# SOUND ON SOUND





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hen MIDI sequencers first showed up on the market, not only were they were very different to the sophisticated packages we have today, they were also very different from each other. Some almost demanded you write music in machine code, some attempted to create a loose tape-track analogy, while others tried to forge a new and better way of their own. No two offered the same features, and the number of computers supported was bewildering. Whether you had a Commodore 64, a BBC Micro or a Sinclair Spectrum, the chances were you could find a MIDI sequencer of some kind to run on it.

When the Atari 1040ST showed up, its built-in MIDI port and generous memory capacity (for the day) made it an obvious choice for serious sequencing, so support for the other platforms dwindled, but it wasn't until Steinberg's *Pro24* was superseded by *Cubase* that we got our first glimpse of what was to become the model for the standard sequencer interface. These days most sequencing is done using Macs and PCs, but virtually every serious sequencer has an Arrange page that looks similar to that first *Cubase* model, complete with scissor and glue tools for editing. Look a little closer and you're also likely to find a score edit page, a piano-roll grid editor and an editable MIDI events list, not to mention a

GM mixer. What's more, with every revision, the interfaces of all these different programs seem to become more similar. When C-Lab's *Creator* evolved into Emagic's *Logic*, a number of features were heavily influenced by *Cubase* — but in the latest *Cubase* revision to version 4, a number of *Logic*-style features have been added. You only have to look at the reviews of *Logic Platinum*, *Cubase* v4 and Opcode's *Studio Vision Pro* in this issue to see how similar these programs have become (see pages 92, 96 and 104 respectively). In fact the only thing that hasn't converged (yet) is the layout of the menus, and this is probably the main obstacle to people

changing platforms. User-definable key commands are now fairly commonplace, so it should also be possible to allow users to configure menus to their own liking.

Of course, one of the most significant things to happen to sequencers in recent years is that they now have the means to manipulate digital audio, and with faster computers came the ability to handle mixing and generate effects within the computer. The pilos and cons of this way of working have been covered at length in this magazine, but suffice it to say that 'native' processing power can provide the user with a powerful and compact recording system at a relatively low cost. At the beginning of this year, Emagic and Steinberg announced that they would cooperate by sharing Steinberg's VST



plug-in architecture so that the same plug-in software can be used by both Steinberg and Emagic users. Recently, Opcode announced that it too had reached an agreement enabling it to support VST plug-ins, which at the very least means plug-in designers now only need to write one piece of software where previously they had to come up with three different products.

It also allows users to move between sequencer platforms without abandoning whatever investment has been made in software plug-ins

This degree of co-operation is clearly a good thing, but what should be the next development? More processing power means we can run more plug-ins, but that's really just scaling up what we already have rather than coming up with something new I don't pretend to know all the answers, but I do have a few suggestions. We have audio processing plug-ins, so why not a MiDI processing plug-in architecture that will allow third party companies to write 'arrangement aid' plugins? For example, as a guitar player with little knowledge of orchestral arranging, I'd like something that could rearrange block chords as proper string parts in a choice of styles. A routine for creating MIDI harmonies could also be useful, and I'd love to have Steinberg's scalequantise function available from within Logic. In fact, how about an intelligent plug-in specifically designed to compensate for the vagaries of the MIDI guitar — that would make a few friends in the SOS camp! So far, only MOTU's Freestyle has dared to break away from the tyranny of the quantise click — what further improvements can be made in that direction? Sequencers could also be expanded to include sample playback — we have the computing power and cheap RAM to do it - and while we're at it, the sequencer should be able to load commercial sample CD-ROMs via the computer's CD-ROM drive. What do you think — what should the sequencer be when it grows up?

Paul White Editor

#### SOUND ON SOUND

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**Antares ATR** 



# Crosstalk

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

Our email address is ses, feedback@sespubs.co.uk

The SOS web site can be located at www.sespubs.ca.ak

#### Live Bedroom Show

I enjoyed Paul White's series on practical studio soundproofing and am currently busily fixing my house. I wonder if he might be able to help. I live in a three-bedroom end-of-terrace house and I am adapting the smallest room (1.8m x 3m) into a control room. For soundproofing, I'm fixing secondary double-glazing with curtains over and am carpeting with thick-hair underfelt. I may also rehang a solid-timber door with a three-quarter-inch plywood layer. What should I do about the ceiling?

My second bedroom (2.8m x 3.1m) is the guest room but is also doubling as the live acoustic room. It has a wooden floor, and at the moment sounds like a tin alley, with a horrible metallic reverb. Obviously I could soundproof this

room too, but I'm wondering if I need to, as there won't be as much sustained noise coming from this room. What I'd like to know is are there any simpler steps I could take to improve the quality of the live sound, or do I need to soundproof first anyway? Could I hang curtains over the walls to absorb some of the sound, and should I use acoustic tiles?

Duncan Alldridge London

#### **Editor Paul White replies:**

Soundproofing terraced houses can be very difficult, but as long as you aren't planning to take drums in there, you should be able to get acceptable results. The hairfelt underlay is a good move, and it may be advantageous to put your speaker stands on small paving slabs resting on the carpet rather than using spikes that go through to the wood. Adding mass and thickness to the door is also a good idea, as is double-glazing, but you need to ensure that the door fits properly and that seals are used to prevent air leaks.

Ceilings can be a problem, especially if you share loft space with next door, but adding a thick layer of rockwool betwen the joists will help (you should have this anyway for thermal insulation), as will boarding over the joists inside the loft. One effective treatment is to put a layer of dry sand over the boarding in the loft, but you have to be very careful not to put more weight up there than the joists can support. A hundred kilos or so should be no problem, but don't put

any more up there without consulting a builder.

For the live acoustic room, a few thick drapes should help tame the worst of the ringing. Try just covering patches of the walls, leaving at least 50 percent bare and reflective; if you can arrange the drapes on rails, you'll be able to modify the acoustics as needed. A rug covering part of the floor may also help - you can take this up when you want a live sound for recording acoustic guitar. Acoustic tiles may also be used, but you can't move these around so easily. Don't worry about the soundproofing unless you have problems, but remember not to tap your feet as you play, as this can cause more of a nuisance than the music itself!

#### DATascene conversion

So I've got my ADAT, I've got my Power Mac, I've got Cubase Score VST, I've got my Korg 12/12 card, I'm all linked up and everything is working well but have I really got to tell my wife that I need to spend even more money? The ADAT (original type version 4.03) is set as the clock source and is therefore running at 48kHz, and so when I've mixed and 'fiddled' in Cubase I have a 48kHz stereo file. Now comes the problem...

My CD duplication plant wants the DAT at 44 1kHz, but my DAT only accepts digital input at 44 1kHz or analogue input at 48kHz, so I need to convert my files from 48kHz to 44 1kHz in order that I can transfer them to DAT digitally. I've conducted a search on the Internet and looked at news groups and discovered shareware programs for PCs that would seem to do the job, but there doesn't seem to be one for



The now-discontinued Alesis Al-1 provides high-quality conversion between different sample rates.

the Mac — so can you or anyone else help me with my dilemma or do I really have to buy an external converter? I haven't got a bottomless wallet — then there's my wife, who keeps reminding me that I've said countless times that I won't need to buy anything else... Roy Griffiths via email

Editor Paul White replies: Buy your wife something nice, then see if you can pick up a second-hand Alesis Al-1 box — though to be honest, it may be cheaper to buy a new DAT machine that can record analogue 44.1kHz, such as the Tascam DA20

Mk II. The AI-1 can convert 48kHz to 44. IkHz and vice versa, as well as allowing track pairs to be copied between an ADAT and a regular DAT machine. Alternatively, (and providing you have lots of free hard drive space) you could use a program such as Sound Designer II to convert the sample rate of your file within the computer. If anyone out there knows of any shareware or freeware that will do the job, please let us know.

Assistant Editor Sam Inglis adds: I'm told that the freeware Mac program SoundApp PPC, which you can download from www-csstudents.stanford.edu/~franke/Sou ndApp/, will allow you to resample 48kHz files at 44.1kHz. There are several other Mac-related web sites offering similar shareware or freeware programs — take a look at www.partnersinrhyme.com/Mac/MacSoundUtilities.html and wwwhost.ots.utexas.edu;8080/mac/pub-mac-sound.html.

Alternatively, if you do decide to buy a hardware sample-rate converter, check out Dave Shapton's review of the Sony MDS JDE520 on page 52. For around £200 you not only get the sample-rate converter, but also a 20-bit analogue-to-digital converter and a high-spec Minidise recorder.

## Perfect Synchronization.



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The Unitor8 is an 8 input 8 output cross platform MIDI interface synchronizer and stand alone 32 patch MIDI patch bay. The Unitor8 offers incredibly fast lock times, the ability to stack up to eight units for up to 1024 MIDI channels, read and generation of SMPTE for LTC or VITC, time-code video burn-in and more. Shipping with comprehensive control software, the Unitor8 is a must for audio/video production work and the perfect addition to any project or professional studio.

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#### You're too kind...

First of all, I would like to start with the usual: you have a great magazine, and that's the truth. I've tried several others, but I found yours the best. However, I find that almost all of your reviews are very favourable. I don't know what the reason is. Maybe the stuff you choose to review is the best there is, or maybe all high-end music production stuff is good these days! But I find that hard to believe. I think that you must do more comparisons. I, like most people, often find myself facing a problem like 'what microphone to buy?' or 'what synth do I need?' and so I would very much like a side-to-side comparison.

But now to my real question: my main synth at the moment is a Roland SCC1b, which is a computer soundcard. My problem is that it is very noisy, whereas in comparison, my Event Gina is dead quiet. How can I try to minimise the noise? I've tried putting the Roland in different slots and changing the video adaptor slots, but nothing helped. The problem seems worse when the computer gets hot (in the winter, the sound was less noticeable!). I also tried changing the cables that connect the SCC to my mixer, but that didn't work. My computer setup consists of said SCC1b and

Gina soundcards, a modem, a video card (ATI), and two hard disks (one 1.7 and one 4.3Gb).

Of course, I guess the best thing would be simply to buy a separate module for the sounds. I would like to buy something that resembles the Roland, to maintain the sounds I used in my MIDI compositions. Which, if any, of the Sound Canvases would you recommend? Ron Mertens

via email

Editor Paul White replies: Firstly on the subject of 'favourable' reviews: while I admit that there is very little gear around these days that can be written off as actually bad, our reviews are designed to show the strengths and weaknesses of each piece of gear we test, and if we feel the price is too high, we say so. The problem with doing comparative reviews on things like synths and mics is that different people expect different things from them. For example, you could take two mics with the same price and technical specification yet find that one works best with vocalist A while the second works best with vocalist B. The same is true of processors such as compressors, equalisers and multi-effects, and similar problems arise when you try to compare

> synths: some people want a perfect emulation of real life, while others want abstract sounds, and

> > I'll het no two

neonle agree on what consitutes the definitive string sound. Technical imperfections such as noise are a different matter, and

would be pointed out as a flaw. On a purely logistical front, doing side-by-side

reviews would mean waiting until several products of roughly the same type were available, whereas at SOS we like to keep our reviews as up to date as possible. The only practical way to present several products at once is in a round-up, usually several months after the products were first reviewed.

Moving on to your noisy soundcard, it sounds as though you've tried all the obvious things like moving to a different slot and keeping bunches of cables away from the card. The inside of a computer is a very noisy environment and it takes a good designer to optimise both the soundcard circuitry and earthing arrangements in order to minimise noise pickup. Unfortunately, a great many budget audio products do not follow best practice when it comes to circuit board layout, especially grounding, but unless you have the expertise to track down the problem yourself and modify the circuit board, I'm afraid you're stuck with it. Perhaps more users should make it known to synth and soundcard manufacturers that they are unhappy about buying products unless they're supplied with a proper technical spec that includes their noise performance. While most cards now come with some form of basic spec, the majority of stand-alone synths tell you nothing.

If you want the definite Sound Canvas, the new SC880 is supremely impressive (see review last month), though sadly not cheap. Even the more modest SC external modules are surprisingly good, though, and a second-hand SC88 would be a good investment. You might also consider a Yamaha MU10 GM/XG module, as these are being sold off very cheaply at the moment, and they sound lively and clean as well as being a little more upfront in character than the Roland. You should be able to get an 'end of line' unit for around £120 or less. Harking back to my first point, I can't tell you whether the Roland or the Yamaha GM sounds are better (I use both) - they're just different, and each faction has its champions and detractors.



module is a good second-hand buy.

#### Neat(o) solution

In his review of the Neato Label system (August '98 issue), Paul White found the system worked well but he had problems with curling labels. Neato's web site offers the solution for this: having unpicked a tiny bit of the edge of the label, put the label face down on a flat surface and peel the backing off the label rather than the label off the backing. No, I didn't believe it either, but it works a treat and gives nice flat peeled labels which never bubble. Roger Derry via email

#### Dicing with DAT

In response to Rob Kirkwood's letter about DAT (Crosstalk August '98): there is a production quality difference in audio DAT and data DAT, although it is slight. It is highly likely that one can use audio DATs in data DAT backup machines with very little noticeable problem. However, it should be pointed out that data DAT machines 'play' at a totally different speed and use a totally different encoding technique to audio DATs, so it would be very difficult to store audio information using a data DAT machine. A sample rate drop would be the only solution, unless some kind of ultra-compact compression is developed. Also, data DATs are pulled around far more ferociously in a data DAT backup machine than their audio equivalent, meaning that data DATs are made stronger than audio DATs (or at least they are supposed to be!). The heads on data DAT machines are also different to the heads on audio DAT machines. Using data DATs in an audio machine will cause excessive wear on the heads of the audio machine as the construction of the tape, and the way in which magnetic particles are attached to the surface, are subtly different. It is akin to using normal VHS tapes in an ADAT — it will work, but it'll end in tears! Richard Aitken via email

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# shape of things to come



## New BOSS Drum

here's a new drum machine on the way from Boss. The DR202
Dr Groove features 256 drum, percussion and bass sounds, developed, say Boss, "for groove music production from hip-hop to jungle, drum&bass, house, latin and more".

**Facilities include:** 

- 24-voice polyphony.
- 128 preset kits (sourced from 207 drum and 49 bass samples).
- Over 400 preset patterns in various 'groove' styles.
- Real-time and step-time pattern programming.
- Quantisation, including groove quantise.
- Real-time control knobs for on-the-fly sound tweaking.
- Rhythm mute function for dropping out individual instruments and creating breaks.
- Tap Tempo control tap along to the beat of a record or live music and have the DR202 match the tapped tempo.
- Low boost/cut control.

The new drum machine will also transmit MIDI controllers and can be

battery powered. It's set to retail for just £299 and should be available sometime in October.

Roland have also announced that they've licensed their Sound Canvas sound set and the GS extended General MIDI format to Apple Computer, for use in QuickTime 3.0 (see this month's Apple Notes on page 244), and to Microsoft, for use in their Direct Music API. The latter provides PC users who have only standard soundcards with access to a soft synth using the same technology as Roland's VSC88 virtual Sound Canvas. Composers for CD-ROMs or web sites will be able to write with a Roland Sound Canvas knowing that anyone with the soft synth installed will hear the music faithfully replayed. Versions of Windows 98 equipped with the GS soft synth are due any time now, and existing users will be able to upgrade.

- A Roland UK Ltd, Atlantic Close, Swansea Enterprise Park, Swansea, West Glamorgan SA7 9FJ, UK.
- T Brochure line +44 (0)1792 515020.
- F +44 (0)1792 799644. W www.roland.co.uk

#### **Emagic's Soft Circuit**

K Emagic distributors Sound Technology are taking the *Logic* range on tour.

There'll be plenty of opportunities for you to check out the facilities of the new *Silver*, *Gold* and *Platinum* versions of *Logic Audio*, Emagic's MIDI + audio sequencer, on the following dates:

- September 17: TSC Brentford (0181 400 9400).
- September 21: Music Connections, Leeds (01943 850533).
- September 22: Music Connections, Birmingham (0121 212 4777).
- September 23: Music Connections, Herts (01462 743300).
- September 24: Music Connections, Chelmsford (01245 354777).
- September 25: Music Connections, Chelsea (0171 731 5993).
- September 28: Music Connections, Southampton (01703 233444).
- September 29: Music Connections, Bristol (0117 946 7700).
- October 3/4: Hemel Hempstead Home Keyboard Show (0181 441 1050).
- October 10: Sound Control, Bristol (0117 934 9955).
- October 18/19: Ashford Home Keyboard Show (01304 375028).
- October 24: Sound Control, Bristol (0117 934 9955).
- October 31/November 1: Mad About Guitars Show, Birmingham (01353 665577).
- November 14/15: Stevenage Home Keyboard Show (01920 460646).
- November 21 & December 12: Turnkey, London (0171 379 5148).
- Sound Technology, Letchworth Point, Letchworth, Hertfordshire SG6 1ND, UK.
- +44 (0)1462 480800.
- W www.soundtech.co.uk

## **Tubular Sells!**

udio Technica's AT4060 tube mic has been designed with input from many professional recording engineers. The result combines modern design with vintage valve technology to produce a pro studio mic with low self-noise, high SPL handling,

and applications in all situations, from guitar cabs to pianissimo strings.
Each hand-selected valve is aged and individually tested, and dual gold-vaporised large diaphragm elements help to provide extended frequency response. Expect a review in SOS soon.

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## Yamaha Hot News

OS brings you exclusive advance news of the forthcoming MU128 compact desktop General MIDI/XG synth. Featuring a whopping 128 notes of polyphony, 64-part multitimbrality and compatibility with up to three PLG-series SW1000XG daughterboards, the new module has a paper spec unlike any other synth. Polyphony and multitimbrality are exceptional for a synth in this market, but it may be the expandability that'll make many musicians look twice: the daughterboards include the PLG100VL virtual acoustic modelling card, the PLG100DX DX7 FM card, and the PLG100VH vocal harmoniser card. The

basic machine also offers thousands of XG-compatible patches, a massive 24Mb of waveform ROM with hundreds of new orchestral voices, and seven (yes, you read it right, seven) internal effects processors. Of course, there's a computer serial connector at the rear, and the module is bundled with a CD-ROM full of software: XGworks Lite v2.0 for PC (plus a plug-in bundle), CBX serial driver, XG Editor for Mac, and a collection of demo MIDI files.

If you're already a Yamaha XG user, there's still a little time left for you to enter XG SoundWorld 98, an international competition with 200,000 yen in cash plus a 300,000-yen voucher for Yamaha musical instruments as a



grand prize — that's a total value of about £3500. The competition is also open to HTML programmers, since the prize is for an XG composition that shows off your XG programming skills in any format. So if your home page uses MidPlug (Yamaha's internet browser MIDI plug-in), you've created something with with SoundVQ (Yamaha's on-line audio system), or you've composed something really interesting with a QY700, for example,

you can enter. But move quickly: the closing date is October 31.

- A Yamaha-Kemble Music, Sherbourne Drive, Tilbrook, Milton Keynes MK7 8BL, UK.
- Product Info Line +44 (0)1908 369269.
- F +44 (0)1908 368872.
- W www.yamaha.co.uk
- W XG SoundWorld 98
- www.yamaha-xg.com/english/ xg/sw/index.html

## **Get your** hands on **HU!!**

t's been a long time coming, but Mackie's HUI (Human User Interface) hardware control surface for Digidesign Pro Tools systems has arrived. The first units have been installed and are already in use in Pro Tools facilities around the country. HUI offers full compatibility with Pro Tools 4.1 systems, taking the mixing process off the screen and onto an ergonomically designed and familiar work surface. Features include eight 100mm touch-sensitive motorised faders and eight virtual pots, which are assignable in banks to different Pro Tools tracks, plus electronic scribble strips on every channel to show track allocation. A dedicated effects panel is provided for hands-on control of plug-in parameters, and the package is rounded off by a built-in meterbridge, complete analogue monitoring facilities (with talkback) and surround sound capability.

- A Key Audio Systems 1td, Unit D, 37 Robjohns Road Chelmsford, Essex CM1 3AG, UK.
- +44 (0)1245 344 001.
- f +44 (0)1245 344 002. E info@keyaudio.co.uk

## Senders Victorious

of two of our previous competitions. It's been a long wait but a rewarding one for Adrian Hall of London, who wins a Sony TCD D8 portable DAT recorder which would have cost him over £600 in the shops. This was the prize in our July '97

competition, thanks to the generosity of FX Rentals (+44 (0)181 746 2121).

Also on to a winner is
Stephen McGoran of Sutton
in Surrey, whose entry in our
November 1997 competition
was plucked from the
postbag by our distinguished
panel of judges (it says
here — Ed). Stephen walks



Adrian Hall.

away with a Yamaha CS1x synth, a VL70m physical modelling synth module and a BC3 breath controller, which, as you can see from his photo, have settled very nicely into his home studio! These superb prizes were kindly donated by Yamaha-Kemble Music (+44 (0)1908 366700). Keep those competition entries coming in, and your gear list could soon be growing too...



## shape of things to come

## webcorner



oland UK have completed a radical Roverhaul of their web site, which now takes the form of an animated "music village". As your mouse pointer passes over the graphics of club, school, homes, studio, radio station and church, the village comes to life, complete with music. Clicking on a musical instrument opens a

link to an online catalogue of 350+ **Roland and Boss** products, some with audio demos, and brochures and free demonstration CDs can also be ordered on-line **FAOs (Frequently Asked** Questions) about Roland equipment can be accessed, and direct email contact with Roland's Product Support team is offered. A Download area hosts new software versions which can be downloaded free of

charge, and there are

news pages and details

of Roland roadshows and demonstrations. Finally, there's a dedicated education page which will be supported by a panel of experts answering questions regarding the use of music technology in education.

A Roland UK Ltd, Atlantic Close, Swansea Enterprise Park, Swansea,

+44 (0)1792 799644. www.roland.co.uk

West Glamorgan SA7 9FJ, UK.

Brochure line +44 (0)1792 515020.

current products, images, technical data sheets and listings of distributors and users.

A Soundcraft Electronics Ltd, Cranborne House, Cranborne Industrial Estate, Cranborne Road, Potters Bar, Hertfordshire, EN6 3JN, UK.

+44 (0)1707 665000.

F +44 (0)1707 660482.

W www.soundcraft.com

ooks like autumn is web site overhaul time: Soundcraft have been at it too, extensively remodelling www.soundcraft.com, with high-quality images and data files for all Soundcraft audio consoles. Soundcraft have also produced an Interactive Catalogue on CD-ROM, which features



Soundcraft's web site.

detailed information on all their

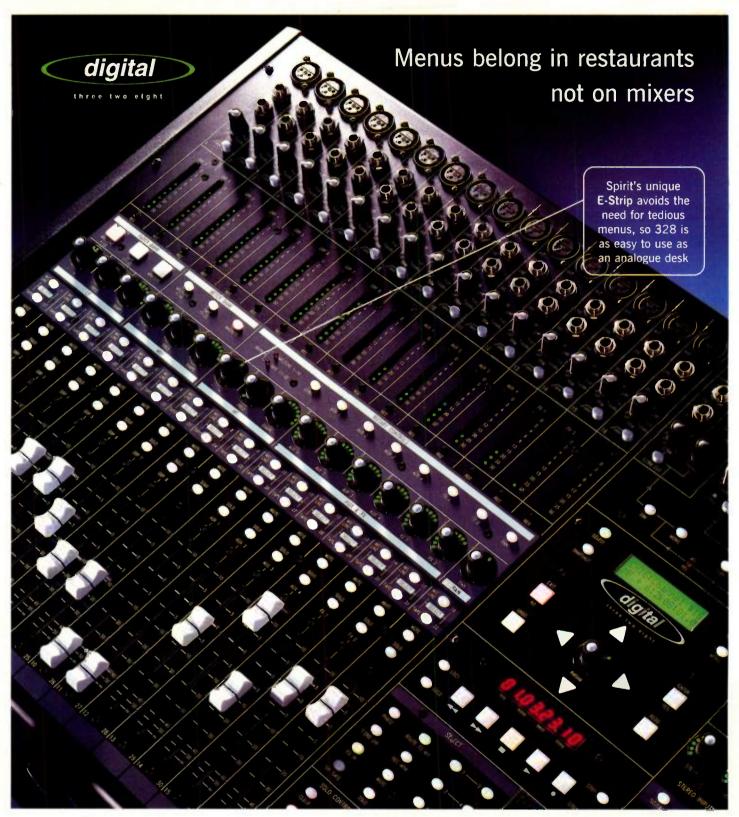
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W



42 Channel Digital Mixe Human

MAIN FEATURES Up to 42 Inputs at Mixdown 8 Bin 16 Mic/Line Imputs with Inserts and HPFs 16 Digital Tape Returns with 2 x ACAT Optical a a Talegam TDIE concessors as shortful. All inputs have access to 3 Band Parametric EQ, 4 external Auxes. 2 Lexicon Effects Sends and Pan via the E-Strip 24 Bit AID and DiA Converters with 128 x oversampling

throughout Moving 100 km Faces, throughout 2 x Lexicon Dual Programmable Effects Units 2 # Assemble Management ics Processors with Compressors, Limiters, Gates & Duraling Snapshot Automation with recalling of all main console

parameters for up to 100 scenes Commission Automobile Undo Redo, Copy & Paste functions Solo in Place 45.3 PFL Sym Full Metering and Monitoring of all Inputs, Processors, Auxes and Masters Timecom display 2 Consoles cascadable for 84 inputs at mindown and 32 track recording from ASAT Codes, Owned for Greens or I x AES/EBU and I x SPDIF gives 28 Digital Outs and Demail My OPTIONS TDIF 8 Channel Analogue FO Interface TDF Me TDIF AES EBU Interface 4 pairs AES EBU I,Os for Hard Disk production systems

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Chack out the	Cairie Wahaita.

## shape of things to come

Cakewalk pick a



akewalk's latest piece of software is claimed to be the first package aimed specifically at guitarists: *Guitar Studio*, for PCs running Windows 95 or NT 4.0, offers MIDI sequencing and eight tracks of digital audio recording with an interface aimed at guitarists. Cakewalk claim "seamless" integration with Roland's GR30

MIDI guitar synth (or Fender's Roland-Ready Strat — a Stratocaster with a Roland divided MIDI pickup built in), and the screen features guitar-like elements. You can even compose and arrange MIDI tracks using a virtual guitar fretboard. On the audio front, real-time effects include chorus, reverb and delay, and a built-in tuner, which lets you tune your instrument with on-screen help.

Guitar Studio also lets you print your work out, complete with guitar chord grids and lyrics. For moments when inspiration is lacking, the software can create new backing tracks automatically, using the Song Wizard: preview and select from a full library of drum loops, grooves and bass lines, in both MIDI and audio formats. and pick and choose until you like what you hear, then just choose

the desired number of bars and set the tempo. You need — besides your guitar — a 120 MHz Pentium PC or better, 12Mb RAM (32Mb for NT4.0 systems), a Windows-compatible soundcard and a MIDI interface.

- A Et Cetera Distribution, Valley House, 2 Bradwood Court, St Crispin Way, Haslingdon, Lancashire BB4 4PW, UK.
- +44 (0)1706 228039.
- +44 (0)1706 222989.
- www.etcetera.co.uk

An incorrect price was given to SOS staff during the preparation of the Alesis M20 review in last month's Sound On Sound, and the wrong price was published. The M20 actually retails for £5873.83 including VAT, not £7044.13 as stated. Apologies to Alesis and their UK distributor Sound Technology.

Following Paul White's comments about the lack of metering on the FwS ColOSCII ring modulator (see review in last month's SOS), Dr Douglas Doherty of DACS, the manufacturing company, has written to let us know that he has revised the design of the FwS series in the light of Paul's concerns. All units In on the Modulator and Music Inputs to the processor (after the equaliser controls on the latter input). The Modulator input meter on the ColOSCII and the forthcoming FREQues EQ will show either the external input or the internal oscillator, whichever is selected. The metering will consist of two LEDs: the lower in each pair will be green, illuminating initially around -40dB and reaching maximum brightness at +2dB, while the upper one will be amber and will illuminate at around +2dB, indicating optimum signal input.

DACS +44 (0)191 438 5585.

Italian software house FASoft have released a DirectX-compatible plug-in parametric EQ for PC users. Dubbed 4-Band ParEQ, the software offers real-time EQ for mono and stereo flies, with support for both 16- and 24-bit audio. Compatible applications include FASoft's own n-Track Studio, Sonic Foundry's Sound Forge, Steinberg's Wave Lab and many more. The cost of 4-Band ParEQ is just US\$15.

- A Flavio Antonioli, via Focilide 44,
- 00125 Rome, Italy. +39 (0)6 5235 4431.
- Flavia. Antoniali@flashnet. It

w n-frack.simplenet.com

Coda Music Technology and Et Cetera

Coda Music Technology and Et Cetera are offering owners of Passport's Rhapsody and Encore PC scoring software a chance to crossgrade to Coda's Finale 98 for £98. That's a saving of over £350. And to make sure users of the Passport software can port their old notation files to the new software, a £5 file converter utility will be available. These special offers will end soon, so move fast.

+44 (0)1706 228039.

he successor to Ensoniq's ASRX sampling.
sequencing drum machine/synth (reviewed in SOS September 1997) is called... the ASRX Pro.
The new-look instrument sports a funky new red colour scheme, and offers a number of improvements over the original. Firstly, its sample RAM is expandable to 66Mb, which yields 12 minutes of mono or six minutes of stereo 44.1khz sampling. Operating system upgrades are now easier, since the OS is stored in Flash RAM. A SCSI socket was optional on the original machine: it's standard issue on the Pro. Use it to hook up a removable drive, such as an Iomega Jaz or Zip, or connect a CD-ROM drive to take advantage of the Pro's compatibility with Akai. Roland, and Ensonio's own EPS and ASR10 sample libraries. The ASRX

**Ensoniq's Red Alert** 

Another totally new feature is Stomper, a built-in software synthesis program that "makes faithful reproductions of classic electronic drum machines — and

Pro can also read AIFF and WAV-format samples.

even phatter sounds." The new machine is still compatible with original option wave and audio output expansion boards.

- Road, Iver, Bucks SLO ONH, UK.
- T +44 (0)1753 630808.
- F +44 (0)1753 652040.
- W www.emsoniq.com

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

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Soundcraft +44 (0)1707 665000 Soundcraft US 1-615-360-0471



## shape of things to come

Canterbury College is providing a variety of eight-week courses covering basic MIDI sequencing and Digital Audio, as well as their two-year full-time BTEC National Diploma in Music Technology. In addition, a one-year BTEC first diploma is planned for the forthcoming year (subject to approval). Due to the success of the courses, the current facilities are being expanded and updated to include two large teaching rooms with individual workstations, and a purpose-built live recording studio. For more information, contact admissions at the address below

A Canterbury College,
New Dover Road,
Conterbury, Kent CT1 3AJ, UK.
1 +44 (0)1227 811188.

Distribution for KRK monitors has been taken over by recording media specialists ProTape, which means that the UK contact details on the end of last month's KRK V8 review are already out of date! Contact ProTape for details of the full range, including the V8 and spares.

ProTape +44 (0)171 323 0277.

505's July '98 review of the Doepfer A100 modular synth stated that the A100 modules could be bought in kit form. This was intended to convey that the modules could be bought individually and customised systems put together, but it gave the impression that modules themselves could be bought in kit form and the components assembled by users. UK distributors EMIS have asked us to clarify the situation. Apologies for any inconvenience.

+44 (0)117 956 1855.

One of the few shortcomings of Emu's Audity 2000 synth module (reviewed in SOS August 1998) was its 32-voice polyphony — this just didn't seem enough for a late '90s instrument with 16 arpeggiators and a sophisticated synth engine. This has now been rectified with the synth's v2.0 software upgrade. Patches using 6-pole filters will play with 64-voice polyphony; use 12-pole filters and the total is 32 voices again, but new technology lets the Audity dynamically switch between 6 and 12-pole filters based on voice count. The new operating system also allows new software to be piped into the synth via MIDI. Until the end of October, the v2.0 upgrade is available free to all Audity 2000 owners; after that, It'll cost £157.

+44 (0)1753 630808.

www.emu.com



## **Digitech in Full Effect**

igitech's new Quad 4 multi-effects processor offers the equivalent of four separate processors, and its four sets of in and outs mean that up to four signals can be processed at the same time. The processor boasts 20-bit A-D and D-A converters and flexible effects configurations with a choice of multiple in/out routings. Any effect can appear at any point in the effects chain, and the choice of effects includes compressor, rotary speaker, spring reverb, up to 5.5 seconds of delay, reverse delay, vocoder, stereo or mono sampler, envelope filter, and more. True stereo operation is possible, and there are 100 memories for user patches; 100 presets are also provided.

The Vocalist range of harmony processors has also been expanded by Digitech: the new Vocalist Access is a 1U rackmounting device specifically designed for keyboard players. It's claimed to be simple to use, yet offers four "natural-sounding" harmony parts, plus a four-voice detuning mode to provide vocal thickening or doubling. The Access also features several built-in reverbs.

Lastly, Digitech have launched their first ever dedicated bass guitar processor, the BP8. Alongside its collection of studio-quality effects such as reverb, pitch-shift, chorus, delay, flange, and so on, the BP8 features a fully programmable analogue compressor, with a choice of 12AX7 valve or solid-state preamps, 4-band EQ, and adjustable notch filter. An onboard continuous controller pedal can be used to modify parameters in real time, and the BP also features a built-in tuner.

- Arbiter Music Technology, Wilberforce Road, Landon, NW9 6AX, UK.
- +44 (0)181 202 1199.
- +44 (0)181 202 7076.
- arbiter@cix.compulink.co.uk
- www.arbitergroup.com
- W www.digitech.com

## **Euphonix 'R' Go!**

ou probably know the name of Euphonix from their high-quality professional mixing consoles, but the company are now moving into digital recording with the announcement of the R1 24-bit digital multitrack system. The aim for the company was to provide a user-friendly transition from analogue or digital tape to hard disk, maintaining a familiar user interface while providing improved "sound quality, reliability and operational efficiency". Euphonix's acquisition of digital recording specialists Spectral Inc. in 1996, helped to supply "much of the key technology" Euphonix needed to complete the recording aspects of the system, but the company have also used their experience in mixing and digital control in the development of the R1.

Base systems (from around £15,000) offer 24 tracks and include a full-featured remote control and MADI (Multi-channel Audio Digital Interface). High-speed Firewire interfaces are provided on each R1 system component, and the system is optimised for use with 9Gb Wide SCSI drives, which provide about the same recording time as two standard reels of 24-track tape. Analogue Devices SHARC DSP chips provide 40-bit floating point audio processing.

The R1 is described as modular and scalable, so systems can be expanded or reconfigured, and it will offer all the benefits you'd expect from a hard disk system — random access, instant locating and looping, cut-and-paste editing, and non-destructive recording. Expect it to be available from early 1999.

Going back to Euphonix's core mixer business for a moment, we've just heard that their *Mixview* software, for the CS series of mixers, has been upgraded to v3.2. Enhancements include better 5.1 surround sound handling, and a comprehensive automation-editing suite of tools specifically designed for the Euphonix Hyper-Surround panning system. You can now be trained on a Euphonix console — a 48-input CS3000, to be precise — at audio engineering college Alchemea. The digitally controlled analogue desk has just been installed in Alchemea's Control Room One.

- Euphonix UK Ltd, 6 Bergham Mews, Blythe Road, London W14 OHN, UK.
- +44 (0)171 602 4575.
- F +44 (0)171 603 6775.
- pturberfield@euphonix.com
- W www.euphonix.com



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are offering an additional 128 MB of RAM ready to be claimed absolutely free to purchasers of a Power Mac G3 and Steinberg's Cubase VST 4.0\*. See your dealer for details.







www.steinberg.net

## shape of things to come

## The **Synth's** in the Post...

he recent CeBIT Home 98 show in Hannover was the venue for the launch of Edirol Europe. Edirol is run by Roland as a mail-order operation specialising in the Sound Canvas family of products and computer music peripherals, and has been established in North America for some time. The company is now

making moves into desktop digital video, with the Video Canvas line, and details of their full range can be found in the Edirol European Buyer's Guide. Just write, call or email for your free copy — contact details below.

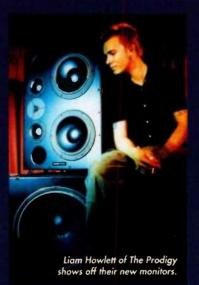
- A Edirol (Europe) Ltd, 500 Chiswick High Road, London W4 SRG, UK.
- +44 (0)181 956 2224.
- +44 (0)181 956 2225.
- I info@edirol.co.uk
- W www.edirol.com

# Dynaudio goes down well with Prodigy

ynaudio Acoustics have released a new sub-woofer specifically targeted at the burgeoning 5.1/multi-channel surround sound market. The BX30, as it is called, is a development of the popular ABES sub-woofer unit, launched four years ago, which is now in widespread use in many recording and audio post-production facilities. The new BX30 is also equally at home as a sub-bass unit in smaller project studios where the nearfield monitoring needs an extension to its frequency response and power handling. Crossover electronics are incorporated into the design, along with a 140W power amp, and the unit can handle frequencies down to 22Hz. The UK list price for the BX30 is £1510 including VAT.

Techno funsters The Prodigy have installed a Dynaudio M3A monitor system, complete with two custom-built sub-bass units, in their new private songwriting studio in Essex. The Prodigy are currently using the studio to prepare tracks for their next album — a follow-up to last year's million-selling The Fat Of The Land. The Dynaudio monitor system incorporates the new XTA 226





digital 2-input, 6-output crossover, Chord 1424 and 612 mono block amps and the new DCA 1250 amp. The installation was carried out by Nik Clarke, head of technical sales support at studio design consultancy Munro Associates, with Kevin Walker and Iain Beckham of Unity Audio.

The Prodigy's Liam Howlett, who is responsible for the band's songwriting, chose Dynaudio Acoustics M3A monitors because he wanted loudness, true clarity and a fantastic bass response: "I was totally blown away by the sound quality of the M3A monitors. I was really impressed by their depth and clarity, particularly at the bottom end, and I wanted a system with enough power to provide a club vibe, but accurate for mixing."

- A Unity Audio, Elms Barn, Baythorne End, Halstead, Essex, CO9 4AB, UK.
- T +44 (0)1440 785843.
- F +44 (0)1440 785845.

We were sad to learn that pro audio retailer Axis Audio of Stockport ceased trading earlier this year. However, Axis' remaining stock has been acquired from the receivers by Boomerang Sounds. Most of the 200 items are brand new, and some "heavily discounted" prices are in effect. Contact Boomerang if you'd like a list.

1 +44 (0)161 873 7770. E boomerang@compuserve.com

Paul Tattersall of Studiohire has formed LED, the London Equipment Database. If you're selling — or looking for — any live or studio gear (mixers, samplers, synths, effects and so on), LED could be the service for you. If you're selling, your gear is added to the database free of charge, but LED will charge a 10 percent commission when a sale is made.

+44 (0)171 435 3491. F +44 (0)171 431 1134.

Deltron Components' new SwiftPatch 48-hole patchbay system offers modular design and user customisability. Sealed jack modules — available in packs of six — offer four 3-pole jack sockets each for stereo, balanced or unbalanced operation. The modules can be used in normalled or half-normalled mode, with the choice being made by removing and rotating the module. No unscrewing is necessary — squeezing the release clips does the job. Colour coding, visible through the front panel, tells you instantly which state a module is in.

Rexburgh Electronics +44 (0)1724 281770.

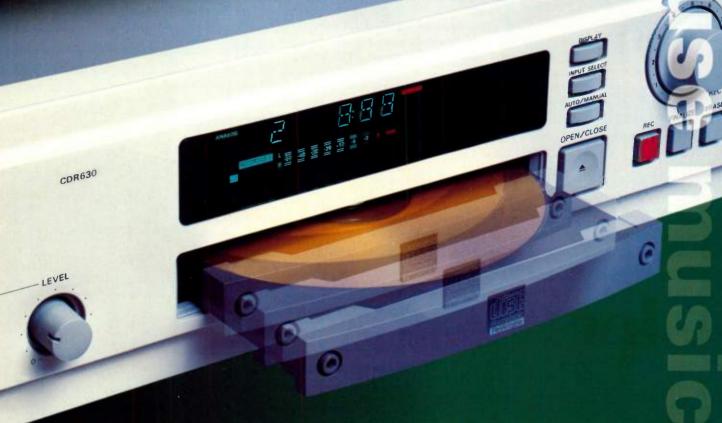
Software developer David Zicarelli, of cuit interactive composition software M fame, has revived his famous program. Available now for Macintosh only, v2.5 offers improved stability, OMS and QuickTime compatibility, plus all the recording, editing, interaction and randomisation functions that have made the software so popular. A trial version of M is downloadable from the Cycling '74 web site, and registration is US\$74 (that's about £46).

www.cycling74.com/products /m.html

sos can be reached at SOS.feedback @SOSPUBS.CO.UK or visit

www.sosbubs.co.uk





## introducing Marantz' new mastering format

At well under £1000, the Marantz CDR630 introduces re-writable CD-R as a low cost alternative to DAT mastering.

