter 8 and 8A had one other quality that made them more desirable than their competitors. Due to slack manufacturing and electrical tolerances, voices programmed on one example of a Prophet or Oberheim could sound quite different on another, ostensibly identical, one. Some players have called that defect 'individuality', but I don't imagine they were very happy when they walked into a studio costing £100 per hour, loaded their patches into the studio synth, and found that all their string ensembles had become composite brass patches. This never happened on a Jupiter 8 or 8A (otherwise I wouldn't have mentioned it).

Jupiter 6.

THE JUPITER 6

The following year, 1983, Yamaha launched the DX7, and synthesis was never the same again. With its 16-note polyphony, MIDI, velocity and pressure sensitivity, and so-called 'Equation Generators', it made the big Rolands seem decidedly old hat. No doubt Roland asked their corporate selves what they could do to make the Jupiter 8 more desirable in the post-MIDI world. The answers — self-evident to those who played it — would have been to increase the polyphony, add velocity and aftertouch sensitivity, work in more sync and modulation options, re-introduce chorus, and incorporate as sophisticated a MIDI implementation as 1983's technology would permit. Perversely, though, Roland launched the Jupiter 6.

The JP6 retained the Curtis oscillators of its bigger brother, but with just 12 VCOs (offering a maximum of 6-note polyphony) rather than 16. It lacked velocity sensitivity, it lacked aftertouch sensitivity, it offered fewer programming options, it had no chorus section, and it featured only the most basic MIDI implementation. It was no match for the vastly more flexible and, at less than £1500, much more affordable DX7. The Jupiter 6 bombed.

Had the new Roland cost less than £1000 it might have become a well-received workhorse synth, finding an honourable niche ▶

COMPARABLE POLYSYNTHS & CURRENT VALUES

Looking for a classic analogue polysynth? Besides the various models of Jupiter 8, you might like to consider the following alternatives:

MAKE & MODEL	S/H BARGAIN	S/H RIP-OFF	MAX VOICES	MIDI	VELOCITY SENSITIVITY	AFTERTOUCH SENSITIVITY
ROLAND						
JP8/8A	£450	£1000	8	No	No	No
MKS80	£650	£1200	8	Yes	Yes	Yes
SEQUENTIAL						
Prophet 5	£400	£1000	5	No	No	No
Prophet 10	£750	£2000	10	No	No	No
Prophet T8	£750	£2000	8	Yes	Yes	Yes
OBERHEIM						
OBX	£300	£550	8	No	No	No
OBXa	£400	£800	8	No	No	No
OB8	£500	£1000	8	Yes*	No	No
MOOG						
Memorymoog	£500	£1000	6	No	No	No
Memorymoog Plus	£500	£1000	6	Yes	No	No
YAMAHA						
CS80	£400	£750	8	No	Yes	Yes

* on all but the earliest versions

somewhere between the Juno 60 and the Jupiter 8. It even offered a couple of tricks not found on its siblings, most useful of which were the high-pass and band-pass options found on the VCF. But, at £2250, the Jupiter 6 had limitations which far outweighed its benefits: it had no screen, its arpeggiator had lost the JP8's 'random' mode, patch volume was not programmable, it lacked a MIDI Thru, and it had but a single output. The final nail in its coffin (though this is a personal view) was that no matter how you programmed a JP6, it always sounded like... a JP6. That it now commands higher second-hand prices than the enormously superior Super JX10 is one of life's unfathomable mysteries.

THE MKS80 SUPER JUPITER

It was to be another year until Roland produced the synth that everybody had been waiting for. But when they did, it was not a keyboard. It was a 2U rackmount module developed to partner the MKB1000 and MKB300 master keyboards. A boring black oblong box in what was to become a glorious tradition of boring black oblong boxes, it was the MKS80 Super Jupiter.

The MKS80 delivered the entire Jupiter 8 wish-list and more, including a much larger memory and upgraded internal electronics. Now let's get one thing clear — despite a few commentators postulating otherwise, the MKS80 had nothing to do with the Jupiter 6. Although there were ultimately to be two versions of the instrument (one with the Jupiter 8's Curtis oscillators, the other with custom chips developed by Roland themselves) both retained the architecture of the Jupiter 8, sounded identical to the Jupiter 8 and, apart from their many enhancements, were the rackmount module versions of the Jupiter 8.

Unfortunately the Jupiter module was the antithesis of the Jupiter keyboard in the style and ease-of-use departments so, unless you were happy to sit for hours struggling through a digital parameter-access programming system, you also needed the optional MPG80 programmer. Almost as large (and currently as expensive) as the MKS module itself, this offered yet another superb facility: it transmitted all your twiddles as SysEx. Thus the MKS/MPG combination became one of the first analogue synths (and still one of the few) that allowed you to sequence parameter changes within a patch. Hooked together, the MKS80 and MPG80 were exactly what the name 'Super Jupiter' suggested. They were the business.

WHAT HAVE THE ROMANS EVER DONE FOR US?

The following is a complete list of Roland's 'Roman' synths and their modular derivatives. Prices depend, of course, upon condition, but beware the plague called 'fashion' that causes pound notes to disappear before your very eyes.

Model	Released	S/H bargain	S/H rip-off	Comments
Jupiter 4	1978	£100	£250	Roland's first true polysynth.
Promars	1979	£100	£200	In essence, a monophonic Jupiter 4.
Saturn 09	1980	£50	£100	A very basic organ. Best avoided.
Jupiter 8	1981	£450	£800	The classic 8-voice polysynth.
Juno 6	1982	£100	£175	Introduced DCOs, but retained analogue warmth.
Jupiter 8A	1982	£500	£1000	The updated JP8, with more stable tuning and DCB.
Juno 60	1983	£175	£350	Added 56 memories and DCB to the Juno 6.
Jupiter 6	1983	£300	£600	Roland's first MIDI synth, also used Curtis chips.
Juno 106	1984	£250	£400	The last Juno, with 128 memories and MIDI.
MKS80	1984	£650	£1200	Velocity- and aftertouch-sensitive Super Jupiter.
MKS80 w/MPG80	1984	£1,000	£2,000	The analogue dream machine.
MKS7 Super Quartet	1986	£100	£300	7 voices & drums. Preset Juno 106/TR707 in a box.

Roland MKS80.

WHAT'S IN A NAME?

Despite the success of the D50 and subsequent synths, Roland have never really recaptured the magic of the Jupiter 8. Yamaha have taken their turn to dominate the keyboard world, and for the past decade Korg have proved unwilling to relinquish the crown they assumed when they launched the M1. Maybe it's because of this that every time Roland launch a new synth with the number '8' in its name, the rumours start... will this be the Jupe's long-awaited replacement? It happened with the JD800, and most recently with the JP8000. Indeed, Roland seem very keen to position the JP8000 as the digital Jupiter 8, but without actually naming it as such. It offers knobs and sliders in the grand tradition of the big analogue polys, and it's a good synthesizer, with plenty of vintage features and modern enhancements. Yet for all the computer power and programming skill that has undoubtably gone into making it the best imitation it can be, in my opinion it still hasn't completely captured the magic of the Jupiter 8 or, in particular, the MKS80. After 17 years and three technological revolutions, the original still stands supreme. Ultimately proving to be more flexible and far more reliable than its contemporaries, it has survived the test of time. It sounds great, it's a doddle to program and use, it's robust, it gives you no nasty surprises, and it was and still is the prettiest synth ever built. It's a funny old world, isn't it?

> "The Jupiter 8 was and still is the prettiest synth ever built."

THE TWILIGHT OF THE GODS

Roland discontinued the Jupiter 8 and Jupiter 6 in 1985, and their analogue era ended with the demise of the MKS80 in 1987. There were, of course, successors in the form of analogue/digital hybrids such as the JX8P, Alpha Juno 1 and Alpha Juno 2, but these could never replace the Jupiter 8. It was only the Super JX10 that managed, to some extent, to keep the spirit of the big 'analogue' synth alive.