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## shape of things to come



ine 6's POD is guaranteed to stand out in any studio, with its unusual shape and ability to "deliver a wide range of legendary amp tones". This direct recording guitar preamp/processor features 16 TubeTone amp models and 16 high-quality digital effects setups, arranged on separate knobs. Line 6's patented digital modelling technology, as used in their AX2 212 and Flextone series digital guitar amp systems, and in the Amp Farm plug-in for Pro Tools TDM systems promises a "deep, inspirational sonic palette." POD also offers MIDI-adjustable parameters and comes complete with a CD-ROM containing PC and Mac editing

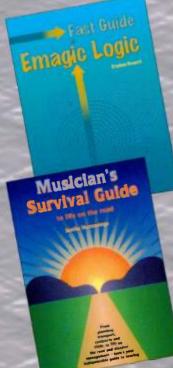
software. It should be on the loose during October

TubeTone modelling also makes an appearance in the new Flextone HD amp head, a 150W stereo/300W mono amp. It provides four inputs, Line 6's amp models, effects, built-in speaker emulation, and stereo XLR outputs, and costs £899 including VAT.

- A Sound Technology, Letchworth Point, Letchworth, Hertfordshire SG6 1ND UK
- +44 (0)1462 480000.
- F +44 (0)1462 480800.
- info@soundtech.co.uk
- W www.soundtech.co.uk

## **book**corner

f you're a user of Emagic's Logic family of sequencing software and a gigging musician, there's a potential double strain on your book-buying budget this month.



PC Publishing have added two new titles: Fast Guide to Emagic Logic by occasional SOS contributor Stephen Bennett, and Stella Hemmings' Musician's Survival Guide to Life on the Road.

The Logic book covers the MIDI

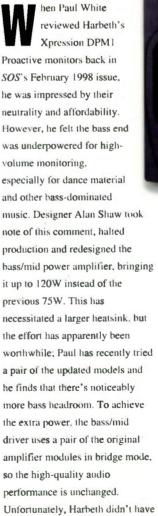
side of the software on Mac, PC and Atari. Logic is a powerful program that has a reputation for being difficult to set up - this book aims to get past that reputation. There are plenty of tips about setting up the program and achieving more musical results, using the Environment and screensets, along with a reference for the most frequently used functions. The book describes Logic setups that will be useful to a typical user, while introducing some of Logic's more esoteric capabilities and offering tips and tricks to help you with your music making. The book costs £14.95 (postage extra), and is available from the SOS Bookshop (contact details below)

The author of Musician's Survival
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breakdowns, lost passports and
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- A SOS Publications Ltd, Media House, Trafalgar Way, Bar Hill, Cambridge CB3 8SQ, UK.
- T +44 (0)1954 789888.
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- www.sospubs.co.uk/shop/

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the first batch, so the rear panel still reads 'Twin 75 Watts', but the alternative would have been another production delay. Future batches will be correctly labelled. Harbeth would like to make it clear that none of the lower-powered models went on sale, so you don't have to worry about whether the DPM1 Proactives in your local store are up to spec — all models on sale are to the new uprated standard.

- A Harbeth Acoustics, Unit 1 Bridge Road, Haywards Heath, West Sussex RH16 1UA, UK.
- +44 (0)444 440955.
- F +44 (0)444 440688.
- W www.harbeth.com



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Digidesign's **Pet Project** 

f you'd

like to have the advantages of Digidesign's audio hardware but can't stretch to a full-blown Pro Tools 24 system. you'll almost certainly be interested in the company's new Project II. This stand-alone, 24-bit PCI card is designed for use with popular Mac and PC MIDI + Audio sequencing software — compatibility with Mark of the Unicorn, Opcode and Steinberg products has already been announced. However, you'll need a Digidesign-compatible external audio interface in order to use it: these include the company's 882/20 I/O, 888/24 I/O, and ADAT Bridge. Special bundles, consisting of a Project II and interface, will be made available. Two interfaces can be connected to Project Studio, for

up to 16 channels of audio I/O. And if you like what you're hearing, or your studio gets an injection of cash, Project II can be upgraded to Pro Tools 24 at a later date. We don't have more detailed spec on the Project II at the moment, but watch this space for more info and a review

- A Digidesign UK, Avid Technology Ltd, Westside Complex, Pinewood Studios, Iver Heath, Pinewood, Bucks SLO ONH. UK.
- +44 (0)1753 653322.
- +44 (0)1753 654999.
- www.digidesign.com

**VST** makes friends

......

teinberg's Cubase VST v4 has been out for a couple of months now (and is reviewed starting on page 96 of this issue). But until now, one significant new VST feature was not compatible with anything. VST had been waiting for Rebirth v2.0, which is now out: using Steinberg's new Rewire technology, any or all of the individual voices in Rebirth (up to 18) can now be patched through VST mixer inputs, for full EQ, plug-in and mixing capability. And that includes all individual drum sounds. The Rewire technology also improves synchronisation between the two programs, on both Mac and PC platforms.

Not content with emulating the classic TR808 drum box, Steinberg (and Rebirth developers Propellerheads) have now included a virtual TR909 drum machine. Rebirth itself also benefits from a

with *Rebirth* 

new effect: the Compressor can work in mono or stereo, and is available for all four instruments both TB303s, the TR808 and the TR909. And for those of you into hacking, the customisability offered by earlier versions of Rebirth has been retained --- and made even easier - with several example alternative Rebirths included on the v2.0 CD-ROM (and Propellerheads' web site). Note that the Rewire technology is only available with VST v4.0 on the Mac and v3.60 on Windows-equipped PCs --- so upgrade now if you want to take advantage of the new features.

- Arbiter Music Technology, Wilberforce Road, London NW9 6AX, UK.
- +44 (0)181 202 1199.
- +44 (0)181 202 7076.
- arbiter@cix.compulink.co.uk
- www.arbitergroup.com

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



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

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

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

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

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

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

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The EMU Audio Production Studio is a PCI based audio system that gives you up to 64 voices of sampling, multitrack hard disk recording and professional real time DSP FX

along with all the software that you'll need to get professional results right out of

The Audio Production Studio comes complete with the E-Drive, an audio I/O module that mounts in an empty drive bay on the front of your PC (no more fishing round the back for that lost cable!).

> This together with the E-Card gives you an amazing 4 analog inputs (switchable line/ mic with phantom power!), 2 analog outputs, 4 channels of digital output and a separate headphone output!



- 64 Voice, 32 Part Multi-Timbral Fully Featured 16 Bit Sampler Using the Ever Popular SoundFont Sample Format
- Full Duplex Hard Disk Recording, with up to 64 Tracks
- Emu E-Drive Audio I/O Module, Multiple Inputs and Outputs
- Fully Programmable Dedicated FX DSP
- On Board Digital Mixing, Multiple Inserts and Aux Sends

System Requirements: Windows '95/98 PC, 133Mhz (200 recommended) with least 24MB of RAM and 804x600 256 calour mo







#### AMIII & G3 Pack

- G3/266 64/4009CD & Apple D
- Formec 17" 200 Colour Disast

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G3/286 32/4000CD, Zlp & Apple Keyboard

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£579.



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

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

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

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



#### F11 SELF POWERED MONITOR

The FIT'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. 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



#### *VS2205* SELF POWERED MONITOR



One of the most popular models in the Quested range of the most popular models in the Quested range, 
57205 is designed as a highly accurate reference 
tor, and its low profile and shielding made it ideal for 
evariety of uses. The built in amplifiers separately 
two 130mm bass units and a 28mm iterrofluid 
damped soft dome tweeter. 
Switches are provided for input 
sensitivity and HF and LF 
equalisation, to compensate for the VS2205 is de

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MIX WITH

YAMAHA

## YAMAHA

#### **PROMIX 01 V** Digital Mixer

Yamaha's fabulous new 01V replaces the ground breaking ProMix 01, and is basically a slightly cut down 03D, for a lot less money!

As well as a striking new silver paint job, the OIV also features 16 analogue inputs plus 8 digital ins and outs via optional cards in either ADAT, TDIF or AES/EBU format. There is 4 band fully parametric EQ for all the main inputs, 2 stereo multi effects processors,

RRP £1399

- Up to 24 Inputs in Total
- Moving Fader Automation
- 4 Band Fully Parametric EQ
- 2 Built in Effects Processors

moving faders, dynamic MIDI automation, and of course, exemplary sound quality.

Call now for a

Initial stocks are very limited - get your order in now!

Turnkey brochure and a free trial!

#### **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





#### **02R** Digital Console

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.

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- Dynamics Processors on Every Channel
- Takes 4x ADAT, TDIF or AESEBU Digital Boards





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TASCAM PORTA 02

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D8 DIGITAL WORKSTATION



MT8X MKII MULTI-TRACKER



YAMAHA

MD8 DIGITAL WORKSTATION ויוויבונו

424 MKII SCAM MULTITRACK RECORDER

A brand new version of the best selling 424 from Tascarr entors of th portastudio Features include 3 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 speet transport with built-in memory location points, DBX reduction, initial supplies limited.

## MINIDISC PORTASTUDIO / EDITOR

Tascam are the inventors of the Portastudio, and were also the first on the market with a MiniDisc based four tracker. The result, the 564 1111111 is triumph of engineering and heavily feature packed with it: up to 12 inputs at mixdown built in MIDI Clock and Time Code synchronisation, 3 band mid sweep EQ, 2 individually adressable aux sends, full LED metering, jog / shuttle wheel, 4 XLR mic inputs with insert points, individual track outputs, SPDIF digital I/o, 37 mins record time per disc, whilst the unique bounce forward facility allowing retention of

the original parts even after digitally bouncing tracks. Far too many specs to list here - a studio in a box! This is without doubt, the ultimate Portastudio. Excellent value for money at the original price, but Turnkey's exclusive offer makes this superb machine the recording bar

- order now while stocks last!

the year

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#### DA20mkii DAT MACHINE

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#### MZ-R30

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RRP (1099

£499

BBP C694

#### DTC-ZE700



#### DAT RECORDER

VIRTUAL

VIRTUAL

STUDIOS?

TASCAM DA38

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## UAV



#### VS-840 DIGITAL WORKSTATION

Want the advantages of a hard disk based recorder, but without the price tag? Roland's new VS840 should fit the bill, recording 8 tracks (up to 64 virtual tracks) onto its built in Zip drive, you still benefit from a fully digital mixer, and a built in FX

- Optional SCSI Port • Full Editing Facilities
- Built in Effects Processor
- Records to Low Cost Zip Carts

processor, with 26 different algorithms and guitar level input. An all in one no-nonsense product with a nononsense price

> Initial stocks will be very limited - get your order in early

## INCLUDES 10 FREE ZIP CARTS!

**GIVEAWAYS!** 

#### **/S-880P** digital workstation

INC FREE AKG C1000 MIC & STAND! Roland's VS880 has become the de-facto standard for compact digital eight track recording. track has 8 virtual tracks allowing you to record multiple takes, and then compare them, even if you've already recorded on the other 7 tracks. The built in digital mixer handles up to 14 channels has 2 band parametric EQ, I external and 2 internal aux sends to the supplied FX board, and is fully MIDI controllable. The SCSI port allows connection of external SCSI devices for recording or backup, which can also be made to DAT or CDR via the digi i/o. MTC is



- Built in Effects 64 Virtual Tracks
- Built in MIDI Sync
- Digital Mixer with Automation

standard to sync up your sequencer. New V2 software allows automation data to be recorded to the hard drive, and

also gives numerous new effects algorithms, including mic emulation! 2 gig HD & FX board now standard!

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

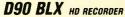
#### VS-1680 DIGITAL WORKSTATION

INC FREE AT4033 MIC & SHOCKMOUNT The VS-1680 from Roland takes integrated digital recording to new heights, featuring up to 16 tracks of 24 b MT Pro recording, each track having 16 virtual tracks for multiple takes. A 2 gig drive is built in for up to 37 hours recording time, as well as one of the new VS8-F2 boards giving four simultaneous FX (a 2nd board can be fitted if required). There are 10 audio inputs including 2 balanced XLRs and 12 ouputs, a SCSI port is standard and CD writing software is built in. 3 band parametric EQ is easily edited via the huge LCD display. In stock now at Turnkey!



- 24 Bit MT Pro Recording
- 16 Tracks with 16 Virtual Tracks
- Huge LCD Display for Easy Editing
- Up to Eight Independent FX Proces









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DAP1 PORTABLE DAT

DPS12 DIGITAL MULTITRACKER



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HHb CDR 800

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FOSTEX FD4

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FOSTEX X55

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## OWES



## **LEXICON PRICE** CRASH!

exicon break the price barrier with their all new budget machine, the MPX100. Previous cut price

Lexicon units have had to cut corners on bandwidth and

true stereo processing etc, but the MPX100 uses the state of the art Lexichip 3 in conjunction with 20 bit AID and DIA convertors to bring you world class processing at an unbelievable price!

There are a carefully selected range of 240 presets, giving you all that's best in reverbs, (5 1/2 second) delays and ambience, as well as more unusual effects like tremolo, rotary, pitch shift and detune. The parameter adjust knob controls not just one, but a selection of usefully chosen parameters for each preset editing a breeze, and their are 16 user registers

The MPX 100 also features a full MIDI specification with In Out and Thru, and even the ability to sync delay times to an incoming MIDI clock signal. The SPDIF output assures compatibility in an increasingly digital age, unique for a processor at this price point, and there's even a footswitch bypass facility for discerning guitarists and other live performers. Upgrade to Lexicon quality today!

#### MPX100



- Top Quality Lexichip 3 Reverb & FX
- Adjust Multiple Parameters Simultaneously
- Sync Delays to Incoming MIDI Clock
- Up to 5 1/2 second Delay Time with Reverb

**NEW PRODUCT** 

## **THC-00**

Freeform Analog Technologies FreeBass has become one of the most successful sound modules ever, and now the range expands further with the THC-00 Resinator and PCP330 Procoder.



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 follow 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.

#### PCP330 VOCODER



One of the most asked questions in the industry must be "Why doesn't anyone 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!

DIGITAL

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#### MPX1



STUDIO QUAD 4

4 CHANNEL STUDIO FX

For those of us who need top quality reverb & multi FX but cannot stretch to the expense of the PCM80, 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. Megadeal only at Turnkey!

RRP £1199



III Digilech

BRP 5795













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 (£299.99) has 8 inputs and outputs (2 each on optical), can accept both AES/EBU and SPDIF signals, and is MIDI controllable. An XLR version (£499.99) is also available for greater AES/EBU reliability. The Audio Time Base (£499.99) is a lu 19" rack which acts as a master clock source for your studio, outputting word clock, Digidesign Super Clock and SPDIF. The master clock can be internally generated, or a reference taken from mains, SPDIF word clock, Super Clock, video or LTC (SMPTE). Lockup from timecode is in around I second







Two channels of classic dbx compression with new Auto-Dynamic To Attack and Release controls, program-adaptive expander gates, balanced inputs, precision LED metering and sidechain insert. From panel selection of stereo or dual mono operation, all in a standard IU rack design and at an unbelievable price. Now with BBP C244 new auto setup mode!

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**DBX** 1066

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ratio settings 3 band EQ with notch Opto de-esser

**DUAL MIC PRE** 

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TONE FACTORY

NEW PRODUCT

#### 500000 100000

#### The RP583 Studio Tube has become an Compressor / Limiter

channels (stereo

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



00 . O O

#### RP533 Studio Tube Multi-Processor NEW PRODUCT

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 DIRECT bypass switch, sidechain access is provided, and the large VU meter can monitor input, output, or gain reduction. No serious recordist should be RP520 Studio Mic Pre Amp

£499

NEW PRODUCT

£499.8

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

RP562 Stereo Exciter Traditional exciters usually do a good job of brightening up the extrem too end, but can often leave you with a rather harsh signal lower do The incredible warmth of the Bellari Sonic Exciter ends all that,

providing a sparkling top end with no harshness, and a huge bottom end to boot. The stereo unit has both lack and XLR connectors, dual VIJ meters, and ofer output with it's own cutoff and level controls. Superb sound quality at a fraction of the price of similar devices.

level controls, true 48v phantom power, jack and XLR ouputs and o

VU meters. Bypass you desk's mic amps and feel the quality!

MP110 Direct Drive Mic Pre Amp

#### ADB3 Stereo Direct Box

00500



PARAMETRIC EQUALISER

FOCUS EQ

VC4 ENHANCER

4 POLE

The 4 Pcle is the legendary Microwave / Wave 24 dB lowpass filter. You are free to apply this fifter to any audio signal that you patch into the Fifter. So if your favourite sampler or rample player locks that special quality, you can give it a sonic boost via the 4 Pcle Sitins.

X POLE FILTER

...00

channel tube

NEW PRODUCT £129

BBP (939

£399°

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£159

FACTORY DIRECT

E269

waldorf

NANOVERB

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£145

ALESIS

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MICROVERB IV FX PROCESSOR

MIDIVERB IV FX PROCESSOR

£195

WEDGE MASTER REVERB



The Wedge Desktop Master Reverb from Alesis

unlike any other in that it's designed to be used right in the sweet spot, not in your rack. The Wedge's reverb algorithms represent the

finest creation's of Alesis' experienced DSP design team, and parameters like Early Reflection shape and stereo depth allow ultra detailed space emulation.

DRAWMER MX50

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DIGITECH VOCALIST **ACCESS** PERFORMER

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Ringing round for the cheapest Pentium II? We sell audio equipment - not office software and games! The computer is the heart of any studio setup, and a Turnkey Pro Tech audio-ready PC, built with carefully selected components, means a quality solution at an affordable price. We deliver a tested, working, integrated system - if you have a problem, just call us!

A modern Pentium II 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 and run through 16 separate tests, 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 you software. Call us to discuss your requirements - satisfaction guaran







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Brand new monster software analogue synthesiser for PowerMac from top programming team Bitheadz. Up to 32 simultaneous voices, 3 oscillators per voice, 7 filter types, 2 parallel and 2 serial effects processors and much much more FACTORY D FACTORY DIRECT

set of presets covering a huge range - not a one sound to free demo disc available!

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Native Instruments Generator is a realtime soft synthesiser and much more - it's a sampler, a step-sequencer, multi-effects processor and an audio track processor. Use a massive library of modules to create your own sound designs. Up to 16 instruments per ensemble with up to 64 voices per instrument. Create classic analogue sounds, organs, FM, additive, trigger

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CURASE VST STARTER PACK

#### LOGIC AUGIOWERK STATIO



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Steinberg

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MICRO LOGIC AV

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CUBASE VST



CUBASE VST V3.5



RECYCLE

REBIRTH RB-338 SOFTWARE SYNTHESISER

PRODUCER PACK TO Cubase VST is great



#### *AUDIOWERK 8*











## **MU10**

MODULE OUT OF THIS WORLD MEGADEALS

YAMAHA

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.

with computers.

The MUIO comes in a handy moddle 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? 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 stered audio input. The MUIO comes with the CD-ROM version of Steinberg's fan Cubasis MIO sequencing software, and this incredible offer includes a shareversion of Yamaha's XgEdit editor free for detailed editing of the onboard sour A complete starter kit for anyone looking to get into This exclusive offer is only available whilst stocks last -

#### PRICES GUARAN

#### A DIGITAL HURRICANE IN YOUR PC?

99% of available sound cards use the oldfashioned "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.

> 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.

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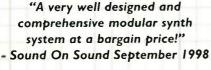
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# Hooter Sound B1

Mic Amp/Compressor/Limiter/Gate

PAUL WHITE encounters a budget recording preamp with a colourful pedigree.

ooter Sound is a new company set up by audio designer Ted Fletcher (the man behind the successful Joemeek range of processors) with the aim of manufacturing good quality budget audio products specifically for musicians working with computers. The majority of budget soundcards have acceptable line-level input stages in terms of noise and distortion but their mic inputs, if they exist at all, tend to be pretty perfunctory, and of course they don't have regular 48 volt phantom power. The Hooter Sound B1 is a desktop mic/line preamp with onboard compression, limiting, gating and phantom power that can be used via the line input of a typical soundcard to give considerably improved performance, especially when working with microphones.

Joemeek's bright green livery brought that product line immediate recognition, so clearly Ted has followed the same philosophy with the canary yellow Hooters.

Housed in a simple but tough steel case, the B1 is powered from an included AC mains adaptor and fitted with rubber feet for desktop use. Other than the PSU connector, the rear panel provides a balanced XLR mic input, a phantom power switch and a  $470 k\Omega$  impedance unbalanced line/instrument input jack. There are two identical unbalanced

outputs, again on jacks, the idea being that one can be used to feed the soundcard and the other to feed a monitor system if necessary. Of course you don't have to use the B1 with a soundcard — it is also well suited to use with other recording formats.

The mic amp is based around the SSM 2017 dedicated microphone preamplifier chip. This device is often found in good quality mid-price mixers and stand-alone mic preamps, and certainly performs better than the mic amps found in most project studio consoles. A rotary gain control provides up to 60dB of mic gain (the same as most mixers) and a red LED shows when the phantom power is active. The line input impedance of  $470k\Omega$  is a good compromise given that both instrument (including guitar and bass) and line signals must be accommodated.

Next comes a (very) soft-knee compressor, which has been deliberately simplified to make it intuitive to use for those with less recording experience. It also has its own Bypass button with green status LED. There are only two controls, Ratio (1:1 up to 8:1) and Release: there's no threshold control or make-up gain. The Ratio control is linked to the compressor gain in such as way that as the ratio increases, the impression of loudness also increases. The compressor threshold is preset, though adjustments can be made using the preamp gain control as this changes the input signal level in relation to the fixed threshold. Unlike the Joemeek compressors that use an optical gain control element, the Hooter's compressor is based on a new Analogue Devices chip. which incorporates a VCA. One casualty



of cost saving, however, is that there's no visual indication of how much compression is taking place, so all setting up must be done by ear, ideally using the gate to mop up noise during pauses.

The limiter is an integral part of the compressor circuit and has no user-accessible controls. When the signal approaches a preset limit threshold of around +10dB, the compression ratio automatically rises to around 14:1. According to the manual, the circuit has been designed to effect a smooth transition between compression and limiting. As the B1 is primarily designed to be used with soundcards, the limit function is a valuable asset in helping to avoid overloading the card's analogue-to-digital converters. A large Peak LED in the middle of the front panel shows when limiting is taking place. A Mute button directly after the compressor can be used to mute the signal when changing microphones and this has a flashing red status LED.

Immediately following the compressor is a gate built around 'soft' switching circuitry and, once again, the controls are very simple. Other than the gate's Bypass button, there's only a red On LED and a Threshold control. The gate operates via the same VCA as the compressor, making it useful for cleaning up noise during pauses where heavy compression is being used.

Finally comes an output level control and LED level meter comprising two green LEDs. a yellow LED, an orange LED and a red Max LED. Compression occurs up to the level



where the orange +8dB LED lights, and 2dB later, the limiter cuts in. The levels shown on the meter are accurate when the output control is set to maximum, but as many soundcards work at a reduced line input level, it may be necessary to back off the output gain. The output gain control comes after the meter.

#### **MELLOW YELLOW?**

The B1 has been designed to be very simple to use, so rather than fiddle around with the usual array of compressor controls, you simply use the Ratio control as a 'more/less' knob, then adjust the release time to suit the material being processed. The mic amp is gratifyingly transparent and clean, and despite its simplicity, the compressor is smooth and musical. It doesn't have the same mellifluous quality as the Joemeek optical design, but it's still very comfortable-sounding. I miss having a gain reduction meter, but setting up by ear isn't really problematic as there are so few controls. The changeover from compression to limiting is also reasonably painless, though the level should generally be set so that the limiter only fires on loud peaks if at all.

When a lot of compression is being used, any background noise present in the input signal must inevitably also be increased in gain

"The mic amp is gratifyingly transparent and clean, and despite its simplicity, the compressor is smooth and musical."

during quiet passages, so a gate is pretty much essential. Though fairly basic, this one does the job OK, and providing the threshold is set no higher than necessary, it doesn't make its presence felt. Even so, I felt that it could have used a slightly longer release time. As with the compressor, the gate must be set by ear, as there's no open/closed LED.

In the Hooter Sound range of products, Ted Fletcher is carrying on in the tradition of Accessit, that Turnkey-owned company of yesteryear best known for building low-cost processing gear aimed at the four-track market (in fact Ted tells me that some of his 'back of an envelope' designs actually ended up as Accessit products). Today, the computer soundcard studio is increasingly popular at this lower end of the market and the need for an affordable voice channel type of product to partner the computer is obvious.

Hooter Sound's approach is to keep the packaging simple and to miss out unnecessary frills in order to keep the price as low as possible while ensuring their products perform well and are easy to use. The B1 voice channel might look like something you'd find in a portion of school custard, but the concept is sound and the audio quality is surprisingly good. I look forward to seeing the next addition to the range.





#### PROBLEMS

Two of the biggest problems experienced by DJ's today must be poor monitoring performance from mixing desks and having to rely on guesswork to mix and catalogue tracks.

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First we packed a powerful, high quality headphone amplifier with 2 band EQ and Stereo/Mono switching into a streamlined case measuring just 195 x 42 x 22mm. Fed from the headphone monitor output jack on any mixing desk, we could now deliver all the pure power needed for successful DJ monitoring, even in the loudest club environments.

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reading is clearly visible on a bright, 4 digit LED display and the red Beat indicator flashes on every downbeat to visually confirm the tempo.

Then we added a choice of three mounting options (chrome mounting brackets shown) enabling it to integrate into any DJ set-up.

Lastly we designed an optional rechargeable battery pack which allows DJ's to hook into club installation systems for hassle-free operation when making guest appearances.

Now DJ's can mix with confidence using the ultimate in headphone monitoring and BPM counting facilities all in one little box!

#### MICRO BPM

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# Digidesign ADAT

ADAT Interface for Pro Tools

Digidesign's new interface allows Pro Tools users to transfer data to and from ADAT-compatible devices.
MIKE COLLINS finds out if it's a Bridge too far...

he ADAT Bridge I/O is
Digidesign's latest addition to the
wide range of peripherals available
for Pro Tools systems, and enables
the user to transfer simultaneously up to 16
tracks of ADAT data in either direction
between a Pro Tools system and two
ADAT-compatible devices. Bridge I/O works
with Pro Tools 24, Pro Tools III or Pro Tools
Project PCI systems using Pro Tools v4.1.1
(or higher) software. As ADATs are 8-channel
devices, the unit manages its I/O in two

#### JUDGING BY APPEARANCES

Looking from the left of the front panel, the On/Off switch is followed by four pairs of Sync Mode LEDs. Group A (channels 1-8) and Group B (channels 9-16) each have their own set of LEDs to indicate the sync mode. This will be 'Internal' when using the internal clock. 'ADAT' when slaved to an ADAT, 'Digital' when slaved to AES-EBU or S/PDIF, or 'Slave' when referenced to an external clock signal. Two pairs of LEDs near the centre show whether Pro Tools' channel 1-2 inputs for Group A or B are receiving from the ADAT ports or the AES-EBU or S/PDIF ports. You also get two pairs of LEDs to indicate whether the current sample rates of Group A and Group B are 44.1 or 48kHz. A final pair of LEDs indicate which digital port. AES-EBU or S/PDIF, is currently being used for digital input on channels 1-2 of Group A or B. All very straightforward and easy to get to grips with.

#### pros & cons **DIGIDESIGN ADAT BRIDGE I/O** £1068 Offers a very cost-effective way to interface a Pro Tools system with an O2R or similar mixer, or with a pair of ADATs. . Doesn't have ADAT Sync connections. Would these really add so much to the cost of the interface? SUIDENALLY The ADAT Bridge does everything expected of it, providing 16 separate channels of digital input and output for transferring digital audio between Pro Tools and any ADAT optical interface-equipped devices. The ADAT Bridge only lacks proper ADAT Sync capabilities, for which you will need an SOUND ON SOUND



separate 8-channel Groups. A and B. You can connect two ADATs to each ADAT Bridge I/O, and up to five ADAT Bridge I/Os can be used with Pro Tools for a maximum of 72 channels of input and output. The ADAT Bridge connects to your Pro Tools card in exactly the same way as an 888 or 882 interface, using a multiway cable running from the back of the unit to the computer card. If you already have an interface connected you can connect to the DSP Farm card instead, and if you have two interfaces already, you can use a special Y-cable (which Digidesign can supply) to connect two interfaces to one socket on the back of the card.

On the back panel, looking from the left, there is a pair of analogue outputs via balanced quarter-inch TRS jack sockets, which feature 20-bit D-A converters. The outputs are software-switchable for -10dBV or +4dBu operation, and by routing your Pro Tools mix to outputs 1-2 you can use them to monitor your entire mix. Two pairs of ADAT optical input and output connectors are provided, one for each Group, and there are two Computer ports which you use to connect the interface to a Pro Tools d24 card, DSP Farm, or Disk I/O card. To the right of these there is a pair of AES-EBU balanced XLR connectors, followed by a pair of unbalanced phono S/PDIF

connectors — both of which can carry digital data in and out at up to 24-bit resolution.

Again, these carry whatever signals you have routed to output pair 1-2 in Pro Tools. A pair of BNC 'Slave Clock' in and out sockets are provided for Digidesign's 256 x word clock (often referred to as super clock) and these may be used for slaving from or to additional ADAT Bridges, audio interfaces or sync peripherals. A single Word Clock Out BNC is also provided to let you connect the ADAT Bridge to a BRC or other sync device which requires this type of clock signal. Finally, at the far right there is a Euro-connector for the mains supply.



## Bridge I/O

#### **IN USE**

The most obvious use of the ADAT Bridge I/O is to transfer up to 16 tracks of digital audio simultaneously from ADAT into Pro Tools. This is a great way to work with your ADAT tracks, allowing you to use Pro Tools' non-linear editing, TDM effects processing and digital mixing with automation. You can go the other way as well, transferring 16 tracks at a time from Pro Tools onto ADAT to replace original tracks with edited tracks. This also provides an affordable means of backing up Pro Tools tracks on to S-VHS tapes, and a convenient way of transferring Pro Tools tracks to another Pro Tools/ADAT system. You can simply hook up the ADATs to Pro Tools. start Pro Tools recording and then press play on the ADATs to record tracks into Pro Tools - or vice versa - though this way there is no sync between Pro Tools and the ADATs. For proper sync, with better than

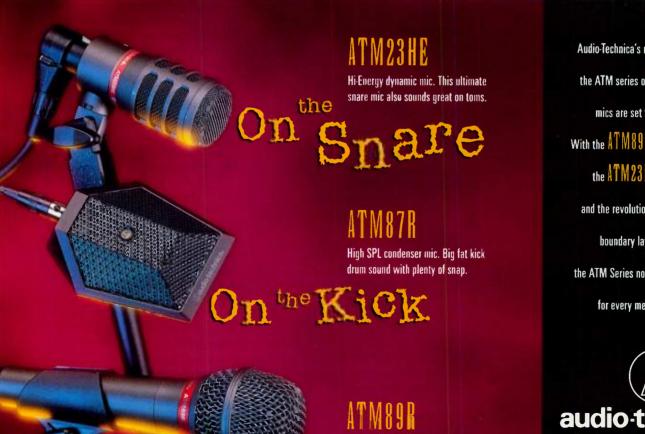
quarter-frame accuracy, you need an external sync device. Probably the cheapest solution is the JL Cooper DataSync 2 which translates the proprietary ADAT ABS time-reference signal embedded in ADAT tapes into MTC. With a DataSync 2 and a MIDI interface, ABS is converted to MTC and used to trigger Pro Tools using the ADAT's transport. A second alternative is the MOTU Digital Time Piece which also features ADAT sync along with many other sync types. Alternatively, the ADAT BRC can be used as both a transport and clock master for Pro Tools and the ADAT to achieve synchronised track transfers. Yet another possibility is to use the ADAT ports to connect Pro Tools to a Yamaha 02R or 03D. Mackie 8-buss or other compact digital mixer at 20-bit resolution. In this case you can synchronise the mixing console's sample rate to the Word Clock output from the ADAT Bridge I/O. You can also use the ADAT Bridge I/O as a stand-alone S/PDIF or AES-EBU to ADAT-optical converter so you can transfer

audio digitally from DAT or CD to ADAT without having to power on your computer or launch Pro Tools.

#### **FINAL WORD**

The ADAT Bridge I/O proved to be ideal for use in my project studio along with my existing 888 interface, allowing me to connect 24 tracks from Pro Tools to my 02R. In this setup I used a DTP as the transport and clock master, feeding super clock to the ADAT Bridge I/O and word clock to the 02R. The ADAT Bridge I/O performed flawlessly, and I can highly recommend it to anyone with similar requirements.

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## Peavey PVM

#### Valve Microphone

The battle for low-cost valve mic supremacy warms up as PAUL WHITE encounters Peavey's new PVM T9000.

f you look at what's happening in recording, mixing or signal processing, technology is rushing forward at an almost breathtaking pace, with the computer taking over most of the jobs that used to rely on expensive hardware. But when it comes to microphones, most engineers like to stick with tried and tested models that have been around for decades — valve mics are particular sought after for vocal recording.

cardioid capsules.

A good valve mic is a joy to listen to, with its smooth yet detailed sound, well-integrated bottom and wispy, open highs, but even with all the benefits of modern components and assembly techniques, the cost is still significantly more than for a solid-state model, mainly because of the valve circuitry and the external power supply needed to run the valve. There's very little choice under the £1000 mark, though we already have AKG's SolidTube mic, Rode's Classic and various Groove Tubes models fighting for a share of the project studio market.

Now US music manufacturing giant Peavey have pitched in with their PVM T9000, which costs a little over £950. Packed in a foam-lined cardboard box almost big enough to ship a

"In side-by-side comparison tests against a number of high quality solid-state mics, and using vocals as a source, you can hear straight away that the PVM T9000 delivers the characteristic valve timbre."

mixer, the PVM T9000 comes with an external power supply, the necessary mic-to-PSU 6-pin XLR cable, a mains lead and a tough shockmount with a swivel stand adaptor. The mic itself has an eyecatching spun stainless steel body and dome-shaped grille, with recessed switches for a low-cut filter and a 10dB pad. Overall the mic looks very classy, though the appearance is let down slightly by



pros & cons

the silver band just below the basket on which the switch functions are printed — this is quite obviously little more than a sticky-back metallic label.

As with most of the 'affordable' capacitor mics, the PVM T9000 has a fixed-cardioid polar pattern rather than a switchable, dual-diaphragm capsule, and features a mid-sized back-electret capsule. Examining the included response curves shows the mic to be essentially flat from 20Hz to 20kHz but with a slight dip at 5kHz and a presence peak somewhere around 9kHz. When the low-cut filter is switched in, the response rolls off gently below around 300Hz (200Hz corner frequency) to help compensate for the proximity effect. A six-pin XLR connector couples the mic to its 25-foot cable and the PSU box translates this to a regular balanced XLR. There are no controls on the PSU other than a mains power switch.

Looking more closely at the microphone itself, the stainless steel grille is backed by a second layer of finer mesh to help reduce wind noise and popping, while the shockmount also works as a heat sink to help keep the mic body cool. Inside the mic body is a single 12AX7 (ECC83) dual-triode valve, and the total power consumption of the system is just 15 Watts. Obviously phantom power is not required, since it comes with its own PSU, though the system seems quite happy when connected to a mic input that has the phantom power switched on.

There is a school of thought that suggests much of the so-called 'valve sound' is actually due to the use of output transformers in vintage gear. The PVM T9000 has a balanced output transformer within the PSU, and delivers a signal power level of -40dB where



Vintage valve mics change hands at phenomenal prices, which is why most of the leading mic manufacturers have come up with new valve models, ostensibly with the aim of capturing the essence of the vintage sound but at a lower cost. Because of competition, some of these are quite attractively priced, though to keep the cost as low as possible, multipattern capsules are often replaced by fixed

0dB corresponds to 1mW/Pascal. This is not the most common way of specifying mic sensitivity, but in practice it's in the same ballpark as the other large-diaphragm capacitor mics I use.

#### **IN USE**

In side-by-side comparison tests against a number of high quality solid-state mics, and using vocals as a source, you can hear straight away that the PVM T9000 delivers the characteristic valve timbre. It's hard to put into words, and there seems to be little subjective difference at high frequencies, but in the lower-mid range, throaty and chesty sounds are both emphasised and made to sound smoother at the same time. To my ears, the top end is slightly harder-sounding than some other valve mics I've heard, and there's also a slight tendency towards over-emphasising sibilance, but nothing serious. However, the mic is prone to popping, so if you don't use a separate pop shield, you risk the occasional

unfortunate syllable wrecking an otherwise OK take. The proximity effect warms the sound up even further, as you'd expect with a cardioid mic, and at close distances, a pop shield is absolutely vital.

'Overall, the impression is good with the mic delivering a well-integrated, focused sound, so providing the top end matches your vocal characteristics, you should enjoy using it. Similarly, acoustic instruments are captured well - the valve tonality helps knit the low end together rather better than some solid-state mics do.

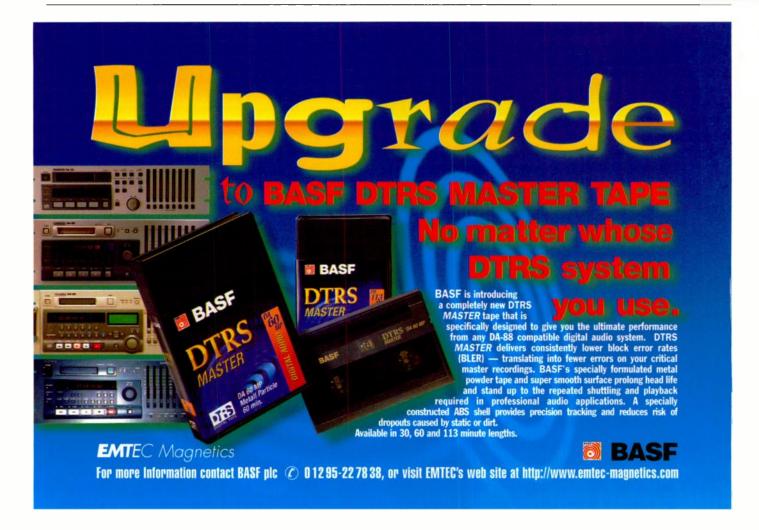
#### **SUMMARY**

The Peavey PVM T9000 is a solidly built, affordable valve microphone that sounds like a valve microphone. It has a subtly flattering quality, though I don't think it's quite as flattering or as smooth sounding as the less expensive AKG SolidTube, but again, much depends on the mic/singer combination - it's rarely fair to judge a mic on its performance

with just one or two singers. If you want a valve mic, this is certainly one of the more affordable models out there, and would be worth including in a shoot-out once you've settled on your short list. The largely flat response should ensure that the PVM T9000 works OK with most vocal types, so it might be a good choice for a small commercial studio where you don't know who's coming in next. But as I've pointed out on so many occasions, you shouldn't buy any mic for your own use until you've sung into it and listened carefully to the results.

- £ £955 including VAT. Peavey Electronics Ltd, Great Folds Road, Oakley Ha Corby, Northamptonshire NN18 9ET, UK. +44 (0)1536 461234.
- +44 (0)1536 747222.
  - www.peavey.com





#### Guitar & Bass Amp Simultator

Can you get a wall of sound from something the size of a single brick? JOHN WALDEN plugs in his quitar, inserts his earplugs and finds out.

he 503 Guitar and Bass Amp Simulator is the latest addition to Zoom's 500 series of guitar foot pedals. Its primary aim is to provide both the guitar and bass player with a range of different 'classic' amplifier and

are used for patch selection. The central strip includes a two-digit LED, which displays either the patch number or a parameter value when editing, and a series of small indicator lights. These indicate which elements of the effects chain are active for a particular patch and highlight which parameter is being edited. Pairs of buttons on both the left and right edges of the unit are used in editing patches. These are all clearly labelled.

On the rear panel there are two mono inputs labelled LOW and HIGH, recommended for guitars with humbucking and single-coil pickups respectively, and a further input which takes a signal from a device like a CD player. This signal is then mixed with that of the guitar and arrives at the stereo output that provides a feed to your guitar amp, mixer or headphones. The only other connection on the back panel is for the external power supply (included in the price) although the unit can also be

> powered from a standard 9V battery

The 503 can store a maximum of 24 patches, arranged in six banks of four and labelled A1 to F4. As supplied, banks A to D are configured for guitar and E and F for bass. The heart of the unit lies in the various amplifier and speaker cabinet simulations it attempts to recreate, and a total of 15 amp and six

cabinet types are available (see the box below for some examples). Each patch is constructed from 10 parameters (see the 'Patch Work' box). and individual components of the effects chain can be switched on and off as required. These

#### pros & cons

#### **ZOOM 503 GUITAR AND BASS** AMP SIMULATOR

- **Pros** Wide range of sounds available.
- · Creditable imitations of amp and cab combinations which go well directly to tape.
- Easy editing.

- Presets might need a tweak to hear the unit at its best.
- A little noise apparent on high gain settings as notes fade.

#### ummary

For those working on a tight budget, the Zoom 503 provides an excellent option for getting a range of convincing electric guitar and bass sounds on to a



components include basic reverb, delay, chorus/flanger and even a tremelo. A chromatic tuner is among a number of other convenient features included for live use.

#### IN USE

As is explained in the manual, the default setting in roughly half the patches has the cabinet simulation disabled to accommodate using the 503 with a guitar amplifier. Unsurprisingly, therefore, these patches including patch A1 which is selected on power up - sound fizzy if you hear them straight to headphones. However, a few minutes with the manual is all that is needed to get to grips with patch editing, including activating the cabinet simulation on patches in banks A, B and E. The editing process is straightforward within the limitations offered by the LED.

Having got my virtual speaker cabinets sorted out, how did the 503 sound? The short answer is very impressive. While some of the factory presets were a little toppy for my taste. simple editing soon improved things. Sounds based on the cleaner amp types could be made to be both bright and warm, while the overdriven amp types produce sounds ranging from mild, edgy distortion suitable for blues. through some great grungy, fat sounds suitable

#### speaker cabinet simulations in one convenient box. In addition, a small selection of multi-effects options are included. While all the 500-series pedals would seem to be designed predominately for use in live performance, more than a passing nod has been given to studio users. Although a budget price does not necessarily equate to budget sound, the cost of the unit means it is more likely to be of interest to those wanting a simple means of getting diverse guitar or bass sounds either at home or when on the

#### WHAT'S IN THE BOX?

move with their portable multitracker.

The 503 is constructed from moulded plastic and measures about 15cm square by five cm high, and seems robust, though I wouldn't advise jumping on it too often. The front panel includes two foot-operated pedals that

Of the 15 amp types, nine are intended for guitar use (G1-G9) and five for bass (b1-b5). The remaining model is configured as 'flat' (FL), but allows access to the EQ, or the amp simulation can be turned off completely. Both guitar and bass amp types vary from clean to overdriven. For example:

- G2 'MS DRIVE'
- A 'British' tube stack amp in overdriven mode.
- 'PV DRIVE' • G6
- A high-gain tube stack amp with heavy metal in mind.
- 'J CLEAN'
- A clean style combo amp

#### h1 'TE CLEAN'

Clean bass amp with strong midrange.

'AC DRIVE

Overdriven bass amp sound.

For the 'clean' amp models, the Gain setting adjusts the compressor (guitar amps) or limiter (bass amps). For the overdriven amp types the Gain setting adjusts the distortion intensity.

Four of the six cabinet simulators are designed for guitar (two combo and two stack types) and the other two for bass. The different types are essentially intended to mimic different speaker combinations (for example, a combo with one 12-inch speaker or a 'wall' of 4 x 12-inch cabinets!). For each cabinet type, the 'ringing depth' can also be set.

PATCH WORK	
Parameter	Name
1	Amp Type
2	Gain
3	Treble
4	Middle/Enhancer
5	Bass
6	Cabinet Type & Depth
7	Mic Position & Noise Reduction
8	Chorus/Flanger/Delay
9	Reverb
10	Output Level

for a Metallica impression, to a smooth, really overdriven lead tone which, with a touch of delay, had me trying out some Gary Moore-style licks. Within any particular amp type, moreover, it is possible to shape the sound you want and alter its tone in a wide variety of ways using the gain, EQ and cabinet type and depth.

Although the chorus, reverb and delay effects are basic, they do add an effective ambience to the sounds, which is useful if you have limited outboard effects available or if the unit is simply being used as a practice tool. The room reverb is particularly effective in this respect, and the simulated mic position (close, angled or distant) also has a noticeable effect on the character of the sound. The noise reduction seems to do a reasonable job and the only problem I experienced was some noise at high gain settings as sustained notes faded to silence. This was probably no worse than the noise generated by a some real amps with a mic stuck in front and, at the price, is a minor criticism.

The 503 performed just as well with a bass. The clean amp types

"The overall impression is of a more-than-adequate sound that can be created and customised with ease."

provided a really smooth and solid sound while the 'drive' amps allow a variable amount of overdrive to be added for a more rock orientated feel.

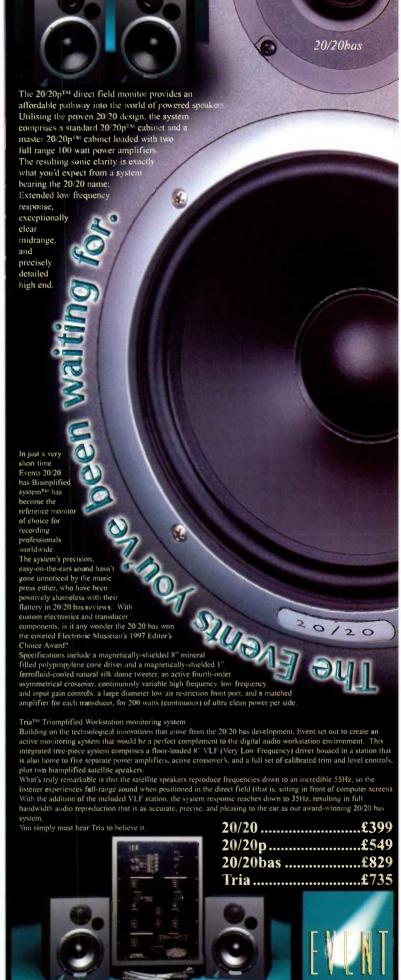
The overall impression is of a more-than-adequate sound that can be created and customised with ease. All the sounds (both guitar and bass) translated well directly to tape providing a convincing presence either within a mix or in isolation. While the sounds may not be as responsive to picking style as a real tube amp or something like the popular Marshall JMP1 guitar preamp. the 503 is a lot cheaper. A more direct comparison might be with Korg's Pandora MkII which, for another £70 or so, offers a similar set of amp/cab simulations plus a wider range of multi-effects. Zoom (among others) also make other units in this higher price bracket.

#### **CONCLUSIONS**

The amp and speaker cabinet simulations available in the 503 are pretty effective. With the addition of a drum machine and a microphone, the 503 would make it very easy to sketch out your electric guitar-based song ideas on a basic multitrack. If you are working on a tight budget, want a wall of sound but don't want to be a candidate for *Neighbours From Hell* then the Zoom 503 is well worth checking out.

- £ £99 including power supply and VAT.
- Exclusive Distribution, Unit 10, Furmston Court, Icknield Way, Letchworth, Hertfordshire, SG6 1UL, UK.
- +44 (0)1462 481148.
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- www.samsontech.com/zoom/





Key audio

## While the fame and

fortune of pop stars is frequently short-lived, session musicians can carve out a career lasting many years, making a living through sheer ability and professionalism.

BIG GEORGE WEBLEY goes behind the

scenes...

ver the past few months, instead of writing poison-pen pieces for SOS, I've been tied to a recording studio mixing desk working on jingles. TV themes, records and barmitzvahs. During those endless hours of hard work (unlike taking life easy and digging holes in the road for a living) I was mingling with quite a few top-notch session players, and it occurred to me that many musicians dream about what it would be like to earn a crust like these players, by thwacking their respective instruments. After all, it's a cushy life—getting called by record producers asking when it would be convenient for the limo to bring you to the studio and play your favourite licks on a worldwide snash-hit pop song.

Actually, it isn't always quite like that — certainly not to begin with, anyway. Being a session player means turning up to a centrally-located studio with all wur equipment before the 10am call. No allowances are made for traffic gridlock or parking problems—you're not paid to make excuses, you're paid to be ready to play exactly what a required, first time, regardless how off-colour you feel or now late last night's gig finished. You have to be really fantastic on your chosen instrument and you have to be able to play what you're asked to, even when it's by a drugged-up idiot who knows nothing about music.

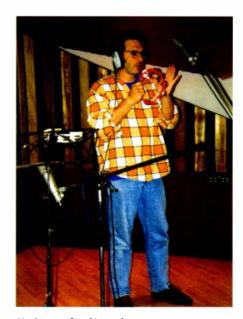
#### BASS GEORGE WHATSNAME

I got my break as a session bass player back in the late '70s. I'd left school before taking any exams in order to join a dodgy club band (today it would be called a covers band; apart from playing the same songs night after night, we were called on to back whoever the club's turn of the evening was, from a singing dog, to Freddie Starr, to a hypnotist who cured our drummer of smoking for almost a week).

As the youngest member of the band by quite a few years. I was aware that the standard of musicianship within the band would rate on the Richter scale as... standard. But I was earning money by playing, and what it did teach me was how to play a 'standard' (a standard in this context usually means a wonderfully timeless song written by a songwriting genius and recorded and sung by the best in the world—although, as I recall, Middle of the Road's 'Chirpy Chirpy Cheep Cheep was a standard in our section).

I knew I had to move on with my career, as I was fast becoming musically more able than my

#### **ALL ABOUT SESSION MUSICIANS**



Big George plays his number one instrument — Hit Record Tambourine. You may laugh, but it's much harder than it looks.

fellow comrades and the valuable lessons the clubband life had taught me (chart reading, not playing too loud or too busy, and being able to throw up during the set, if unavoidable, without the punters noticing) had been learnt well.

So I came off the road and fell into punk rock, "which was nice", but hardly musically satisfying. I led the house band at the Roxy Club in Covent Garden until the rot started to set in (that means until the wages stopped being paid and I'd spent one too many nights collecting empty beer glasses).

My next step, after getting married, was to write a letter to my bass-playing hero: Herbie Flowers. I'd followed his career since before I was a teenager, when I flipped out listening to the Love Affairs' perfect piece of pop, 'Everlasting Love', with its killer bassline (which the producers of the recent pathetic hit cover version decided wasn't necessary — once again music becomes a casualty of bland marketing).

#### **EAGLE-EYED COCKNEY**

At 11 years of age, I'd noticed that the bass player in the original band miming to the record on black-and-white Top of the Pops didn't know where to put his fingers, so I wrote to the record company to ask who had played on the record, and they replied that it was Herbie, probably the most experienced session player on the planet today. If you want to know more about him or the history of British session playing, go and see his one-man show, My Mum's A Yoghurt, where he talks about having the first electric bass guitar in England, playing on mega hits like 'Walk On The Wild Side', and working at the top end of the session business. There's a piano accompanist with him on the show, and between them they'll show you what cultured playing is all about.

Anyway, all those years later I wrote him a letter in which I mentioned that my musical career wasn't going as well as I would have liked. To my astonishment, he called me the next day and said we should meet up at the studio where he was working on a Justin Heywood album, with Jeff Wayne at the controls - cool! I turned up, we had a laugh and I spent the next two years sitting in on sessions with him, helping to carry his gear, and learning session etiquette. From there I started depping for him (depping, or deputising, means doing rehearsals for evening shows when he had a session, or doing the less glamorous session if he was double-booked which was hardly ever).

My first proper session was with Sally Oldfield at Roundhouse Studios. I was nervous: on the way to the studio there were enough hot bricks in the car to build a wall round London, but the omens were good.

I was listening to Capital Radio, and just as I was passing their old studios at Euston Tower, Kenny Everett (God rest his soul) read out my car number plate as part of a spot-the-car-sticker competition. I'd won a T-shirt! I pulled up outside the station within a minute of him announcing it, claimed my prize and got a name-check at the very moment I was parking in the Roundhouse car park — super cool!

As for the session, at the time I thought I was laying down the virtuoso bass-playing standard for generations to come. On listening back to it, I now realise it sounds like simple bass playing of the pedestrian kind — but it was a start.

#### WHAT YOU NEED

First up, music qualifications: just how important are they? Of course, being able to sight-read with flair and personality is more or less essential (although there are a couple of people that earn a fabulous living as full-time session musicians who can't read a note — but they fall into the category of 'don't bank on it being you' - and there's nothing more embarrassing than a player who can't read music very well pretending that they can in a studio full of fluent sight-readers). However, I know of no contemporary players who have ever been asked what music exams they've passed before getting a session — although I'm sure that if your desire is to be first violin with the LSO they might want to know if you've passed grade two theory.

Sight-reading is just one of the things anyone hoping to become a session player needs. Here are a few of the others:



lan Thomas, without doubt one of the greatest session drummers of all time. A powerhouse of pinpoint technical ability tempered with musical understanding and empathy with the vocalist — and boy can he down a pint.



Ever wondered why the quality of PC audio recording systems is generally so poor? - One word: Jitter! Now here's the solution: The Aark 20/20 from Aardvark, the makers of the professional digital master clock generator, the AardSync II.

This is a multichannel system with eight 20 bit A/D & D/A's plus SP/DIF i/o - 10 simultaneous channels of record and playback. The software includes standard Windows drivers to fully support Sound Forge, Emagic, SEK'D, Cool Edit Pro, Cakewalk, etc... Plus custom ASIO drivers for Cubase VST. Then the control panel includes comprehensive routing and mixing. It's simple to use, quick to install, and the audio quality will blow you away!



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#### **ALL ABOUT SESSION MUSICIANS**



"You need gear that works properly, is in perfect tune, doesn't rattle or hum, and won't die halfway through the session."

- Ability: you may well be the greatest guitarist to ever play in your bedroom, have got all your musical grades before you could walk and have worked out every Hendrix lick on record, backwards. So what? Thinking you're any good and being able to play what the client wants, in the way they want it, more or less first time, are two separate things.
  - Nerve: this doesn't mean you strut your stuff in tight pink leopardskin pants and blue hair. It means not having the faintest idea what you'll be asked to play but being confident that you will be able to play it, exactly as required. Will it be a sight-reading roast up? ('Roast up' something that's very hard to play, especially when there's no time to work out how to count the 11/16 bar which links the 5/4 piece in C-sharp and the 7/8 coda in A-flat.)
  - Tools: you need gear that works properly, is in perfect tune, doesn't rattle or hum, and won't die halfway through the session. It doesn't necessarily have to cost a fortune. I spent the first half of my session career using a pre-CBS Fender Jazz bass, in mint condition, worth about a million pounds (well, from the cost of the insurance you'd have thought that was how much it was worth). I decided that it'd be a good idea to have a spare, so I bought a Squier Jazz for £120 and spent about £30 getting it set up properly (intonation, pick-up balance, buzzing fret). It sounded every bit as good - or was it the fact that my fingers have the magic (he said, laughing all the way to the bank to plead for an extension on his overdraft)? So for the second half of my career as a session bass player, I used one of the cheapest instruments available.
  - Location: the truth of the matter is that living in the outer Hebrides is all very well if you're an 'in demand' touring session player, but if you're trying to carve a career out for yourself in the highly competitive world of 'musicians for hire' there are really only four major centres on the planet (Nashville, Los Angeles, New York and

London) where a session population exists in abundance. So you'll have to be commutable to one of these when starting out.

#### **WAYS IN**

There's no formal way into the session business, though becoming a roadie or dep for a session player, turning up at studios to help them set up their gear, or perhaps being the person they call when they're double-booked, is one of the best ways of getting a foot in. Touring Europe with an old has-been is also a great way to start a session career: the pay isn't bad, and it's usually a real laugh. As for where to look for these types of openings... one thing's for sure: they're not in the local job centre.

Once you have wormed your way in and have done your first couple of sessions, you have to be seen by as many producers as you can. But how? By deception, of course! My fiendish plan when I first started was to send packages addressed to me to a number of studios, and then a day or so after I'd sent them I'd call and ask if they'd received anything addressed to me. They'd be grateful for my call, as they didn't know what to do with the package. I told them not to worry about it, as I'd come and pick it up the next day. Then I'd go to the studio and collect the empty tape box, at the same time clocking who was doing what where. Before long, the people who were making the records knew who I was, and the rest, as they say, is history.

Perhaps the personal background of one of the UK's 'first-call' session players might give you a few more hints as to the possibilities. There are about a dozen 'first-call' players (a first-call player is simply the first person a producer, composer or artist calls for their session) for every instrument in Great Britain. Probably the drummer on top of more lists than any other is lan Thomas, who has a credits list as long as your arm and works on records, jingles, TV themes and feature films, including the Oscar-winning Leaving Las Vegas. On occasions, he'll have up to three different drum kits set up and ready to go in various parts of London on the same day.

He started playing at 12, but apart from a few lessons, had no formal music education. He moved to London from his native Wales in 1984, in order to play in a trio performing in a late-night hostess bar. Aside from these 8.30pm-3.30am nightly spots, he was the backbone to NYJO, which led on to loads of jazz gigs.

The first big name he worked with was Cilla Black, when he was called in as a last-minute dep on a Middle East tour. But it was at a jazz festival in Edinburgh, playing with the John Altman Big Band, that his first major session came up. He was asked by Mr Altman "are you doing anything next Tuesday?", which as luck would have it he was — a summer-season gig with Ms Black. But luckily the bass player knew what the gig on offer was and gave Ian a sharp dig in the ribs, which made him think about getting a dep. The session

#### SECRET AGENTS

Session agencies and diary services are essential for a busy player. But before you write in asking where and how you can get on their books and why I didn't include a list of all the major organisations who deal in this service, I'll tell you.

Session agencies usually find their clients themselves, either through producer recommendation or by reputation. They are a one-stop shop for a lot of advertising agencies and soundtrack producers who need to book a wide range of players for a session, or for producers who have exhausted their personal contacts and drawn a blank. They're commonly referred to as fixers, and often specialise in orchestral bookings or advertising work. They organise the session players and invoice the producer en masse, including a booking fee for themselves, and the

players then invoice the agency.

Diary services are only of any use if you've got loads of work coming in all the time and need to have someone else to deal with the pressure of calls. If I want to book a particular sax player, I call their diary service and find out if they are available on the particular day; if they are I'll book them for the session, and they will confirm it with me, usually later that same day.

However, getting yourself started is not about being on someone's books — it's about getting in the game. This business is full of friendly media tossers who will promise everything you desire if you'll sign a contract giving them 10-25 percent of everything you earn, before you've earned a penny. Don't sign nothing with nobody, until you're absolutely sure of who they are and what they're offering, and that goes for every aspect of this business.

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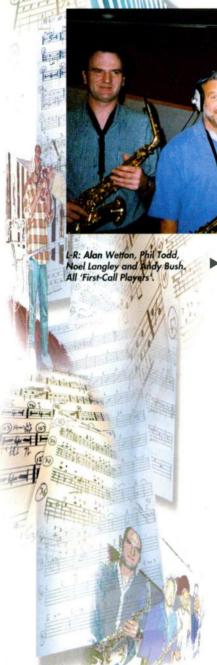
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#### **ALL** ABOUT SESSION MUSICIANS



was 'Kissing The Fool', a track on the first solo album by George Michael, with whom he's worked many times since.

When Ian went for a gig with Seal he was the last of 20 drummers to be auditioned, and since he hates auditions and thought the gig had probably already been taken, he decided to go crazy and play what he wanted — kind of Keith Moon reborn in a world of hot jazz. Seal liked what he heard — in fact they ended up jamming all night — and yes, he got the gig.

One of Ian's most bizarre jobs of late was working on George Martin's final album, In My Life. The day started badly and he was running very late for the 10am start, so he decided to make use of the bus lane. Luckily for the safety of all of us, the police stopped him and gave him a jolly good ticking-off. When he eventually arrived at AIR Lyndhurst he realised he'd forgotten to tell his roadie to drop the kit off. So he'd got to the studio with no time to spare, and no kit. Just as he was going to confess to the greatest producer of all time that he didn't have a drum kit, he bumped into the riddum programmer who'd been booked to lay down the click track. Ian told him his dilemma and it turned out that the angel-of-mercy programmer was also a drummer, with a Gretsch kit in his car which he didn't need: phew!

The track Ian was booked to play on was 'Golden Slumbers'. Halfway through the song

there's an added 16-bar drum solo which calls for the drums to go mad. A drum solo added to a song written by the undisputed greatest pop beat group of all time, on the swan song album for (arguably) the most influential producer in the history of recorded sound? A stroke of luck or what — bastard. Then, at the end of the session, George Martin came up and said "I don't know if now is the right time to tell you, Ian, but we won't be using a note of what you've played. Phil Collins is coming in next week to replace it all."

#### SO HOW MUCH?

If you think you can stand this kind of life (which could lead to you earning loads of dosh on a first-class Egon Ronay tour of the world, if you can get a gig with an internationally massive band on their world circuit), how do you know what you should charge for your work? Let's take a look.

Are you a member of the Musicians' Union? If not, why not? If you want to be a professional musician, of any flavour, you have to be in the union: they're hip to everything going on in the industry, and the more members they have, the more power they can wield in our interests.

There are about a million different minimum rates for musicians, as set by the union. They range from what a rank-and-file viola player gets for a five-hour rehearsal, to a price per bar for writing out arrangements, but we'll just look at a few of the most relevant. And remember: these are the minimum payments, and when you start out you really aren't in the position to demand a triple-rate scale.

For a session of up to three hours where you record no more than 20 minutes of music, the rate is £93, with every hour of overtime making you an extra £33. This is for audio record release only, which means that if it's used on anything else, including a pop video or radio link, you will get more money (how much depends on a number of factors, the main one being whether you signed the appropriate union consent form).

For playing on a jingle (media advert) the rate ranges between £88.50 and £115.95, depending on what uses are bought out by the producer (radio only, or combined TV/radio/film, although this doesn't include the Internet which, as in many areas of the industry, is proving to be a nightmare when it comes to copyright protection).

For a feature film (and over 20 percent of all Hollywood movies have their soundtracks recorded in London) there's a sliding scale of between £45 and £90 per hour, depending on how many musicians are involved on the session. Which means that if it's a full orchestral session the rate is £360 for an eight-hour day, but if it's just you and a click track, it's twice as much.

TV signature tunes made by independent production companies are a bit more complicated, but pay by far the best minimum rate of pay. Based on a three-hour session, the rate ranges from £300 to £370, depending on the uses bought. So for £300 the company can only use the piece for up to

#### THE PROFESSIONALS

Make no mistake, being a successful session musician means that you can play anything put in front of you. For example, my first-call guitarist, Steve Donnelly (who is also, more importantly, internationally renowned producer Mitchell Froom's first-call guitarist) can open any piece of manuscript music, be it heavy-duty jazz, a classical overture, avant garde nonsense or dodgy old three-chord Britpop and play it immediately. He can hear any guitar sound and know how to emulate it, and can play with style, class and accuracy every time. But whether he's working on a simple lick on a Sheryl Crow single or doing a toothpaste commercial (he doesn't do those anymore) he gives the client what they want, straight away - not just a run-through of

the best licks he knows, although if I'm not very much mistaken he knows every guitar lick there is.

Of course, not all session players are masters of their trade: some of us got through by the skin of our teeth, trading on a good sound and a calm but enthusiastic attitude in the studio. Others are booked for their own particular sound or their mastery of one particular skill or style. People like London-born Nashville guitarist Albert Lee is as good as you can get when it comes to country picking. Then there's Marc Ribot, who plays art-house, off-the-wall guitar that sounds like a cartoon car exploding, and Jody Linscott, who shakes, rattles and splashes a wall of sexy percussion with cat-like precision... These are guys who get booked because there's no-one better at doing what they do.



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### **ALL** ABOUT SESSION MUSICIANS



"Make no mistake, being a successful session musician means that you can play anything put in front of you."



The accompanying charts (right) are for 'The Spirit of Cilla', one of my mental ball-busting brass bashes which has the horn part written 'in concert'. This means that the players have to sight-transpose their parts. The drum part is mapped out exactly with cymbal hits, precise tom fills and helpful guides like "classic pop drum beat". The piano and guitar part is just a chord chart that has occasional rhythm figures to hit. The bass part is a technical nightmare which redefines the boundaries of lower-stave music theory - but seeing as I played it myself it wasn't written down. Or was it not written down because it was so easy that even a blithering idiot could play it from memory?

After looking at their parts for a nanosecond, the guys who played this piece began to tell hilarious stories from their respective travels. Then we all had a lovely cup of tea while everything was being miked up, after which they listened to me explaining what I wanted for a couple of minutes, then recorded it, Bosh! First take. But then these are dead easy charts to play; it gets a lot harder than this.

▶ 13 episodes, but for the extra £70 they can use the theme as many times, in as many countries as they like, for five years. After the uses paid for are exhausted, they must pay a percentage of the original fee, between 40 and 50 percent.

Whenever I book players, I feel it good manners to pay at least 10 percent over the odds, and I make sure that all their rights are accounted for — as do most people who hire players. It's not that the rates aren't high enough; it's more a matter of a little bit extra going a long way — or, to put it another way, if you pay over the odds and go a little over time they won't charge you overtime.

There's also the question of 'porterage', which is an extra amount to cover the cost of getting the equipment to the studio. Drummers, more often than not, have a roadie deliver and set their kit up for them. They pay the roadie £50, which they add to their fee as porterage. But I've seen a saxophone player turn up on a session with their one instrument in a small case tucked under their arm and charge (or try to charge) £30 porterage. I've been on sessions where the percussion player earned more for his porterage than the fee for the job. Every time he used a different tambourine it was another £3.50. The most common way of dealing with porterage these days is that if you're going to charge it (which I never do), you tell the person with the cheque book before you write out your invoice.

The most-asked question of a session musician by a producer is "how can we sort out overdubbing this without it costing me a fortune?". Now in explaining this I'll probably fall foul of the MU, but if I'm to be the purveyor of truth and accuracy in this piece (something which I, and the entire magazine prides itself on) I have to tell it like it is.

Some time ago the MU lay down a directive that if a musician overdubbed on a track they'd already played on, they would be eligible for a 120 percent increase in their fee, if they were to overdub again they'd get an extra 140 percent, and so on. The reason for this expensive-to-comply-with directive was to make it cheaper for a producer to hire extra players than to just use one person to bank up the parts. An excellent idea, but in the real world what happens is that the producer and the player/s come to an arrangement at the start of the session. But don't say I told you so... Shh!

#### AND MORE ABOUT ME

The most money I ever made on a session was £800 for 10 minutes work, where I had to replace the bass part played by a member of a very well-known band without his knowledge. The producer called me in at 9.30am and I had to be out within the hour, so as not to bump into any of the band. The song was a minor hit, the part was dead easy (although the guy in the band obviously didn't think so — he was all over the place). The money was to buy my discretion, and it has.

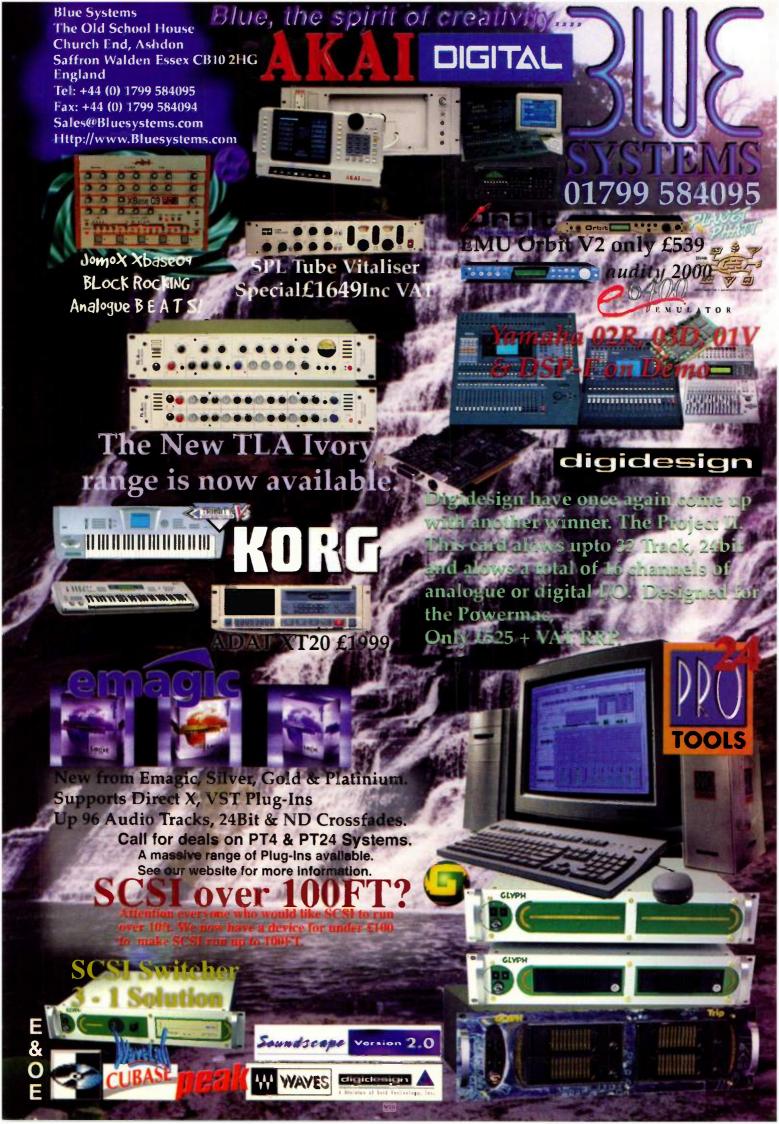
The most money I earned out of a single session that initially looked as though it would be just another £75 job was a penny or so under £1500. It was a minor hit record which earned me an extra couple of bob for *Top of the Pops* plays and so on, but it went on to be remixed by Arthur Baker and used as the theme for a Hollywood movie. I'm not bound by a secrecy contract on this track, but modesty forbids me to reveal which classic film my sampled-up bass playing booms all the way through.

These were very much the exceptions, though, and both were over 10 years ago. These days, when accountants run everything with stranglehold contracts and agreements, tickles like these are harder to come by. And I can assure you that there's always someone younger, better-looking, cheaper, and musically superior waiting to step in. But that someone could be you...

Just remember that when you start out you'll have to be prepared to do anything, and that includes playing on crap written and sung by someone with more money than talent, or working for a fiver with fellow broke top players on their own material. Even pit work in the theatre (ultimately one of the most boring and frustrating places to be stuck, but a ripe breeding ground for gaining top contacts and for learning the trade of professional playing) is better than sitting at home waiting for the phone not to ring.

That concludes this month's depressing picture of your chances of earning the big bucks playing easy licks on number one hit records. If you think that was tough, wait until next month, when I'll take a look at becoming a programmer.







## Designer Ware

SPL are renowned for producing highly specialised audio processing tools, and their latest product is no exception.

PAUL WHITE attempts to unravel the mysteries of the Transient Designer dynamics processor.

# SPL TRANSIENT DESIGNER £799 Pros • Childishly easy to use. • Consistent results regardless of input signal level. • Exceptionally musical. CONS • Only the price! Summary This is a unique dynamic processor that allows the user direct control over the feel of percussive material. The price isn't keen, but there's nothing else on the market like it.

#### SPL TRANSIENT DESIGNER

PL are best known for their slightly oddball Vitalizer product range, but even they are at a loss when it comes to describing the Transient Designer. It offers a new type of dynamic control, and though it is related to both the compressor and the expander, it could not fairly be described as either. Outwardly, the box is pretty conventional with balanced XLR audio inputs and outputs plus SPL's distinctive 'squirdly' blue front panel, but this simple exterior belies the complexity of what's taking place inside. The circuitry relies on VCA gain control technology, but there's a lot more to the process than compression — it can change the envelope of a sound, but it's not an envelope generator, and though you can use it to add punch to a mix, it's certainly not an enhancer. It's perhaps best to think of the Transient Designer as a 'results-oriented' device insomuch as it's what it achieves that's important, not how it does it.

From the user's point of view, the Transient Designer is disarmingly simple to use — each channel has just an Attack control, a Sustain control and a Bypass button. Two further buttons are provided so that channels 1/2 and 3/4 can be linked as stereo pairs for processing stereo signals, and each channel has a Signal Present LED that comes on at input levels above -40dB. In fact, it's what you don't see that provides the clue as to how clever this box really is. There are no meters, no threshold controls, no ratio knobs and no make-up gain controls. The process is independent of input level, and the two controls are so cleverly linked to the internal magic that setting up can be done entirely by ear.

#### SO WHAT DOES IT DO EXACTLY?

The rationale behind the box is to give the user direct control over the attack and sustain characteristics of

natural sounds, and though this sounds less than revolutionary, you only have to play with the unit for a few minutes to realise that the Transient Designer is a very powerful creative tool. For example, you can take a gutless, flabby recording of an unremarkable drum kit and dial in some really hard-hitting attack or, conversely, take a very percussive sound and soften the attack. You can also use the sustain control to work on the decay portion of sounds, and with drums you can tighten up the sound to give a fast, dry decay or you can make them ring as though you'd taken the dampers off the kit. It's just like having remote control over the amount of damping tape stuck to the drum heads — after the recording. What's more, because the process is independent of level, the effect is consistent regardless of whether the input signal is loud or soft, and off course you don't have to use it only on drums. How is it possible to achieve all this with just two controls?

The secret is something that SPL call Differential Envelope Technology (a registered trademark of course!), which works by using two envelope generators for the attack and two more for the release. On the attack side, one generator follows accurately the original signal amplitude while the second does the same thing but with a slower attack. Subtracting these envelopes produces a control signal that can be used either to increase or decrease the level of the audio depending on whether the Attack control is turned clockwise or anticlockwise from its centre position. A similar methodology is used to derive the release control envelope. The outcome is that any attack transients can be cut or boosted by up to 15dB and the sustain can be increased or decreased by up to 24dB.

The audio signal path is exceptionally clean with a THAT 2181 used as the gain control element. High-quality input and output stages using laser-trimmed resistors have been designed to produce minimal distortion plus an exceptionally high common mode rejection (CCMR). Relays bypass the channels completely when the power is off or when the channels are bypassed, and the dynamic attack/sustain time constants respond to the dynamics of the input signal to provide a musically natural result over a wide range of input material.

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#### SPL TRANSIENT DESIGNER



into an insert point and make sure you have enough input level to get the signal LED flashing. With both the Attack and Sustain pots set at their centre positions, there's no effect when switching the process in, but as you advance the Attack control, percussive sounds become more assertive with a snappier attack. Conversely, if you wind the Attack control back from centre, the attack of the original sound diminishes, but in a way that is still reasonably natural. The effect is definitely best appreciated with drums or percussion, but percussive bass lines also respond well to treatment.

The Release control has more range than the Attack control, and as you move the control anticlockwise, the sound dries up, tightens up and exhibits a faster release time. If you go too far, the sound takes on an 'expanded' characteristic, but used carefully, you can take the ring out of a badly set-up drum kit and still leave it sounding natural. Take the control clockwise and the ring of the drums is enhanced. Some of you are probably thinking that you can create effects like these with any good compressor, but that's not entirely true. Certainly, if you're dealing with a single drum hit, you can use a compressor to modify the attack and release characteristics, but if the next hit that comes along is a radically different level, the effect of the processing changes. With the Transient Designer, every percussive sound gets the same treatment, regardless of level, and that's the secret of both its sound and its ease of use. Indeed there's so much range that you can take a kick drum sound and either sharpen it up to sound like a heavily processed drum machine kick, or you can pull back its attack, extend its release and make it sound like a 'bouncing basketball' electronic kick. Similarly, you can take an electronic kick and modify it so that it sounds almost like a real acoustic kick.

It's easy to use, it can seriously reshape percussive sounds and it's hard to make the Transient Designer sound anything other than musical, but are there any negative points? Well, you do have to be careful when recording to a digital destination, because as you add more attack to a sound, you increase its peak level. This is the opposite of a normal fast attack compressor that's set up to reduce the dynamic range of a sound. It's really

not a problem, you just have to be aware of it, and in some cases, the subjective level of the treated sound will be lower than that of the untreated sound because of the extra headroom needed. On the other hand, you can take down the peak level of an over-aggressive drum sound and increase your subjective level for a given headroom, so it all depends on how you use it. The really great thing is that you can check different settings instantly simply by moving two knobs - you're not constantly adjusting thresholds, selecting ratios or messing with attack and release times. What's more, because of the way the Attack and Release controls work, you effectively have the option to use different degrees of compression or expansion for the attack and decay portions of your sound, all without having to worry about signal levels.

#### **SUMMARY**

Though you get four full channels of processing, the Transient Designer isn't exactly cheap, but most of the people who've heard it have been seriously impressed by the results. What it can achieve transcends by far what can be done using an ordinary compressor, in much the same way as the SPL Vitalizer takes tonal shaping beyond the conventional equaliser. The Transient Designer is most effective on drum tracks or rhythm sections - processing whole mixes is, as you might expect, often less successful, though percussive synth sounds generally respond well. Even if you record only ballads, you could still use one for polishing up your drum tracks, but as soon as you get on to dance music or anything else with a strong rhythmic element, the Transient Designer rapidly moves out of the luxury category and on to the 'must have' list. This is a unique processor that you have to hear working to appreciate, but be warned — don't play with one unless your credit card can back up what your ears are telling you!





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DISTRIBUTION

Yes, it's a Minidisc machine and it's not even a multitrack, just a stereo recorder. Why on earth could you possibly want one in the studio? DAVE SHAPTON explains...

ow's this for a deal: a 20-bit digital-to-analogue converter, with co-axial and optical inputs, for less than £250. Oh, and by the way, it includes a sample-rate converter so that all that stuff you mastered at 48kHz can be reduced to 44.1kHz. Even better, it comes from Sony, a company that knows a bit about digital audio. And what if I told you that the price includes a high-spec Minidisc recorder/player? You'd probably do what I did. I bought one, and am still wondering how you can possibly get so much hi-tech magic for so little.

I'm a recent convert to Minidisc. I've worked with digital audio for a very long time and I've always tried to avoid any sort of audio compression, figuring that the closest you could get to the original sound was to leave it alone after it has been digitised. Now I've got a different viewpoint for several reasons — not the least of which is that Minidisc is now so good that I really can't tell the difference between the original and a compressed Minidisc recording. Another reason is that Minidisc is now getting stupidly cheap. So cheap, in fact, that I wouldn't be surprised if Sony and the other manufacturers of Minidisc equipment are making very little money indeed on the sale of their products, for the sake of building market share for the format.

I got hooked on Minidisc when I saw a little Sony recording Minidisc Walkman in an airport Duty Free shop. I don't normally go in for this sort of impulse buy, but I was looking for a better way to record interviews and this seemed ideal. Incredibly, you can get nearly two and a half hours on to a Minidisc if you use Mono mode. This use alone would justify the expense of £160, not to mention the fact that with a decent stereo microphone I could make location recordings to a very high standard. The Walkman (an MZ R35) was even better than I had hoped, with great converters and the ability to record digitally from anything with an optical digital output. The only real drawback I could find was that the line out was a miniature stereo jack. This, however, is hardly a justified criticism of something you are supposed to listen to while you are jogging. And speaking of jogging, there is a 20-second buffer which means that you can shake the thing like mad for what seems like an eternity, and it won't even glitch.

But there is something intrinsically naff about using any kind of Walkman device as a music source with a full size hi-fi, or in a studio. I can't help feeling that such a tiny thing is not going to stand up to heavy, or even moderate use, for very long. Mine has worked perfectly so far, but with the price of full-size players being so low, I felt compelled to buy one of these as well.