The popularity of the JP8 itself (together with that of every other analogue synth) hit a low point in the late 1980s, but even in those analogue-unfriendly times, it still numbered users such as Mark Kelly (Marillion), Patrick Moraz (with the Moody Blues), Roland Orzabal (Tears for Fears), Peter Vetesse (Jethro Tull), John Beck (It Bites) and Steve Gray (Sky) among a long list of aficionados and endorsees. In stark contrast, the 1980s witnessed the deaths of Moog, ARP, Oberheim and Sequential Circuits — a situation that would have been inconceivable when Roland released the Jupiter 4. Much of the blame for this lies with the DX7 and its successors. But he who laughs last (and all that)... A big analogue polysynth such as a Prophet 5 or Jupiter 8 will now command a second-hand price four times that of the more common Yamaha. Even the Jupiter 4 is enjoying something of a revival (although this has more to do with its name than its sound, because the Juno 60 is, for most purposes, a far better polysynth). But that's fashion for you! SOS

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8/10

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9/10

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BOSS DR660 drum machine, £195, mint condition. IG8/909 samples, 255 sounds, editable reverb, chorus, delay, flanger, 4 outputs, boxed, manual, PSU, £195. ☎ Andy 01355 261649 or email md2cd @cablenet.co.uk (Glasgow area).

BOSS SE50 stereo multi-effects, as new, boxed with manuals, £120. ☎ Alec 01204 888675.

DENON DTR2000 DAT, full size co-ax and digital in/outs, cost £800, will sell for £275. MQX32 MIDI interface for PC, two in/out, SMPTE, £70 ono. ☎ Paul 0966 463429.

ELECTROVOICE RE20 microphone, mint condition, £250. Qlock 3-10 synchroniser with interfaces for Sony 5850, Fostex E16 24-track, £1250. Fast Movie Machine, MJPEG video encoder, £200. Video Logic scan converter (output VGA to video) £250. ☎ 0118 958 4934 (Reading).

ENSONIQ DP/PRO, Symetrix 606, flightcase, SKB 4U, dbx 166, all new, £1600. ☎ Gerard 0171 404 8329.

FOSTEX 260 4-track, double speed, swept EQ, MIDI compatible, a very high spec quality mixer, pristine condition, home use only, £350; Boss RSD10 sample/delay unit, mini rack size with trigger play and gate play, power supply included, £80; Boss RCL10 compressor/limiter with noise gate, power supply, mini rack size, £80; Alesis Microverb II, excellent condition with power supply, £80. ☎ 01865 240019.

FOSTEX 812 mixing desk, 12:8:2 with MIDI mute, perfect condition, £450 ono. ☎ Neil 0181 853 0224.

FOSTEX D80 8-track hard disk recorder, rack mounting, 850Mb hard disk, hardly used, £850. ☎ 0141 339 0344.

FOSTEX D80 8-track hard disk recorder, Mackie SR32 4 mixing console plus quality looms, excellent 8 in/out digital recording package, all in mint condition, £2000 ono. ☎ 0966 194790.

FOSTEX DMT8 8-track digital recorder, just serviced by SCV, also has version 2 software, boxed, £750. ☎ Craig 0191 265 3846.

FOSTEX E16 plus 4050 autolocator, home use only, £1550. Studiomaster Diamond 12:2 mixer, nearly new, £225; Peavey CS800X power amp, £450. ☎ 01723 870648.

FOSTEX E16 multitrack recorder and remote unit, £1050; Seck 1882 desk, £375; Rebis Rack and 6 units £275. ☎ John 01705 325650 (Portsmouth).

FOSTEX E16, hardly used, as new, with 3M tapes, £1450 ono. ☎ Dave 01285 713691 (Fairford, Glos).

FOSTEX E16 multitrack recorder, home use only, excellent condition, Fostex Autolocator 4050, all with manuals, £1500 ono. ☎ Andrew 01792 417656 (Swansea).

FOSTEX M80 8-track reel-to-reel tape recorder, loom, cable, manual, £320; Fostex 450, 8-track mixer, £200. ☎ 01992 558138.

FOSTEX M80 with remote, £400; Denon DRS810, 3 head professional cassette recorder, £250; AKG C1000 microphone, £120, all in very good condition. ☎ John 01203 361795/334409.

FOSTEX RD8 ADAT digital 8-track with internal sync, home use only, £1200; Yamaha Promix 01 digital mixing desk with ears for rack-mounting, home use only, £950. ☎ 0171 625 4038 (anytime).

FOSTEX R8 with remote cable, rack kit, manuals, £650; Fostex 812, £425; Ensoniq SD1 workstation plus voice crystal RAM, manuals, £695; all immaculate. ☎ 01295 721696.

FOSTEX R8 8-track with extension cable, 3 new reels, full working condition except track 1, thus £295. Behringer Sonic tube exciter, £225 or both for £500. ☎ Geoff 0370 754814 (evening).

FOSTEX X28H multitracker, 8-inputs, aux return, Dolby, home use only, excellent condition, boxed, manual, PSU, £250 including delivery. ☎ David 01706 213214.

FOSTEX X28H multitracker, 4-tracks, 8 inputs, excellent condition, boxed, manuals, Midiman, Syncman, £225. ☎ Ed 01795 842731.

JBL M350 SPEAKERS, 2 in excellent condition, £450 each. ☎ Gordon 01262 420552.

JL COOPER PPS100 MIDI rackmount SMPTE, MTC synchroniser, new, boxed, £150. Bel dbx noise reduction, 8-channel in rack, £150. Yamaha EMT10 piano, vocal, bass module, £85. ☎ 01482 448767.

KORG MS03 signal processor, includes original manual, £125. Moog Satellite, good condition, £230, seller pays shipping from Canada. ☎ 001 514 334 4405 (daytime) or Email ZeFrogue@accent.net

LEXICON LXP1 reverb, Lexicon LXP5 multi-effects, £250 each, Lexicon LXP15 reverb and multi-effects, £500 or swap for Emu Orbit or Carnaval, Zoom 9030 advanced instrument processor, £250; BSS DPR 502 MIDI expander gate, full spec machine with manuals, £350; Drawmer DS301 MIDI expander/gate, mint condition with manuals, 2 for sale at £300 each. ☎ 01535 645233.

LEXICON PCM80, £1600; MPX1, £700 respectively, both as new, boxed with manuals, must sell quickly. ☎ 01981 217458 (evening).

MACKIE CR1604 mixer, 16 inputs, two sets of stereo outs, great EQ, six aux sends, insert points, multitrack possible, rack ears and optional Rotopod for rotating connector section to most convenient position, boxed, manual, good condition, £620 ono. ☎ 01354 695239.

MACKIE CR1604, 16-channel mixer, 6 aux, 4 effects returns, hardly used, in excellent condition, no manual or box hence £500, no offers. ☎ Nick 0181 340 0329 or 0976 222991.

MACKIE 8-BUSS 24-channel, £2100; Drawmer DL241 compressor/gate, £250; SPL Stereo Vitalizer, £200; ART multiverb, 2 stereo multi-effects, all boxed with manuals, home use only, £80. ☎ Simon 01203 674526.

MXR DIGITAL time-delay, flanger, delay, chorus with knobs and manual, £180. ☎ 0171 221 7274.

NAKAMICHI CASSETTE DECK, £300; Technics cassette deck, £125; Denon CD player, £70; Hitachi speakers, £120; Soundlab DJ mixer with sampler, £240 ono; all in very good condition. ☎ 0181 287 1772 or 01523 499532 (pager).

PHILIPS DCC170, with optical cable, 4 brand new tapes, budget digital mastering, unused, £150. ☎ Dave 01299 404197 (Bewdley, Worcs).

RAM MICRO 16/8/2 studio mixer for all 4-track and 8-track applications. External rackmount power supply in mint condition, complete with manual and original box, £300 ono. ☎ 01223 811245 (Cambridge).

ROLAND S8X80 sync box converts SMPTE to MIDI clock/SPP and sync 24, manual, £150 ono; 3M 996 2-inch tape, new, £60; 3M 996 half-inch tape, new, £20. ☎ 0181 211 8822.

ROLAND SRV2000 reverb, mint, £260; Samson stereo 500 power amp, £175; Lexicon Reflex, £150; MXR time delay, £175; dBX over-easy compressors, half-rack, £70. ☎ 0121 422 9605.

ROLAND VS880 hard disk recorder, internal drive, SCSI, effects, v2 software, £1250 ono. Akai S950 sampler, expanded, time-stretch, £490; Novation Drum Station, boxed, manuals, £290. ☎ 01273 628703 (Brighton).

SAMSON MPL2242, 22-channel mixer, 48v phantom, 4-band EQ, 6 aux out, very quiet, mint, £500; Alesis Midiverb 3, £150; JL Cooper PPS 2 SMPTE/MTC MIDI sync unit, mint, £90. ☎ Philippe 01903 214380 (evening).

SANSUI MR6 classic 6-track cassette recorder, 3U rackmount, 50% more tracks than your average 4-track, bounce in stereo, recent full service from Panic Music, so sonically and operationally as good as new, double speed, varispeed, Dolby C, sync track, great condition, box, manual, excellent sound, £365 ono. ☎ 01354 695239.

SANSUI MR6 six-track recording deck, Sansui MX12:6:2 desk, Sansui MD7 remote control, MIDI

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sync unit, complete recording system, excellent condition, £595 ono ☎ 01705 613515.

SECK 18:8:2 mixer, mint condition, insert on every channel, offers over £360 please ☎ 01252 623601 (Hants).

SECK 18:8:2 mixing desk plus flightcase, £600, Yamaha RX5 tuneable drum machine, 12 outputs, £225 ☎ Mark 0117 972 4966.

SECK 12:2 mixer in very good condition, 3-band EQ with mid-sweep, 4 aux, mic and line inputs, inserts on each channel, manual, soft case, PSU, £200 ☎ Dave 01642 459355 (Cleveland).

SIMMONS SPM 8:2 digital mixer, MIDI controllable, £150, Fender Telecaster, USA, 22 frets, sunburst, Rosewood fingerboard, case, £450, 486 DX2-66 multimedia PC, 20Mb RAM, CD-ROM, soundcard, speakers, modem, 14-inch SVGA monitor, Windows 95, keyboard, mouse, loads of software, £350 ☎ 01702 616961 (Southend).

SONY DTC 690 DAT recorder 48, 44.1, 32kHz, analogue digital I/Os, £350, no offers ☎ 01222 460757 (Cardiff).

SONY DTC 1000ES DAT machine, very good condition, £500 ono ☎ Joe 0171 482 2345.

SONY HRMPS, effects, £290, Fostex DMT8, £750, Alesis Nano Synth, £290, Boss GX700, £270, Roland JX10 module, £490, Tascam DA20, £490, Roland R5, £110, Atari 1Mb with monitor, £190, Phantom power, 2-channel, £50, Rain Stick, £50, Irish folk drum, hand made, £60, all pristine ☎ 0961 157247.

SOUNDCRAFT DELTA 200, 16 4 2 professional quality, excellent condition, 24 inputs, 16 mic/line, 8 line, deluxe module with flightcase, £1400 plus VAT (private sale), Klark Teknik DN300 31-band graphic, excellent condition, £450 ☎ Jon 01773 823805.

SOUNDCRAFT GHOST LE24, boxed, unused, £2500, Korg M1 with stand, £435, Atari 520STFM, monitor, 1Mb, Emagic Notator, unused, £180, ring for sample CDs ☎ Mike 01925 791798.

SOUNDCRAFT SPIRIT FOLIO SI, 18 2 mixer, home use only, in very good condition, manual, boxed, quiet stereo desk with swept mids on mic input, £275 ono ☎ 0171 766 1616/01705 5271616 (weekdays/weekends).

SOUNDCRAFT SPIRIT FOLIO SX, hardly used with case, manual, various cables, 19-inch rack adaptor strips, £440 ono ☎ 0370 697876/01792 458496.

SOUNDCRAFT SPIRIT FOLIO SX, 20-input mixer, never used, £450, Emu Launch Pad controller panel, mint, boxed, manuals, £330, Roland R70 human rhythm composer with cards, Platinum Award drum machine, £320 ☎ 0181 964 0631.

SOUNDCRAFT SPIRIT STUDIO 32-channel mixer, £1700, Yamaha NS10 studio monitor, £180, Behringer Composer, £100, Behringer Ultrafex, £100, Alesis MIDIVerb 3, £100, all in excellent condition ☎ Stuart 01703 869792.

SOUNDTRACS MEGAS 20 16 16 mixing desk with MIDI muting, 4 band EQ, 6 aux send, £1100 ono ☎ James 01223 721776.

SOUNDTRACS PC MIDI-24 with extra effects returns, £1499 ono, Seck 18 8 2, £499 ono ☎ Carl 01223 236108.

SOUNDTRACS TOPAZ, 32-channel mixing desk with meterbridge, perfect condition, boxed, manual, £2100 ☎ 0181 741 0395.

STUDER B 62 quarter-inch, two-track mastering machine with trolley, £350 ☎ Simon 0181 552 5630.

STUDIO CLEAROUT Fostex G16s with synchroniser, £1500, Allen & Heath GS3, £900, Mesa Boogie Mk 3, £800, Revox B77, £250, all prices negotiable ☎ Andy 0181 881 9707.

STUDIO CLEAR OUT, Samson MPL2242 mixer, £350, Roland W30, £600, Novation Bass Station, £200, Boss DR660, £200, Alesis Microverb 3, £80, Zoom 9001 multi-effects, £80, all perfect ☎ Richard 01757 701010.

STUDIOMASTER CLASSIC MIXDOWN 8, 16 8 2 plus meterbridge, unused, 6 aux, as new, £1000, no offers ☎ 01604 765064.

STUDIOMASTER P7, 16 8 2 mixer with MIDI muting, £650 ono, Baretta electric guitar, £200 ono ☎ 0171 385 3332.

STUDIOMASTER CLUB 2000, 142, unused, box under warranty, £265; Lexicon Alex unused, in box, under warranty, £160 ☎ Paul 01743 231842.

STUDIOMASTER DIAMOND 16 2 mixing desk, 3-band EQ, 2 aux, mic inputs, good working order, £220; Fostex 2016, 2U, 16-channel line mixer, 4 aux, front and rear inputs, £130 ☎ 01708 523469 (Essex).

STUDIOMASTER MIXDOWN Gold, 16 8 16 2, MIDI mutes, flightcase, Mint, Allen & Heath, system 8/168, 16 8 2 with 8 tape returns, sensible offers please ☎ Mike 0161 740 9438.

STUDIOMASTER SERIES 5, 40 16 2, £1100, Groove Electronics M4CV 4-channel MIDI-CV convertor, £225, Fostex M80 8-track, £450, Trantec radio headset mic, £350 ☎ Nick 01642 490823/0385 711171 (Cleveland).

SYQUEST EZ135 removable hard drive, as new, boxed, £80 ono, 2x3-metre 8-way jack-to-phono looms plus gold-plated jack converters, £20 each, 4-octave MIDI controller keyboard, £60, Roland MDC1 module, £290 ono ☎ 0958 607578.

TASCAM 488 8-track recorder, £400, Philip Rees TRS1 sync unit, £45, Philips DCC730, 18-bit digital cassette recorder, £75 ☎ 01291 422907.

TASCAM 488 MkII as new, unused, still boxed, under warranty until July 1998, £450 ovno ☎ 01204 593301 (Bolton, Lancs).

TASCAM 488 MkII 8-track, 9 months old, good condition, boxed with manuals, £700 ☎ Paul 0161 279 2115/01884 258435 (Salford).

TASCAM DA30 MkII DAT recorder including wired remote, excellent condition with original packaging and manuals, £650 ono ☎ 01752 558218.

TASCAM DA88, multitrack recorder including SY88 sync card, £2000 ☎ 0181 245 0928/0467 891425.

TASCAM TSR8, half-inch 8-track recorder with 8 reels of used tape and remote control ☎ Jonathan 01380 726831.

TELEX DUPLICATOR 1-2-1 high-speed cassette duplicator, good condition, £420 ☎ 01291 629212.

TL AUDIO PM1 portable 4.2 mixer, VU metering, as new, £1000 (list price £1639), Sennheiser wind cover, MZS20 with pistol grip and windsock, £100 ☎ 01206 384143.

YAMAHA CBX HDR system, 19-inch rack, Studio Vision Pro Mac software, £550 ☎ 0181 889 0990/0802 447358.

YAMAHA DMP7 fully-automated digital MIDI mixer, absolutely mint condition, £450; Alesis Midiverb II, £150; Opcode Studio 4, MIDI interface for Apple Macintosh, 8 in/out, £250 ☎ Anthony 01784 481871.

YAMAHA MD4 digital recorder, as new, £500 ☎ Roger 01450 870763.

YAMAHA MT44 multitrack, £200; Yamaha EMP700 effects, £250; Watkins Copycat, £40 ☎ 01432 820467 (Hereford).

YAMAHA MT8X, 8-track portastudio, 3-band EQ, 2 aux sends, auto punch in/out, perfect condition, boxed, £460 ☎ Andy 01924 469002.

YAMAHA PM2000, 32 8 8 mixer, 32 inputs, 8 groups, 8 way matrix, 2 echo, 4 foldback, pre/post sends, flightcase, 2 power supplies, £5000 ono, also several lead trunks ☎ 01376 326088.

YAMAHA PROMIX 01 in very good condition with box and manuals, delivery possible, £1000 ono ☎ Andy 01926 886549.