The Sony MDS JE520 is the same size as almost every other bit of hi-fi gear that doesn't describe itself as Midi or Mini. It is black as well, so it will match practically every other piece of high-tech equipment you have, and certainly wouldn't look out of place in a project studio. It has a large fluorescent display, at least half of which is devoted to displaying disk and track names. The big remote control has a full alphanumeric (but not QWERTY) keyboard to speed up the process of titling (until you've tried it, you might not realize how useful it is to be able to see information like "Recorded June 1997 at Big Dave's. Good guitar





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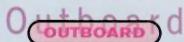
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#### COMPRESSION

As you can tell from its eponymous title, Minidisc is very small. So it can't store as much data as a (merely) 'Compact' Disc. The only way to get the same amount of music on an MD as on a CD is to shrink the data until it does fit. It's actually very easy to make digital audio fit into a smaller space: you can halve the sample rate, reduce the number of bits to eight instead of 16, and you can make it mono instead of stereo. And it would sound terrible.

Alternatively you can use some terrifyingly sophisticated algorithms to analyse the full-resolution audio, extract the parts of it that are important to our brains when we are 'perceiving the audio, and, quite simply, not bother to record anything else. This is what the ATRAC Minidisc compression algorithm (Adaptive TRansform Acoustic Coding) does. Rather than simply reducing the resolution of the recorded material, and hence the quality. ATRAC looks for parts of the frequency spectrum that are hidden, or masked by other frequencies that may be louder or in a frequency band that is more sensitive to the ear (or, arguably, the brain). Essentially, it works on the principle that what you don't hear in the original you won't miss if it's not reproduced. Bear this in mind when considering the following: what

happens if you make a copy of material that is already compressed? The numbers would suggest that if you throw away four fifths of the data and then re-compress, you will end up with audio at one twenty-fifth of its original quality. But if you actually try this you will be amazed at how little is actually lost (as long as you use the same kind of compression — if you move between different compression types then you are in big trouble). What's going on here?

Remember that ATRAC works by leaving out information that would not have been audible because of masking effects by other frequencies. ATRAC knows that it can only store a fifth of full-bandwidth audio information. But that's not as much of a problem as it might seem, because the other four-fifths of the information was discarded the first time the audio was compressed. So it isn't there to be compressed a second time. Therefore all the available bandwidth can be used to store the remaining frequencies, which hardly need to be compressed at all. Nevertheless. ATRAC, in common with most compression schemes, has to work harder with complex mixes than with individual voices or monophonic instruments. But I have to say that I have heard very few examples of music that really catch out the latest ATRAC algorithms.

solo. Listen for the string breaking at the start of the third verse").

Using a Minidisc device is just like using a CD player, until you realize that you can record as well. The MDS JE520 caters for this in several ways. Firstly, there are conventional analogue inputs. You can also record digitally via the co-axial or optical inputs, and the sample rate converter automatically changes the sample rate to 44.1kHz from either 48 or 32kHz. When recording digitally, it is not normally necessary to set any levels, because the digital data stream contains its own absolute level information in the digits themselves. Surprisingly, though, the MDS JE520 allows you to vary levels digitally, which may at times be useful if an original recording was a bit low throughout. But it's not a panacea for bad levels, because any gain applied during the transfer to Minidisc will also bring up the noise floor, with the result that the recording will sound the same as the original, but louder.

There is also a digital fade facility that hints at the possibility of producing fully edited master recordings with no additional equipment (especially since the Minidisc format allows track re-ordering and even within-track edits).

Is is as good as DAT? Well, I couldn't reliably tell the difference between my Minidisc recorder and the CD original. At that point, I think you have to say that, subjectively, it is as good as DAT. Remember, though, that Minidisc is a compressed format and that as much as 80 percent of the original data is thrown away during the compression process (but see the box on this above). As such, you won't be able to make perfect copies of a Minidisc recording on to another Minidisc, even via a digital connector — because inevitably some quality will be lost as the ATRAC compressed digital audio is uncompressed

for transfer via the optical digital interface, and recompressed as it is recorded onto the destination Minidisc. You could actually make loss-free copies if there were a way of duplicating the data, as opposed to the audio that the data (imperfectly) represents. If this were possible, making perfect digital copies would be as simple as a file-copy operation on a desktop computer, because. essentially, that's what it would be. Sony already has the ideal way to do this: Firewire (also attractively known as IEEE 1394 and Sony's preferred appellation, 'iLink'). Firewire, as I shall continue to call it, is a scorchingly fast data connection that is guick enough for several channels of digital video, never mind digital audio. It's cheap and robust, and could no doubt be used to copy MDs several times faster than real time. Inevitably, though, I suppose the copyright lobby would object, which is why MDs are lumbered with the anti-musician, anti-common

#### ATRAC 4.5

The latest Sony Minidisc recorders use ATRAC 4.5 compression. A new compression chip (the CXD 2537R, if you want to impress people at cocktail parties) "offers superior fidelity by use of adaptive high-frequency control technology" according to a Sony press release. What this means is that the algorithm looks at the frequencies present and varies the encoding resolution, depending how important an individual range of frequencies seems to be in the overall context of the music. The result is an even better use of the available data bandwidth. This, together with a "24-bit coefficient for word length calculation" has improved the total dynamic distortion caused by ATRAC by around 8dB relative to previous incarnations of the chip. (For a detailed discussion of audio data reduction and compression, see Hugh Robiohns' piece in the August edition of SOS.)

sense and generally completely daft Serial Copy Management System (SCMS), which prevents a digital copy being made from a recording that was itself recorded via a digital interface.

#### CONCLUSION

The MDS JE520 has no right to sound as good as it does, and still only cost around £230. But it does sound brilliant and, incredibly, certain hi-fi chains such as Richer Sounds are selling it for even less than £200, together with blank Minidiscs that cost less than £2. I may be wrong, but I don't think there's ever been a bargain quite like this one. Remember, this is not old stock being dumped — it's the latest model from a range that is growing all the time.

- Prices vary, but most Sony Centres sell the JE520 for £229.95 including VAT.
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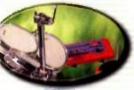
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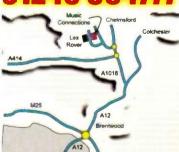
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NEW STORE: HERTFORDSHIRE - 01462743300 NEW STORE! LEEDS - 01943 050533 SOUTHAMPTON - 01703 23 00N - 0171 7315993 BRISTOL - 0117 9467700 CHELMSFORD - 01245 354777 BIRMINGHAM - 0121 212477 ven if all the music you make is created via MIDI, the chances are that at some time or other you'll have to record vocals using the traditional tools of a singer and a microphone. The vocal line is invariably the focal point of a song, so it has to be good, and because the human voice is the natural sound with which we are most familiar, any flaws in a vocal recording are immediately evident. Fortunately, providing you have a vocalist who can sing in tune, getting a good vocal sound isn't rocket science — you just need to follow a few basic guidelines, and perhaps take advantage of a few tricks of the trade to help you get a professionally produced vocal sound.

- 1. Make sure the singer is well rehearsed, physically comfortable, and under no psychological pressure. Most singers perform best standing up in a room that has a comfortable but not over-warm temperature. If they are distracted by other members of the band or by hangers-on, send everyone but the engineer (and producer, if you have one) out of the studio.
- 2. Take time to get the vocalist's headphone mix right, and give them a little reverb to help them sing more confidently. If you can rig up a system which allows vocalists to adjust their own monitor level, it will make life a lot easier. A good headphone mix really helps to encourage a good performance.
- 3. Always use a pop shield between the singer and the microphone. Failure to do so will almost certainly result in unnatural 'pops' on plosive 'b' and 'p' sounds that can't be fixed afterwards. The pop shield may be a commercial model or a DIY job comprising stocking material over a wire coathanger frame (one such design was explained in the Cheap Tricks article in SOS February '95), or even a fine metal or plastic sieve or chip-pan splash guard. Any of these will do the job without affecting the tone of the mic. Foam wind shields are virtually useless in combating pops.
- 4. Use a good microphone: it doesn't have to be anything too special, but you should avoid low-cost 'bargain' models or those designed



for use with home stereos or portable cassette recorders. **Professional** studios generally use capacitor microphones, but in the project studio a good back-electret mic or even a good dynamic vocal mic can produce



Vocals

If you've got a storming vocal on tape you're halfway towards a great production. PAUL WHITE offers some tips on perfecting this most important of recording skills.

excellent results. For more on these different types of mic, see April's SOS.

- 5. Pick a mic to suit the singer. Singers with thin or excessively bright voices may actually sound better with a dynamic mic, such as the ubiquitous Shure SM58, while those needing more of an open sound would benefit from a capacitor or back-electret mic. If you have several mic models to choose from, try a test recording with each and see which is most flattering to the vocalist.
- 6. Use the right mic pickup pattern: most project studio vocal recordings are made using a cardioid or unidirectional mic, as these pick up less sound from the sides and rear. However, an omni mic of a similar quality generally imparts a more natural, open sound and that can be useful if you're working with a singer who tends to sound nasal or boxy. If you work a couple of inches closer to an omni mic, you'll get close to the same 'direct sound to room sound' ratio you'd achieve with a cardioid.
- 7. Put the mic at the right distance, because if you get too close to it you'll increase the risk of popping and the level will change noticeably every time the singer moves slightly. Cardioid mics also exhibit a bass-boost 'proximity effect' that varies as the singer's mic distance varies. On the other hand, if the singer is too far away from the mic the room reflections will colour the sound, making it seem remote and boxy. As a rule, a mic distance of around six to nine inches (15-24 centimetres) is ideal.
- 8. Minimise the room's influence on your sound. The mic picks up both direct sound from the singer and reflected sound from the room. Reduce the room's contribution by keeping away from the walls and by



#### **RECORDING VOCALS**

- improvising screens using sleeping bags or duvets behind and to the sides of the singer.
  - 9. Use mic technique to help control level: if the singer can be persuaded to pull back from the mic slightly when singing louder notes, there's less risk of overloading the recorder or mic preamp, and you won't need to use so much compression to even things up. An experienced singer may also lean into the mic on quieter, more intimate passages to exploit the proximity effect. However, to prevent an inexperienced singer getting too close to the mic, position the pop shield about three inches (7.5 centimetres) from the mic.
  - 10. Where possible, mount the microphone on a stand. Only let the singer hold the mic if to do otherwise would compromise their musical performance. When the singer is hand-holding a mic, particularly if it's a cardioid model, make sure they keep their hand clear of the rear of the basket, as obstructing this area can change both the directional and tonal characteristics of the mic.

the loudest signal peaks, and if the compressor has an auto mode, use it.

13. Don't be afraid to use more compression on the vocal track once it has been recorded. When the performance is in the bag you can try both subtle and heavy compression to see which works best with the track, though if you're using a lot of compression you may need to gate





A split-band de-esser like the Drawmer MX50 will give a more natural de-essed result than if you use a simple compressor and equaliser side-chain setup.

- 11. Don't settle for anything less than the best vocal performance you can get, and don't expect to get it all perfect in one take. More often than not you'll have to punch in and out around phrases that need re-doing, but if you have enough tracks, get the singer to do the whole song several times and then compile a track from the best parts of each take. You can do this on tape by bouncing the required parts to a spare track, but hard disk editing is much more flexible in this respect.
- 12. Use suitable compression even well-disciplined vocalists tend to sound uneven against the very controlled dynamics of a pop mix, so it helps to apply a little compression while recording. Err on the side of using less compression than you think you will finally need, and use a compressor that has a reasonably neutral characteristic. Aim to achieve 5-8dB of gain reduction on

- the vocal track first. This will prevent noise build-up in the pauses between phrases. It's at the mixing stage that a compressor with an obvious character can be used to make a vocal seem larger than life.
- 14. Don't gate the vocal while recording. A badly set-up gate can ruin an otherwise perfect take, so save gating until the mixing stage. Use the gate before any further compression, but don't gate so hard that you remove all the breath noises preceding words, as these are part of the character of a vocal performance, and the recording will sound unnatural without them.
- 15. Don't run amok with the EQ: on most budget desks the EQ only sounds decent when used sparingly or to cut unwanted frequencies. Mid-range boosting usually results in a nasal or phasey sound, so use as little EQ as you can. If you've picked the right mic, and taken the time to

fine-tune its position during recording, you shouldn't need much corrective EQ anyway. Of course, there are times when EQ is used for creative purposes, and at such times it's best to use a good-quality outboard equaliser, because the difference between a budget EQ and a really good one is immense. Resist the temptation to pile on too much high-end boost, as this will enhance sibilance, bring up background noise and may make the end result fatiguing to listen to.

- 16. Use reverb sparingly: vocals recorded in a dry acoustic environment need reverb to give them a sense of space and reality, but don't use more than the song really needs. As a general rule, busy songs need less reverb and slower ballads with lots of space in the arrangement can afford to use more. Listen to some commercial records in a similar style to your own and see what reverb techniques the producer has used.
- 17. If the vocals are very brightly recorded, they may cause any added reverb to sound sibilant. Instead of de-essing the vocals (which often sounds unnatural), try instead de-essing just the feed to the reverb unit. You can also experiment with the reverb type and tonality to minimise sibilance and spitting.
- 18. If you do have to de-ess the vocals, try to use a split-band de-esser rather than the simpler compressor with an equaliser in the side-chain, as the split-band approach produces fewer undesirable side effects. It's always best to try to avoid sibilance by moving the mic slightly or by using a different mic, rather than trying to fix it afterwards. Pointing the mic slightly above or below the singer's mouth sometimes helps.
- 19. When you're using prominent echo or delay effects on a vocal, try to get them in time with the song, either by calculating the delay needed to match the tempo or by using the tap-tempo facility if one is provided. For a less obviously rhythmic echo, try a multi-tap delay with irregular tap spacings.
- 20. To ensure that the vocal is mixed at the right level in the song, listen to the mix from outside the room and see if the song has the same balance as something you might hear on the radio. The vocals are the most important part of the song and so mus\* be well forward, but not so far forward that they sound 'stuck on' to the backing.

## One Listen... You'll

### the DRAWMER MX50

#### THE MIX Alan Branch:

"Comping some backing vocals in the computer and printing them on to multi-track, they were a little bit sibilant, so were processed with the MX50. With a few seconds fiddling they sounded much more natural. It's an excellent tool for recording or mixing. This box can reduce anything that is up in the sibilant range, from the fret string noise or twang of an acoustic guitar to a hi-hat within a loop. When looking for the final polish to problem vocals this should be in your rack.

#### SOUND ON SOUND Paul White:

"Not only is the MX50 a very good dedicated de-esser, it is also affordable when you look at what other manufacturers are charging for a comparable product...there can be few de-essers that work as smoothly and unobtrusively as the MX50, and which are so straightforward to operate. The floating threshold system is also extremely clever, as the input signal can vary over a wide range and still be treated effectively. If you suffer from sibilance problems, this is probably the best budget solution around."

#### AUDIO MEDIA David Mellor:

"The MX50 is very simple and to the point. All you have to do is find the frequency at which the offending ess sounds are at their worst, and dial in the amount of reduction you require. There is a definite need for a standalone de-esser, and the MX50 fulfils that need admirably, and it has two channels for when you are really having a bad ess day."

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an average left/right signal which is used as the FLOATING Sets an av level which is

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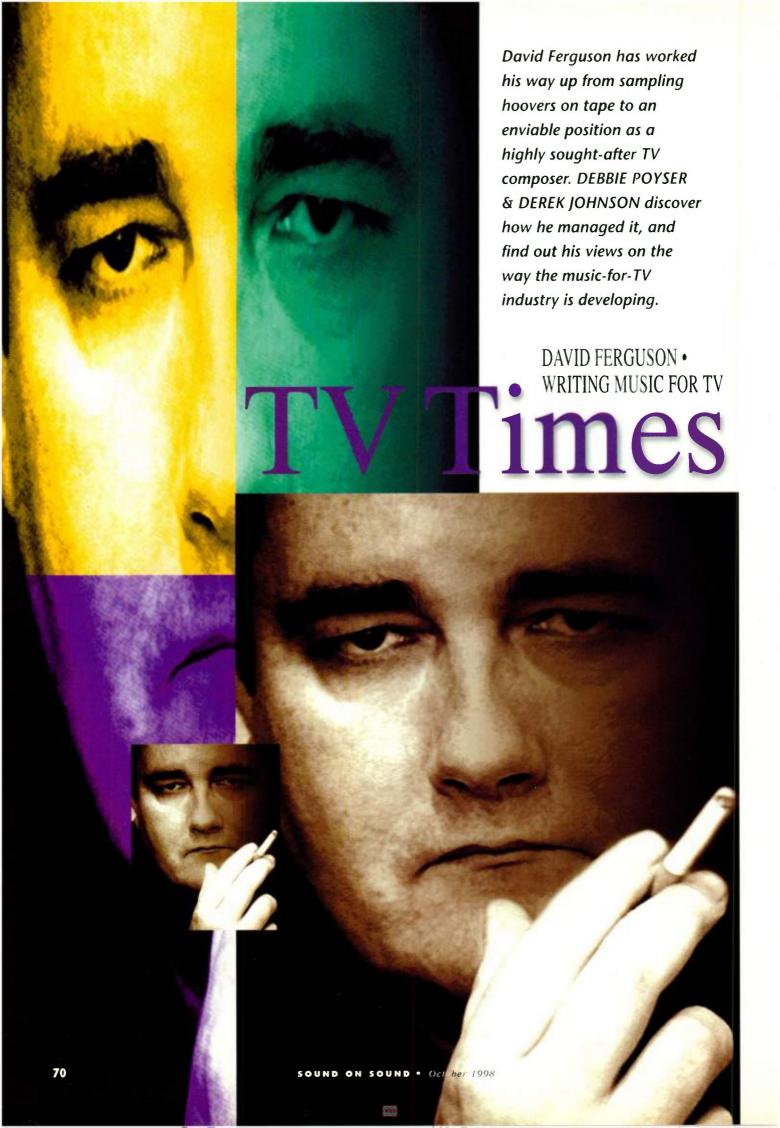
Reduces total signal level in response

signals in the selected frequency band as set on the FREQUENCY control Drawmer's Intelligent FLOATING THRESHOLD system that adapts to the dynamics and level of the incoming signal so there's no need Sets the amount of gain reduction that occurs when an Ess is detected. for a manual THRESHOLD control works using

## DE-ESS GAIN REDUCTION DISPLAY

the whole signal, value set on the Shows how much gain reduction is being applied up to a maximum 20dB. In FULL BAND mode gain reduction is applied to whilst in SPLIT BAND mode only frequencies above the REQUENCY control are subject to gain reduction

harmonics and increases transparency of the de-essing process. Adds back high frequency gloss in excess of 12KHz which preserves upper



'm still a terrible keyboard player", says David Ferguson. If that's the case, there may be some hope for the rest of us terrible keyboard players, since the man speaking is a leading UK film and television composer and has just released a Chandos CD, The View From Now, of his soundtrack music. His work can be heard on such contemporary drama as Ruth Rendell's A Dark Adapted Eye (BBC 1994) and A Fatal Inversion (BBC 1992), and the second series of Granada's cult thriller Cracker, starring Robbie Coltrane. Recently nominated for an Ivor Novello Award for his work on the Carlton/BBC period psychological thriller The Woman In White, Ferguson seems drawn to drama, perhaps because, as he himself admits "I'm not very good at cheerful tunes."

In person, he's an affable man, but the serious side that manifests itself in his music is certainly evident, and amongst other topics we'll talk about is one of some importance - which could affect you, as a musician, personally. But first, let's fill in some blanks.

## A LIFE LESS ORDINARY

David Ferguson was born in 1953 in South London, where he still lives to this day. If you witnessed the blooming of early-'80s synth pop first-hand you might be acquainted with Random Hold, the band which brought him his first taste of musical success. Meeting by chance at an 801 (Brian Eno and Phil Manzanera) gig, the 24-year old theatre student David Ferguson and old school friend David Rhodes decided that they could form a band at least as interesting. David Ferguson takes up the story:

"I'd never played an instrument, but in the theatre I'd learned a lot about tape recorders, and we were initially interested in the avant garde end of things. We had tape loops of insect sounds and vacuum cleaners. I had a bass guitar with one string covered with crocodile clips, processed by an echo machine. Because this was the era when synths were first appearing, we gravitated towards them."

Attracting record label interest and touring with XTC and OMD, the band were also spotted by, and taken under the wing of, Peter

David's recent CD, The View From Here.

Gabriel, on whose worldwide hit 'Biko' David's keyboard talents appear. But three albums later, suffering from a lack of public exposure, Random Hold split, leaving David to return to his old life in drama or forge a new career: "I had a qualification to teach drama, and I applied for endless jobs, but didn't get them. Then the director of the last Random Hold music video was offered a Channel Four TV series called Low-

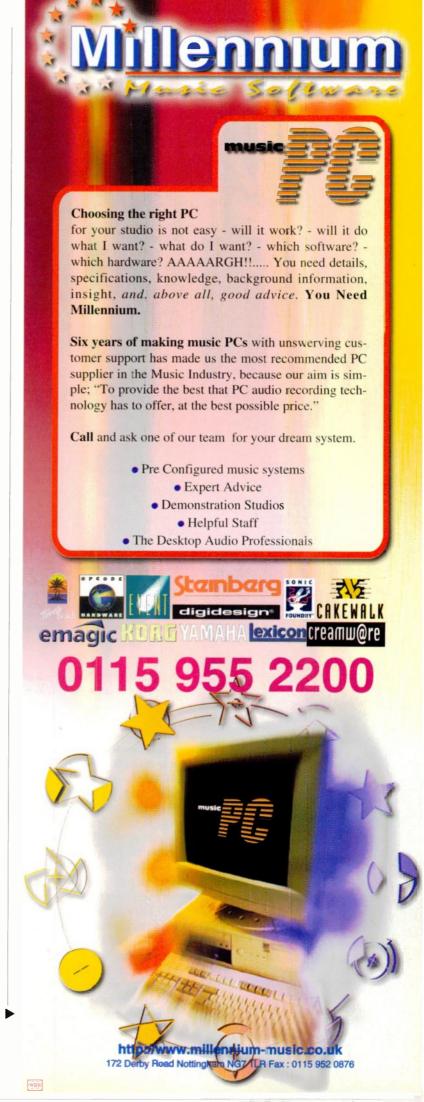
Tech and asked me to do the music. The series was all to do with junk, so we did a fake junk band, with an Emulator 2."

David's real breakthrough came when he narrowly missed a job at the BBC's now-defunct Radiophonic Workshop: "I was heartbroken. But then the Radiophonic Workshop rang up and said they'd like to add me to the list of their freelancers. Initially, nothing much came of it; then one day I got a call from a producer at Granada Television to do the music for a documentary called *The Sword of* Islam, which went on to win the Emmy for best documentary and a BAFTA. Literally the day after it went out, the phone started ringing. It completely changed my life."

The Sword of Islam opened doors for David, and as the '80s turned into the '90s he found himself increasingly in demand. His CV is packed with high-quality drama and documentary credits, and he recently made the move into the American market with the 1997 action movie Hostile Waters, starring Rutger Hauer and Martin Sheen.

## **BUILDING A STUDIO**

In the wake of Random Hold's break-up, David's gear consisted of "bits and pieces. I think I had a PPG Wave 2.2 and a Linndrum, and



## DAVID FERGUSON • WRITING MUSIC FOR TV

## SELECTED EQUIPMENT LIST

- · Apple G3 266 computer. 96Mb RAM/4Gb HD.
- · Akai S3000XL sampler.
- Alesis ADAT XT digital recorder/BRC remote.
- · Alesis Microverb effects.

a 4-track Portastudio. I used to use a studio in Brixton, called Wolf, for my TV stuff. What made me get my own gear was doing a BBC children's drama series called Moondial. These were the days when if you had a studio bill the BBC just paid it. I was in Wolf for almost a month and I realised they'd spent around £10,000 on studio time. So when the director of Moondial asked me to do his next project, A Country Boy, I borrowed £10,000 and bought a home studio, then paid it off with the studio costs on A Country Boy."

These days David has what he calls a "writing room" in his London home. But for recordings that call for real players and instruments he decamps to Terra Incognita studios, in Bath, where we're conducting our interview. It's the second home of producer David Lord (interviewed in SOS November 1996), Ferguson's long-time friend and musical

"Sample libraries, to me, have become much more important than gear. I buy virtually everything Time & Space put out, apart from the dance-orientated CDs. I've got the Peter Siedlaczek ones, the Miroslav Vitous stuff, Heart of Asia, Heart of Africa, Ultimate Piano, Mediterranean Instruments... When we were doing the music for Bravo Two Zero, there were some scenes where they wanted Iraqi radio playing, and it was so useful to be able to get a drum loop off Mediterranean Instruments and put a little bouzouki thing over the top. We were able to come up with a pretty convincing forgery really quickly." Since samples are the core tools of David's trade,

he spends a lot of time with his samplers: "The samplers I use most are the Roland S760s. I've got two, and an SP700, which is the playback machine." Clearly he prefers the Roland 'way'. "I find that the Rolands sound so musical — I think they've got the best tone. Roland obviously spent a lot of time developing their sample library, which is very good. For instance, with the Orchestral Percussion CD-ROM, the effects you can get are great, like having the timpani crescendo via the modulation wheel. I rarely use the Rolands to actually sample; in fact, Akais are quicker for that, but I find the Roland file management system better."

Having said this, David admits that he'll probably get one of the forthcoming S5000 or S6000 Akai samplers, the fact that they can take up to 128Mb of RAM being a key attraction. "I need another one to accommodate the fact that an entire 32Mb machine is taken up with one piano. The new Akais are supposed to hold up to 128Mb, which is fairly hefty. but I'm sure in a few years we'll need more."

David's a Mac user, running Emagic's Logic Platinum sequencer on a G3 266 computer. He graduated to Mac Logic in the same way as many musicians - via Notator on the Atari - and still has a lingering fondness for a program that progress tells us is outdated. "I adored Notator. Now I'm reasonably quick with Logic, but I don't think its front window is as good. They felt they had to follow the Cubase line, and I think that was a mistake.

There are also some irritating things in Logic. For instance, say you're inside the Event editor which I use a lot, because it's close to the way Notator worked - and you have a hi-hat part that you want to repeat. You do multiple copies inside the Event editor, but back in the Arrange page the size of the hi-hat Object doesn't change, so the hihat runs out unless you remember to go to another area and modify the Object; niggly little things like that. I'm now on Logic v2.6.6 and it doesn't run as fast as v2.5 — partly because it's got audio in it. I don't use the audio, but you can't separate it in Logic any more, which seems daft to me.

"Until recently I haven't had a use for the audio side, but on my album David [Lord] did a lot of editing and crossfading, and I'd now like those facilities, although I don't desperately want to get into multitrack recording inside the computer yet. I see too many people crashing. Most of my composing is done under extreme time pressure, and I can't afford to have gear that goes down and leaves



· Bit 99 synth.

• Drawmer DS201 Gate & LX20 compressor.

• Emagic Logic Platinum 2.6 sequencer.

- Emu Proteus 1, 2 & 3 sound modules. ("On the album, the 'Hall Strings' preset from Emu's first Proteus module is used a lot, because it's a great marcato string sound.")
- Emu Proformance piano module.
- · Ensonig VFX synth.
- FriendChip Timecode Refresher.
- · lomega Jaz drive.
- · Korg 1212 PCI card.
- Korg DRV3000 effects. ("Weird and sometimes wonderful.")
- Korg Wavestation SR synth.
- Lexicon MPX1000 effects.
- . Logan String Melody keyboard. ("The last of Random Hold.")
- Mackie 32:8:2 mixer.
- Oberheim DPX1 sample player.
- · Roland D550 synth.
- Roland S760 samplers/SP700 playback unit.
- . Sony 600Mb optical drive.
- . Sony DTC690 DAT recorder.
- . Spirit Absolute 2 monitors.
- . SPL Vitalizer enhancer.
- Symetrix 511A noise reduction.
- . Tascam DA30 MkII DAT recorder.
- . TC M2000 Wizard effects.
- · Yamaha AN1x synth.
- Yamaha SPX50 effects.

David's compact but powerful London-based writing room, including the following selection of gear: (on rack, left) Lexicon MPX1000 effects, Drawmer DS201 gate, Yamaha SPX50 effects, Alesis Microverb effects, Emu Proformance Piano module SPL Vitalizer enhancer Tascam DA20 MkII DAT machine; (in centre of room) Spirit Absolute 2 monitors, Mackie 32:8:2 mixer, Bit 99 synth; (in far right corner) Roland S760 sampler, Alesis ADAT XT, Roland D550 synth,

Oberheim DPX1 sample player; (mid right of room) Alesis BRC, Apple G3 Mac computer; (in rack on extreme right) Roland 5760 sampler, Korg Wavestation SR synth, Akai S3000XL sampler, Roland SP700 sample player, and Emu Proteus 1, 2, & 3 synth modules.

collaborator. Surrounded by gear of all kinds, it seems appropriate to talk about Ferguson's own equipment preferences and opinions — and he's got plenty.

"My favourite piece of gear of all time is the Alesis Microverb." This could be seen as a strange admission for a man at the top of his profession, who can afford a corresponding level of equipment. But David is adamant: "It's just the best reverb in the world. Well, it's not actually the best reverb in the world, but I like it. In fact, it wasn't until I heard TC's M5000 that I was tempted by any other reverb. I'd been so impressed by the M5000's reverbs that the second the Wizard appeared I bought one. It does everything, and somehow it's got character. That's what it is with the Microverb. It's clearly technically not a very good reverb, but it has character."

With his background as keyboardist with Random Hold, you might expect David to have a soft spot for synths, and he does — but they're mostly antique: "All through Random Hold I had a Minikorg, Microkorg and an 800DV. I loved the noises they made. Currently the only two synthesizers I use are the Wavestation SR and a Yamaha AN1x, which is all right, though very limited.





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# DAVID FERGUSON • WRITING MUSIC FOR TV

"The soundtrack is like another character in a drama."

me stranded. It makes you terrified to get on an aeroplane when you know it's computers in charge!"

Having made his point, David mellows: "But the thing with any of these tools is that we don't think about how wonderful they are, that they've given us opportunities we never would have had without them. So we end up griping about little things. But I do know people in dance music who are so fed up with Macs that they've gone back to Ataris - because they find the clock on the Atari so much more reliable - but slaving the Atari to their Mac or PC, which they use as a hard disk editor with something like Soundscape."

## **CREATING MOOD**

If you turn down the sound while watching a horror movie, it's easy to see what a huge contribution music makes to atmosphere - much of the tension just evaporates when the spooky music isn't there any more. What's not so easy to see is how the composer makes this happen, and even David Ferguson looks perplexed when he's asked to explain exactly how he goes about creating mood. He falls back on explaining how the decisions are made about what feel a given soundtrack will have:

"One project I did had the best briefing I can remember. It was a play called Killing Time, about the serial killer Denis Nilsen. I had a meeting with the director, and we sat through the film. Then we started to talk about what was happening in the film, and decided that it was really about loneliness, and that in many ways slow jazz music is the music of loneliness. So the soundtrack had to be a jazz soundtrack. At one point the Nilsen character plays an overture from a Respighi opera, so we decided to use the theme from the Respighi opera as the melody inside the jazz piece. That became the central point of the film score. I think one of the things that has served me very well doing soundtrack music is that I worked in theatre before I ever got into music, so I'm very interested in the drama.

"The soundtrack is like another character in a drama. Aaron Copeland said that it has five roles. It can set time and place; warn you of something about to occur; underline things that otherwise might be missed; tie things together; or it can be there purely as underscore. It will change its role according to how it's being cast in the film."

Often a composer will aim for a specific feel to a soundtrack — as in the slow jazz example above — and sometimes will even be asked to virtually copy another piece of music. David: "I actually get quite fed up now, when people ask me to do that. I did a documentary series called Crash, where they wanted me to create some imitation bits of pop music, including a bit from the 1960s. It's not easy to do, and you're doing it on a keyboard player's budget. You can't sound like The Searchers just like that out of an Akai S3000!"

Sometimes, though, recreating a period feel can be fun. Ferguson cites an episode of Cracker in which he was asked to produce something in the style of the Ray Charles Orchestra for inclusion in the German broadcast of the show, where the original piece of music couldn't be used.

"With the Cracker thing there was more latitude to be free with it. You weren't actually meant to seriously sound like the Ray Charles Orchestra."

But David was meant to get as close as possible with "one trumpeter, one sax player and a bank of synths". So how did he do it?

"Well, it took a very long time. It's on the album, actually."

David leans over to a CD player and the track in question starts to play. It opens with a menacing mood built up by a repetitive two-note piano figure, something which recurs in his work ("I love these repetitive, very simple underpinnings, whatever else ends up going on top. That's what creates the tension..."), backed with disturbing, low-level chords on a deep string pad. The atmosphere builds as David explains that the camera is pushing through dense undergrowth to finally reveal two people on the ground... having sex!

David: "Here's the crossover... now we have a tracking shot through Fitz's house, and it's down to the record player with the Atlantic label going round." The track dissolves perfectly into the jazz piece proper, a lazy, low sax and trumpet unison riff backed by lush strings, then builds to a melancholic muted trumpet solo over softly-brushed jazz drumkit and delicate piano chords.

"We're just attempting to get that early '60s feel... everything apart from the trumpet and the sax is synthetic. Stuart Gordon, David [Lord] and I worked on the string arrangement to get that 1950s string sound. I believe the strings are 'Orchestra Unison' from the Roland sample library, then there's a couple of individual string samples at the front of it, so that it doesn't sound like too big an ensemble. We listened to the original several times, then David worked quite hard on the EQing to get as close to it as possible. On another version, we overlaid crackle and record pops. It sounded very authentic."

## TECHNOLOGY: THE GOOD, THE BAD, AND THE UGLY

David is the first to admit that he has no musical training as such, yet he's writing for orchestras, and he's in no doubt that he has technology to thank: "The synths enable me to do it. You can do such good things with machines. On The Woman in White, the core motif was a repetitive harp figure. We knew that this was virtually impossible for a harpist to play, so we sampled her playing each of the notes - we used the real harp and the real musician — but then to get the musical effect we used the machinery, because she wouldn't have been able to play that rigorously for that long.

"I think David [Lord] and I do quite good work with synthesizers and samplers, but you increasingly hear work with no dynamic range. I'm a massive fan of what David can do. The people who should really be grateful to him are the producers of some of the programs we do, because [synthesized] scores can be done for a quarter of the money that a full orchestral score would cost, and it's the work he puts in that makes them sound so rich.

Nevertheless, David will always use an orchestra if the budget allows: "When we did Hostile Waters, we had enough budget for a really big string section. The tape went into roll on the

first track and it was just instant. That's why you're paying £190 a session for an orchestral musician — for their lifetime of learning and

That £190 figure is after a recent increase in the MU rate, as David explains: "We had a meeting recently of the APC [Association of Professional Composers], saying that we were not opposed to musicians getting £190 for a session, but the effects of this would be firstly to drive more people towards using synthesizers, and secondly to encourage more composers and production companies to go to Prague or Munich. A German string player costs £70 for a three-hour session as opposed to £190. In the case of Hostile Waters, the recent increase would have added over £6000 to the cost of the sessions. The MU know this, but composers in media are caught between a rock and a hard place, because now you're contracted to do a job within a budget, and there's no way the production company is going to give you more money because the MU rate has gone up. Musicians inside the MU and composers need to work and pressurise together more often, because we have a lot in common."

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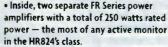
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\* Electronic Musician, October 1997. All quotes are unedited.

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# DAVID FERGUSON • WRITING MUSIC FOR TV

"I do approach it all very naïvely. But I'd hope the music has got soul of some sort."

## **BRAVE NEW WORLD**

When David launched his soundtrack career, Britain had just three established national channels and Channel Four was independent TV's new baby. Now Channel Five is attempting to make its mark, Sky offers 30+ satellite channels, and cable TV is increasingly widespread. Not to mention the imminent arrival of digital TV, which promises (or threatens) to introduce hundreds of new stations. Good news for soundtrack composers, surely - more programmes means more music, right? Well, it's not quite that simple. David Ferguson finds reason to be anxious about the future, and not just for the sake of his own career. He thinks it's time to speak out.

"I think we should be seriously concerned about the future of television. All the negative things that were said about multi-channel TV have been proved true. I doubt if TV is going to be a medium which is capable of producing quality work in 20 years time. It will just be a recycling situation with odd bits of live stuff thrown in. Good drama, like we're dealing with now [David was working on the forthcoming BBC film Touch and Go, about wife-swapping, starring Martin Clunes] is done on a wing and a prayer. Five years ago the director would have had twice the time for that shoot. There were just two weeks for the edit. Partly that's because technology allows you to edit more quickly, but even so...'

David also echoes what's become a commonplace observation in these days of the 'modernisation' of the BBC. "I'm not saying the BBC didn't need to change, but I doubt whether it needed the kind of reform that it's undergoing, from a bunch of accountants who know nothing about programme making, who see the whole thing in terms of project targets. I had a ludicrous experience recently. I had agreed to do the music for a space documentary, and there was next to nothing in the budget for the music. I think it was £1000, when you'd normally expect about £3000 for a 50-minute documentary — and you'd hope for more if there were going to be real players. I'd agreed to do it because I'd seen the rough cut and there were fantastic pictures. Then I had a call from the producer to say that I wasn't going to get my tape to work to until a week later than the date we'd agreed. So I said

yes, that's fine, presumably that means you've moved the dub to later? And she said 'Oh no'. That gave me exactly four days to do the music. All they would have got from me was repetition of stuff I've done in the past, and I would have been very stressed doing it in four days. I asked why they couldn't move the dub, and she said 'because we have to deliver by that date internally for the accounting period to be satisfied.' So all this was to do with an accountancy procedure." Under these circumstances, David decided not to do the job.

## THE FUTURE OF COPYRIGHT

The 'streamlining' of budgets and apparent change of emphasis, away from the artistic and editorial requirements of programming and towards the imperatives of accountancy, are just the thin end of the wedge as far as David is concerned. Even more ominous is the growing threat to the status of music copyright and copyright royalties. He enlarges: "This situation is one of concern to all people who produce or market music. It is in the interest of certain types of large media corporation to see the end of copyright on music as a separate issue. You may be aware of a court case abroad where a TV station employed people to write their music who were 'bought out' by the station [paid a one-off fee, with no entitlement to royalties]. The station then told the equivalent of the PRS in that country that they would not be paying any license fee for broadcasting because they were not using any copyright material. And now the APC [Association of Professional Composers] has become aware that a broadcaster has been sniffing around music students in this country who have not yet joined the PRS, trying to sign them up to write copyright-free music."

The implications are obvious. If copyright is eroded in this way, musicians could be relegated to the status of music-producing automata, churning out music like car parts on a conveyor belt, being paid once and once only for each piece, which would then belong to the broadcaster to exploit as they wished.

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## CRACKING IDEAS

David's reaction when asked for his favourite soundtrack project is unhesitating: "It's got to be Cracker. I did the middle series. The first story was the Robert Carlisle one ['To Be A Somebody'], about the factory worker, Albie, who shaves his head and decides to start murdering people until he's murdered enough to make up for the victims of Hillsborough. In some ways this is regarded as the classic Cracker.

"The music was divided into three sections. There was the relatively straightforward thriller music, then there was the blues/jazz-based Fitz music, which was to reflect Robbie's view, then there was the 'Albie' music. And the

point is that while Albie is out there murdering people, you nonetheless feel sympathetic to him. The music was supposed to express his loss and the unfairness and wrongness about why he was in this position.

In classical style, Ferguson used each theme - leitmotif - to underline the internal state of the characters, also keeping the musical feel chosen for each character specific to that character. So, for instance, as the Fitz motif was blues/jazz, blues and jazz were not used in the rest of the soundtrack for that programme. And at one point in this episode Ferguson's music was notable for its absence. Ferguson: "In that story, Bilborough gets killed, and he'd been regarded as the second character to

Fitz. We'd originally scored the whole of the Bilborough death sequence. It starts with a long chase, then we see him creeping around inside a house, then the stabbing occurs, we see him trying to crawl out to get help, and he eventually dies. The cue is about 10 minutes long. We decided that, just as he comes into the house, before he's stabbed, we would do the rest of the sequence in silence, which is normally unheard of. And they took out all the atmos as well, so that when the murder occurs there's just total silence. I think the effect was much stronger than any music or sound effects could have been.

Sometimes a dramatic change in feel can be achieved by a simple but effective



idea, such as was used on a Cracker episode about a rapist.

"All the post-rape music was done as blues, but instead of being done with conventional instrumentation, we did it with a string quartet. So that in no sense were we colouring the thing attractively. In fact, it became more oppressive."