YAMAHA REV500, 32 bit, still boxed, only £315 ono ☎ Tony 01273 686637.

YAMAHA SPX1000, top of the range unit, cost £1200 new, yours for £400 ☎ Neil 01384 838938 or 0410 136830.

DRUM MACHINES

ALESIS D4 drum module, excellent condition, brilliant sounds, £190 ☎ 01773 823805.

BOSS DR5, mint condition, boxed with manuals and PSU, £175 ☎ Chris 01708 859558/855495 (Essex).

BOSS DR660, 254 sounds, 4 outs, effects, boxed, £190; Atari STE, 2Mb, boxed, £70; Toshiba CD-ROM drive, £70; Syquest 44Mb removable rack with four cartridges, £75 ☎ 01752 562343.

HAMMOND RHYTHM unit (built by Roland and based on early "CR" and analogue drum machines). In mint condition. £100 ono ☎ 01223 811245 (Cambridge).

KAWAI R50E digital drum machine, mint condition, boxed, with manuals, £95 ono; wanted, DR55, TR66, CR8000, CR78, TR606, etc, early analogue drums ☎ Phil 0113 230 5036.

KORG DRMT module, 5 cards, 808/Linn, jazz, £140, Kawai R100 plus chip, 8 outs, £145, Korg KPR77 analogue, £95; Kawai K1, 2 cards, £220, Alesis Midiverb 3, £125, Microverb 2, £65, Behringer Dualfex 1, £60 ☎ Mark 0121 622 2743.

ROLAND CR78, excellent condition, £225; Roland TR727, seller pays shipping from Canada, £150 ☎ 001 514 334 4405 or email ZeFrogue@accent.net.

ROLAND R8M with electronic, dry power drums USA, contemporary percussion sound cards, complete with manuals, immaculate condition, £350 ono ☎ Andy 0151 708 6669.

ROLAND 505 drum machine, well used but not abused with manual, £50 ☎ 01795 667027 (Kent).

ROLAND TR909, immaculate, manual, £750 ono ☎ 0181 342 9014.

ROLAND TR909 rhythm composer, excellent condition, manual, offer please; Atari ST, monitor, mouse, software, £180; Ensoniq VFX work station, £350; JP8000 wanted, AN1X, Eurodesk, Nord, Orbit ☎ 01252 377638.

ROLAND TR909, £600; TB 303, £400; MSQ 700, £100; TR808, £400; JV2080, MKS 80 and JP8 MIDI for £700 each, Yamaha Promix 1, £650, Oberheim Matrix 12, £1300, Midimoog, £750, Lexicon MPX1, £450, PCM70, £400, PCM42, £250 ☎ Jerry 0181 480 7541.

SEQUENCERS

BROTHER PDC100 MIDI sequencer, data filer, 32-track, excellent condition, boxed with manual, £125 ☎ Ed 01795 842731.

KORG SQ10 analogue sequencer, £420; SH09, £250, Roland SBF325 stereo-flanger, £289; Yamaha CS10 analogue synth, £199; CR68, £99; SR88, £65 ☎ Tom 01384 353694.

ROLAND JSQ60 DCB sequencer, runs Juno 60, Jupiter 8, 2000-notes, overdub, two-sync (5-pin) outs, photocopy manual, £60 ☎ 01484 669911 (Huddersfield).

ROLAND MC500 with manuals and software update for MIDI files, £140 ono ☎ 0171 277 7292.

ROLAND TB303 Bassline, in mint condition with manual and carry case, £620, Philip Rees MIDI to DINsync (TB303) convertor, £45, both together for £640 ☎ 01933 678608.

ROLAND TB303, mint condition, manuals, boxed, £900, Korg Vocoder, as new with original microphone, £250 ☎ Franco 0039 438 989312 (Italy).

ROLAND TB303, serviced with Philip Rees MIDI interface, very good condition, £700 ovno ☎ Gerry 0116 255 7057.

ROLAND TB303, TR606, in very good condition, unmodified in original packaging, offers ☎ Mike 0114 230 1584.

ROLAND TB303 with manuals, case, mint, £650, Jupiter 6, £650, SH101, £250 SH09, £200, Korg Poly 61 with flightcase, £200, EDP Wasp, £250, Moog Prodigy, £250 ☎ 0114 248 4440.

YAMAHA QY300, hardly used, £400; Yamaha QY20, £150 ☎ Herve 01895 624341.

YAMAHA QY700, brand new, boxed with manuals, video and demo disks, full manufacturing warranty, excellent writing machine with on-board sounds and effects, £750, no offers ☎ 01884 821537.

COMPUTERS/SOFTWARE

APPLE MAC IIci, 8Mb RAM including Soundtools card and 650Mb SCSI disk, complete system £1000; CyberROM 4X PCMCIA CD-ROM drive, £100; 2-speed parallel port CD-ROM drive, £30; Digidesign Remote Control, £400, Digidesign SMPTE slave drive, £400; Session 8 8-track non-linear recorder, PC, screen, 2Gb SCSI disk, complete working system, £1500 ☎ 0118 9584934.

APPLE MACINTOSH LC475, 8Mb RAM, 160 hard drive, monitor, printer, MIDI interface, masterstracks Pro5 sequencer, Illustrator, Quark Xpress, Photoshop, disks, manuals, £400 or swap Roland MC303, R8, Akai S20, Workstation ☎ 0181 788 6986.

APPLE MACINTOSH 7200/90, complete with monitor, keyboard, 56Mb RAM and Cubase VST 3.5, £1100 ☎ Paul 0113 293 9810 (evening).

APPLE POWER MAC 7100/80, 80Mb RAM, 1Gb internal hard drive, built-in CD-ROM, 1Mb V-RAM, Apple keyboard & mouse, Steinberg Cubase VST 3.0, plus additional software, too numerous to list, £500 ono ☎ 01603 628390 (Norwich)/0410 264815 (mobile) or email jonathan@jmpr.demon.co.uk.

APPLE POWER MAC 8100/110, 56/2Gb, CD, CPU, £900 ☎ Russell 01633 601613 (Gwent).

APPLE POWERBOOK, 1400CS, 117MHz, 750 hard drive, 6XCD, 48Mb, modem, Emagic Logic v3, Steinberg Recycle, Rebirth, MOTU, MIDI interface, excellent MIDI programming set-up, £2000 ☎ 01442 878370.

ATARI 4Mb, monitor, Midex, Cubase v3.02, dongle, manual, Roland A880, MIDI Patchbay, 8-ins, 8-outs, merge, offers ☎ Mike 0161 740 9438.

ATARI 520STFM, 1Mb, hi-res monitor, Notator Logic 3, Unitor MIDI, 2-in, 5-out, SMPTE, EXT DS disk, £325, human touch sync, £50, Steady Eye VITC sync, £50; Hearmaster Eartrimmer Atari, £50; all boxed ☎ Robert 01572 770038.

ATARI 520STE & SM124, upgraded to 4Mb memory, £210 ☎ Mark 0973 719650.

ATARI 1040STE, 4Mb RAM, high-res monitor, all leads, cables, Cubase and tutorials, £230 ☎ 0956 505985.

ATARI HIGH resolution Emulator, converts any TV or colour monitor into high resolution, complete with instructions, £10 ☎ George 0181 785 9862.

ATARI MEGA 1, including high-res monitor and software £200 ono ☎ Justin 01273 834491 (West Sussex).

ATARI MEGA 4, 4Mb RAM, hard drive, Atari monitor, extra floppy drive, plenty of original software, music and games, £240 ☎ Gordon 0141 636 6589.

ATARI POWER PACK, 520STFM, 2.5Mb, Atari SC1224 monitor, trackball, power PC720B drive, software, all boxed with manuals, can split ☎ André 0181 554 4115 (evenings or weekends).

ATARI SERIES 900 hard disk drive with version 2.1 Cubase, £120; Tascam Porta 07 four-track, Korg KMX8 mixer, £320; swap cutdown Lambretta, 185cc for musical items, £800+ ☎ John 01529 413018.

ATARI STE, 4Mb, SM124 monitor, E-Magic Logic, Log 3, Unitor 2, Export, 128 MIDI channels, SMPTE, home use only, in very good condition, will not split, £375 ☎ Dan 01938 570356 (evenings).

ATARI STE with 14-inch high-res monitor, Cubase V3.1, all leads included, mouse, £250; Maclue CR1604 mixer, 16-channels, 3-band EQ, 6 aux, 8 inserts, clean, quiet mixer, perfect condition with box and manual, home use only, £550; Drawmer DS201 noise-gate, £165, various other bits for sale ☎ 01858 575 353.

C-LAB NOTATOR with dongle and manual, swap with PG300 or PG800, Dolby A in rack, 4 pieces, balance in/out, Dolby A 361, swap or sale ☎ 453 966 6638/452 129 6938 (Denmark).

DIGIDESIGN AUDIOMEDIA III, PCI soundcard, 20 bit digital input and output for PC, Mac, VST, three months old, £360 ☎ Dave 0181 287 6224.

DIGIDESIGN AUDIOMEDIA III, PCI audio card. Latest BIOS (runs with PCI burst mode) ☎ Kevin 01242 230489 (Cheltenham).

DIGIDESIGN PRO TOOLS III, brand new 7100/80, 40MB/700HD, PT III NuBus core, extra DSP farm still sealed, 882, PT 4.0.1 s/w, SD II, DINR, Studio Vision Pro, most other plug-ins, recent purchase, still under warranty, manuals included. £5000 ☎ Kingsuk 0181 907 8278.

EMAGIC AUDIOWERK 8, Logic Audio version 3 (Mac), one month old, as new, £750 ☎ 01442 878370.

EXABYTES EXB 8700LT archiver, many cartridges, head cleaner, ME220 media archiver software for Pro Tools, total cost, £1300, will sell for £850 ono, all 7-months old ☎ Mike 01382 22689.

FUJITSU 230Mb Magneto-Optical drive plus seven disks, £200 ono ☎ Trevor 01787 47108 (Essex).

MACCELERATE ACCELERATOR BOARD speed up your Mac with a 604e/200mHz processor board, 7500, 7600, 8500 or any Mac with upgradeable CPU slot, £450 ☎ David 01923 234887.

OPCODE STUDIO VISION audio and MIDI recording software for Apple Macs, no extra hardware required, complete original package with all manuals and disks, £75 ☎ 0181 778 7378.

PC 486, 50MHz, 540 hard drive, 4Mb, Cubase, Cakewalk, CoolEdit, AWE32 sampling soundcard, all installed, cost £1000, will sell for £395, excellent value, can give full demo ☎ Phil 0171 614 2408/385 7269 (work/home).

PC WORLD VOUCHER worth £1000 for sale, unwanted prize, will accept £900 cash, or exchange for Kawai K5000S ☎ Andrew 0181 883 6709.

PENTIUM P133 PC, 32Mb RAM, 1.2 Caviar hard drive, 16 speed CD-ROM, Tahiti audio card, Windows 95, Cakewalk Audio version 6, Cubase 3.5, £650 ☎ 0958 473564.

PENTIUM P133 PC, 1020Mb hard-drive, soundcard, 16Mb RAM, CD-ROM, Cubase Audio, WaveLab 1.6, Rebirth 338, Cakewalk, MIDI in/out, instant dance music machine ☎ Mike 01785 840830 (Stafford).

PENTIUM P200 PC, MIDI + audio system, 16Mb RAM, 1.6Gb hard disk drive, 16X CD-ROM, 14-inch SVGA Soundblaster AWE64, Duplex MS keyboard, mouse, Windows 95, Cubase, Cakewalk, Sound Forge, Recycle, Sony SPK, cost £1500, sell for £830, can demo, no offers ☎ 0181 203 5960.

STEINBERG AVALON 2.1, Universal sample editor/librarian plus Avalon 16-bit D/A stereo converter, all for Atari ST and STE computers, cost £700, sell for £295 ☎ 0181 883 4329/0956 339577.

TURTLE BEACH FIJI soundcard, including Digital I/O, £325; Quantum hard drive, DMATO SCSI, lead, £230; AMDK6, CPU, will swap for official V3 Cubase for Atari, dongle, manuals, 2M SCSI lead, £10 ☎ 0181 9029784.

TURTLE BEACH TAHITI+MAUI+QUAD, complete sampling and 4-track hard disk recording system for PCs, excellent condition, manuals, boxed, £225 ☎ Neil 01388 731389 (County Durham).

TURTLE BEACH TAHITI sound card, with digital in/out, professional quality sound, hardly used, boxed with manuals and disks, £175 ono ☎ Scott 0117 9071028 (Bristol).

TURTLE BEACH TROPEZ plus card for PC, excellent condition, £150; also 8Mb samplestore for Tropez, £85, will sell together or separately ☎ 0181 830 1662 (evening).

PERSONNNEL

FEMALE SINGER REQUIRED by songwriter to record (and possibly perform live) some original dance material, must be drop dead gorgeous looking, with a lust for fame! ☎ 01903 210550 (anytime).

FEMALE SINGER/WRITER needed to form an ambitious collaborative dance trio, influences include E.B.T.G, Olive, Massive Attack, based in Brighton area, must be mobile ☎ Nick 01273 736733 (days).

HIGHLY INNOVATIVE, experienced producer with songwriting/engineering/remixing skills, available for professional work, own studio. Call for details and demo ☎ Patrick 01373 830733.

KEYBOARD PLAYER/PROGRAMMER, male or female wanted, committed, innovative, broadly-influenced, to play Rhodes, synths, Hammonds, samplers, for a band with strong, edgy and melodic songs ☎ Tim 01908 671688.

PRODUCER/SONGWRITER required to collaborate with commercial dance-pop music production, I own a pretty decent home studio ☎ Manu 01484 513961.

RECORDING PRODUCTION team with own commercial studio in London, looking for keyboard player into all styles of underground dance music for projects ☎ Vas or Dean 0802 485724.

SEEKING A BAND, producers, musicians and other collaborators, I'm an experienced performer, male vocalist with androgynous look, into pop, rock, dance, punk, easy listening ☎ Mikko 0171 226 7735.

SONGWRITER SEEKS Singer/Songwriter for collaboration, musical training helpful, influences Yazoo, Depeche Mode, Erasure, Enya etc. Sussex Area P.O Box 2674, Lewes, BN8 4LU.

THEREMIN PLAYER wants to meet innovative musicians, have theremin, will travel, let's jam! ☎ Volly 0031 20 673 7735 (Amsterdam, Holland).

VIOLIN/VIOLA player wanted by 'Attrition' (playing industrial/ gothic/experimental music) for tours in the UK/Europe/USA, check out www.projekt.com/bands/attrition/ ☎ Martin 01203 672288 (Coventry).

MISCELLANEOUS

ACOUSTIC VENTILATION silencers, cost £500 each, will accept £55, 14 available ☎ 0171 837 6419.

BASS GUITAR SERIES 10, in very good condition, lightweight, would suit beginner, hardly used, includes case, £125 ono ☎ 01923 234398.

BASS GUITAR, 1979 Shergold Modulator, 3 plug-in modules, treble booster/overdrive, stereo recording and anti-phase mixer, excellent condition, padded hard case, £250 ☎ 01633 244896 (anytime).

DANCE CDs, 100 albums, 100 singles, Warp, GPR, Rising-High, R+S, Peacefrog, 1990-1995, some rare and limited editions, very good condition, reluctant sale, £480 ☎ Chris 0181 255 8037.

DOES ANYONE WANT TO SWAP their 19-inch flightcase/box for my 27 unit Zimmer rack trolley? Flightcase must hold up to 8-12 units ☎ Guri 01462 678685 (Herts).

8810 LINEAR PHASE speakers,(a pair) brand new, unused, still boxed with 2-year warranty, £1250 ono ☎ 01494 551000 Ext 1046.

FLIGHT CASES Korg M1 case, black, £60, SKB shock rack, 8U suspended road case for samplers, brand new, £375 ono ☎ Steve 0973 970695.

GIBSON ES335 Honeyburst with original case in excellent condition, worth approximately £1800 new, will sell for £1000 ono ☎ 0973 236997/0161 721 4516 (Manchester).

MINIMOOG SUSTAIN PEDAL, £25; EMT10, £80; Oberheim DPX1, £265, Electro Harmonix Electric Mistress, boxed, in very good condition, £120; EMS synth, AKS, excellent condition, offers over £1500 ☎ 01726 66715.

PEAVEY BASS CAB, 250 watts, 1 x 15 and 2 x 10 speaker cabs, perfect condition, £225 ☎ Tony 0181 473 3138.

ROLAND GUITAR SYNTHESIZER, G505 guitar (Ibanez Blazer), GR300 synth module, £295 ono ☎ Paul 0151 342 4180.

ROLAND SLJD80-02 dance drums card-set, offers? PCM1-01 piano selection card, £25; Anatek Mac MIDI merger/interface, £35, Boss CE3 analogue chorus, £15; TR909 service manual, £10 ☎ 0181 692 8129.