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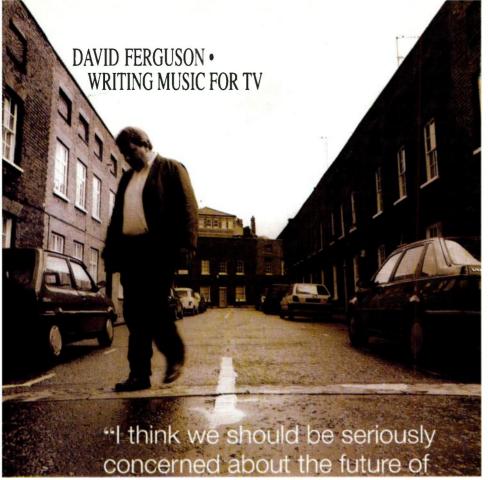


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television. All the negative things that were said about multi-channel TV have been proved true."

▶ and into that of the powerful corporation can be accomplished in different ways, though, and a practice that's apparently widespread on the continent is now moving into the UK. David: "All the ITV companies and quite a large number of small production companies are now trying to maximise their income stream. Many of them insist on anyone who's writing music for them signing a publishing deal for that music with whichever company is returning the income stream to them — it might be a big music publisher who has a deal with that company, or the company might have set up a publishing company themselves, that would be administered by a larger publisher."

For those who didn't read about this kind of situation in George Webley's article in SOS December '97, the publisher of a piece of music is entitled to a slice of the royalties for that music. By setting themselves up as publishers, TV companies can gain extra pocket money from the royalties of writers they commission — and that could be up to 50 percent of the royalties due on a given piece. David is understandably disturbed by the possibility of composers being coerced by the fear of losing their livelihood into signing publishing deals.

"I'm not certain that there are blacklists of people who have refused to sign publishing at the moment, but I'm fairly sure that they will happen." He's got more than just a hunch to go on: "I'd started work on a project for a certain company; I'd written some of the score and produced some pieces of classical piano

music for actors to mime to, and my agent had kept on saying 'no, we don't want to sign publishing with you'. Literally in the middle of one night the phone rang and it was the producer of the programme saying 'I've had instructions that unless you sign the publishing deal they're going to give me the names of seven composers who know how to make a sensible commercial decision.' So there you are, in a situation where it might be someone you do a lot of work for, already halfway into the project... We gave in, we signed their publishing deal. I'm still furious about it.

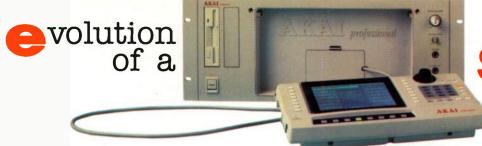
"What's absurd is that they're just re-circulating money they have to pay to the PRS, and the only people who really gain are the administrators on the side. The publishing company can only take 50 percent of the royalties, and it doesn't add up to a great deal of money as far as the BBC or ITV are concerned. But to a composer on something like the project I'm talking about, the Performing Right would probably be something in the region of £4-5000 on the UK showing, and £2500 is a major loss of income to a composer who doesn't make much money on the actual writing process. I sincerely hope that we make this practice illegal, but we may not succeed. In Spain it's commonplace, in France it's increasingly so, and French composers are outraged by it.

"There are lots of creative publishers who sign new talent and support it, and they are fully entitled to their cut. My agent works on my behalf because he's getting a proportion of my income. It's perfectly legitimate. It's not legitimate for somebody who employs me to take money away from me for employing me."

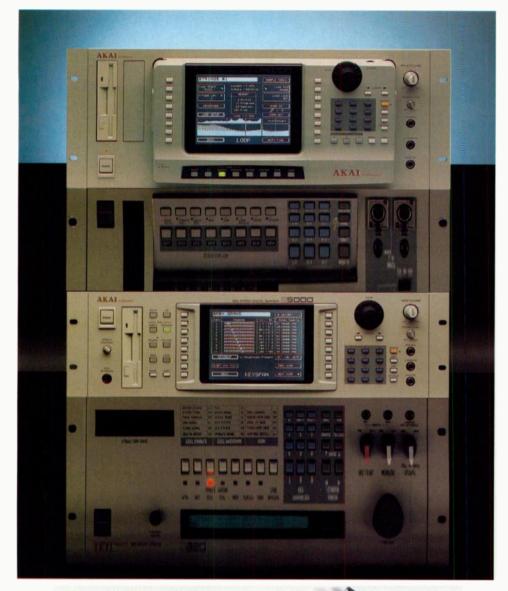
## THE VIEW FROM NOW

There's a long journey between tape loops of hoovers and film scores for huge orchestras. It's a journey which has only been made possible for an untrained "terrible keyboard player" by technology and a unique set of influences which include Bulgarian folk, African music, and modern classical composers such as Steve Reich and John Adams - plus a few guiding principles of his own. David: "I think one of the things film music has, that very self-important classical music doesn't have, is a tune, and I do think that a lot of people like a tune. I was recently interviewed by Classic CD magazine, and the interviewer said that he thought my music, whilst borrowing sounds from modern writing, refused to fall into the disciplines of modern writing. I think he's right, but it's partly because of ignorance on my part. I wouldn't know how to write 12-tone music if my life depended on it. I might do something that was 12-tone instinctively but I wouldn't know, as it were, the discipline. I do approach it all very naively. But I'd hope the music has got soul of some sort."

David's new 18-track Chandos New Direction CD, The View from Now (Chan 9679), featuring music from Cracker, The Woman in White, Bravo Two Zero, Hostile Waters, and many more, is out now. His web site can be found at www.davidferguson.co.uk



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JBL's new studio monitor system, the LSR32, represents a radical departure in their approach to the design and technology of loudspeakers. HUGH ROBJOHNS lends them his ears... here was a time (when policemen were middle-aged, and sequencers controlled only the flashing lights at discos) when I would rather have used a pair of cocoa tins and a bit of old string to coax a mix from a master tape than suffer the aggressive, coloured 'American Sound' of older JBL monitors. Tough as old boots they may be, punchy and directional in PA systems they certainly can be, but point a pair at me in a studio control room and I would have begged for the cocoa tins every time! But that was then... now, JBL have caught up with all that is good and worthwhile in modern loudspeaker design practice — and they have even added a few new twists of their own.

The LSR32s are the first in a new range of monitor loudspeakers based around JBL's new-found

approach to speaker design, which involves careful analysis and control of the total radiated sound of the speaker, not just the on-axis sound. This attention to the spatial response of the loudspeaker system as a whole lead to the moniker LSR or 'Linear Spatial Reference', and it represents a significant leap forward in perceived sound quality.

The design aim is twofold, and has been set out in a white paper available on JBL's professional products web site, www.jblpro.com, in the 'Technical Notes' section (Volume 3, Number 2). The primary goal was to create a 'listening window' in which the user can move around and receive consistent sound quality, ideally with stable and accurate stereo imaging. The second aim is that off-axis sound projected above, below and to the sides of the loudspeaker should have as smooth and consistent a frequency response as possible with a gentle tailoring of HF energy levels. This tailoring is based on the psychoacoustics of how we react to the combination of direct, reflected and

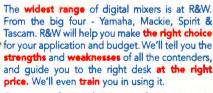


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▶ reverberant soundfields within a listening environment. Off-axis sound hits the side walls, ceiling and floor, and bounces on to the listener as the first strong reflections, before going on to create the reverberant sound. Consequently, the spectral balance of these reflected sounds can have a very significant effect on the perception of the overall quality and clarity of a loudspeaker system.

There is nothing earth-shatteringly new in this approach to speaker design — many of the more reputable hi-fi manufacturers and the best of the professional monitor builders have been aware of the importance of the off-axis contributions of their loudspeakers for a long time, and have designed and built their models accordingly. Indeed, most of the references quoted in JBL's LSR white paper list AES papers from the '70s and '80s. However, analytical techniques have improved enormously since then, and computer analysis and modelling allow the testing of theories and optimisation of the design prior to building mechanical prototypes for the fine tuning.

The real advantage of the LSR approach of getting the total spectral power em tted by the loudspeaker balanced properly is that the resulting loudspeakers work better in real rooms. They tend to have less perceived coloration, larger usable listening areas with good consistency of sound and wider, more stable stereo imaging — all critical qualities in a monitor loudspeaker design.

## LSR32

So, to the first of JBL's new LSR products, the LSR32. This is a passive three-way system, described by the marufacturer as a midfield monitor. It is certainly far too big to be used as a nearfield, with cabinet dimensions of 635x394x292 mm and weighing in at over 21kg (47lbs). With boxes of this type, and with drivers spaced as these are, a certain minimum distance is required for the sound from the drivers to become fully integrated — hence the midfield label.

The simple rectangular cabinet encloses a 50-litre volume which is vented to the front through what appears to be an elliptical flared port, but which JBL's white paper refers to as a "linear dynamics aperture"! The dual-flare design is claimed to reduce port

compression and eliminate port noise (a breathing noise accompanying LF peaks and known in the trade as 'chuffing').

Moving and repositioning the LSR32s is not a trivial task because of their size and weight. However, I quickly discovered that the port on the front and the recessed terminal panel on the rear provided excellent finger-grips for lifting the cabinet. Whether by design or accident I know not, but the balance of the cabinet and the positioning of the grip points are almost ideal for the purpose!

The cabinet is a conventional rectangular MDF box finished in a matt black 'sand-texture'. It incorporates some internal bracing and a small amount of glass-fibre wadding on all side and rear surfaces. The crossover is mounted behind the woofer on the rear panel and good quality components and wiring are used throughout. An unusual aspect of the design is that the front baffle is made of carbon fibre 38mm thick. This is claimed to be virtually resonance-free, and has radiused edges to minimise sound diffraction from the discontinuities of the cabinet sides. There is no provision for a front grille, nor any protection for the drivers, although they are all recessed to some degree and should not suffer accidental damage in normal use.

The LSRs are handed — they are supplied as pairs with the tweeters and midrange units on opposite sides. The packing cases denote the speakers as LSR32L and LSR32R, implying that the drive units should be on the outside edges when set up for stereo listening, but the speakers themselves do not appear to carry any designations at all. Nor does the brochure supplied with each speaker provide any advice on recommended siting (relative to rear wall or ideal listening axis for example). Surprisingly, the review pair did not even have consecutive or related serial numbers. However, they certainly worked very well as a stereo pair, which is presumably a good indication of the consistency of the production line.

The tweeter, midrange driver and port are all mounted on a square cast-aluminium sub-baffle which can be removed and rotated to allow the speakers to be mounted vertically or horizontally, whilst maintaining the vertical alignment of midrange and tweeter (for accurate stereo imaging) and the correct dispersion angles for the off-axis energy distribution. Apparently, the response of the system remains almost identical with horizontal or vertical cabinet configurations.

As delivered, the speakers were configured for horizontal use, but eight minutes and 16 crosshead screws had them realigned for my preferred vertical arrangement, and placed on a pair of very sturdy stands. I positioned the LSRs with their fronts about 18 inches from the rear wall, and toed-in to cross axes slightly in front of the listening position. Although I experimented with positioning once I had become familiar with the speakers, I found this starting point to be the best arrangement in my listening room.

## **DRIVERS AND CROSSOVERS**

The LSR32 boasts three 'advanced' drivers. The 252G 12-inch woofer employs a carbon fibre and

## pros & cons

## JBL LSR32 MONITORS

## pros

- Professional and robust build quality.
- · Able to cope with most forms of abuse.
- Accurate neutral and detailed sound.
- Wide and consistent listening area with stable imaging.
- · Very competitive pricing.

## cons

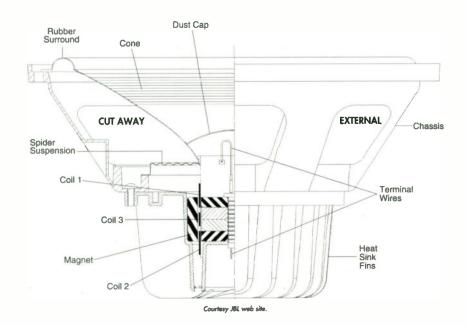
- · Passive.
- That JBL badge might stir up preconceptions.
- Midfield design means room acoustics can be influential on sound quality.
- They wanted them back...

## summary

The result of a rethink in the design department, JBL's LSR32s are a passive three-way design with excellent resolution, a wide and consistent listening area, and stable imaging. They have JBL's usual robust construction and power handling, but also offer a delicate, detailed and neutral sound. The LSR32s are JBL monitors of which the most demanding audiophile would approve.







## FIGURES, PLOTS AND SPECS

The LSR32s are very highly specified. Their quoted sensitivity is 90dB/W at 1m which is about average, with an anechoic frequency response between the limits of +1/-1.5dB from 60Hz to 22kHz. In fact the bottom end is significantly extended on this in typical in-room conditions with substantial energy being output to below 35Hz (the enclosure resonance is tuned to 33Hz). The recommended minimum amplifier power is 150W into  $4\Omega$  (with a maximum of 1000W) but I would suggest 250W is a more sensible figure for the headroom required in typical control room monitoring. I used a Bryston 4B amplifier which seemed very well suited to extracting near real-life dynamics from the LSRs when required (the 4B is rated at 400W into  $4\Omega$ ).

The distortion figures for the LSR32 are impressively low, with under 0.5 percent for second and third harmonic above 120Hz at a highish listening level of 96dB SPL (rising slightly to around 1 percent at 102dB SPL). Below 120Hz, the second- and third-harmonic distortion figures are better than 1.5 and 1 percent respectively at all power levels, presumably thanks to the DCD motor design of the LF driver. Power compression is also well controlled at under 1dB for 100W input, and JBL show a pretty tidy impulse response for the system on the brochure with all most of the HF ringing tamed within 0.5mS and the LF ringing all done within 1mS. This confirms the smooth and well controlled phase response of the crossover.

polypropylene composite cone, supported on the outer edge by a soft butyl rubber roll surround. The motor assembly is based on JBL's patented DCD technology which is very unusual in its use of three voice coils the two outer ones provide the motive force, whilst the central coil is shorted (its terminals connected together) and acts as a dynamic brake limiting the maximum cone excursion to protect the driver without adding to the distortion at high sound levels.

Most loudspeaker designers follow the theory that linearity stems from ensuring the voice coil remains within a uniform magnetic flux — hence the prevalence of the short voice coil in a long magnetic gap. JBL have instead followed a radical path whereby each of the two voice coils are deliberately arranged to start off half way out of the magnetic gap. The flux from the neodymium magnet is arranged to pass in opposite directions through the two coils (looking at the cutaway diagram of the drive unit, above, the magnetic field effectively flows clockwise, left to right through coil 1 and right to left through coil 2), but as the coils are wired in opposite polarities, their mechanical efforts add to move the speaker cone as required.

Although apparently complicated, JBL claim a number of advantages to this novel approach for a given specification of electrical-to-mechanical coupling. Since there is double the surface area of coil, the heat dissipation is far better allowing a 3dB increase in power handling and a reduction in dynamic compression. As the two coils are wound in opposite phases, their mutual inductance is reduced helping to provide a flatter impedance curve to the amplifier, again making the loudspeaker easier to drive. Also, the entire magnet and voice coil assembly can be made more compact and requires less iron in the magnetic path than most designs, making it lighter. These combine to allow greater efficiency in heat dissipation and improved power handling.

The central, shorted coil does nothing at all most of the time, as it is well away from the two magnetic gaps. However, during high cone excursions, the third coil enters the magnetic field and a current is induced within it. This sets up an opposing magnetic force which acts against the motion of the cone, thus damping the movement and acting as a brake. The design is certainly clever, and apparently the introduction of the third coil into the magnetic gap helps to cancel the inherent distortion artefacts caused by the magnetic field instability as the main voice coils reach the outer edges!

The C500G midrange driver is a more conventional design with a two-inch kevlar cone, again supported on a butyl rubber surround. The voice coil has the same diameter as the cone and works with a neodymium magnet for high power handling. The unit is housed in a cylindrical metal chamber and is designed to cover a frequency range of 250Hz to 2.2kHz. The 053ti tweeter employs a one-inch titanium dome damped with a substance called Aquaplas as well as a "unique low recovery foam" in the rear chamber. This high-frequency driver is mounted to the baffle via an 'Elliptical Oblate Spheroidal Wavequide' (fortunately abbreviated to EOS!), which controls the horizontal and vertical dispersion characteristics of the tweeter to 100x60 degrees respectively. The tweeter is intended to cover the range from 2.2kHz to well over 20kHz.

The crossover network presents a nominal load of  $4\Omega$  and allows bi-wiring via two pairs of '5-way' 4mm/binding posts on the rear panel. As supplied, metal links short the high and low sections together, but these are easily removed if required. I auditioned the LSR32s in bi-wired mode simply because my normal monitors (PMC AB1s) are also configured for bi-wiring (I once managed to convince myself that I could hear an improvement with a ludicrously expensive bi-wired cable...).

The crossover employs fourth-order (24dB/octave) Linkwitz-Riley filters claimed to minimise lobing at the crossover points. Lobing is an inherent but detrimental side effect of dividing the frequency range between multiple drivers, and can have an adverse affect on the off-axis energy balance from the speaker. The crossovers incorporate both magnitude and phase correction at the crossover points, and a very mild -1dB level trim option is available for the tweeter if required via links on the rear panel. Decent-quality crossover components are arranged carefully on a large circuit board mounted on the inside of the cabinet's rear panel and linked with respectably chunky wire to the drivers. JBL's published plots of the system impedance and phase are commendably controlled and my amplifier had no problem driving the LSRs at all.

## LISTENING

I must admit I approached auditioning the LSRs with a certain amount of trepidation. I was never a fan of the 'JBL sound', which I always felt was brash, coloured, typically American (I don't mean to be nationalist, but American speakers have always sounded different to British ones), and fatiguing. Not the qualities which make a decent monitor speaker, in my opinion!

So imagine my surprise when I first heard these speakers last year at the New York AES Convention. It has taken a long time to get hold of a pair for a proper review in decent listening conditions, but I am even



## JBL LSR32

more impressed now than I was then. These speakers have changed my views of JBL for ever. I cannot stress too highly what a high grade product the LSR32 is, and there are a lot of British manufacturers around in this sector of the market who now have some very serious competition to deal with.

These loudspeakers are impressive. They can sound smooth, delicate, revealing, clear, neutral and uncoloured, but are also weighty and dynamic when the music calls for it (but not in an over-the-top way). They can generate frightening sound pressure levels with very little hardening of the sound quality, and could probably cope with ear-splitting abuse all day if necessary, such is the build quality and solid engineering of the drive units.

once have had many engineers running for their earplugs, but the LSRs are quite at home with all types of music and voice — the sign of a truly well-balanced monitor loudspeaker system.

Stereo imaging and focus were to very high standards, and once I had the LSRs sufficiently toed-in, a good wide 'sweet-spot' could be created with natural and stable spatial presentations. Depth information was also conveyed well. Bass extension is good, as one might expect from a 12-inch driver, although careful room placement is important of course. Certainly, there was plenty of energy around to stimulate involuntary foot-tapping (another good sign of a well balanced speaker), and bass instruments and drums were expressed with the solidity and weight required (whether for natural

## "...there are a lot of British manufacturers around in this sector of the market who now have some very serious competition to deal with."

Although it is clear from first auditioning that the LSR employs a metal (titanium) tweeter, it does not exhibit that typically metallic ringy quality that gave such devices a bad name in the '80s. It actually sounds very smooth and controlled with an excellent balance of revealing inner details without becoming fatiguing, even after long periods.

The midrange driver deserves praise too for its ability to present complex audio signals with fine clarity. A well-designed three-way system will always outperform a good two-way, simply because of the extra driver to handle the inevitably complex midrange portion of the audio signal. The LSR demonstrates this very well when compared to my (two-way) PMC AB1s which, although extremely good and certainly worthy of the monitor quality label, were clearly outperformed by the LSRs in midrange detail.

This was made very obvious when I auditioned a couple of tracks from Chesky Records' The Ultimate Demonstration Disc which is full of very challenging music. In an excerpt from Vivaldi's Flute Concerto in D (a rather busy piece of music) the starts of the flute phrases are often obscured by the rest of the instrumentation on average speakers. A decent monitor should be able to separate out the various instruments playing at the time and my PMCs can just about manage that, but the JBLs presented the flute very clearly as a distinct and separate instrument with its own audio environment perfectly intact, and the other instruments all just as clearly defined.

This example also raises another point. The idea of listening to 'serious music' on JBLs would

acoustic music or driving synth lines and heavily processed drum kits).

With the speech tests from the useful Canford Audio Quick Check CD, the excellence of the midrange was clear in its resolution and neutrality. The accurate matching of the drivers and crossover was also revealed by moving around in front and to the sides of the speaker: the sound quality remained remarkably consistent without abrupt changes, demonstrating how well the off-axis output has been controlled.

I didn't expect these JBL LSR32s to sound as good as they do, and I tried everything I could to reveal weaknesses in their presentation. However, with each new challenge I became more and more impressed. Sure, there are better monitors available, but not many at this price point. The LSRs compete in the same ball park as the Genelec 1031A, Harbeth Monitor 30, Dynaudio BM15A, ATC SCM20SL Pro, PMC IB1S, and Tannoy 1200DMTII to name but a few respectable monitors. At the price, I would rate the LSR32s as a bit of a bargain, and if you have the space, the requirement and the budget, the LSR32s should definitely be on your auditioning list. 1808





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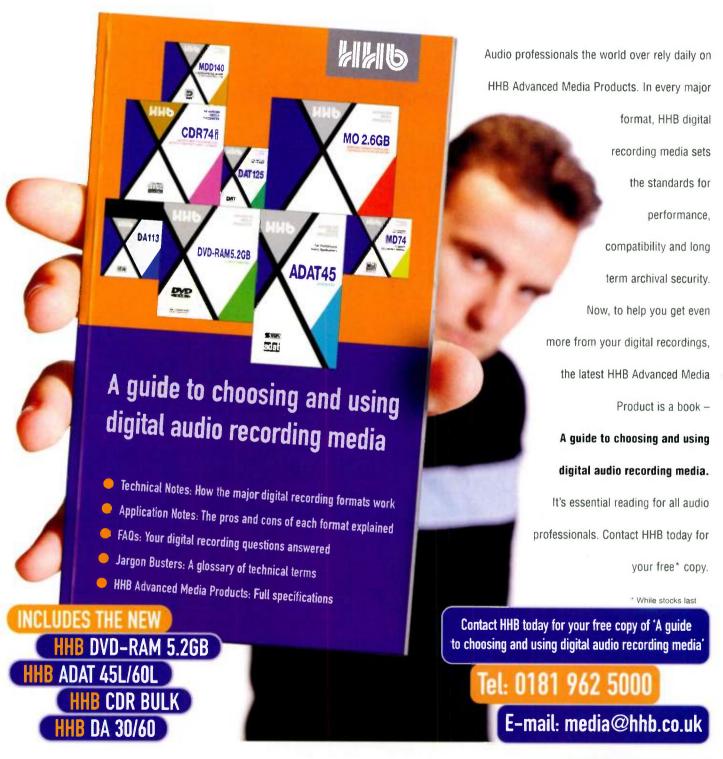
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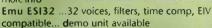


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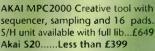
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Logic Audio's new Adaptive Audio MIDI Mixer makes setting up a mix very much simpler.



## I LOGIC AUDIO PLATINUM v3.5 MIDI + AUDIO SEQUENCING SOFTWARE POLISIE POLI

Emagic have slicked up the popular Logic sequencer line with a few coats of metallic paint and some sparkly new features to match.

PAUL WHITE goes Platinum with the top of the range.



magic have recently revamped all the programs in their leading *Logic* sequencer range, for both PC and Mac. Every package now includes some audio recording capability, right down to the baby of the series, Micrologic AV. Next up the ladder is Logic Silver, then there's Logic Gold, and top of the heap is Logic Platinum, which is under review here. It comes with a completely new manual rather than vet another bundle of additions, the Arrange page has gained a little more colour, and there are a few important new features. This is not a major upgrade in terms of sheer numbers of new features, in the way that Cubase VST v4 for Macintosh is (see page 96), but the new additions are significant. For more on the differences between the programs in the redesigned Logic family, read the 'New Range Explained' box, right.

## **GOING PLATINUM**

One notable new feature for *Platinum* is the ability to record stereo interleaved files without the need

to split them into two mono files. This uses around 25 percent less hard disk space than split files, and is clearly a good idea for any tracks where the sound needs to be kept in stereo. When I tried to import stereo interleaved files into a song, I still got the familiar dialogue box informing me that I had to split them into two mono files, but on checking with Sound Technology I was told this is a problem which only applies to the DAE (Digidesign) hardware with which I was working.

Of the new features, perhaps one of the most exciting is the VST and DirectX plug-in support. VST support does, however, demand quite a lot of memory, and the manual suggests you allocate between 16 and 20Mb to *Logic* alone. On my 32Mb Macintosh I had to remove most of the VST plug-ins before any of the remaining ones would agree to open at all, so I wouldn't recommend having less than 48Mb of RAM if you intend to make serious use of these plug-ins. *Logic* automatically locates the 'VstPlugIns' folder, where one exists, and the

plug-ins are added to the Plug-In menu along with the effects supplied by *Logic*. Clicking and holding an effect insert point opens this menu and inserts the selected effect. *Logic Gold* and *Platinum* can have up to eight insert points per channel. Double-clicking on the inserted plug-in brings up its editing window (where one is provided), allowing adjustments to be made.

It's now possible to create non-destructive audio crossfades, and to bounce finished mixes to disk so that you can create a finished stereo mix without leaving the computer environment. Conventional audio crossfading can be done when you're mixing consecutive regions together via the Crossfade window. The only two adjustable parameters are crossfade time and curve, and once these are set the values are stored in the Preferences file until they are next changed. The new non-destructive crossfade facility is accessed using the Fade tool in the toolbox, or by adjusting the Fade parameters directly in the Regions parameter box. If several regions are selected at the same time, the fade time for all of

them can be adjusted at once. The reason this process can be non-destructive is that an additional audio file is created to cover the crossfade regions, though the original audio files remain unchanged. Crossfade files reside in a separate folder and don't require intervention by the user — they're effectively invisible to the process. As soon as a new crossfade region is played back, the fade file is modified accordingly. As before, the length and curve of the fade-in and fade-out can be adjusted independently. The fade region may be marked directly using the Fade tool, and even if the two regions are separated by a small gap, the fade will still work as long as the original audio material within the file extends far enough before or after the region in question.

Another innovation is something called Active MIDI Transmission, which works specifically with Emagic's own Unitor8 MIDI interface. As I understand it, this continually pre-loads MIDI data into buffers inside the Unitor8 so that optimum timing is maintained between the different

MIDI ports, even at times of heavy MIDI traffic. For those who are constantly berating the inadequacies of MIDI timing, this could be a most significant new feature.

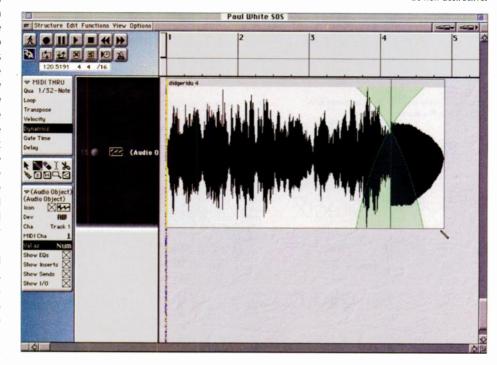
There's also a new effect plug-in, called *DQ* or *Dequalificator*, which turns pristine 16-bit audio into something rather rougher-sounding — Emagic are clearly courting the dance market here. *DQ* offers a choice of bit-depth reductions and degrees of clipping, though to my ears it doesn't sound as interesting as some other 'grungifier' software processes, such as those incorporating vinyl emulation. Even so, if you simply want your music to sound like a soundtrack from an early Commodore 64 game, it'll do fine.

## MIXING WITH A DIFFERENCE

Cosmetically, the whole of the audio/mixer interface has been restyled to make it more colourful, sleek and expensive looking. There's also a new Adaptive Audio MIDI mixer (which makes its appearance across the entire *Logic* range), and this makes

"The rationalisation of the *Logic* software range means that audio support is now available at all levels."

Audio crossfades can now be non-destructive.



## THE NEW RANGE EXPLAINED

Even the baby of the new Logic range, Micrologic AV, can now provide up to 12 stereo tracks of audio alongside MIDI sequencing. It has a mixer with two effect busses, delay and reverb, plus a 3-band equaliser on each track. Much of what is provided in the bigger packages is offered, but in a slimmed-down form. However, there's no Environment, as such, on this package, and though MIDI sync is included there's no continuous resync of audio, which means that long audio files could drift out of time if the master sync source isn't rock solid. When sync'ing to tape, all you need do is cut your audio tracks into manageable sections so that they don't have time to drift.

Logic Silver is roughly equivalent to an enhanced Logic Discovery package, with up to 16 audio tracks, four effects busses, and built-in reverb, delay and chorus, as well as DirectX plug-in compatibility (PC only) and VST plug-in compatibility (Mac only). There's a stereo sample editor with the Time Machine (time/pitch change) and the Energizer (limiter) from Logic Audio, as

well as hardware support for AV/MME, Emagic's own Audiowerk8 PCI digital recording card and Digidesign's Audiomedia III PCI card. The Hyperdraw facility for volume and pan automation is included, but the overall MIDI and audio editing facilities are simpler than on the Gold or Platinum versions. Logic Silver and Micrologic AV also use key-disk protection rather than the hardware dongles employed by Platinum and Gold. Sophisticated sync options are provided, as is a simplified Environment, and both Micrologic and Silver have basic scoring capabilities, but these are much simpler than those provided for Gold and Platinum.

These top two programs in the hierarchy are essentially the latest incarnations of the former Logic Audio, with extended hardware support built in as standard rather than as an option. Facilities include the full Environment, serious scoring, up to 96 audio tracks, depending on your hardware, eight effects busses, and up to eight audio inserts per track. A selection of Emagic's own processor-powered effects come as standard, and both PC and Mac users have access to plug-ins — again, DirectX for PC users and

VST for Mac users. For Mac users only, Premiere and Audiosuite plug-ins are also supported.

The real difference between the *Gold* and *Platinum* packages is in the hardware supported. *Gold* is compatible with AV/MME, Audiowerk8, Korg's 1212 I/O card, DAE (for Audiomedia II and III or Pro Tools Project hardware) and Yamaha's CBX D3 and D5 hard disk recorders. *Platinum* does all this but also offers compatibility with both 16- and 24-bit Pro Tools hardware (Mac only), Soundscape's SSHDR1 system and Akai's DR8/16 digital recorders (arrange editing only with the Akai).

Whereas before you had to pay extra for extensions to allow some of the more sophisticated hardware to be supported, with *Platinum* it's all built in as standard. Much of the hardware support is relevant only to Mac users — of the Digidesign hardware, only the Audiomedia III is usable in a PC, and the Korg 1212 I/O is Mac only, as are the Yamaha CBX D3 and D5, and the Akai DR8/16. Of course Soundscape and multiple-output MME support (including 1212 I/O) is PC only, so it's not all one-sided.

## **LOGIC AUDIO PLATINUM** v3.5



setting up a mix very much simpler. In essence, when you call up this screen it automatically creates a virtual mixer for all the MIDI and audio tracks in your song, where the MIDI channels have controls similar to those found on the GM/XG mixer Environment Objects and the audio channels have similar features to the audio Environment Objects. This mixer doesn't replace the GM mixer Objects in the Environment page but does address a number of the same parameters. As the Environment GM mixer settings are saved with a song, if you're using a GM/GS/XG module that doesn't save parameter changes when switched off, you can simply send Used Instrument MIDI Settings (from the Arrange window Options menu) before you resume work, to get the instrument back to how you last left it. Each MIDI Adaptive Mixer channel has four knobs for adjusting reverb, chorus, cutoff frequency and pan, though the first three may be remapped to any other MIDI controller via a pulldown menu. Sadly, these changes may only be made globally rather than on a per-channel basis, which is a wasted opportunity. Unless you have a GM synth on every channel, you're unlikely to

Yes, those really are VST plug-ins running in Logic Audio Platinum.

"The ability to use VST/DirectX plug-ins is a huge step forward."

The control panel for the new Dequalificator plug-in.

## WHY DON'T THEY...?

Every time a piece of software is updated, the first thing I do is look to see if any of my long-standing gripes and wishes have been addressed. Here are some of those that haven'û, along with a few daydreams.

I'd like to see some way of locking the start box you see at the front of the time-scale ruler on the Arrange page. Since the loop marking routine changed, so that you're obliged to drag from left to right to select the looped section, I find that whenever I'm looping something from the start of a song I invariably move this box accidentally. A little open/closed padiock icon is all it would take.

I don't know about you, but I never really got on

with working with the folders in *Logic*. *Cubase VST* 4 has a new feature where you can select any region of a song to copy and then grab everything between the start and end points, regardless of whether the regions have been chopped up with the scissors tool or not. Even if you grab part way through a region, only the selected area is copied, so if you want to select a whole chorus and copy it without having to worry about scissors or folder, you can do it. This would seem a very practical feature to add to *Logic*, and if the selected parts included any looped regions, the looped data could be copied to the selected chunk intelligently.

Logic songs take up a lot of disk space because the whole Environment is copied with each song. I'd like to see a feature where you can store several versions of a song based on the same Environment, thus conserving disk space.

On the wish side, how about giving us a scale-quantise function like the one *Cubase* has had for years, where you can take your C-major rambling and turn it into a B-minor Mixolydian folk melody, just to see what it sounds like? Similarly, automatic harmony creation based on your single-line melodies would be interesting, as would block-chord-to-string-part interpretation, at least for those of us with limited arranging skills. If such a feature could be implemented with a universally supported plug-in architecture, who knows what third-party developers might come up with — choral arrangers, brass harmonisation and so on?

## WHAT ABOUT THE PC?

Apparently, PC Logic users still don't have the Touch Tracks feature that lets Mac users trigger pre-recorded sequences in real time for live mixing, or Capture Recording, a facility that allows you to play along with the sequencer, then turn what you've just played

into a recording, even though the sequencer was only in play mode at the time. However, the feature set is otherwise generally very similar between the two platforms, and it's to Emagic's credit that both the Mac and PC upgrades are available at the same time.

want all the controls to access the same synth parameters!

Unlike the GM mixer Object, the Adaptive Mixer can be resized using the Zoom tools. Various View options allow certain parameters to be hidden to conserve space, and there's the option to have the selected track follow the channel controls you're tweaking on the mixer or to stay as last selected. Despite the lack of controller-mapping flexibility, the Adaptive Mixer is a great idea, as it provides a simple way to control all the tracks in your song without having to build your own mixer in the Environment or stare at empty channels relating to unused tracks.

## SUMMARY

The rationalisation of the *Logic* software range means that audio support is now available at all levels, so those with simpler requirements no longer have to buy a more complicated (and more expensive) version of the program than they need, simply to get audio support. Also, having the necessary extensions supported within *Logic Gold* and *Platinum* means an end to those pain-in-the-bum key-disk installs. The 24-bit Pro Tools support will also be good news to the small minority of users lucky enough to have Pro Tools 24 hardware.

Though the number of new features in this upgrade is fairly small, many of them are very important — in particular, the ability to create non-destructive audio crossfades and to use VST/DirectX plug-ins. The latter is a huge step forward (Opcode have also announced their intention to follow the same route). This is a multilateral process that requires co-operation between the various manufacturers, but the benefits to both the end user and co-operating companies are potentially huge, so expect so see more integration of this kind in the future.

I also like the Adaptive mixer, and Active MIDI Transmission could be a really big deal to Unitor8 MIDI interface users — this is one of those good ideas that we hope will inspire more manufacturers to work together. Steinberg announced AMT support at the Frankfurt Musikmesse, so it'll be interesting to see if the other major players follow suit.

The differences between the various sequencing packages tend to get less pronounced with every revision, but *Logic* still stands out as being mildly quirky and proud of it, and there's no denying that it's also one of the most stable and powerful pieces of music software around. This rationalisation of the range should make *Logic* accessible to a greater number of people, and if you're already a *Logic* user it's worth getting the upgrade, not just for the new facilities but also for the much-improved manual.





## into the Othon Sion



## STEINBERG CUBASE VST v4.0 FOR APPLE MAC

The upgrade of Cubase to version 4.0 sees the software comprehensively overhauled — and it's available in an optional 24-bit version for the first time. MARTIN WALKER temporarily changes platform for the next stage of the Cubase journey.

he biggest problem I had when writing this review was knowing where to start. Far from being a spit-and-polish upgrade, version 4.0 of Cubase VST for the Mac has undergone a complete overhaul, with a host of new features (sadly, PC users like myself will have to wait for these changes — see the 'What about the PC version?' box). Along with all the changes, Steinberg nave also launched another high-end version — Cubase VST/24, which replaces Cubase Audio XT at the top of the Cubase hierarchy, above Cubase Score and the standard non-24-pit Cubase VST. The standard Cubase VST v4.0 was used for the purposes of this review, but see the '24-bit? Sounds Great!' box for more on the new flagship version and how it differs from the non-24-bit Cubase under scrutiny here.

Whether you buy the standard *Cubase VST*, *Cubase Score* or the 24-bit version, you get a CD-ROM containing all three applications — but the associated Master floppy disk will only contain a licence for the one you've purchased. Two 'authorisation counts' are provided, and they will thankfully survive a hard disk defragmentation. I still personally prefer the dongle protection of the PC version, but most Mac users seem

The new MIDI Mixer and subgroup Mixers provide yet more control, as well as bringing MIDI and Audio more into line, with full automation on each.

well used to having hard disk installs (whether or not they approve of the protection method).

## THROUGH THE ARRANGE WINDOW...

Despite the changes to the *Cubase* range and the upgrade to the features within each version of the program, version 4.0 will still seem largely familiar to existing *Cubase* users, even those like myself who normally use the PC version. The heart of the program is still the first window you see when you launch it — the Arrange window (see main screenshot). Nevertheless, there are lot of significant tweaks to this window. For a start, the restrictive 10-letter limit for both track and part names has been extended to 26 (no more cryptic abbreviations needed), and the entire dropdown menu structure has been re-organised. Most people will adjust fairly quickly and find familiar menu options elsewhere, although there are many new ones as well.

The Part Appearance options have been enhanced and rationalised — both MIDI and Audio parts are now treated in the same way. You can view names,

events, or both, and you can still decide what types of MIDI data will appear as events. A third and new option is 'Use Track Settings', and this introduces an extra 'N-E' track column where you can select name and event display independently for individual tracks, entire track classes (all Audio, or all MIDI for example), or every track in the arrangement. This versatility brings Cubase VST a little more in line with Logic Audio.

Tracks can now be resized independently in the vertical direction. You can change all sizes for a certain track class, which is ideal when you want big audio waveforms but small MIDI tracks, for example. Alternatively, you can zoom in on a single track when working on it, without losing all the others off the top and bottom of the screen.

Another way to keep the Arrange window more manageable is to use the new Folder Tracks — a new class of track containing others, just like folders in MacOS (and, indeed, in Emagic's Logic Audio). Once you have created a new folder track, you can drag and drop any combination of MIDI, Drum or Audio tracks into it, which can then be collapsed into a single track (the screen display indicates the number of tracks within a folder by dividing the part displays into a number of horizontal strips). Folders can give a huge saving in screen space, and are ideal for drums, brass or string sections. You can still expand the folder at any time to view and edit each track individually, but the best thing is that you can edit the entire folder instead - all the events will then appear in a single editor window.

## **FULL MARKS**

However, the most obvious new item on the Arrange page is a small button labelled 'Marker'. This toggles a feature that many users have been requesting for a long time a Marker Track, which appears as an extra full-width horizontal strip directly above the ruler. At last you can add text such as 'Verse', 'Change to D#minor here', 'This bit needs re-doing', or 'Start fading here'. You can add Marker Parts by double-clicking between the left and right locators, or drawing them in with the pencil, and all the normal editing tools such as eraser, scissors and glue can be used. You can enter up to 26 letters in each marker, but even better, if you double-click on one, another window pops up where you can enter comments. This seems to have unlimited length, so it is perfectly possible to add a novel describing the historical and sociopolitical reasons for a particular key change.

Clicking on a marker moves the Song Position pointer (for quick navigating), while simultaneously holding down the Command key sets the left and right locators either side of the marker as well. You can also use Marker parts in conjunction with the new Range Selection tool (more on this later), to quickly select everything within the specified range. It is even possible to use Markers to move and copy entire sections of the Arrange page from one position to another — ideal for

quickly trying out different variations of verse, chorus, and middle eight.