SKB 10 UNIT flightcase, very good condition, £100; Peavey XRD690s powered mixer, 600w stereo, 8 channels, 9-band graphic, digital effects, only one year old, £600 ☎ 01273 596289/0410 130464.

SYNTH MANUALS, ARP Avatar, Bit 1, Trilogy, Moog MG1, Source, Prodigy, Rogue, Tesco 60F, SX400, Pro 1, Juno 60, 106, SH101, SH2, SH3A, Jupiter 6, Korg MS10, 20, VC10, SQ10, Yamaha CS5, CS10, CS15, CS30, CS30L and many more, from £10 each plus postage; Blue MOD grip for SH101, excellent condition, £50 ovno, Yamaha SY85 disks (too many to list) £5 each; wanted: kit synths, complete or unfinished ☎ Graham 01942 814818 (Bolton).

3U RACK BAG WITH SHOULDER STRAP strong wooden frame with padded fabric covering, no compromise build, (made by CPS, not the cheaper JHS soft rack), brand new but surplus to requirement, perfect for samplers, £99 ☎ Kingsuk 0181 907 8278.

WAVESTATION ROM CARDS, Tracewaves Vol 2, £35, Masterbits, Inspiration, Science Fiction card, £40, both for £70; also Kawai DC8 blank RAM, as new, £40 ☎ Dave 01642 459355 (Cleveland).

WANTED

AKAI MPC3000 sequencer/drum machine required, cash waiting ☎ 0181 883 4329/0956 339577.

ALESIS ADAT, Quadraverb or similar, Roland XP50, Yamaha SY85, Akai sampler and PC software, guitar bits also required, cash waiting ☎ 01869 347167 (Oxfordshire).

ANY UNUSED HALF-INCH tape, full reels only, any 01/MFD disks, cards ☎ Duncan 01226 360219.

CASIO CZ230S manual or photocopy ☎ Rob 0181 740 8916.

ELECTRO HARMONIX 0400 mini synthesizer schematics wanted or photocopy of the underside of the synth circuit board to facilitate a rebuild ☎ John 01389 751843 (evening).

EMU ESI32, condition not important as long as it works and has manuals, will pay up to £700 ☎ Magnus 01235 831279.

ENSONIQ ASR SAMPLER KEYBOARD, have you got one? I will pay cash for the best deal ☎ Leon 0171 223 844 (Battersea).

ENSONIQ EPS16+ rack, with or without SCSI, also Soundcraft Spirit 24-track mixer ☎ Rob 0116 276 1242.

EVENTIDE 4000 or 4000B Harmonser, Digitech Studio Vocalist, Lexicon MXP1, Yamaha REV500, Klark Teknik DN6000 audio analyser; valve mic; all wanted ☎ 0171 431 1654.

FOCUSRITE GREEN Voicebox or channel strip ☎ Chris 0181 571 6794.

KORG N264 video manual, cash waiting ☎ Al 01792 429282 (evening).

OBERHEIM OB1 monosynth, ARP Axxe, (white face) Octave Kitten, Nord Rack, Mutator and Technics WSA1R rackmount synth ☎ 01243 830697.

ROLAND MC303 wanted, cash waiting for best price, any condition ☎ Phil 0113 2305036.

ROLAND PG10 programmer or PC editor software for Roland D110 (not shareware) ☎ Steve 01902 870101.

ROLAND SH101 manual wanted, hard currency waiting ☎ Alistair 0181 888 3099.

ROLAND S760 CD-ROMs, orchestral family volume 3 (CD706) Modern Sonic Volume 1 (L-CD703) or access to them ☎ Trevor 01787 476108.

ROLAND TB303, **TR909**, Nord Lead, AN1X, JP8000, Orbit, Phatt, ESI, JD800, W30, Eurodesk, Promix, FX, Korg, TR808, or similar for home project, most items considered ☎ 01252 371699.

ROLAND TR505, TR606, TR707, dance card for R8, Novation DrumStation, Roland R8 Mk2, TR626, TR727, no ridiculous 'vintage' prices please ☎ 0181 449 9698.

ROLAND W30, FAULTY OR DAMAGED, cash paid, depending on extent of damage or nature of fault ☎ Nick 0114 272 6433 (Sheffield).

SANSUI MDR7 sync unit plus PSU ☎ 0151 632 1682.

YAMAHA CS80 synthesizer wanted, must be in good condition, preferably with stand, manual and music rest, Prophet VS rack, must be in good condition, Morpheus Cards, Morpheus expanded dance range, Film Score Composer ☎ 01535 645233.

YAMAHA MDF2/3 data filer, £150 maximum, or Yamaha 2 8-inch QD and MCD64 memory card, Yamaha SU10 for about £150 or less, needed urgently ☎ Darren 01707 262397 (Herts).

YAMAHA SY85 voice/sample disks, Zoom 1201/4 effects, various sample CDs including Robots & Computers, 3-tier keyboard stand ☎ Tris 0115 958 1216 (Nottingham).

YAMAHA WX7 wind controller, good condition, cash waiting ☎ David 01400 272833 (Lincs).

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QUESTIONS

Outboard EQ? Why would you want that, then? Well, those in the know will testify to the sonic power and flexibility that a quality parametric EQ can bring to the recording process, and Focusrite EQ is in the upper echelons of quality outboard. The company have made a name for themselves with their no-compromise Red and Blue ranges of professional outboard, as well as the large-scale consoles that even a Camelot director would have a hard time affording. Keeping this pedigree in mind, it's not surprising that this Focusrite Green Focus EQ is one desirable piece of kit.

For starters, the Green Focus EQ has a versatile front end, incorporating a preamp stage which allows you to directly plug in a mic, line or instrument source (including guitars) without routing the signal through the desk, thus offering you a cleaner audio path to tape when recording. The EQ section offers 4-band EQ with additional bypassable high- and ow-cut filters. In the EQ section proper, the high and low bands can be used in shelving or bell mode, with 18dB of boost or cut, adjustable from 30Hz-470Hz and 3kHz-18kHz respectively. Taking care of the mid-range are twc fully parametric sections, each of which may be switched to cover different frequency ranges. The x3 Frequency button causes the low section to span the range 40Hz-1.2 kHz, while the high section can span 600Hz-18kHz. The EQ bell curve is adjustable between Q values of 0.3 to 1.8, again with 18dB of cut or boost available.

As you would expect from Focusrite, this unit has loads of headroom and performs like a real pro. In his review our Editor, Paul White, had this to say: "Focusrite's EQ behaves as do most of the best EQs I've heard, in that it is quite assertive, but it doesn't create phasiness or unnatural coloration, even when you apply it generously." This truly is a processor that will make a difference.

How much would you expect to pay for this design classic? Don't answer — thanks to Focusrite, we're giving away a £940 unit to the winning entrant of this competition. Just complete and cut out the form on the left, and send it off to the address below no later than **Friday, 6th March**.

the small print

1. Only one entry per person is permitted. 2. Employees of SOS Publications Ltd and Focusrite, and their immediate families, are ineligible for entry. 3. No cash alternative is available in lieu of the stated prize. 4. The competition organisers reserve the right to change the specification of the prize offered. 5. The judges' decision is final and legally binding, and no correspondence will be entered into. 6. No other correspondence is to be included with competition entries. 7. Please ensure that you give your DAYTIME telephone number on your entry form. 8. Prizewinners must be prepared to make themselves available in the event that the competition organisers wish to make a personal presentation.

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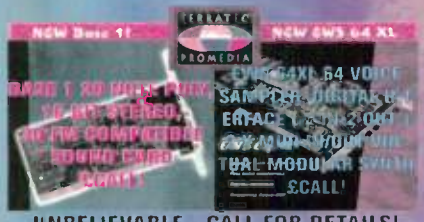

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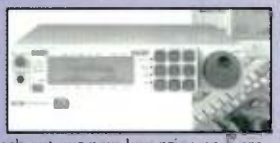

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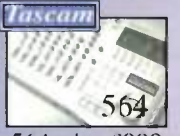

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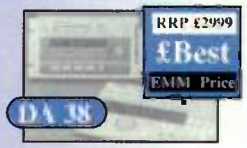

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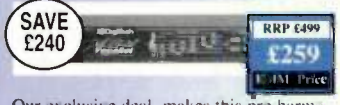

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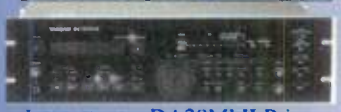

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by Ubo Weyers

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By Simon Millward

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By David Mellor

If you are thinking of setting up a home studio, a project studio or a DJ studio, this book is the place to start. It takes a highly practical 'nuts and bolts' type of approach to help you produce an efficient and productive studio. It covers soundproofing, keeping the sound in and the noise out, acoustics, studio layout, and studio equipment, and advice on the kit you are likely to need. The book ends with an invaluable questions and answers section, a glossary of terms and a list of contacts.

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MUSIC BUSINESS

THE STUDIO BUSINESS BOOK

by Jim Mandel

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Written & compiled by Annie Gunning

This book has been produced by the Association of Professional Composers and examines the business of musical copyright and music publishing from the composer's point of view. It aims to educate composers of all kinds of music in the operation of the music publishing business to help them obtain, negotiate and benefit from publishing agreements and avoid expensive mistakes. Apart from publishing, the book also covers copyright legislation, performing and mechanical rights, the royalty administration societies, music in film, broadcasting, theatre and ballet and commissioning agreements. There is also advice for composers setting up their own publishing companies. An exhaustive and useful book.

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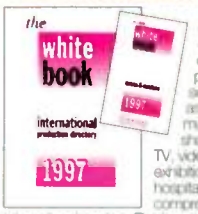

This is the latest edition of the essential source of contacts for artists, performers, venues, services and facilities associated with music, concerts, shows, festivals, film, TV, video, conferences, exhibitions and corporate hospitality - there's even a comprehensive international section. The layout is logical and an index makes fact finding an easy task - altogether an indispensable 864 pages. The new edition once again comes with a complementary copy of The Little White Book, which lists the contents of the larger volume to a pocket-sized list of names and phone numbers.

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Joe & Pauly Ortiz

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THE ART OF RECORD PRODUCTION

Richard Burgess

This is the most comprehensive guide to record production ever published. It is an insiders guide to the mysteries of the recording studio and the problems faced by the modern day record producer. It includes a rundown on the different types of producers available, what they are likely to earn and the relationships they have with artists and record labels. A must for everyone interested in the world of record production.

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SOUND ASSISTANCE

by Michael Talbot-Smith

This book has been designed to be readable and easy to understand. Aimed at anyone wishing to work for a sound assistant, but who lacks a thorough grounding in maths and physics.It starts from basic electrical principles, going on to cover electronic devices, sound and hearing, basic acoustics, mics, speakers, analogue and digital recording, TV sound and PA. There's even a section on safety, plus a glossary and a further reading list. The author is a former trainer of audio engineers at the BBC's Wood Norton facility.

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by Donald S Passman

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By Rob Young

This book comes from Prentice Hall and aims to help you get the most out of your MIDI system, by providing loads of tips on programming realistic instrument and rhythm parts, using sequencers to create advanced effects. Basic MIDI concepts are covered, along with advice on setting up a MIDI-based home studio. More advanced discussions cover specific types of MIDI messages and what you can achieve with them. All the techniques in the book are illustrated on a supplied floppy disk.

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by Peter Buick & Vic Lennard

Written by Peter Buick and Vic Lennard (author of SOS's Atari Notes column), this book offers information at your fingertips and is an indispensable reference source for the musician or sound professional in the recording, broadcast, live, video, computer, multimedia, post production and theatre industries. It includes comprehensive MDI spec, General MDI, MTC, MSC, and SysEx information. It also includes charts, check lists, useful hints, tips, and ideas, plus a glossary, list of contacts and a comprehensive indexed, it is also organised into convenient sections. 150 Pages.

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By Paul Overaa

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EMAGIC

THE EMAGIC LOGIC TUTORIAL VIDEO

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- Tutorial 1 The Arrange window and basic sequencing
- Tutorial 2 Playback parameters & Toolbox
- Tutorial 3 Controlling MIDI data flow
- Tutorial 4 Manipulating sequence data
- Tutorial 5 Moving around in Logic
- Tutorial 6 Windows and key commands
- Tutorial 7 More sequencing
- Tutorial 8 Score
- Tutorial 9 Looking at the Event List
- Tutorial 10 Editing the Event List
- Tutorial 11 Using the Environment
- Tutorial 12 The best of the rest (HyperEdit, Matrix Editor, Cycle Mode and more)

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At last! The video you've all been waiting for! Nick Cooper unveils the incredible versatility of the VS 880 in this fully comprehensive Video Owners Manual Nick clearly explains every feature function and effect of this powerful new award winning Digital Studio Workstation,the video covers every aspect of the unit's capabilities in fullest detail, enabling you to realise its full potential The video also incorporates Labyrinths unique Video Index System VIS TM, which uses a combination of permanently on screen Time Code together with a Contents Listing

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MACKIE 8•BUS VIDEO

Almost 60 minutes of fun-packed, detailed explanation of the various features of Mackie's popular range of 8 buss mixing consoles (16•8, 24•8, 32•8, 24•E) and how best to utilise them. Onscreen numbers allow quick searching to desired topics.

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MACKIE ULTRA MIX VIDEO

This highly informative video for the Ultramix automation system, clearly demonstrates how to set up and use Ultramix's many time saving features to get the best from your system The cost of the video may be redeemed against the purchase price of an Ultramix system, making the video a good way to try before you buy!

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CUBASE

STEINBERG CUBASE

This manual is presented by Chris West Steinberg expert It's very much a practical get up and running video showing the novice user exactly how to install and begin using Cubase whether they're running the program on an ST Mac or PC computer — there's even a basic background on using the computers themselves! All of Cubase's controls are shown explained and demonstrated in depth Once you're familiar with the basic controls Chris takes you slowly through recording your first session followed by overviews of the various edit screens It's rather like having an expert tutorial that you can run again and again in the comfort of your home until you can use Cubase like a true pro
Topics covered include, the main screen, customising names and outputs copying and pasting between arrangements MIDI filter, cycle mode recording the tool box all edit screens

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SYNTHESIZERS

ROLAND XP-80

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ROLAND XP-50

This XP 50 video owners manual is produced by Roland Corporation US and covers all the major features of the instrument in detail This is an application based video that provides many examples of how your new found knowledge can be applied Just a few of the 30 separate topic areas covered are Effects Choosing Sounds Loading a Song Loop Recording Copying a Track to Pattern Making an RPS Set Track Editing Multitrack Recording, Patch Editing, Creating Splits & Layers in a Patch

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ROLAND JV-1080 VIDEO MANUAL

Roland's amazing JV 1080 synthesizer module is covered in detail in this informative video Presented by Tim Walter the video the video guides you through the basics and leads you painlessly onto the advanced features The video even shows you how to fit the expansion boards & gives demonstrations of some of the wonderful sounds they contain Once again this video has been produced in association with Roland UK & USA to ensure that everything it contains is accurate and relevant to the new and more experienced users alike

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by Sam West
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Cassette/CD

by Sam West
Although geared towards singers of varying abilities, voices and styles, the contents of this recording are often challenging even to the professional singer! The video (code V067) goes into more technical detail, whereas the CD or Cassette concentrate on more intensive practising. First of all the exercises are sung, in various keys and then with musical accompaniment and melody line, so you can concentrate more on your voice while practising (karaoke style). Vocal exercises can be boring, but this studio recording has been produced and presented to a very high standard, with interesting musical accompaniments to the exercises.

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Full of professional tips and clear examples, this superb video offers the musician with no recording experience a fast route to successful operation of a simple home studio.