## **BAR SNACKS**

The Transport bar now has three size options: two horizontal sizes containing all the usual buttons, and a collapsible vertical one with three options. Useful as these are, more interesting is the new but confusingly named Toolbar, which even Steinberg's own publicity refers to, far more clearly, as a user-definable icon bar. You can hide or show this from an option in the Windows menu, and it defaults to having five icons for Rewind, Forward, Stop, Start, and Record. However, the Toolbar offers a lot more than just these functions, since the control icons it contains can be chosen from the Key Commands window (which is in turn located in the Preferences menu). Here, arranged in nine submenus, you will find every item from every main pull-down menu, as well as extensive transport bar options. You can redefine any of the existing keyboard shortcuts, assign them to a MIDI note, or to controller or program change messages, and/or give them an icon that then appears on the Toolbar. Many functions already have unique icons, but even if there isn't one for a function you want, you can choose from a selection of predefined ones. These new options will please everyone who prefers to use the same keyboard shortcuts in several different applications rather than a mouse, but it also means those who prefer mousing around can place all their most-used functions on the icon bar for one-click access.

## MAKING AN INSPECTION

The Inspector, the section of the Arrange window containing track and part playback

## THE *Cubase* range – SELECTED HIGHLIGHTS

- 15360 ppqn internal resolution
- 24-bit/96kHz capability with Cubase VST/24 and suitable hardware
- 64 audio channels 96 in Cubase VST/24
- ASIO support for additional outputs
- 16 group channels with effects and equalisers
- 8 auxiliary sends per channel (and 8 audio send effects)
- · 4 insert effects per channel
- · 4 master insert effects
- Non-destructive audio clips editor
- Folder tracks
- Complete marker navigation system
- Long track names (now up to 26 characters)
- Variable Transport display options
- User-definable Toolbar
- User-definable key commands
- Extended Inspector
- Improved drag and drop facilities
- Enhanced Toolbox (including Range Selection tool)
- New Controller Editor
- More Logical Presets (now savable to disk)
- Savable Grooves
- Savable Window sets
- Dedicated MIDI Tracks mixer
- Advanced score notation and printing

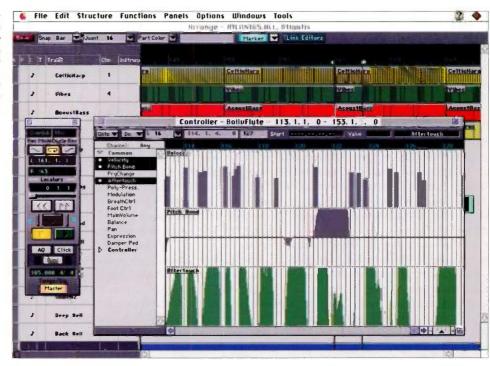
(in Cubase Score and Cubase VST/24)



WRH

## STEINBERG *CUBASE* v4.0 FOR MAC

The Controller
Editor can be
used to edit
multiple
controllers, or for
Automation data.
Notice also the
alternative
Transport Bar.



## STEINBERG CUBASE v4.0 FOR MAC PTOS • Huge number of new features. • Much more consistent features for handling both MIDI and audio. • Extensive user-definability. • Sideways upgrades are only £79. CONS • PC version is lagging way behind. SUMMARY A major leap forward that adds many of the features that existing users have been asking for, along with many others that should make day-to-day operation much more pleasurable and productive.

SOUND ON SOUND

parameters, has been made more comprehensive in version 4.0. Partinfo now shows the start and end positions (which can be edited directly), and the Preferences dialogue box now has options to change volume and pan with pop-up horizontal faders, while another preference allows transpose to be adjusted from a pop-up mini keyboard. Audio tracks also have these additions (apart from transpose), and the volume and pan controls mirror the positions of the channel fader and pan controls in the Audio mixer. This is a useful way to make quick mix adjustments without having to open up any Mixer windows.

Clicking on the small button at the top right opens the Extended Inspector (see screenshot on page 100), which has extra options for MIDI tracks. Multi Out allows you to add extra Outs so that you can, for instance, play back a track through several MIDI channels simultaneously. Each added output has its own Inspector, so you can choose a different

MIDI port or channel, give it a different name, transpose it, and so on — this feature will certainly keep the Arrange page more manageable if you do a lot of doubling to fatten up sounds.

There are two Randomise boxes, which allow you to specify the amount (minimum and maximum) of random variation for any two parameters chosen from position, pitch, velocity, and length. Sadly, for anyone like me who instantly thought of using this feature to 'humanise' sequence data by slightly randomising the pitch of every note, random pitch offers only full-note transposition rather than pitch-bend nuances.

Two similar boxes allow Dynamic limits and filters to be applied to velocity or note values — for instance, you could limit note values for a string section so that each instrument only receives the correct range of notes.

Many of the parameters shown in the Inspector can now be added as extra track columns (such as

## 24-BIT? SOUNDS GREAT! TELL ME MORE...

Cubase VST/24 is Steinberg<sup>®</sup>s new flagship sequencing package, and as the name suggests. It supports up to 24-bit audio recording at 96kHz - as long as you have suitable 24-bit audio 1/O hardware to accompany it, of course. Initially the Sonorus STUDI/O card (reviewed in last month's SOS) and Korg 1212 provide such hardware support for the 24-bit Cubase, and drivers for the Lexicon Studio system should also be available by the time you read this. However, the 24-bit software is only available for MacIntosh at present, and use is really only recommended on a high-performance G3 Mac -- although Steinberg do not discount the use of non-G3 Macs, they do euphemistically state that Cubase VST/24 is 'optimised' for the G3 - and reports abound of fairly sluggish performance on less well-specified Macs. Of course, you can buy the 24-bit version of the program and use it in non-24-bit mode if you wish. Although you might think this defeats the object of buying VST/24, because it is the top-of-the-range Cubase, the 24-bit version does offer two major advantages over the standard version, even when you're not using its 24-bit capabilities. It has the same more advanced notation and score printing functions as Cubase Score, and it also offers 96 audio channels, rather than the 64 of the standard Cubase.

However, before you rush out in haste to purchase the 24-bit version and hardware in a bid to stay on top of

the heap, there are a few things you should know about 24-bit audio. As you might imagine, when compared to what's needed to handle a 16-bit file, 24-bit processing will take longer and 24-bit audio files will require around 33% more hard drive space for storage. In theory, perfect 24-bit audio should provide a dynamic range improvement of around 32dB over the maximum 96dB of 16-bit, but In reality, the limitations inherent in the analogue part of any analogue-to-digital converter means that the very best resolution available is just a little better than you might expect from a perfect 21-bit system. Most affordable 24-bit hardware has a dynamic range more comparable with a theoretical 18- or 19-bit system, though this is bound to improve as new converter designs appear. However, the extra dynamic

range does mean that low-level signals sound much cleaner than on a 16-bit system, especially quiet classical instruments or reverb talls, so you can afford to leave a few dBs of safety margin when recording, unlike 16-bit where you have to ensure peaks are virtually at full scale to get good results. Using more bits also reduces the side-effects of truncation errors when signals are changed in gain, processed or mixed, which is a significant benefit. If you're making dance music with a 3dB dynamic range and you're putting everything through a vinyl simulator, then the regular 16-bit version of Cubase VST will sound every bit as good as the 24-bit version, but if you are working with natural instruments that have a wide dynamic range, the 24-bit option is well worth considering. Matt Bell & Paul White

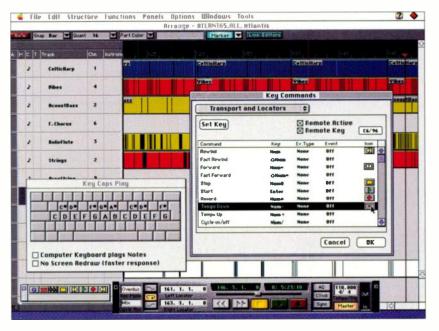


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## STFINBERG CUBASE v4.0 FOR MAC



The Extended Inspector provides Multiple Outs for a single track, as well as Randomise features. Notice also the Marker Track above the ruler.



The Key Commands dialogue provides a huge range of customisations for keyboard shortcuts and your own personal icon bar (bottom left).

## SMALLER TWEAKS

Along with all the major changes, improvements, and additions to version 4.0, I came across lots of smaller new features that will nevertheless be extremely useful:

- Convert to Groove takes the selected part and converts it to a Groove template, which is then immediately available as an option in the Groove Quantise menu.
- Ears Only initially had me baffled, since it completely blanks the screen display.

- However, it dawned on me that this is intended for use when you are playing back music, and don't want to be distracted when listening. Pressing any key returns everything to normal.
- Key Caps Play opens a small window showing a graphic computer keyboard with notes allocated to different keys. You can transmit MIDI data directly from the computer keyboard while the window is open.
- Muting of individual notes is now possible using the new Mute tool that appears in the key editor.
- Optimise Arrangement scrutinises all selected parts for empty sections of a bar or longer in length, and will then cut and re-size them. This makes is far easier to see where your data actually is.
- Restrict Polyphony (1 to 32 notes) ensures that a MIDI part does not use more than the specified number of notes, which is extremely useful if you are getting occasional note-stealing problems. It works by shortening notes as required before another starts that will exceed the chosen polyphony.

Volume, Pan, Transpose, and so on) which makes it far easier to see the value for every track at once than when using the Inspector. The Volume and Pan track columns also appear for audio tracks, and this does mean that basic audio and MIDI mixing can now be carried out from track columns, without opening up any other mixer windows (which will benefit those whose monitors are suffering pixel fatigue). It is even possible to carry out limited automation from these controls.

## **EDITING**

Much more use is now made of graphical 'drag and drop' editing techniques; for example, parts or notes can be dragged onto the desktop (where they appear as a Part icon), and then dropped again later at another position. Notes dropped beyond the original end of a part automatically extend the part.

Also making editing easier is an enhanced Toolbox with various new tools. Three of them allow you to change Volume, Pan and Transpose directly by clicking on an individual MIDI Part. You can also apply Logical

Edit presets or select a quantise groove for a part with two more tools. The speaker tool now allows you to audition individual parts, while the magnifying glass (which used to perform this function) now acts as a zoom control.

However, it is the new Range Selection tool that is the most interesting and useful, and this overcomes a former restriction when editing parts. Previously, you could only delete, move, and copy complete parts, and if for instance you wanted to grab a section of a song, and drop it later on in the arrangement, the entire part would be picked up. The only way to move a cross-part portion of a song was to make a global cut at the desired start and finish points, drag the cut portions across, and then glue the earlier cut parts back together. Range Selection allows you to draw a rectangle around any

section of any combination of parts, and then perform any edit on this highlighted portion — and this applies to processing such as quantisation as well. Overall, this really streamlines editing, and I can't wait for it to appear in the PC version.

A new Controller Editor has been added, and this finally allows you to edit several controllers (such as volume, pitch-bend, and aftertouch) simultaneously on the same page. You simply select from the left-hand column the type of controller that you want to edit (holding down the Shift key for multiple selections), and the edit window is divided into a number of horizontal sections showing controller information ready for editing. Although MIDI notes can't be seen, you can edit velocity, which is a useful way to keep track of where the notes are in relation to other controller data.

Cubase's Logical Editor has always been underused, and one possible reason for this is that even if you created useful presets, there were only 10

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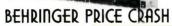
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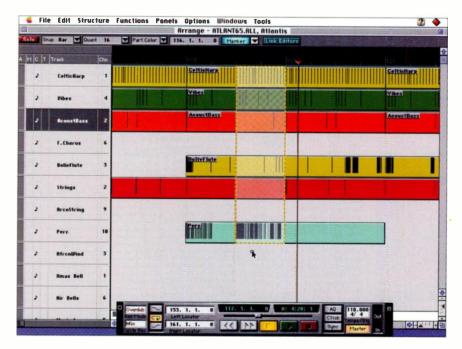
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## STEINBERG CUBASE v4.0 FOR MAC



The new Selection Range Tool allows you to grab any portion of your song for editing, moving or copying, without having to worry about where Parts start and finish.

REQUIREMENTS

## ABSOLUTE MINIMUM

- 601/120MHz Processor
- 32Mb of RAM
- 256K Second Level Cache
- MacOS System 7.6.1 or later

## RECOMMENDED

- 604 or preferably G3 Processor (the latter is virtually a prerequisite for 24-bit operation)
- 64Mb of RAM

## WHAT ABOUT THE PC VERSION?

PC users will have to wait for a while before they can get their hands on Cubase VST v4.0, though how long exactly is not currently clear. The latest word on the subject is that the PC version won't appear all at once. Version 3.6 will probably arrive in August, and then 3.7 later on this year. Quite which of the Mac version 4.0 features these interim PC updates will incorporate is hazy at present, and there is still some doubt over whether a full version 4.0 will appear for the PC at all. I'll keep you informed in PC Notes, but in the meantime, Mac owners have got something to gloat about again...

▶ possible storage positions, and storing new ones once these were full wiped out the defaults. Version 4.0 now provides two sets of presets (24 in total), but even more usefully, they can now all be saved as disk files, and unlimited numbers of logical presets can be created, saved, and sorted into folders for global use by any song; so it's finally worth spending time on creating libraries of useful settings for future use.

In a similar fashion, Grooves are now saved on your hard disk, rather than with the song, so you can have unlimited numbers of these available as well (storage space permitting, of course). Another addition which makes life a little easier is the Quantise Groove Box. You can select any combination of MIDI parts, set up a cycle and suitable quantise value, and then once the Groove Box is selected, you can activate Pre-Listen and then hear the results of applying any groove file 'on the fly'. Timing, Velocity, and Duration sliders fine-tune the effect of the currently selected groove on these parameters, and once you are happy, you can click on 'Do It' to apply the final values to your data. You also access groove editing from here as well. The Groove Box certainly tidies up groove quantising functions, and makes them easier to access and use.

## **SETTING A TREND**

At last! Window sets (known as Screensets to users of Emagic's *Logic*) have finally been added to *Cubase*, so that you can save and retrieve the sizes and locations of every open window on the screen. This includes the Arrange page, any open Editor, any Mixer, and the Audio Pool and Notepad. To create a new window set, you simply arrange everything on screen as you prefer, select 'New Window Set' from the Windows menu, specify various options, and then give it a name. Window sets are saved as part of your Preferences, so they are available on a global basis to any song.

You can recall any named set using the Windows menu again, but many people may prefer to enter the hugely expanded Preferences section mentioned earlier, and using the Key Commands window the

first 15 window sets can be allocated keyboard shortcuts or even MIDI commands. I started by adding icons on the new user-definable bar for 'Mix All' (with MIDI, Audio, and Master channel windows open) and 'Arrange' (with just parts showing). Another useful related function is Track Views, which allows you to store and retrieve various arrangements of Track columns (minimal when arranging or mixing to get more parts on screen, and more comprehensive when adjusting play parameters, for example).

## **AUDIO & MIDI MIXING**

The Audio Channel mixer is largely the same as before, although clicking on the 'FX' buttons now shows eight effects sends (arranged as two columns of four) instead of the previous four. However, there are now eight subgroup Channels as well, as well as an entirely separate Audio Group mixer. I did initially find this rather confusing, since the Audio Group mixer simply duplicates the controls for subgroups that have already been added to the end of the Channel mixer (moving a control on one panel causes the equivalent one on the other to move as well). Presumably this is so that you can quickly get at the subgroups without scrolling past the other channels.

You can route the output of a subgroup to any Output buss — in most cases, you will want to route both 'sides' to the same stereo buss, although each side can be sent to a different output if desired. You can also alter the fader, EQ, and effects independently for each side of the subgroup by holding down the option key. However, this rapidly becomes unwieldy, since you need to open separate Effects/EQ windows for left and right sides, and if you once forget to hold down the option key when moving any control, the equivalent control on the other side will start moving as well. I did notice a tiny bug in the naming of groups — 'L' and 'R' are appended to your chosen name, but if you re-open the text box, this happens again, resulting in names like 'Grp 5 L L'.

One big operational change is that MIDI channels now also have their own MIDI Track mixer. This looks very similar to the Audio one, and sports Fader (with meter alongside), Pan, Mute, and Solo buttons. These simply reflect the Inspector values (with the meter indicating MIDI velocity values), and send out MIDI controller values when changed. Ironically, this can cause confusion, since the MIDI Track Mixer is connected to Track Info in the Inspector, but not Part Info. If you make volume and pan changes for a single part using the Inspector, they will not be reflected in the Track Mixer — Steinberg recommend setting all Inspector Part parameters to Off, removing any existing controller messages inside the parts, and then using the read/write automation facilities of the MIDI Track Mixer to record and play back all changes. A global Audio Mute button is also provided, in exactly the same way that the Audio mixer has a MIDI Mute button.

An Expand button for each MIDI mixer channel provides some extra functions: a selection of Yamaha XG and Roland GS controls are available (such as effects sends, attack, release, filter cutoff, and so on), and these send the appropriate SysEx messages. Once again, you can change these controls in real

time for automation purposes.

Speaking of automation, there is one huge improvement for Audio as well as MIDI. In previous versions of Cubase VST, although clicking on the mixer 'Auto Write' button generated an Audio Mix track containing the automation data, there was no way to edit this except by grabbing a control and overwriting existing values. Now, not only does activating MIDI Auto Write generate a separate Track Mix track, but you can double-click on either the Audio Mix or Track Mix tracks to directly edit existing data, using the previously mentioned Controller Editor. Once again, by holding down the shift key when choosing what to display and edit, you can view multiple channels and parameters. When editing an Audio Mix track, the data appears as waveforms, so that you can clearly relate it to the superimposed controller information.

## **IMPRESSIONS**

You really need at least a few weeks to fully explore the new options available in Cubase v4.0, but most things fall into place fairly quickly at a basic level. Although the reorganisation of the Menu structure does initially make it more difficult for long-term users to find things quickly, it doesn't take long to adapt, and functions do now seem to be in more logical places after the many rather piecemeal

additions of the last few years' updates.

Users have been clamouring for some of the new features (such as long names, screensets and the automation editor) for ages, and these do make dayto-day operation a lot simpler. The Key Commands window and Icon bar will please many people, since they allow you to customise Cubase to suit your own personal way of working. In fact, flexibility seems to be one of the biggest features of version 4.0.

Overall this is a huge step forward for Cubase VST, and it will no coubt make a lot of people very happy. I have to say though that my favourite new feature is the Window sets. When the mixers disappear behind the Arrange page again I will no longer curse in frustration — well, not until I return to Cubase on the PC, anyway! SOS

## E Steinberg Cubase VST £329; Cubase Score £499; Cubase VST/24 £699. Prices include VAT. Arbiter Music Technology, Wilberforce Road, London NW9 6AX, UK. +44 (0)181 202 1199. +44 (0)181 202 7076. E arbiter@cix.compulink.co.uk W www.arbitergroup.com

## MANUAL MOAN

I know all the arguments about not cutting down any more rainforests, but sadly only a Getting Started manual is provided with Cubase v4.0; the other extensive remaining documentation is in on-line Adobe Acrobat format. To offset the inevitable murmurs of protest, Steinberg have bundled a tutorial CD-ROM with Cubase v4.0. This is in two parts: Getting Started (with 16 topics) and Working with Version 4.0 (with 14). Foolishly, I waded in at the deep end for this review, reading through the Getting Started manual for the new bits, and then exploring all the menu options within Cubase itself. However, I subsequently discovered a lot of previously undiscovered ways to use the new features in the CD-ROM tutorials. I wish there had been an equivalent when I first started with Cubase VST!

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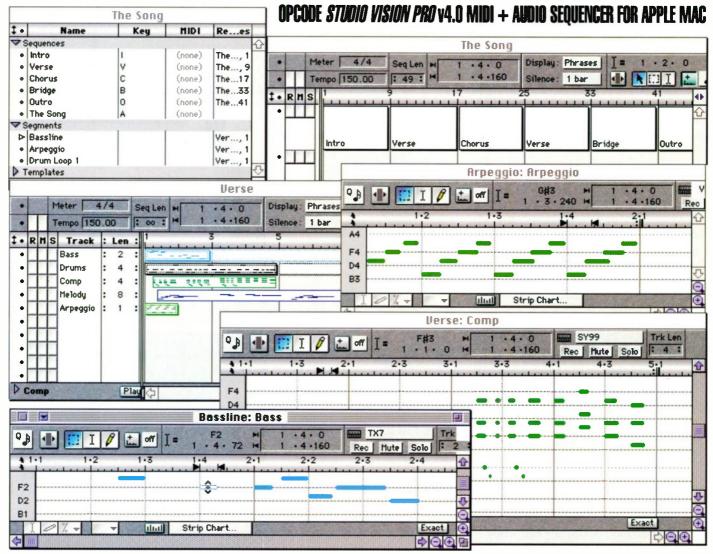
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## A Vision for the Future?



Studio Vision has been offering digital audio recording for an amazing eight years, making Opcode a pioneer in this field. MARTIN RUSS sets out to discover whether successor Studio Vision Pro is still keeping up with the times, and finds it visibly improved...

pcode have been in the sequencer business for a long time. At the back of my floppy disk archive, in the section that will soon be 10 years old, there's a disk containing a demo of *Vision* 1.02 from 1989. The original Opcode sequencer from 1986 was called exactly that (*Opcode Sequencer*), and was very much a mixture of live performance aid and MIDI

This song is made up of several Sequences. In this case the Sequence called 'Verse' is shown in a Track Overview Window, and three Segments are shown in Graphics Windows. The Drums track would probably be shown in a Pulse Window.

sequencer, whilst in 1989 the addition of the now universal piano-roll graphical display prompted a change of name for the program, to *Vision* — so now you know! Just one year later, the first version of *Studio Vision* was released, and this added digital audio recording features, which were revolutionary at the time.

Opcode sequencers are designed around patterns — in some ways they're rather like overgrown drum machines. The 'Song' is the basic container — what you store on disk. A Song is made up of one or more Sequences, and these Sequences can be the sections of the song: Intro, Verse, Chorus, and so on.

Within a Sequence are individual Tracks, and these Tracks can themselves be made up of smaller units called Segments. You can re-use Segments in several Sequences if you like.

The arrival of the new version (4.0) of the Studio Vision Pro MIDI + Audio sequencer for review prompted me to look back at its ancestors and see how things have moved on. It's actually quite interesting to see how much underlying design and structure has survived, although the appearance of the user interface these days is much more sophisticated. For a more detailed look at Vision and Studio Vision through the years, I'd advise you to check out past SOS reviews (see the 'Vision In SOS' box for a list); in this review I'II be concentrating on the improvements delivered by v4.0 and assuming a certain amount of knowledge of the program.

## **PULSE EDIT WINDOW**

My roots lie in using 8- or 16-step analogue sequencers to control synthesizers, and I'm pleased to say that SVP's new Pulse Edit window (see screen) finally provides a way of working with rhythmic events that suits me. Its Graphic window is fine for working with notes, but for drums I've always been left wanting a grid-based editor and now there is one. Individual Tracks and Rows on the Pulse Edit grid can be single or multiple notes from one or more instrument sources, and each Track or Row can have its own loop length and playback quantise settings. A new 'Magic Drumstick' tool allows you to 'paint' in events, and you can toggle the grid blocks so that vertical height indicates (and edits) velocity. For 'LFO sync' sweeps there are Sine, Square, Sawtooth and Triangle shapes for an Oscillator in the controller stripchart, which lets you replace the process of going to your sound source to sync the LFO to MIDI Clock with a couple of mouse movements within the program instead. These features are all very useful, and make the Pulse Edit window a much better home for your drum parts and rhythmic sequences.

The Track Overview window now has a controller stripchart, and there's also the option of having your Quantise controls built into the info area or as a separate window. In previous versions of the program, there was a Quantise dialogue box, but now that it's a window you can leave it

open permanently if you like (I found that I used the built-in Quantise controls instead, which helps to keep the number of open windows down). Replacing dialogue boxes with windows can help smooth your workflow, because being forced to fill in a dialogue box each time you want to quantise or transpose can interrupt your train of thought. So it's no surprise that the process of selecting some notes or events, and then modifying them, has been changed from two dialogue boxes (I used to hate the Transpose dialogue!) into one 'Select & Modify' window. This allows you to choose what you're going to work on, and then make the changes - all in the same window. This is much more intuitive, and far easier if, like me, you are an iterator who goes round and round tweaking and listening until it sounds right.

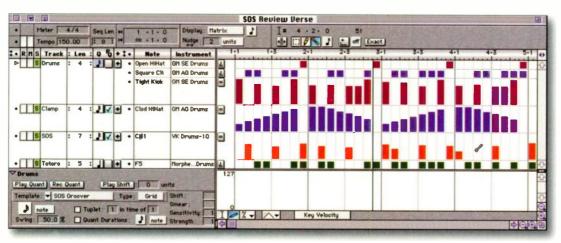
The addition of the controller stripchart and the modified Quantise controls to the Track Overview window means that you don't have to open Graphics windows as often, and that you can work faster — especially in the later stages of mixing, where you're not changing notes, but you are tweaking controllers and timing.

## **USER INTERFACE**

Some of the changes to the user interface aren't quite as useful as the above. You can now choose the background colour and texture of the windows — anything from woodgrain or zebra stripes to the Stars and Stripes flag. A quick session in *ResEdit* will allow you to put in your own patterns if you can't find a preset that's distracting enough. I found that I could no longer squash the left-hand side of windows down to save space, because some essential controls, such as those for Quantise which I mentioned earlier, are there. This kind of reduces my enthusiasm for otherwise wonderful features like being able to change the width of columns in the Sequence window.

The renaming of what used to be called Sub-sequences into Segments should make the distinctions between them clearer. As a long-time advocate of re-using little nested snippets in bigger sequences, I'd say that anything that frees you from tape recorder emulations with long, linear tracks must be a good idea (though you can always use *Studio Vision Pro* to do this if you want to). Editing is made a little more interactive with the 'Nudge

## pros & cons OPCODE STUDIO VISION PRO v4.0 £649 Smooth, sophisticated user interface. Powerful audio-to-MIDI conversion. • 24-bit Pro Tools support. Almost complete integration of MIDI and audio sequencing. cons Some screen redraw untidiness Slow switching to other OMS programs. · So deep that many people will never explore it all. Studio Vision Pro offers a near-seamless integration of MIDI and audio sequencing. This update cleans up a few rough edges, and adds many neat refinements. SOUND ON SOUND



The new Pulse Edit window — a different way of working with rhythm for Studio Vision Pro.

## OPCODE *Studio Vision Pro* v4.0

▶ Edit' feature, which lets you make changes using the cursor arrow keys. The reworking of the MIDIkeys dialogue box into a much clearer 'Commands' window also now allows you to completely remap all of the Qwerty key equivalents (shortcuts) for menus as well. This is a boon if you need to swap an arcane shortcut for something you use a lot with a more convenient shortcut for a feature you never ever use.

Alongside the live performance shortcuts, such as triggering Sequences by typing a list of Qwerty keys, there's a new one which allows you to arpeggiate your MIDI master keyboard. This can be sync'ed to the sequencer timing if you want, or it can be independent, and it allows up, down, alternate and random note ordering. Control over the spacing of the notes is from yet another of those built-in Quantise controls. Instead of arpeggiating, the same controls can also be used to provide note repeats (and not only by setting the range to zero!) and this can be useful for exploring the retrigger time of some synthesizers (a useful source of interesting and often unexpected rhythmic variation) or for drum rolls (especially on polyphonic drum machines, where you can cause flanging by retriggering the same drum). My only quibble is the limitation of the range to a maximum of three octaves — one of my own arpeggios requires four octaves!

## **AUDIO**

Studio Vision Pro 4.0 does audio too: 8-, 16- and 24-bit stereo audio, with support for Digidesign's Pro Tools 24 recording hardware, including DSP functions and Premiere plug-ins — although the Premiere plug-in previews use Apple's Sound Manager (maximum 16-bit) for playback. QuickTime is even more integrated into the package — importing audio and exporting movies and OuickTime 3.0 is supported. Crossfades are now easier, with a redesigned dialogue box that saves you from messing about with fading in and out separately. Sensible auto-naming of audio files is also a wonderful thing, although it can help to fill up hard disks even faster. Perhaps the neatest and most subtle addition is the way that you can now colour the Console faders with colours to match the instrument used.

Some of the features of the SVP DSP menu are also included in Vision DSP, as the once MIDI-only Vision is now called. Pitch and Time manipulation, for example, which used to be confined to Studio Vision Pro, are now available on both. But the jewel in the crown is still featured only in Studio Vision Pro: Audio-MIDI conversions. Opcode got a US patent for this earlier this year, and it's probably one of the most powerful features of the software if you really want to get deeply into working with MIDI and audio, beyond just recording and playing back. At first sight, it's all very simple. You select a monophonic audio track, and you can convert this into a MIDI track. You can then edit the MIDI information, and convert it back to audio again. One use for this is to correct singers whose pitching is less than perfect, but there are lots of other uses for it —

## *Vision* In *Sos*

Vision	Oct 1989
• Vision 1.4	Jan 1993
• Vision 2.0.3	Jun 1994
Studio Vision Pro 3.0	
· Vision 2.5 Windows	Sept 1996

and many of them fall into the category of 'doing five impossible things before breakfast'. Replacing one sound with another in an audio track without re-recording can be more than just what it seems — you can use it to harmonise at the same time. Separating out a MIDI drum track and then replacing some of the instruments is a useful way of augmenting an old or tired drum machine. Changing the timing and volume of audio from MIDI allows one audio track to be toasted in a variety of ways, and all done in software rather than retakes.

Some features of *Vision DSP* are moving the other way — to *Studio Vision Pro*. Steinberg *VST*-compatible effects mean that a host of real-time effects will become available to non-TDM *SVP* users. If support for ASIO-compatible sound cards is also included, this means that the choice of audio hardware will increase too. *Studio Vision Pro* will then offer support of MIDI, Apple Sound Manager, ASIO, USB, DAE...

## **VERDICT**

SVP v4.0 is very much a consolidation of an already powerful tool. The changes are apparently the result of user feedback, and I noticed several from my own wish list, so it seems to be working. I'm pleased to be able to report that there are almost no superfluous features added for no obvious reason (word processor manufacturers please note!). Instead there are many minor adjustments and improvements that make working with MIDI and audio easier and faster — although, as I know only too well, this merely means that I spend more time doing things I never had the time to do in the past!

With lots of MIDI + Audio sequencers around, making a choice between them is getting harder. Two of the criteria that I use are experience and metaphor: Opcode have been doing MIDI + Audio for longer than most (and it shows), and their user interface exactly fits the way my mind works. It's a winning combination for me.

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## UNIVERSAL SERIAL BUSS

Apple's new iMac computer seems to have succeeded in making the Universal Serial Buss visible. Although this socket has been gradually appearing on the back of PCs for the last year or so, there hasn't exactly been a rush of peripherals using USB so far. But throwing away SCSI and PCI expandability in favour of a USB-only expansion capability is certainly one future option for low-cost computers, so this makes Opcode's July announcement of the **DATport USB audio interface very** timely. With hot-plugging and a no-card, no-configuration install, the **DATport should make hooking stereo** audio between a computer and an S/PDIF audio device very easy.

## PACE OF CHANGE

Although this update covers version 4.0.1 of the Studio Vision Pro MIDI sequencer and digital audio recording/editing software, a forthcoming free download to 4.1 will add in some new DSP features from Vision DSP, the latest version of what used to be a MIDI-only sequencer (but now can use Sound Manager and ASIO-compatible soundcards for audio).

Just to confirm, everything in Vision (3.5 or DSP) is in Studio Vision Pro, although sometimes they leap-frog each other temporarily. The major difference is that Studio Vision Pro provides support for Digidesign and Yamaha professional digital audio interfaces, and the patented Audio-to-MIDI and MIDI-to-Audio conversions.

The pace of software development means that features and capabilities now change at a very fast tempo, so regular visits to Opcode's web site (www.opcode.com) and that of their UK distributor (www.scvlondon.co.uk) is recommended.

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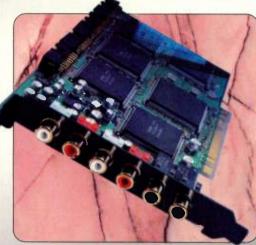
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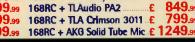
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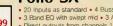
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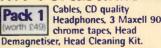
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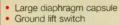
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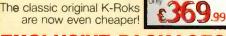
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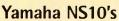


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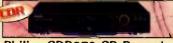
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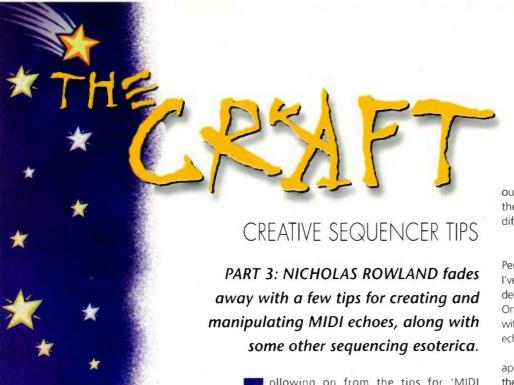
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### Recording



ollowing on from the tips for 'MIDI composition without really trying' which I explored in the first article of this series, I now want to move on to look at some of the more esoteric MIDI manipulation facilities found on higher-end sequencers. Well, to be honest, most of what I'm about to talk about refers specifically to features to be found on *Cubase*, which happens to be my sequencer of

choice. Apologies and respect to anyone who drives another sequencer model. However, you should find that many of the ideas outlined here are still relevant, though obviously the mechanics of achieving the results will be different according to the program you use.

### **EXPECT DELAYS**

Perhaps due to my background as a percussionist, I've always relied heavily on the rhythmic effect of delays when creating and mixing my own music. One of my (probably over-used) tricks, particularly within rhythm tracks, is to manually create dub-style echo parts using elements of the main rhythm.

In Cubase this is a simple matter of setting the appropriate quantise level and then 'painting' in the delayed notes. (When working with a straight, four-square type of rhythm or melodic line, I tend to build these echoes around triplet or dotted note quantise values or odd-number groupings.) You can then go to the continuous controller editor screen and edit the note velocities so that

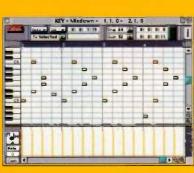
"...don't forget that it's always interesting to apply arpeggiated sequences to banks of drum sounds."

the echo fades in or out (or both) as desired. You can also crossfade different echoed instruments and generally bounce stuff all over the place. And, for that matter, you can also use continuous controllers to modify the echoes in other ways. For example, by altering the pan, reverb, attack, decay and so on you can modify the sound each time the echo repeats (if none of this makes sense, hopefully the box elsewhere on the page will provide full illumination).

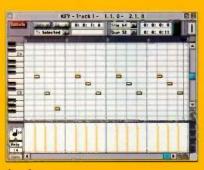
Of course, this is very much a Heath Robinson approach to creating delays, but at least one thing in its favour is that fact that you can apply it using any sequencer. However, programs like *Logic* 

### ARPEGGIATE!

We start with a simple four-on-the-floor chord sequence. By rubber-banding the notes we can shift their positions forward to create the simple 'broken chord' arpeggio shown in step 2 The pattern is then copied to another track where, in step 3, it is transposed up by seven semitones, reversed and the notes then kicked back so they are in the right place. In step 4, we mix the patterns together. However, in this particular example, we're left with quite a lot of double notes (ie. notes copied on top of each other) and there are also a few moments where you have two different notes on the same beat. While this will sound fine with polyphonic instruments it might not be so good with monophonic synth sounds, so in step 5, I've gone in and deleted notes so that there is just one note per beat. The result is an early Tangerine Dream-like sequence that works a treat with analogue voices.

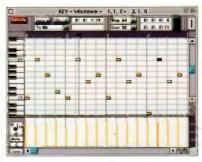


Step 4.



Step 3.

Step 2.



Step 5.

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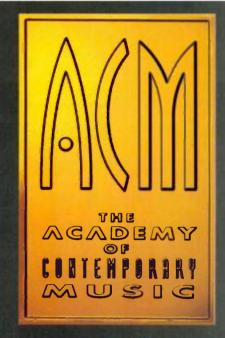
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### CREATIVE SEQUENCER TIPS

### **INTERACTIVE PHRASES**

In the words of the *Cubase* manual, the Interactive Phrase Sequencer allows you to "create one-finger accompaniments, generate complicated arpeggios and more". Whatever you're trying to achieve, the IPS experience starts by loading in an existing MIDI phrase (pattern or riff) which is then used as the base material for the program to work its magic.

In this particular example, I started by using the normal edit page to generate a straightforward one-bar melodic sequence as shown in Step 1. Note that the IPS will also function quite happily with drum patterns. Once the phrase is loaded into the IPS and the program made active, you'll find that when the Transpose Retrigger function is clicked, your phrase will be triggered every time you hit the note of the keyboard. It will also be automatically transposed depending on what key you hit. (Note that if you take a drum pattern, with the drum sounds assigned across the keyboard, then the effect of the transposition will be to play the rhythm with different sets of voices — a neat way of generating new rhythm patterns from old.)

The fun comes when you start modulating the Dynamics, Pitch and Rhythm of the Phrase. In the example shown here (see step 2), the Dynamics (MIDI velocity) are subject to the effect of a downward velocity ramp which means the riff gets quieter as it plays through. Meanwhile the Pitch function forces the notes of the sequence into certain keys and scales — with variations

including such exotica as Persian and Hungarian. Again you can use the LFO shapes to alter how this effect is applied in real time.

Here, though, the main change to the original phrase has been made through the Rhythm control. As you can probably see from the box, all notes have been transformed into sixteenth-note triplets, while the rhythm itself is changed to a 16-to-the-bar analogue power driver. Georgio Morodor eat your heart out!

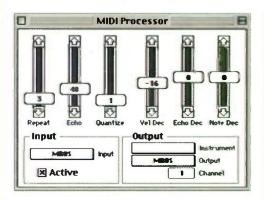
Finally, in the lower left-hand part of the box. I've used Modulator 1 to automatically vary the amount of volume boost to the riff. The result of all this is shown in the second screen from Cubase's edit page (step 3).

This really is just scratching the surface. If you're a *Cubase* user then you'll know that there are not one, but two separate IPS processors. each of which can be independently programmed with a different phrase and then sent to different MIDI channels/instruments and so on. The advanced features of the program will also change the order of notes, either according to the program's internal logic, or what notes you input from the keyboard. The result is a bit like a musician jamming by trying out a combination of notes in different orders. For users of multitimbral synths, you can cycle round MIDI channels, so that, in effect, each note is sent to a different patch.

Go read that manual now!

Audio and Cubase have their own MIDI delay modules which allow you to set up these and other more advanced effects quite easily.

The key to understanding the *Cubase* MIDI processor is first to understand that the delay and quantise values are expressed in terms of MIDI ticks rather than musical notes — so always keep a conversion chart handy. If you look on the last page of this feature, you'll find one that I made



The settings shown here will give you three repeats after the initial note with an eighth-note spacing. The velocity decay parameter means that each successive echo will drop in volume. Try using these values to process a hi-hat or ride cymbol pattern.

earlier. Just ask an adult to help you with the scissors when cutting it out of the magazine! The first example screen shown here would give you three repeats after the initial note at quarter-note spacings, with the MIDI velocity of each repeat decreasing by 16. By moving the Velocity Decrease slider to give positive values you can make each subsequent echo get louder, which is always a handy trick to keep up your sleeve for a rainy day.

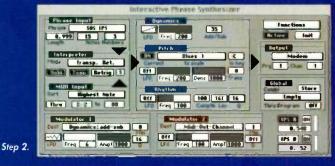
The 'interesting' parameters here are Echo Decay and Note Decay. The first allows you to create staggered echoes, by adding or subtracting a specified time value with each decay. If you set the Echo Decay to very small values (something like plus or minus 1 or 2) you will find that the echoes get slightly — but only slightly — out of time as they fade away. You can use this function to add a sense of dynamics to otherwise strictly quantised parts, such as hi-hats or tuned percussion.

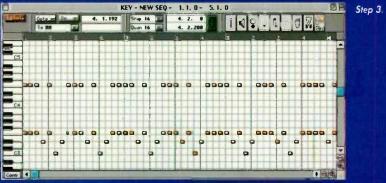
With Note Decay, the MIDI processor will also change the pitch by up to 64 semitones either way with each delay. This allows you to create a number of simple up/down arpeggio effects. Note that if you want the results to be comfortable on the ear then stick to intervals of thirds, fifths or sevenths.