CODE V005 **£24.95**
Running time: 1 hour 10 minutes

LEVEL TWO

This is, in our opinion, the best ever guide to the equipment and skills needed to produce high quality results from a home studio.
Full of clear examples and graphic information, the video majors on effects and how to use them well. It also covers the do's and don'ts of track bouncing; microphones and mic techniques for different applications; getting the most out of multi effects units; plus an analysis of guitar effects with top session guitarist Milton MacDonald and an enlightening interview with ace producer Alan Parsons. *Writer/ presenter Julian Colbeck packs the programme with professional tips, allowing musicians of all kinds to get the most out of their home studio.*

CODE V006 **£24.95**
Running time: 1 hour 45 minutes

LEVEL THREE

This video is packed with information and professional tips on advanced MIDI applications in the home studio, including interfacing with sequencers, which sync code is best for which application and why. Hit producer Martyn Phillips (Erasure, London Beat) discusses modern recording techniques, and top programmer Paul Wiffen examines
the opportunities and benefits offered by hard disk recording. It offers
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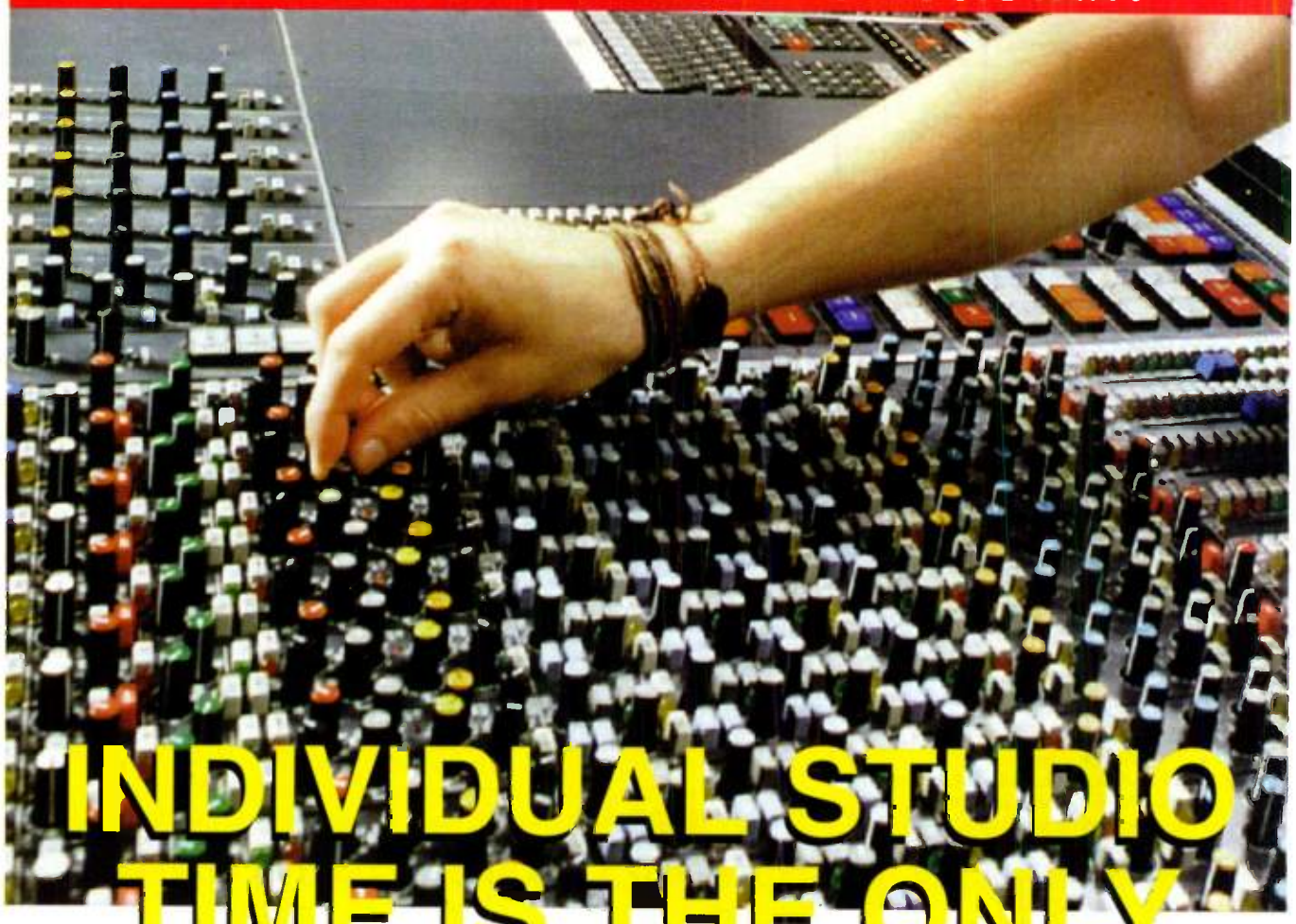

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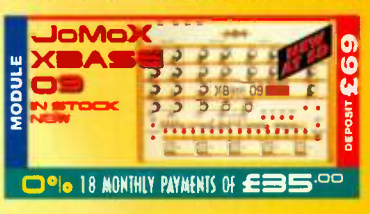

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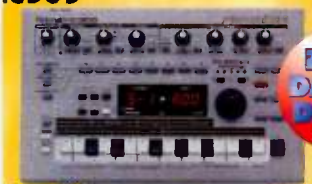

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sounding Off

Your cosy home studio can be more like a death-trap, as CHRISTOPHER HOLDER warns...

During a recent appraisal of an effects unit with an external power supply unit (PSU), I began to think along the lines of this little gripe. The words 'external PSU' have almost become a mantra for reviewers to incessently bleat on about. In fact, if anybody outside our happily cloistered hi-tech sphere were to eavesdrop on one of these diatribes they'd be forgiven for thinking that the dreaded wall-wart was produced in Iraqi sweatshops, in flagrant breach of a hundred different UN directives — not to mention the Geneva Convention, the Zagreb Pact, the Treaty of Rome and The Horse & Haywain Handshake. But no, it wasn't the PSU that got me pondering, it was the widgety thing that manufacturers bolt on the back to stop the unit becoming accidentally unplugged. In theory this is a splendid idea — not as good as an internal PSU, mind, but still better than a power meltdown. What we don't always hear about is that the widget presents some other mortal dangers in the studio. Let me explain.

The term 'home studio' has a very cosy ring to it — it's all visions of warm cups of cocoa, soft lighting, bean bags and the strains of the *Teletubbies* theme echoing down the hall from the kiddies' rumpus room. The reality, as anyone bothering to read this article will know, is something entirely more sinister. Don't be under any misapprehensions: the home studio is a minefield, and if we've learnt only one thing from the life of the 'People's Princess' (other than not to travel at twice the speed of sound in a titanium-plated Mercedes), it is that minefields aren't to be trifled with.

As gear becomes lighter and PSUs sprout around power points like so many barnacles around the culvert of a unloved seaside pier, so increase the dangers of becoming entangled in power cords. Furthermore, as reviewers we're encouraged not to bolt gear into our rack units, thus preserving its aesthetics. This can mean having bits and pieces stacked precariously around the studio in a manner that openly invites disaster. The cord widgets, although well meaning in their purpose, can sometimes turn a dangerous situation into a truly deadly one.

Home studios are hotbeds of inspiration; at the beginning of an evening you can unwittingly catch the soaring thermal of a mind-expanding idea, and for the rest of the night, by heck, you do your best to stay with it. This involves sharpness of thought, and nimbleness of movement. One of the quickest motions (so to speak) is in answering nature's call: you wheel around in your chair, you spring to your feet and make a frantic dash for the door. Of course, the harsh realities of life dictate that your flailing limbs, in their haste to help you relieve your bursting bladder, intercept at least a couple of these infernal lightweight external PSU power cords. Without the widget, this encounter between limb and lead results in the relatively harmless unplugging and clattering of gear. *With* the widget, it's an entirely graver scenario. Your body might already be in the bathroom but your foot is back in the studio, firmly ensnared in the cords of death, the sheer force of your ablutive zeal sending the unit's chassis catapulting across the room, spinning and flying with all the menace of that feral kid's razor-blade boomerang in *Mad Max*.

The other classic threat in the home studio involves the common-or-garden pair of headphones. Sure, the headphone may seem innocuous enough and is an invaluable tool for certain types of monitoring, but many a poor unsuspecting sod has nearly been strangled, decapitated, or torn limb from limb by one of these vicious little buggers. Firstly, every session in the studio must start with the act of sitting on your headphones, resulting in the expense of yet another pair and six months in a pelvic brace. Often the damage can be even worse when you haven't sat on your headphones. How? Everyone knows the feeling of sitting down then just catching in your peripheral vision your sunglasses/full coffee cup/Auntie Ethel on the chair. Your body goes into seizure in an attempt to avoid the collision: your arms flap, your legs buckle, you grasp at anything that might assist you to avert the inevitable. In the end your headphones are totalled anyway, and you've succeeded in burying yourself under an avalanche of the entire complement of your synth rack.

Other favourites? How about leaning over to tweak a synth while monitoring on your headphones, only to find that the lead has wrapped around your chair leg, resulting in both of your ears being ripped off by the impact? What about forgetting that you've got your headphones draped around your neck, heading out of the studio, tripping over the lead and face-planting into an ashtray that hasn't been emptied since the coronation?

Take care out there, and I mean, *take care*. SOS

If you'd like to air your views in this column, please send your ideas to: Sounding Off, Sound On Sound, Media House, Burrel Road, St Ives, Cambs PE17 4LE. Any comments on the contents of previous columns are also welcome, and should be sent to the Editor at the same address.

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