To transform an otherwise mundane bass line or plodding chord sequence, try copying the part to an empty track and then transposing it up by either one or two octaves (depending at what pitch the original part is playing). Then set the repeat and echo values to give you four repeats at eighth-note intervals with the Velocity Decrease set to -10 and Note Decrease at +5 (in other words so it goes up by a fifth with each echo). This gives you a kind of 'dancing' pattern over the top. (See box on page 126.)



S p 1.





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Yamaha CS1x	£499	£59	10 x £44	0%
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Roland XP6o	£1299	£147	18 x £64	0%
Roland XP8o	£1429	£169	18 x £70	0%
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Sound Modules	Price	Deposits	Payments	APR
Korg X <sub>5</sub> DR	£259			
- NY 54	A.			
Korg NS5R	£349			
Alesis Nanopiano	£249			
Korg SG Pro X	£599			
Korg Trinity Rack	Ecall	-0.46	-	
Yamaha MUgoR	£349			
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Movation Super Nova 16voice	£1299	£219	18 x £60	0
Novation Superbass Station	£379			
Novation Drumstation	£379			
Roland JV1080	£call			
Roland JV2080	£call			
Roland MC505	£949	£103	18 x £45	0
Yamaha QY700	£699			
THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	100	100	OF REAL PROPERTY.	

<b>15.5</b>				
OR	£1199	£119	18 x £60	07
Yamaha A3000 with 64 Meg plus zip drive	£1349	£179	18 x £65	07
Akai S3000XL with 32meg and zip drive	£1200	£120	18 x £60	0%
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Bost 5P202	£259			
Yamaha SU10	£189			
Street, Square, Square,		-		

	COLUMN ST. COLUMN ST. ASS.	
ì	Dynamic and	
ı	Effect Processors	Price
ì	Alesis Nanoverb	£89
ı	Alesis Microverb 4	£139
Ğ	Alesis Midiverb 4	£179
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ı	Behringer Vitalizer	£149
6	Digitech S100	£179
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ı	Lexicon MPX100	£229
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ч	DBX DDP	£529
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ı	Dyn Audio 8M6P	£call
ı	Event 20/20	£3.9
١	Event 20/20P	£call
١	JBL 4206	£189
١	JBL 4208	£225
١	Soundcraft Absolute Zero	£199
۱	Soundcraft Absolute Two	£149
ı	Soundcraft 4P	frail
ı	Samson Servo 170	fise
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Marantz	£699
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# BUYING A READY-MADE PC MUSIC SYSTEM

Although you can go 'under the bonnet' and put together your own PC suitable for MIDI + Audio recording, buying a complete system could prevent many potential problems.

MARTIN WALKER gets bundled up.

'm still surprised at the number of gueries I receive from readers who want advice on where to buy a PC system for making music. Yes, I fully understand that the average PC warehouse outlet has no idea about the subject whatsoever, but there is an easy answer. If you look through the pages of SOS, there is a host of advertisers who will supply fully configured PC systems for music use. Not only do these normally come bundled with sequencer software, and your choice of soundcard, but they also arrive with the soundcard installed, with all the drivers up and running, and the software properly configured to work with it. Also, if the worst happens, and you experience difficulties with some aspect of the package, you immediately know who to contact.

Contrast this with the piecemeal approach taken by so many people: buy a cut-price PC, learn lots about its internal workings while you try to narrow down the cause of its low performance when running MIDI + Audio software, and then upgrade various components in an effort to improve matters. Yes, I know that you might get your PC slightly cheaper from the mega-retailer who shifts huge numbers of boxes, but spend a few moments considering how much extra time you might lose if you have problems.

In addition, you will probably experience the ping-pong effect, as your technical queries are bounced backwards and forwards between the soundcard and sequencer manufacturers (neglecting the supplier of the PC, who probably won't have a clue what you're talking about). Some people never do get a properly functioning PC, and seem forever destined to swap one component after another in a desperate attempt to solve an ever-more-elusive fault. Judging by the frustration and even desperation of some of the letters and emails we receive, some owners simply run out of people to ask.

### SYSTEM SOLUTIONS

If you are buying a complete system, you may have to justify its price by choosing one suitable for your entire family. This inevitably means that you need a more general bundle of software, but some music retailers can supply this sort of bundle on request, in addition to your choice of sequencer software (it is certainly worth asking, since bundled prices are always keener than buying separately). Unfortunately, one almost inevitable consequence of buying a multi-purpose or family PC is that games get installed, and these tend to be the most common cause of music-related PC problems. Given the low prices of many dedicated games machines, it would seem a more sensible proposition to buy one of these in addition, resulting in fewer problems and more time for the serious music-making PC.

If you want your system primarily for music purposes, you will nearly always save yourself a lot of hassle in the long run by buying from a specialist music retailer. After-sales support is something that every business takes into account when choosing a supplier — after all, time is money, and you need the reassurance of an established procedure if and when the worst happens.

By buying the whole package from a single source, you know exactly who to contact if you have any problems. Retailers have an easier task as well, since it is far easier for them to track down the problems if they have experience of every component in the supplied system, including the software and soundcard. Trying to narrow down music software or hardware problems in an unknown PC is never a trivial proposition, simply because of the huge number of possible components involved (and the even greater number of possible interactions between them). Even if you subsequently decide to upgrade, those who have bought complete systems still stand a better chance of doing it with the minimum of grief, since the original system supplier

This system case
from Millennium Music Software
shows one of the advantages of going
to a specialist — you can have any combination of more
unusual drives pre-installed, such as the CD writer and
Zip drive shown here.

can provide more informed advice, knowing exactly what the buyer already has.

### **NARROWING IT DOWN**

Some suppliers offer several standard systems, others use a few standard systems as a basis for a variety of packages, and still others aim to build a machine from the ground up to specifically suit your requirements. Thankfully, you are likely to be spared the hard sell, since these suppliers know that the last thing they want is someone constantly back on the phone with problems.

Mind you, before you contact a specialist PC music retailer, you will need to do a little homework to establish roughly the sort of system you need, since there is still a huge variety on offer. You always tend to get a better price buying a complete system in one go, rather than upgrading in fits and starts, so it is best to try and buy something that has sufficient power to do what you need for at least the next year (although with the current pace of PC technology, this is increasingly difficult).

This, however, must be offset against the fact that prices are forever tumbling. In general, the best compromise is to buy a system one or two rungs below the top of the technological ladder. The latest and fastest systems always attract a premium price — if you can afford this, fine, but whenever a new faster processor comes out, the models just below it have their leading edge prices trimmed significantly, and these therefore tend to be the most cost-effective.

Since most bundles are fairly flexible, you will need to decide what your system should include. Although a well-trained salesperson will guide you through the options, there may be many other choices to make apart from the fundamental ones of processor and speed, amount of memory, hard drive capacity and so on. Many dealers can also supply an initially bewildering selection of other components, such as CD-ROM drives, CD-R and CD-RW drives, removable hard drives, built-in modems, SCSI cards...

The list may seem endless, but if you are likely to need any such options in the near future



Red Submarine have a wide range of PC systems on offer, and their Professional Series even offers to diagnose problems by remote control, using the built-in modem (see main text).

anyway, you will probably get a considerably better deal if you buy them with your system, rather than purchasing them separately at a later date. And don't forget, the whole point of buying a bundle is to get everything pre-installed and working properly — make the most of this, and let the dealer do all the initial hard work for you.

### **SLOT MACHINE**

Catering for future expansion can be just as important as choosing the right system for today. If you can project your likely requirements a year or more into the future, you will be far less likely to be faced with a dead-end PC that has to be traded in, or sold second-hand for next to nothing.

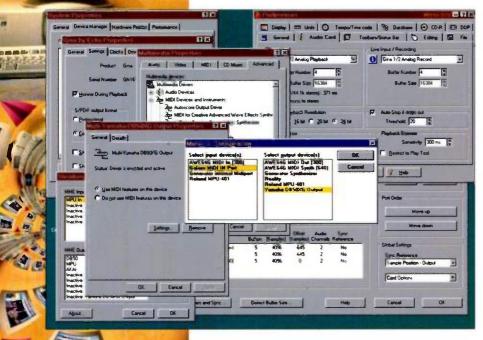
For example, consider the issue of expansion slots, of which there are normally a total of seven in most PCs. Avoid machines with less — such as some of the new Celeron-powered entry-level models — however conveniently compact they are, since slots always tend to be in short supply for musicians (who can soon run out of space after installing several soundcards, MIDI interfaces, and SCSI cards.)

Traditionally, PC expansion slots have been of two types: ISA and PCI (often with four ISA slots, and three PCI ones, or three of each with one extra dual-purpose position which can hold either an

"If you want your system primarily for music purposes, you will nearly always save yourself a lot of hassle in the long run by buying from a specialist music retailer."



### **BUYING A READY-MADE PC MUSIC SYSTEM**



Configuring software and hardware can be a huge initial task. If you're buying a complete system, and don't want to be faced with a plethora of screens like this, let the specialist music retailer's fingers do the walking.

▶ ISA or a PCI card). However, Intel would like to phase out ISA cards altogether over the next couple of years (plug and play would certainly become more reliable), and most new cards now tend to be PCI. With this inevitable move to PCI cards, the balance is shifting, and many modern motherboards feature three ISA, four PCI, and one of the new AGP slots (Accelerated Graphics Port — see January's PC Musician for more details).

The important thing when buying a system is to check how many *free* slots there will be. It may be wonderful to have a soundcard, graphics card, internal modem, and SCSI card installed when you buy it, but this may leave you with no free PCI slots at all for future expansion. There are several ways to ensure that you keep as many of the valuable spare PCI slots as possible. You can make sure that your new system has an AGP graphics card — these are now about the same price as similar PCI versions, avoid possible clogging of the PCI buss with graphics data, and leave a valuable PCI slot free. Also, I have always preferred to use an external modem — apart from saving another valuable expansion slot, these normally provide comprehensive LED readouts that can be a great help if you ever have problems with sending faxes or cruising on the Internet.

External MIDI interfaces that attach to the parallel printer port are also popular; not only do they leave yet another slot available for future expansion, but most of them also provide valuable LED readouts of MIDI Out activity (much like the external modem option).

### THE ENGINE

The most fundamental choice for any system is that of processor. There are two basic standards on offer, based on the design and pin-out arrangement of the socket holding the CPU (Central Processing Unit). The older and more established Socket 7 includes Intel Pentium processors (both standard and the more recent MMX variety), the AMD K5, K6, and K6-2 ranges, and the Cyrix 6x86 and 6x86MX ranges. Intel's newer Pentium II processors, by contrast, use the completely different Slot 1 standard, as well as a different style of motherboard; there is also a cut-down version of the Pentium II called the Celeron, which is just starting to appear in budget systems.

If you are considering buying a complete system, I strongly recommend that you buy one featuring a Pentium II, unless you have an extremely limited budget, in which case you might be best placed buying one of the many PCs now being sold second-hand by people upgrading, since this will save you even more money. You will also need to decide which version of the Pentium II to get, since there are models available with clock speeds of 233, 266, 300, 333, 350, and 400MHz. Going back to my earlier comment about the technological ladder, the best value (as I write this in early July) is perhaps the 300MHz model, although you must be guided by the retailer at the time you buy, depending on what you are proposing to do with your system.

If you do buy a Socket 7 system, either new or second-hand, the order of preference for musicians should, in my opinion, be Pentium MMX, AMD K6-2, and finally AMD K6. Cyrix processors cannot be recommended for musicians, since although they are fine for general business applications, and will run most musical software, they will probably do it significantly slower than other processors.

### **KEEPING TRACK**

When choosing your system, it can be confusing to simply specify the maximum number of audio tracks you want to record and play back

### UPGRADING VERSUS BUYING A NEW MACHINE

Many people assume that it is easier and cheaper to upgrade an existing PC than to throw in the towel and buy a new one. SOS gets lots of email from readers asking for advice on making their MMX PC more suitable for digital audio recording, but there is always a limit beyond which you are better off, both in performance terms and financial terms, by buying a completely new machine. Let me explain...

If your current machine's processor has a clock speed of 166MHz or less (whether from Intel, AMD or Cyrix), 16 or 32Mb of RAM, and a few gigabytes of hard drive capacity, then you will certainly get a significant increase in performance by buying an Intel 233MHz MMX processor (assuming that your motherboard can cope mine, at 18 months old, won't run anything faster than a 200MHz model). It is never worth moving up a single clock speed, since the performance improvement is unlikely to reflect the cost involved. Far better to jump two places, for Instance between a 166 and 233MHz clock speed. However, a simple processor upgrade may only be postponing the inewitable, and a more drastic course could be needed to give you enough power

to last for more than a few more months.

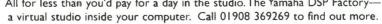
I recently received an email from a reader who was thinking of spending about £500 to upgrade such a machine, by installing a new motherboard housing a Pentium II 266MHz processor (about £300 for the pair), 64Mb of SDRAM (about £70), and a larger and faster hard drive (about £130). Although this would initially seem much the cheapest option, you always pay more to buy a set of parts than a complete bundle, and new Pentium Il 266MHz systems start at about £700 without the monitor (which most people have already). For this extra £200 you will also get a new case, graphics card, 32-speed CD-ROM drive, floppy drive, keyboard and mouse, and none of the possible hassles of performing open heart surgery on an existing machine. You might even get £200 second-hand for your old machine as well.

I'm faced with just this situation, and frankly even the latest upgrades installed in my existing PC over the last six months have already been superseded — such is the rapid pace of PC technology. When the crunch comes, it's definitely going to be a complete new system for me.



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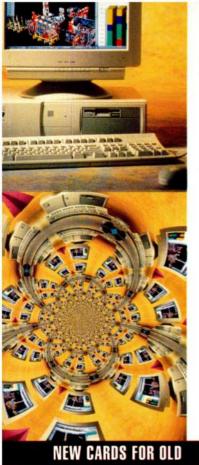








These companies have announced support for DSP Factory in their Windows® products. Macintosh software coming soo Visit our Web site @ www.yamaha.co.jp/product/proaudio • © 1998 Yamaha Corporation • Yamaha, DSP and DS2416 are registered trademarks of Yamaha Corporation. \*Not all software supports all of DS2416's features.



cards that you are intending to move across to a new system, this may be the opportunity to rationalise and rethink. You may have several ISA cards (such as a soundcard and MIDI interface) that still work perfectly well together, and many people have two or more existing undcards running side by side. However, although you can amass several MIDI Ins and Outs and multiple udio channels by using several soundcards, this approach can cause problems for audio recording and playback, since most MIDI + Audio equencers rely on the sample clock from one soundcard to lock everything together and keep it running in exact

Freewheeling a couple of identical cards from one manufacturer will probably be reasonably successful, but the ideal solution is to invest in a single card that fulfils all your needs. If you want your system to be cheaper now, but still leave scope for future expansion (always a sensible option), you can either buy a system with a core card that offers external expansion possibilities (such as the Ensoniq PARIS, or DAL V8), or one that allows you to sync multiple soundcards together.

Some cards allow you to do this by connecting link cables between them internally (such as Yamaha's DSP Factory and SW1000XG soundcards), or by linking the digital out of the first to the digital in of the next (such as the Event Gina); others, like the Midiman Dman 2044 provide drivers that can run several cards simultaneously, although it is worth checking the claims that are being made, since not all such tandem approaches give sample-accurate sync.

### **BUYING A READY-MADE PC MUSIC SYSTEM**

have a choice of operating system. Once the inevitable kinks have been ironed out, Windows 98 is likely to be supplied with all new machines (especially if the dedicated music retailer has checked compatibility with the supplied music software). Initial reports are that Windows 98 is much more robust than Windows 95 was when it first came out, but since most people regard Windows 98 as an enhanced version of Windows 95, this is hardly surprising. The most important improvement as far as musicians are concerned is that the notorious 11-device MIDI device limit is no more. This is reason enough for many musicians to throw caution overboard and install the upgrade in their existing PCs.

### **EXAMPLES**

I contacted a small random selection of dealers to ask them what they saw as important in a ready-made PC system. Music Connections (0171 731 5993) put together systems based on customer's requirements, rather than having a range of fixed models. Although they can supply virtually any type of PC, they find most people are at the moment buying Pentium II systems with processors of either 233 or 266MHz speeds. When it comes to soundcards, the Event Gina is popular for an audio-only solution, with the Turtle Beach Pinnacle still selling well if you want on-board sounds as well. On the sequencer side, most people choose either *Logic Audio* or *Cubase VST*.

When I asked about their after-sales support they pointed out that a lot of effort goes into pre-sales support as well, to make sure that the customer knows all the options, and that they are happy with using the system before they make the purchase. If there are any problems afterwards, they seem very knowledgeable, and have even been known to visit a customer's premises to help sort out a problem.

Digital Village (0181 597 3585) do publish four suggested system bundles in their ads, but again these are only starting points — any combination of components can be used, depending on the customer's requirements. The most widely sold systems at the moment use Pentium II 233 and 266MHz processors, along with a 'few gigabytes' of hard drive storage, 64Mb of SDRAM, and a 17-inch monitor. Event Gina soundcards are again recommended, since they have an excellent sound, and seem to cause so few problems. Digital Village say that they recognise that PCs can be significantly cheaper than Macs, but are useful only if they work properly from day one. By supplying the complete solution, this is far easier to ensure, and backup support will then be easier as well.

They also highlighted a perennial concern for music retailers when dealing with customer problems — they are happy to answer telephone queries from anyone who has bought music software from them, but point out that they can only help with associated hardware problems if the system in question has also been purchased from them. Sounds very fair to me!

Red Submarine (01904 624266) advertise a huge range of systems and options to suit both beginner and professional, but a fairly unique feature is their 'On-Site Software Maintenance Package', included as part of the Professional Series bundle (and as an extra for their other lower-cost systems). If you run into any problems with software configuration, they can dial into your PC system using its built-in modem, and fix the problem by remote control. Since describing problems over the phone can be so difficult, this sounds like an ideal solution, but again, only if you buy a complete and known system from a single manufacturer. Apparently 90 percent of such problems are caused by customers installing games on their machines!

Millennium Music Software (0115 955 2200) have been selling PC systems for some years, and provide a free 48-hour return-to-base warranty on them all. If you really can't be without your machine for this long, you can opt for an on-site warranty, and for music professionals, this is ideal. They also mentioned other benefits of buying from a specialist — your system will arrive with all the appropriate hard drive and system tweaks already made, for optimum performance of a hard disk recording system. Another very worthwhile point is that with a wide range of soundcards and other components on offer, there is never any pressure to buy a particular product — they can remain impartial.

### **SUMMING UP**

If you want a PC system to give you loads of audio recording and playback channels, as well as multiple real-time effects, you need a powerful one. Buying from a music retailer should ensure a balanced system which will reliably do what you specify, as well as bypassing initial teething troubles and long-term support problems. Once you decide just how many channels you want, and hence the PC specification, the biggest decision will be that of soundcard. We have covered the choices in great detail already in our two-part roundup (in the February and March '98 issues), but new cards are being launched all the time. Choice of music software is very personal, but whatever you decide, make sure that you get a complete set of CD-ROMs and manuals.

I've gone on record in the past saying that I prefer to deal with local PC suppliers, for ease of support. Over the last year not only have the goalposts moved thanks to the increased interest in hard disk recording; they have also been pulled further apart with a huge range of new and competing products. It is now extremely difficult for a typical local shop to keep up with the mass of information faced by the PC musician, much of which conflicts with the more typical advice given for general office and home use.

Be guided by the PC music specialists — most of them have no axe to grind, and they are likely to stock only products that perform well, are easy to install, easy to use, and cause the minimum hassle for their support staff. I will be putting my money where my mouth is quite shortly.

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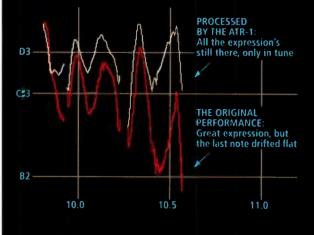
MADAME MARIE CURIE



Nothing helps your peace of mind on tour like an ATR-1 in the rack."

FRANZ KAFKA\* \*not their real names

OK let's be honest. For most of you, "Perfect Pitch in a Box" is right up there on the credibility scale with Elvis sightings and miracle three-day weightloss. Unless, of course, you happen to be one of the thousands of oudio professionals who already depend on Antares's amazing Auto-TuneTM pitch-correcting software for the Mac (and soon, PC). In fact, when we introduced it last year, Recording magazine hailed Auto-Tune as a "Holy Grail of recording."



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guirey The guitar is distorted, but not overly. Yes, there are rockist overtones, but they are never cliche-ridden. Technique, tone and timing are exemplary throughout, as is the engineering till amazing how a few well-placed licks and rhythms can immediately bring a promising but perhaps posterile keyboard composition to life.

on the beaten track Steve White is the master of Jazz. Agg Jazz and

R&B. He's used all his skill on this CD to create vintage breakbeat grit and hard-alsed technolises. 8. He's used all his skill on this Cu To create writings uneasteen synt and that of several services whose tastes run toward sonic rough trade will find it of ficult to top these aggressive. Rough and dirty all the way, down to the sloppy-in-a-hip-way pedal noise and gasping tube-style compression.

### underfire vol 1 - terminalheads

This unique collection of distorted, filtered and phat samples ranging from drum loops, funky cruch gate corner, dub fx, Pascal Banadjaoud percussion to shortwave strangeness and trippy oddness. Experimental future punk is probably the most accurate discription. There are no rules. There are no boms. There are no keys.

### underfire vol 2 terminalheads

Mighty, meaty, compressed live beats on the edge of cistortion make up the first 10 tracks, it's a producer's dream, with filtered loops, hip-hop friendly crustiness and tightly ED'd sciit loops sharing groove space with all manner of effected extremities.

### abracatabla - tavin singh

Tavin Singh's superbiparformance on this CD has arriazed just about everyone who's heard it. It features both groups and single hits from Tablas, Dugon, Lowh, Tarling, Kachi Dhol, Cowbell

holocks Gong

Tam Gungru Tambour ne Shekere and loads more



loop Soup by Megabass, Norman Cook, Coldcut, Pascal Gabriel and others, A double CD set of bonil by the best AMG dance producers All loops are tempo grouped for early sampling. This CD in this ormany samples for a standard price is an ideal starting place for anyone getting into sampling for the first time. A classic by now

### drum & bass carnage

Hot on the hees of Keith le Blanc's first serving of Fresh K led Mest comes his Drum&Bass Carnage. This is his most extreme work so far. The beats and sounds are extremely hard - there are even some that utilise effect sounds.

### amg street series



black II black

Not one but two CDs full off everything you need for soul and R&B Loads of drum loops, sax-, brass-, guitar licks and bin busting bass lines. The se you and vocoded hooks including adlibs with many different phresings and living

### freekee jack swing

BLACKBEAT decided to produce sample CDs after being disappointed by the quality of several products that he heard and by the lame sameness of many loops used by producers, remixers, jingle programmers, etc. Inspired by Jam & Lewis, Babyface, and of



### sounds good



eurotech

This is definitely high energy. A rich variety of drum loops, wild synths, heavy basses and other techno sounds. More than 540 drums & percussion loops in 120-170 byms or over and more than 1500 samples in total. All material is equally balanced between experimental and variations of straight 4 on D floor.

### on the jazz tip

A CD full of cool jazzy licks and grooves in many different tempos. In s, gultar, acoustic & electric bass, flutes, sax and drums. This CD is des add that cool feel to any modern mur

# drumtools

The only loop CD dedicated to rock and pop drum loops in probably. Everything is played live with tempo sets, inspiration grooves and individual hits so you can make drum tracks with a flow and natural feel. 4/4 straight, 4/4 shuffled, 6/8, blues, brushes and the big section of inspiration grooves.

### methods of mayhem

Methods Of Mayhem, a journey to the edge of Ugly. An organized chaor engine that takes you from the Hard-ness to the Weirdness - From Twisted Guitar Riffs and Distorted Synthloops, to Feedback Rhythms No-less Cottle Werdiness - From Invested Guitar with and Distorted Syntheopps, for Peddack in Nighth Mouthbox Beast Methods Of Mayhem is the missing link between the noisemaking pioneers of the 70's and 80's like Throbbing Gristle, Kraftwerk, DAF, Severed Heads and Suicide - and todays Sonic explorers such as Autechre, Aphex Twin, LFD, The Prodigy and The Orb

### new world order #1

Percussion & Drum Loops from all over the world. Loops you are guaranteed not to find on any other Sampling product. Loops from both Percussion Ensembles and single drums. A mixture of field recordings, studio recordings & programming to give rou the maximum flavor and variation. An Adventure in Rhythm. Some of this plainets most. popular and time-tested prooves

### new world order #2

Double CD with ethnic instrumental loops from all over the world. Loops and instruments you can't find on any other sampling product. All Safe and Sounding Good!

### sampleheads



### nyc percussionworks

ty is home for the most skilled percussion sts in the world. This double CD contain excellent performances from 7 of the best. Instruments played include congas, quinto, cabasa tambourine, shaker, bells, triangle, timbale, wood block etc. What more do you want

### ultra freakin' bass

Two whole CDs full of it. Disc One is a collection of licks, riffs and patterns in many different styles do some recorded with effect pedals like DOD envelope filter, Whammy and Boss Octaver Dos Two contains samples of five different basses. Basses used include Sadowsky 4-string, Pedulla 8-string fretless, Spector 4-string, Fender Jazz fretless and Yamaha 5-string acoustic fretless.





### the sss collection



### each



### brushed

Rock, pop and funky drum grooves all played with different kinds of brushes. Hot Rods, Blasticks, Wire and Plastic Brushes. This gives the grooves a totally unique sound with much expressiveness. The loops are particularly useful at underlay and will add drive to any programmed. rhythm track



Country samples, many pitched towards blue-grass. Loops and riffs in 4 ke nd 5 different tempos. Drums, bass (electric & acoustic), guitar (electric & acoustic) pedal steel, mandolin, banjo

### q-soul

Hiphop influenced Soul & R'n'B loops. Quality material with everything you need. Dr guitar riffs, drum and percussion hits, basses, stabs, hits, synths & Fx's

### house

Modern and progressive material for house production. House music is here to stay because its constantly evolving. The SSS house collection will help you with this work. Melody loops, Strings, lots of drum loops, synths, pads, fix's and bass.

### laidback

Unusual, cool and laidback grooves in the spirit of David Sylivan, Daniel Lanois a Plus, some ballad grooves in 70's style. Absolute inspiration. All played five

### popped vol.1

Powerful pop and rough rock drum grooves played and produced in style covering the 60's up till the 90's. Grooves with attitude and a lot of variations. Full loops, breaks, fils, separate hihat & ride loops All played live.

### roots reggae

All is played live on real instruments by reggae musicians. Great samples for ambient and dub Loops and riffs in 4 keys and 4 tempos. Drums (grooves, fills & individual hits), bass, guitar (riffs & chords), Hammond B-3 (riffs & chords), davinet, percussion.

### best service wav file cd's



### pc wave file material

### rave'n dance elements for pc

The rave construction kit consisting of stonking drum/percussion loops bass lines melodic chords, house pianos and synth lines. Bpm's from 120 to 190. The arranger program Circle Elements is included so you can get started straight away

### jam box elements for pc

All the house, jungle & trip hop elements you need for re-mix work.
The material is from the personal library of producer, DJ and remix-workaholic Mousse T. An excellent library of vocals, adlibs, shouts, bass-, guitar-, brass & sax licks plus effects, breaks, pianos, rhodes etc

### trance 'n ambient elements

This construction kit contain electronic sounds for Trance, Ambient, Electronic and New Age. The audio files are recorded from pro synths and effect processors, all arranged in tempo groups 110, 120, 130 and 140. Loads of pads, filter sweeps, arpeggios, atmos and electronic fx's

### voodoo elements

A comprehensive archive of fascinating drum and percussion loops, ceremonial hants and shouts and many more sounds from the mystical realms of another culture. The complete material has been recorded in africa especially for this CD and is bound to add spice to your music.

### drum 'n bass elements

Interested in that ground breaking new sound? Drum'n'Bass Elements will get you going instantly. All material is arranged in different tempo groups giving easy access to tricky drum loops, intense subbasses, pads & single sounds.

### morbid elements

great CD with more than 2000 sounds developed by the Morbid team. On his CD you also find an amazing collection of tracker programs and sound files to be used with this popular PC sound format. Create amazing mod files, use the wavfiles and become your own music producer today

### Soundcube

### everything you need in one set

### soundcube

A comprehensive 10 disk box set library containing the following CDs: Dance Instruments (Drums/percussion, sax, piano, bass etc.). Orchestra (well performed real orchestra stuff), Voice Spectral (Loads of vocals and robot voices), World FX 1 (Sound Fx from doors to sports stadiums), World FX2 (Sound Fx from business machines to trains), World FX (Sound Fx from business machines to trains), World FX (Sound Fx from business machines to trains), World FX (Sound Fx from animals to thunder), Crash Boom Zap! (Laserguns & explosions), Soundtracks (Musical phrases for multimedia production), Ethnic Journey (Exotic rhythms and voice from Asia and other cool places), Rave X (Breakbeats & Drumloops, synth & basses all between 120-200 bpm).

SoundCube is available in three different formats. Audio, Mac/PC and Akai.

### software & hardware

### waveit gold

Wavelt Gold turn the AWE 32 or 64 into a powerful sampler/synth with more than a thousand different patches. The high quality samples ensure that your AWE will sound as good as equipment costing 10 times more. Over 3000 samples are included ranging from 808/909 drum sounds, analogue synths to excellent strings and acoustic instruments.

And if that isn't enough, the included Wien soundfont editing software allow you to easily create your own samples complete with loop points and key mapping Even that is not all. You also get a great sequencer so you can

start working on your compositions straight awayine, shaker, bells, triangle timbale, wood block etc. What more do you want

### micro waveit piano

Great sounding pianos have always been the key element in all styles of music. Micro Wavet Phano is an excellent collection of piano sounds for your AWE sound card. Some of the pianos contains more than 26 layers, each programmed with different parameter settings to give you the best sounding

### dance ejay

Create your own club tunes in seconds. Dance elay is an award winning program with an 8 track recording studio and over 1350 original/dance samples. This best elling software has truly made the creation of remixes, fun. All loops and sounds have been professionally edited and produced at 140.

BPM ensuring that every sample fits together perfectly

### expand your dance ejay collection

Three optional sampekits are available if you already have Dance eJay. Choo between Rap.&Voices, Drums&Synths and Space Sounds. All 3 volumes are fully compatiple with the material included with the original program and have been recorded at 140 BPM.

### sound engine plus

Everything you need to get started with computer music. Steinberg Cubasis Audio (midi sequencer w/4trk audio), Sound Lab Fun Tool (audio editor with loads of effects), and 600 PC wave files for instant gratification. Just add a little talent.

### media dJ

each

This cool software program is for fast real-time song construction. Eight tracks audio recording with stunning effects such as filter sweeps, pitch, scratch and automatic time stretching. Withe more than 2000 quality audio files included, this package is an excellent starting point for the creative DJ.

### samplezone pcmix10

The multimedia mixer solution include 10 channel audio mixer with AKC incroprione and sample CD. The low noise mixer feature 2 switchable serims: inputs wifack socket, 4 mono phone inputs and 2 stereor mini jack inputs. Volume and panning is available for each channel and two stereo outputs (1 minijack and 1 stereo phono). Smotson

### soundcard 6 ft midilead

### teach me piano

A full course of piano lessons with more than 150 lessons and 100 exercises. The interactive scoring system evaluates your performance so you can see how you're progressing. Teach Me Piano also includes a reference guide for understanding musical notation, a songbook/score printer with 75 songs, and a Performance screen for playing the songs you've learned with the horizontal recommendation. - with background accompaniment

on and colourful illustrations, makes learning the P and easy Video material, anin and fun Was £79.95

### discovering music

Explore the history of music, music theory and musical concepts in an exciting interactive environment with more than 60 high-quality symphonic recordings and 50 video clips Includes a Glossary of musical terms and a survey of orchestral instruments. You can also write and print your own scores with MusicWrite plus

record both Was £79.95

# discovering keyboards

A professional teacher introduces basic music notation, theory and playing technique in a series of video clips and exercises. The interactive training system provides analysis and feedback in each lesson. The Keyboard tour lets you explore the history of keyboard instruments in text, photographs, video and sound. From early spinets, virginals, hapsichords to organs, pianos and synths. Also included is a songbook with traditional material which can be printed, a guide to MIDI & synthesis and a Music Quiz. Was £79.95



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There's a new star in the current galaxy of groovy dance-oriented synths, but does it outshine the rest? DEREK JOHNSON and DEBBIE POYSER investigate Quasimidi's most comprehensive dance music creation tool yet.

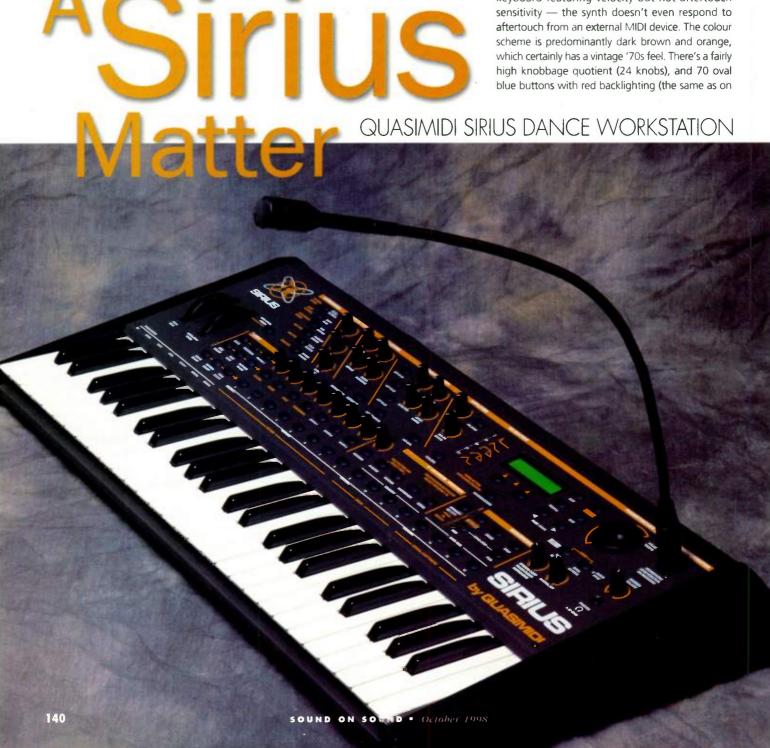
mong the hotter products produced by both Quasimidi and Roland in recent years have been silver all-in-one dance machines incorporating drum machines, sequencers and synth engines. Neither Quasimidi's Rave-O-Lution 309 nor Roland's MC505 (reviewed in the May '97 and April '98 issues of SOS respectively) featured a proper keyboard, but both manufacturers have obviously decided that there is room in the market for similar devices which do - hence we now have Roland's JX305, reviewed on page 204 of this issue, and Quasimidi's Sirius.

The Sirius, however, is a fair bit more than a 309 with a keyboard. For a start, the 309 had just one monophonic bass/lead synth, while the Sirius has three polyphonic synths which aren't just restricted to bass or lead duties. The new instrument pretty obviously aims to be a total dance workstation,

incorporating those three synths, a 7-track sequencer, an arpeggiator, and two effects processors. Maximum polyphony is 28 notes, and the Sirius is 7-part multitimbral. The gooseneck mic sticking up from the front panel is not just for decoration: the Sirius also features an 11-band vocoder and, to further reinforce the dance-machine image, has a built-in 'beat-recognition' system designed to detect the tempo of rhythmic audio input and regulate the Sirius' sequencer to match. If it works, this could be useful in the studio as well as on stage, since while the Sirius' sequencer is being sync'ed to a CD it can itself provide master MIDI clock for any connected MIDI sequencers and drum machines — making it possible for a whole studio to be sync'ed to a CD.

### **RETRO STYLING**

The Sirius is about the size of Korg's old Mono/Poly analogue synth, and has a similar look, with a deep front panel, black end-cheeks and a short (49-note) keyboard featuring velocity but not aftertouch sensitivity — the synth doesn't even respond to aftertouch from an external MIDI device. The colour scheme is predominantly dark brown and orange,



the 309), a pitch-bend wheel, mod wheel and alpha dial complete the controller lineup. The front panel is busy, and confusing at first sight, though thankfully there are few dual-function controls. However, a dedicated control is not provided for every parameter — while the knobs provide a moderate degree of editing power, there's a menu system, using the small backlit display, which gives access to all the synth's parameters.

At the back are the usual MIDI In, Out and Thru, a pair of audio outputs, a footswitch socket, and two inputs for the vocoder or beat-recognition system.

### THE SYNTH INSIDE

The synth controls, at the top left of the panel, access a synthesis engine similar in feel to that of the Rave-O-Lution, and of quite sufficient complexity for most people. The Sirius' 7-part multitimbrality includes three polyphonic synth and four drum parts. Each synth voice, according to the manual, has two 'oscillators', though when you edit a voice there appears to be no way to access a second oscillator. The only evidence that there are two comes when detuning them: the effect is genuinely that of one oscillator being detuned against the other, but the fact that they can't be edited separately precludes such dual-oscillator tricks as oscillator sync and cross-modulation.

125 oscillator 'Macros' (combinations of two waveforms, some identical and some different) are available, which make use of a selection of traditional analogue-style stalwarts such as sine, pulse, sawtooth and triangle, plus some TB303, synth-choir, synth-string and bass waveforms. After an oscillator Macro has been chosen, it can pass through a traditional digital emulation of an analogue synth, as follows:

- Octave setting: this is something like the facility found on certain analogue synths and allows you to set a sound's octave range. Quasimidi calibrate it in feet, like drawbars on an organ.
- Detune: up to 24 semitones of detuning is possible, in one-cent steps for the first semitone, then in semitones thereafter.
- Glide: sets portamento time.
- Monophon on/off: sets whether the sound will play monophonically or polyphonically, so you can emulate a monosynth if you like.
- Pitch EG (Envelope Generator): a very basic envelope with attack and decay and a positive or negative 'mod amount' which sets how much pitch modulation is applied to the sound.
- VCF (Voltage Controlled Filter) parameters: Drive (overloads the filter stage; recommended for "acid basslines and aggressive solo sounds". In practice it seems to give sounds more edge and body); VCF Type (low-pass 24dB or 12dB, and high-pass 12dB); VCF Cutoff and Resonance; Keyboard Tracking (controls filter cutoff frequency according to where you play on the keyboard — the higher up the keyboard, the brighter the sound); VCF Dynamic (determines how the filter responds to keyboard velocity); VCF Envelope Modulation (sets by how much the EG affects the filter); VCF EG (offering two ways of setting a filter envelope: define attack, decay, sustain and release via the parameter access system, or choose one of 128 preset filter envelope types

- with the front-panel VCF EG Macro knob).
- VCA (Voltage Controlled Amplifier) parameters: Level; VCA Dynamic (controls a sound's volume with keyboard velocity — essentially a switch for turning velocity sensitivity on or off for a sound); VCA EG (sets amplitude envelope: as with the VCF EG, use the display, or choose from 128 preset types with the VCA EG Macro knob).
- LFO (Low Frequency Oscillator) parameters: LFO
  Waveform (six choices); LFO Rate (choose a value
  or sync the LFO to MIDI clock); LFO Depth; LFO
  Amount (defines how much LFO modulation is
  applied to the oscillator, VCF and/or VCA).

As you can see, there's more than enough soundmangling power in the detailed editing levels of the Sirius. However, if you don't want to get your hands quite that dirty, quick and easy editing is available from the front panel. The 13 knobs dedicated to the synth section are divided into four areas:

- Modulator (or LFO), where LFO Depth and Rate can be adjusted, and an LFO 'Macro' — a preset LFO routing — selected.
- Oscillator, where a sound's basic waveform can be chosen, Glide (portamento) time and Detune amount can be set, Filter Overdrive applied, and a sound transposed by a maximum two octaves down or one octave up.
- Resonance Filter (VCF), which provides quick access to the three filter types, cutoff frequency, resonance, keyboard tracking and VCF Dynamic. This section also offers a VCF EG Macro knob and one labelled Envelope Mod, which actually sets envelope depth.
- Amplifier (VCA): this section has VCA EG Macro and VCA Level knobs, a VCA Dynamic switch, and a Release switch, which automatically lengthens an envelope by a fixed amount — so if you have a short sound selected, you can instantly give it a long decay.

A lot could be done to a sound using just these knobs, and naturally they can be used to vary a sound dynamically while it's playing. Their movements can also be recorded into the Sirius' sequencer, as well as transmitting over MIDI.

User-programmed sounds can be named with up to eight characters (which wasn't an option with the 309) and saved in one of 96 synth user memory locations. The 288 presets show off the possibilities. Incidentally, the presets are arranged in a way that's very specific to Quasimidi: synth sounds are in three banks (A, B and C), and within each bank are six broad categories (Bass, Dirty Bass, Pad, Plucked, Solo, and Effect), with 16 sounds in each category. These categories each have a switch for easy selection, and you swap between banks with successive button presses. For a bass preset you'd press the Bass button, to access Bank A basses; press again for Bank B basses; one more time and you've arrived at the Bank C basses; four presses access the User bank. Once you're in the right category and Bank, sounds are selected using the 16 numbered keys above the keyboard.

The 96 synth user memories will probably fill up pretty quickly, at which point you'll want to save them externally. The Sirius will certainly oblige, allowing you to dump Sound, Song or All data via MIDI. One useful option is the Momentum Data



### THE FULL TREATMENT: SIRIUS EFFECTS

Effects are basic: one of the Sirius' processors offers reverbs (Room, Metallic, Chamber, Hall, Cathedral, Plate, Delay, Pan Delay), while the other provides modulation effects (Chorus, Slow Chorus, Fast Chorus, Super Chorus, Feedback Chorus, Flanger, Short Delay, Pan Delay). Pan Delay appears twice, for some reason... Note that effects are global: if a reverb and a chorus are set up, for example, all sounds and Patterns, and the current Song, will be processed with them, though send levels for each track in a Pattern allow you to vary effect amounts. Luckily, effects settings are saved with each Song.

The Rave-O-Lution had similar effects capabilities to the Sirius, but also offered a 2-band parametric EQ. This is missing on the Sirius, though the 309's 'Overblast' bass-boost is present.

### PATCH TEST

The Sirius isn't what you'd call a general-purpose synth — you certainly wouldn't buy one for orchestral music. It has a huge dance bias (all the preset Patterns and many of the preset sounds) and works fabulously well for that purpose, though you could conceivably use it for any style of synth/hi-tech music.

While the factory presets are generally very good, there's occasionally a sameness about groups of presets. The characteristic Sirius 'sound' is analogue, aggressive and edgy, though there are some more subtle, smooth pads on board. Drum and percussion timbres are dirty, electronic and analogue in feel, with a collection of more natural drum voices available too. Some might say 96 each of bass drums, snares and hi-hats is overdoing it a bit, though. On the whole, the sounds are perfectly optimised for their target market - think Prodigy, Sash, Kraftwerk, euro-techno, jungle... The same goes for the preset Patterns, though it's hard to discuss favourites, since none of them are named. Some of simulations of recent dance hits are rather too close for comfort, as you'll notice instantly if you hear them. And if you make too much use of preset patterns, you won't be setting many new trends, just following them.

The Randomise button on the front panel randomly generates a new sound (or drum kit), complete with randomly stupid name. Personal faves include: Nasdobin, Gatfokis, Daxwomix, Calroxii, Nafoonia and Zagbonio. If you were Terry Pratchett you could buy a Sirius just to generate new character names.

Dump, which saves a snapshot of all the Sirius' currently-set parameters to an external device, even if they haven't been stored yet.

### **DRUM MAJOR**

Quasimidi's Rave-O-Lution 309 was arguably even more drum machine than it was synth, presenting one monophonic synth part alongside a comprehensive 4-part drum section. The arrangement of the 309's drum section is largely carried over to the Sirius. The four parts are Bass drum, Snare, Hi-Hat, and Percussion, although the last is a set of 12 percussion voices; these can all sound at the same time but only occupy a single MIDI channel. Each drum part has a collection of basic waveforms, plus 96 preset sounds and 96 user memories. Arguably this is overkill, especially on the user memory front. It would be quite possible to run out of synth sound memories while having some of the many drum sound memories unused, yet you can't save synth sounds in drum slots.

Each drum sound can be treated with virtually the same parameters as the synth waveforms, so drum sounds don't even have to sound like drum sounds when they're finished with. You've got to start with a drum waveform, obviously, but after that the sky's the limit. Bear in mind that a Percussion sound set behaves as one drum sound, so if you alter filter cutoff for the Percussion part, for example, this affects all 12 Percussion sounds in the set.

And speaking of Percussion, there's one small problem... A Percussion sound has as its source a Percussion Set (the assignment of 12 Percussion waveforms to 12 keys of the keyboard, plus level, pan, tuning and effects send parameters). There are 20 Percussion Sets on board, and though they're already filled with waveforms, they can all be edited. However, when you make an edit the Sirius automatically saves it to that Set, overwriting the original. So once you edit a Percussion Set, any Percussion voice using that Set will no longer sound correctly. This would also affect sequencer Patterns which use that voice.

### **MAKING TRACKS**

The Sirius' 7-track sequencer has dedicated transport controls and also uses the numbered buttons above the keyboard. It's fixed in 4/4 time (so no prizes for guessing what kind of music Quasimidi think you'll be producing with it), has a tempo range of 51-250bpm, offers real- and step-time recording, and is pattern-based. Patterns have up to seven 'Motifs' (one on each track of the sequencer) which can be

The rear panel showing connections to the vocoder/beat-recognition system (on the left).



be 1-8 bars long. If a bass drum Motif is only a bar long and a synth Motif plays for eight bars, the drum Motif automatically loops eight times. Patterns are chained to make Songs, with up to 100 Pattern steps in a Song, though steps can be repeated without affecting this limit. The overall restriction on Song length, however, is 600 bars, and the Sirius has memories for 16 Songs.

Real-time programming operates as you'd expect: play and the sequencer records the data, after which you can comprehensively quantise and/or apply 'swing', courtesy of the Groove parameter. Programming in step time involves scrolling through an event list in the display, inputting the desired note on each step. While the event list defaults to 16th-note resolution (that's 16 steps per 4/4 bar), a choice of 8th, 8th triplet, 16th-note triplet or 32nd-note resolution is available. You can't enter chords in step-time mode, and velocity and gate-time information are entered separately, using front-panel buttons, despite the fact that the Sirius' keyboard is velocity sensitive.

Drum sequence programming is via the numbered 1-16 buttons: these behave as a drum grid, as with the TR909 (and 309), with each button corresponding to a 16th note in a 4/4 bar (though you have the same resolution options as step-time recording). To record a complete rhythm part you'd make several passes, laying down a different drum track each time.

When it comes to editing a Pattern, the Sirius has a couple of shortcomings: the first is that there's no proper edit mode. If a real-time recording has a mistake in it, the best you can do is go into step-record mode and change the offending event (and this possibility isn't even mentioned in the manual). There's no 'microscope' event-edit mode such as you'd find on a Roland Microcomposer. An additional complication is that it's not possible to edit chords in step mode. So if you were recording in real time and played a chord wrong, you'd just have to play it again, and since there's no punch-in facility

### **BRIEF SPEC**

- Synthesis System: DTE Synthesis.
- Polyphony: 28-note.
- Multitimbrality: 7-part.
- Preset Sounds: 672 ROM; 480 User (96 each for synth, bass drum, snare, hi-hat and percussion).
- Sequencer: 7-track; 142 ROM Patterns, 100 User Patterns: 16 Songs.
- Arpeggiator: 16 preset Programs, nine of which can be overwritten with user patterns; Chord Trigger and Gater features.
- Effects: 2 effects processors; Overblast bass boost.
- Keyboard: 4-octave, velocity-sensitive, with pitch-bend and mod wheels.
- Display: 2-line x 16-character, backlit.
- Vocoder: 11-band, with 16 editable presets and supplied gooseneck mic.
- · Beat-recognition system.
- Connections: MIDI In, Out & Thru; L/R stereo audio outs on quarter-inch jacks; 2 input jacks for vocoder/beat recognition system; quarter-inch footswitch jack; front-panel mic and headphone sockets; external PSU socket.



# QUASIMIDI SIRIUS

you'd have to play the whole thing again.

As you'd expect, there are preset sequencer Patterns — 142 of them — and Motifs from within these can be used in new compositions. A randomise function is also available: the Sirius can pick a Motif from any of its preset Patterns for

Master Track off, which is a shame.

Finally, note that the sequencer can be the sync master or slave in a more complex MIDI setup, and that it responds to MIDI Song Position Pointers.



The arpeggiator offers seven preset monophonic arpeggio types: Up, Down, Up/Down, Random, Assign (arpeggiates the notes in the order you play them), Reverse Assign, and Assign/Reverse Assign. There are nine extra arpeggiator patterns that can be overwritten with your own. User patterns, which can incorporate chords, can be up to 32 steps long.

Additional sophistication is added with the Chord Trigger and Gater facilities. The Chord Trigger repeats whatever chord you've just played, in a rhythm triggered by a sequencer part of your choice; you could trigger the chord with the bass drum part of a sequencer Pattern, for example. The Gater function is similar, but cuts off the sustain of the sound, giving a

rhythmic gated effect such as you can achieve conventionally by triggering the opening and closing of a noise gate with a rhythmic pulse.

Part of the fun of an old analogue synth is holding an arpeggio and transposing it in real time, and this is possible with the Sirius. The trick is to press and hold a connected sustain pedal: while an arpeggio is active this allows it to be transposed up or down over two octaves from the keyboard. Arpeggios can be recorded into the sequencer for instant track creation, and the arpeggiator can also be used at the same time as a sequence Pattern is playing, though this will have implications for polyphony. Finally, a Hold feature repeats the arpeggio without the need to keep your fingers on the keys.

### HIT THAT PERFECT BEAT?

Quasimidi state that any audio you want to sync the Sirius to, using its beat recognition system, should be rhythmic, with an easily locatable bass drum pulse. External audio is fed into the Sirius via either of the two vocoder inputs, and you have to tap along in time for a bar, using the Tap Tempo button, after which it needs three bars to settle on a tempo. In practice, however, the system seemed a bit flaky: at one point it had trouble sync'ing to a simple bass drum pulse from a drum machine, and it certainly wasn't happy tracking tempo changes. With rhythmic material from a CD it fared rather better, but you have to be very exact with your tempotapping: the more on-the-nail you are, the better the results. The task isn't made easier by the fact that the Tap Tempo button is small and in an awkward, position just behind two prominent knobs and to the left of the headphone socket, which makes it harder to hit squarely. You have to give it a good confident bashing, too, and even when we thought we were doing everything right the display sometimes showed



each part of a new Pattern. This is a bit of a cheat, but it could be interesting to use live, and if you like the result you can save it to a user Pattern. Should you actually want to use a preset Pattern in a Song, a quirk of the operating system means that you'll need to copy it to a user memory first.

The Mixer section is very handy when a Pattern is being recorded: each sequencer track has its own knob, for quick, intuitive adjustment of level, pan and effects sends — select which will be adjusted using the three buttons to the left of the Mixer. Movements of the Mixer knobs can be recorded into a Pattern, and tracks can be muted and unmuted using the buttons below the knobs. When Patterns are being chained into a Song, track mute settings can be different for each step, so the maximum sonic variety can be squeezed out of even a small number of Patterns.

One useful facility has failed to make it from the 309 to the Sirius: the Master Track. With the 309, front-panel knob tweaks for an entire Song were recorded into a sequencer Master Track, so you could record a tweaking 'performance' for a whole Song. As the Sirius can record knob movements into Patterns, Quasimidi have left the

### DIFFICULT TO EXPLAIN

It's hard to tell what synthesis system the Sirius uses, because Quasimidi don't say, preferring not to "confront musicians with too much technology". What we can tell you is that it emoloys the traditional subtractive method, as found on analogue synths, and that there are definitely some sampies in there. However, the white noise 'waveform' doesn't change in pitch across the keyboard, which would suggest that it's either produced by a real noise generator or modelled in some way. So what do Quasimidi call all this? DTE Synthesis, because it's "Difficult to Explain"!

### PERFORMING ARTS

The Sirius has several features especially suited to performance use:

- Favourite Patterns could be used to create new pieces on the fly, as you can store eight of the 100 user Patterns on the first eight of the numbered keys for each Song.
- Breaks are similar to Favourite Patterns, though there are only

four in a set, stored on keys 9-12. A Break can be triggered while a sequencer Pattern is playing and it will replace the currently playing Pattern for a pre-defined duration (up to eight bars).

- Special Loop tracks are similar to Breaks, except that in this case single Motifs, from any of the user and the first 100 preset Patterns, can be assigned to keys 13-16, along with your choice of sound. A Loop Track
- replaces one of the current Pattern's Motifs.
- Mute Tracks lets you mute sequencer tracks from the keyboard (using white notes C-E), as an alternative to the Mixer section buttons— possibly more convenient live.
- Transpose Tracks allows you to transpose the three synth parts using the second octave of the keyboard (C-B), by up five or down six semitones.

tempos which were wildly out.

In short, you can make this facility work properly, but it needs practice and patience.

It should be good enough for DJs segueing records with their own material, but if the beat recognition system is important to you, try to check it out before buying.

### **VOX CLEVER**

One of the 309's optional expansions adds two audio inputs, so external sound sources can be treated by its synth engine. The Sirius doesn't have this facility — at least, not exactly. Instead, Quasimidi have provided a vocoder with a 9-band filter bank, plus high-pass and low-pass filter, complete with a gooseneck microphone. Vocoders were discussed in the January 1994 issue of SOS (and if you want to know the theory, dig it out), but to recap briefly and simply, they enable the character of one signal (the modulator) to be imposed on another (the carrier). The more filters the vocoder has, the more accurately it can analyse the frequency content of the modulator signal — super-duper vocoders of old had up to 22 filters.

The Sirius' vocoder can take input from the mic as the modulator signal; or line-level audio as either carrier or modulator. In addition, two onboard sounds can interact with each other as modulator and carrier, or the same sound can be both modulator and carrier. In fact, it's possible to select up to all seven sequencer parts as modulator or carrier, or both at the same time. This effect is quite fascinating and would take you a long time to achieve with more conventional means, if you could at all.

Of course, the vocoder effect that everyone is familiar with is the 'Mr Blue Sky' effect, employed more recently and credibly by French popsters Daft Punk and Air. With some tweakage (find the right basic sound and set up the level of the mic carefully), you can replicate this effect. However, since you can do so many other fun things with this vocoder, why restrict yourself?

The vocoder is editable to a certain extent: Quasimidi provide 16 vocoder programs, badly explained in the manual: you can tweak the level and pan position of each of the filter bands, their low- and high-pass filter levels, and a global effects send level for each program. Any edits can be saved with the current Song, but the programs themselves remain unchanged. One thing that contributes greatly to the vocoder's ease of use is the fact that the seven Mixer knobs, plus the Vocoder volume control, can tweak the levels of filter bands 2-9, so you can mess with the sound in a totally non-theoretical and hands-on way.

One last thing to mention is that the mic can still be used when the vocoder is switched off: the mic's output is mixed with

the Sirius' stereo output, and can even be treated with the effects — good for DJs and live performers in general.

### CONCLUSION

The Sirius looks, feels and sounds the part. Its physical resemblance to an analogue monosynth can only stand it in good stead for the dance market, whose fondness for compact, easily portable sound machines has been demonstrated by Korg's Prophecy lead synth, Roland's MC303 and 505, and Quasimidi's own Rave-O-Lution 309. On the sound front, while the preset palette is not especially varied (with the exception of the drum sounds), it is very well targeted - and users prepared to program can introduce more sonic variation themselves. The provision of 128 filter and amplifier EG Macro presets is clever, making programming easier for the novice. Presets of this kind have been used on the odd synth before (Yamaha's SY85 has something similar), but probably never in these kind of numbers. The only real fly in the ointment when it comes to programming is the limited number of onboard synth sound memories compared to the number of drum sound slots.

In use, after you're familiar with the layout and multiplicity of buttons, the Sirius is intuitive, as is its sequencer. However, the latter is not a match in sophistication for the one available on (for example) the Roland JX305, and the fact that it's fixed in 4/4 time could also be seen as a limitation. The dedicated Mixer section, however, is worth its weight in gold knobs.

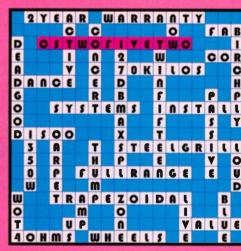
Especially commendable is the way in which, when you're doing one thing — editing a sound, say — you can still do another, such as tweak the level or pan position of the sequencer part the sound you're editing is assigned to. This makes the Sirius feel like a very hands-on instrument. When you add in the large amount of dedicated knob control. trendy features such as the vocoder and arpeggiator, and nice little touches like the patch randomise function (surely destined to be popular) it's not hard to work out that Quasimidi are onto a winner. At £799, it should positively fly off the shelves, and could be the company's most successful product to 305



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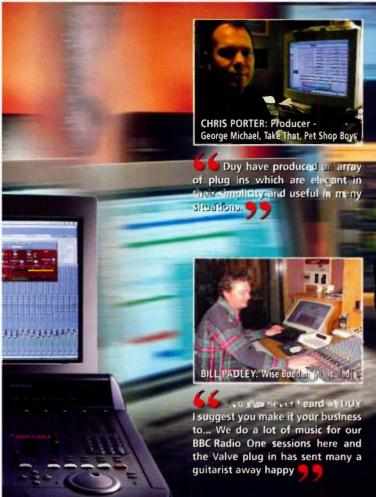
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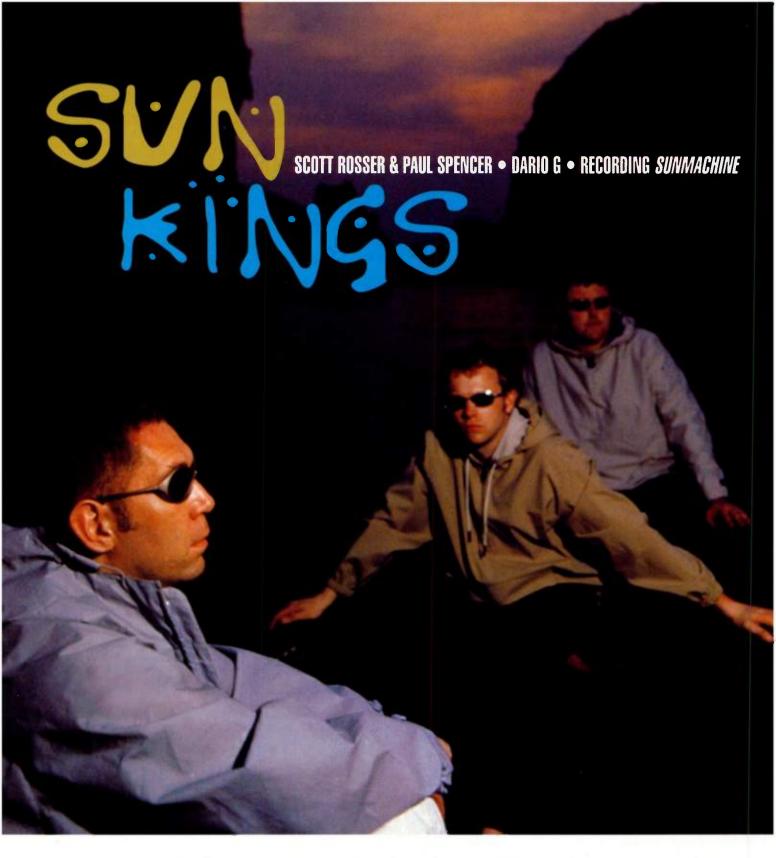
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It's the dream of many an SOS reader to have a multimillion-selling worldwide hit with a track recorded in your bedroom — but as Crewe-based Dario G found out, it can create more problems than it solves. MATT BELL finds out how the group came through the turbulent waters of success to produce a fine debut album.

here ain't no business like the music business. For every tape-op unexpectedly elevated to the status of producer while their boss is stuck on the North Circular, there lie the broken dreams of a thousand eternal teaboys, who once had the unshakeable belief that they, too, were destined to make it big. As everyone knows, talent is but a part of success stories in all realms of the biz — luck also plays a major role.

Paul Spencer, Scott Rosser and Stephen Spencer of Crewe-based dance trio Dario G had their fair share of such good fortune last year, when their debut single 'Sunchyme' became the unofficial anthem to the Summer of '97. An infernally catchy dance track

recorded in Scott's bedroom and propelled by a quasiethnic chant sampled from The Dream Academy's 1987 hit 'Life In A Northern Town', 'Sunchyme' went on to sell over 1.5 million copies worldwide, taking everyone by surprise, not least its composers, who had hoped for modest UK and Mediterranean success at best. Less than a year later, they released a very different follow-up single 'Carnaval De Paris', designed to tie in with the World Cup, and watched it sail into the UK Top 10 and on to TV screens everywhere as the official theme tune of world cup coverage in several EU countries. A quick comparison of the two singles tells you much about what Dario G have been up to since 'Sunchyme' fell off the charts last November; one was the output of a group running a few bits of MIDI gear, a couple of samplers and an Atari STe with what they freely admit was a 'dodgy' copy of Cubase. In Crewe. The other is the handiwork of a flock of exotic session musicians (ranging from a tuba player to a steel band) with some serious production on a punchy MIDI and sample-based backing track - and the whole shebang was recorded in the considerably swankier surroundings of London's Lansdowne Studios. Oh, and yes — they've got themselves a proper version of Cubase now.

So far, so good, you might think; the lads done all right. But if the learning curve from a bedroom in Crewe to the control room at Lansdowne seems a tad vertiginous to you, you wouldn't be alone. Witness Scott Rosser's feelings as he looks back from the group's rented studio premises in Crewe on the 'Carnaval De Paris' sessions, as well as those held for Dario G's debut album SunMachine, which was eventually released in June this year: "When it finally started to come together, it felt great, because we had really thought it wouldn't at one point."

# THE SUNMACHINE IS COMING DOWN...

As the successful people in the music business are so fond of telling the less successful ones, "You're only as good as your last record". Fortunately for Dario G, SunMachine is superlative pop music, ranging from the furious clangings and batterings of the Brazilian battacuda drumming on 'Carnaval De Paris' to the tastefully restrained mandolins of the dreamy 'Voices' via the high-octane house of the title track and latest single, which features a sampled vocal from ol' blue-and-green eyes himself, David Bowie. Certainly, SunMachine is a dance album, but it's one that throbs almost as frequently to the pulse of an ethnic polyrhythm as it does to the metronomic thud of the 909 kick. Clearly, Dario G are fond of a challenge or maybe they just like making life hard for themselves. Certainly, they refused in SunMachine to make the kind of album everyone, including their label Warner Brothers, would have expected on the basis of 'Sunchyme', Paul Spencer: "Record companies like to cash in on a big hit; they think 'OK, these guys can probably get another sample together quickly and churn out another record that sounds like the first one'. Warners did that with us too, at first, but we didn't want to do lots of little soundalike follow-ups; we have got more depth than that. Once you're stuck doing those, you get the problem of how you'll ever follow

it up with something different. You have to make time to address that problem, you have to fight back when the record company say — like they did to us — 'We need another single, we need another single'. The truth is, they don't, really. And we came through with a quality album because of that extra time off."

# FROM THE CLASS OF '89 TO 'SUNCHYME'

Both classically trained pianists, Scott and Paul met at Salford College, Manchester, in 1989, where they were both attending an unequivocally titled 'Pop Music and Recording' course. After two years spent collaborating musically and honing their production skills in the college's recording studio, they relocated to Paul's native Crewe, Scott moving up from his home in South Wales so that they could continue working together. During the early '90s both Scott and Paul put together bedroom studios, and eventually combined the two facilities in Scott's bedroom for ease of use. By early 1997, they had formed a creative trio with Stephen Spencer, a former record distribution company employee (and completely unrelated to Paul, confusingly). It was Stephen who was later to prove instrumental in getting 'Sunchyme' to a wider audience.

Paul takes up the story of how 'Sunchyme' came about. "A few years before, I had been going through some sounds on a synth, checking them out, and we found a really good steel drum. We thought we'd love to use one on a track, but we just forgot about it..." Until Spring 1997, that is. Scott: "We were all watching VH1, the music channel, when 'Life In A Northern Town' came on, and we all remembered it. When it got to the chorus, we all said 'oh, that's a great chant, isn't it?' But the vocalist sings over it in the early choruses, so we could never have sampled it. However, at the end of the song, you get the whole chant on its own. We just looked at each other, and said 'let's get down to HMV!' We ordered the album, sampled the chant, and started building the track around it in Scott's bedroom." (see the box on page 154 for more on how 'Sunchyme' was put together in the studio).

This ultimately led to the naming of the group. Convinced that 'Sunchyme' had what it would take to be a massive club hit in Ibiza that summer, Paul, Stephen and Scott chose their group name to sound 'vaguely Mediterranean', inspired by the highly successful Italian manager of Crewe Alexandria Football Club, one Dario Gradi. Scott: "It was totally the opposite way around to how you'd expect an album to happen normally; first there was a song, then the name of the song, then the name of the band, then, finally, the album."

# **CLEARED FOR TAKEOFF**

Many musicians baulk at the prospect of legally clearing an audio sample for re-use, but Paul and Scott were adamant that they should settle all legal matters before releasing the track either to DJs or commercially. Paul: "We didn't want to get into a situation like a lot of people, who release a track with a dodgy sample on it, and then get really done over legally later..."

Pressing up just three copies of 'Sunchyme', Dario G sent two to the original writers of 'Life In A Northern Town', The Dream Academy's Nick Laird-Clowes and Gilbert Gabriel. "They should have re-released



# DARIO G • RECORDING SUNMACHINE

▶ the original, really", laughs Paul, "but then they made tons on the publishing, so I suppose they didn't need to... We got a verbal clearance to use it, but not before the record company had tried to pass it off as a remix of 'Life In A Northern Town'. It's nothing like a remix! We just used one line out of the original."

"And we've turned it into a really happy track!" adds Scott, "the original is pretty dark..."

The legal manoeuvres continued in protracted fashion for several months. Meanwhile, Stephen handed the third copy of the track to DJ David Dunne at KISS 102 Manchester, who he knew from his distribution days. Scott: "Stephen has worked selling records into shops, so he usually knows what they want. He has an element that we, as musicians, don't always have. He's got a very good ear, and he's a sounding board. He knows what people like."

David Dunne, it transpired, definitely liked 'Sunchyme'. "David was building it up, saying 'this is the big Ibiza hit, the one for the summer'." remembers Paul.

"At the end of the two weeks of KISS having it, Radio 1 were ringing them up, saying 'What's this? We want it on our playlist'." continues Scott. "And then all the record companies moved in" interjects Paul. "Pete Tong wanted it for FFRR, Deconstruction and Sony were in there... To hear that all those companies were after our track was great, but I do look back on that differently now, because a lot of labels are there with their chequebooks open for one successful record.

"In the end, we struck a deal with Warners for an album. We went with them mainly because of the sample clearance. The sample was from a Warners record, you see...'

Scott: "We didn't have much choice in the end. It came down to the sample clearance, really. Basically, if that track was going to come out, it would have had to have been on Warners!"

"And in the end, Warners have done a great job" says Paul. "Some of the labels we were talking to are big in the UK, but not so big outside it. Warners, of course, are huge all across the world, and things get sorted out for you that you wouldn't have thought of."

Scott: "You don't think about the rest of the world at first. But somebody rang here one day and said 'Oh, you're number 3 in Germany, by the way'. We thought 'Well, who sorted that out?"

### **ALBUM BLUES**

As soon as the contract with Warners was signed, in late July 1997, pressure began to mount for Dario G to produce an album. Scott: "They got together a plan for one, to be called Super Dario Land, and for three or four weeks, we thought we'd go for it as well; we actually started work on it on the day after the commercial release of 'Sunchyme' went into the charts, in mid-September. The original plan

was to get it finished by the end of October, and it would have had seven tracks; an hour's worth of music, we thought. We would have done it all in Crewe, like 'Sunchyme', and we would have had to rush it. But the success of 'Sunchyme' abroad changed all that."

"We found out in November that we'd sold 1.3 million copies of 'Sunchyme'", explains Paul, "so we needed a quality album for America and Japan to get it released over there."

"Some of the more minor territories in Europe don't have a singles market, so you don't get a record released in those places at all unless you have an album," elucidates Scott. "Anyway, the level of success with 'Sunchyme' abroad made us stop and consider what we were doing."

Furthermore, there was the question of the 'Carnaval De Paris' track, which the group had written by then. Try as they might, and perhaps unsurprisingly, they could not realise a particularly convincing simulation of a South American battacuda track in their Crewe studio. And as for the bagpipes...

Scott: "We demoed 'Carnaval' here, and you should have heard the bagpipe sound from our Korg X2... We thought 'we can't release that...!" Paul continues the tale. "We were planning to go to London after Christmas to mix it anyway, so we thought we'd sort out some of those problems when we got there, and hire in some musicians."

Scott: "So, in the first couple of weeks of January, we changed our approach; we began booking session musicians, and sorting out time in the studio - amazingly, we only booked three-and-a-half weeks at Lansdowne initially. We had no idea, did we?"

# SESSION IN PROGRESS... **VERY SLOWLY**

Until this point, Scott and Paul had proved themselves to be extremely competent MIDI programmers and samplists, but they had had little experience of commercial studio environments, multitrack recording, and hard disk recording systems. And of course, unlike in a strictly controlled commercial studio, they were free to come and go in their rented Crewe studio whenever they pleased. The group were firmly on collision course with the very different working methods prevalent in Lansdowne Studios.

Scott: "It's funny — you spend years thinking you'll be really motoring when you get in a real studio, and it didn't live up to our expectations, really. Everything seemed totally new to us. For example, when we got there, the engineer started laying the tracks we'd completed on to multitrack tape. We were just sitting around not doing anything while he did that and it all seemed very strange..."

Paul: "...and it dawned on us that the reason was that he was laying our tracks to tape! We never did that here — we'd just run everything

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b live off Cubase straight to DAT, 'cause the gear's so reliable you can do that. We'd write a track and mix it the same day!"

Scott: "When we got there, just putting everything we'd done to tape took a week!"

Paul: "Everything did seem to be taking an awful lot of time. Also we could spend as much time as we wanted on things in Crewe, but in Lansdowne, it was costing us! We spent a fortune."

Scott: "We were constantly thinking 'this is costing X pounds a day...'. It wasn't very relaxing."

Paul: "The studio and London accommodation was costing us a total of £4500 a week. We just weren't used to paying that sort of money, and we were paying for it out of our advance... I'm still quite shocked by the worry of it all!

"We didn't feel in control, really. We were getting tired, our ears were tired, and we were getting quite stressed out. The really scary thing is, we could have carried on — I mean a lot of bands just keep going, and they actually write in places like Lansdowne, whereas at least we'd demoed it all up here."

# IS IT LIVE... OR IS IT SUNMACHINE?

This raises another point. As Scott explains, the arrangements for 'Carnaval De Paris' did not change in Lansdowne: the purpose of hiring the

session musicians was solely to replace the tracks in the band's existing arrangement which they had been unable to create realistically in Crewe. Sadly, this supposedly simple idea turned out to be much more involved than it first appeared.

Scott: 'When the musicians we'd booked started coming in, we gradually replaced the backing tracks we'd laid down, like the awful Korg X2 bagpipe track, with the tracks from the real musicians.

"When we listened to it back, after replacing our demo tracks, we just thought 'Oh no. We wanted it to sound like a carnival, not a load of session musicians in the studio'. For example, we had all these lovely drum sounds that were *too* perfect; they didn't really *clang*. Once we started hitting things in the 'wrong' way — all the rims of things and so on — it started to sound better".

Paul: "We even had a Brazilian session percussionist play the studio teapot, in attempt to give the track that battacuda sound. We were struggling, so we asked the session player 'how can we get that sound?', and he said 'well, in Brazil, we'd just hit anything.' So we said 'go on then, hit anything. Hit the teapot!' He added that and it sounded great!"

Scott and Paul also resorted to sampling to thicken up some of the sounds being created by the session

# DARIO G GEAR LIST

Paul and Scott have come a long way since they started at college with a couple of Roland D10s, an Alesis MMT8 hardware sequencer and a Roland TR505 drum machine. However, due to their comparatively recent ascent into the world of pop stardom, the gear in their Crewe studio remains fairly ordinary at present; there's certainly nothing in there yet which would be out of place in the average SOS reader's studio, and they certainly bought most of what's there by a route which will be familiar to most of us (Scott: "We would just look out for things to buy in magazines, and buy stuff like the effects units when they were end-of-the-line, and cheaper.")

### KEYBOARDS/SYNTHS

- Akai SG01v.
- Emu Carnaval.

Scott: "We sampled a lot of sounds out of this for 'Carnaval De Paris'".

- Hammond XB2 organ.
- · Korg M3r.
- · Korg X2 workstation.

Scott: "I was in a covers band once, and they used the Korg X2 as their keyboard. I kept borrowing it and using it here, and just got used to it, so I got one. We use it a lot. Its piano sounds aren't great — they're not very realistic — but they've become part of our sound, like for the Jangly house piano in 'SunMachine'. We also used the X2's preset Clarinet and Mandolin sounds on 'Carnaval De Paris'."

 Roland Alpha Juno 2.
 Paul: "Someone told us they had a Alpha Juno 2 for 100 quid, and we loved the Juno 106 so much [see below] we got it. It's amazing, it's got some great sounds on it. We haven't used it so much lately, but at first it was on every track. Once we ran out of presets, we stopped using it..."

- Roland D110 module.
- Roland Juno 106

Paul: "I got this from a friend who didn't want it! It was in immaculate condition, and the sounds are great."

- Roland JV1080 module with World board.
   Paul: "The JV1080's taken a lot of the attention away from the X2, which in turn replaced our D110 and TG55 as our standard multitimbral workstation synths with good basic sounds."
   Scott: "The World board is good for some loops and ethnic effects."
- Roland JX1
- Yamaha AN1x
- · Yamaha CS1x.

Paul: "We make a lot of use of the realtime controller knobs on the CS1x and AN1x. We used the ribbon controller a lot on the album track 'Peaches'; you can get some great effects with that."

Yamaha TG55.

### SAMPLING

- Akai S3000i (16Mb of RAM).
- . Akai \$3000XL (32Mb of RAM).
- Akai S3000XL (32Mb of RAM).
- 2 Iomega Zlp drives.
- Panasonic CD-ROM.

# RECORDING

- Aiwa XD S1100 DAT machine.
- AKG C1000S mic.
- Alesis 3630 compressor.
- Alesis Quadraverb + multi-effects.
- Behringer Composers compressor (x2).

right: Dario G's Crewe-based studio.

> Below: That CS1x and other keyboard



- Boss GE231 graphic EQ.
  Boss RV1000 reverb.
- Digitech Studio Quad v2.
- Focusrite Green 3 Voicebox.
- Fostex D90 digital multitrack (2.3Gb drive).

Paul: "We used that to demo stuff for the album. We did a little bit of demoing at a friend's studio, Andy Blythe, so we just took out the drive — he's got one too, you see — and took it round there, and plugged into his D90 to do some vocals. We used some of those vocals, as well, on the finished album track 'Be My Friend'."

 JBL Control 5 monitors with SB5 sub-bass woofer.

- Lexicon Alex multi-effects.
- Mackie 32:8 buss mixer.
- Midex + synchroniser.
- MXR Dual Limiter.
- Panasonic SV3800 DAT machine.
- P+R Audio PB48 patchbays (x3).
- · Quad 306 power amp.
- · Rode NT2 mlc.
- · SPL Vitalizer MkII enhancer.
- Spirit Absolute 2 monitors.
- Yamaha A100 power amp.

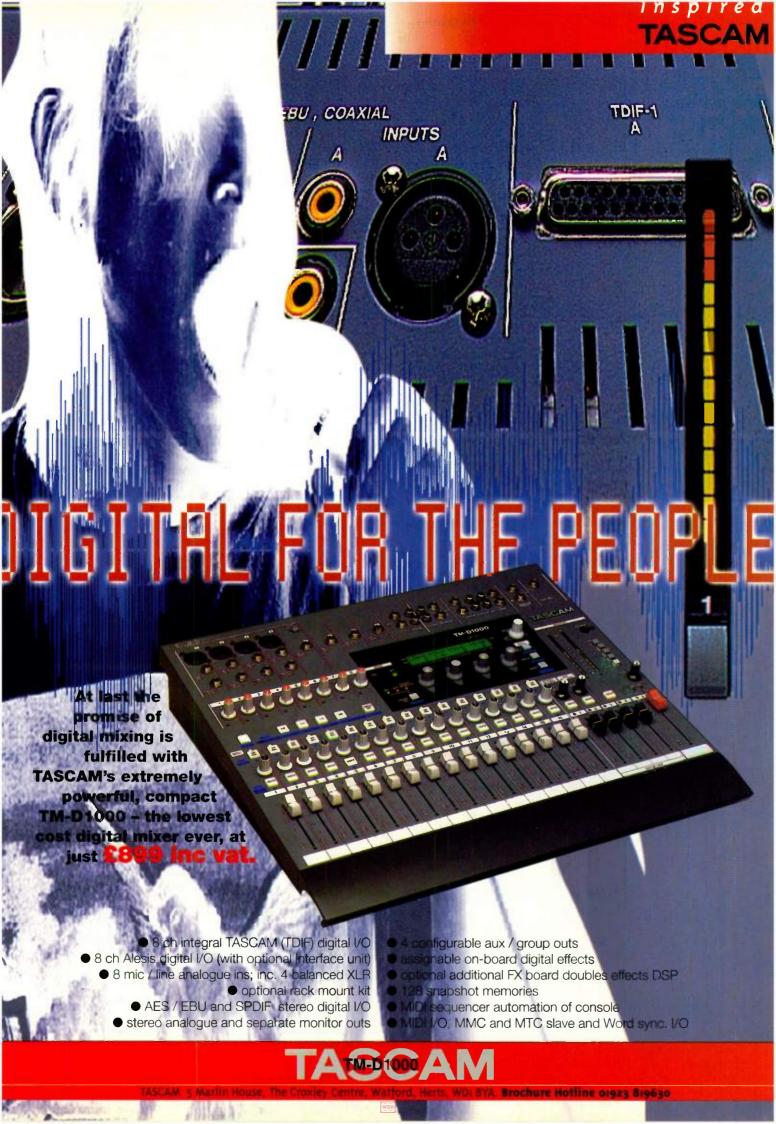
# COMPUTER & SOFTWARE

- Atari 1040STe (2Mb of RAM).
- Steinberg Cubase v3.1.

### MISCELLANEOUS

- Aiwa AD WX 929 dual-cassette player/recorder.
- Citronic SM 150 DJ mixer.
- Genexxa 10-band graphic EQ.
- Nad 502 CD player.
- Technics SL1210 MkII turntables (x2).

Scott: "We bought decks 'cause we were thinking it was a good way of raising your profile if you're into dance music, by DJing. In the end, though, we didn't need them... Paul: "We do use them when we're recording, for checking mixes on, though."



# DARIO G • RECORDING SUNMACHINE

musicians. Paul: "We would pitch samples down and up slightly, and layer them on top of themselves as well, to give them a bigger sound. We also added some other sounds off keyboards that were lying around, like a Korg Trinity and some toms. After a bit of layering like that, some compression, and some reverb, it finally started to sound right — after about a week!"

Unfortunately, this was not the end of Scott and Paul's problems. As well as being dissatisfied with the sound of the session tapes, they were unhappy with the rhythmic feel. Over to Paul: "We'd got reels and reels of tapes full of drums, trumpets, and so on, all played by the session musicians to click tracks. But because they all came into Lansdowne one at a time — there was never a band performance at any one point — the feel was all over the shop. When we pieced it all together, it was a total mess!"

Scott: "We were used to having everything bang-on quantised from MIDI gear, and suddenly everything was out."

Paul: "The drums were the hardest part, because we

had a very precise drum riff in mind. So we had to get the session material off the tape, put it on the sampler, put it into keygroups and whack the keyboard."

So much for the rhythm tracks; they were easily re-triggered as individual samples. But Scott and Paul felt the feel of the brass, guitar and accordion was out too, and to fix this problem, a sampler was no longer enough.

Paul: "We put everything into Pro Tools on the computer in Lansdowne, and ended up examining it all eight bars at a time; all the accordion off-beats and the guitars. It was a bit scientific, but it was a good learning experience. The brass was one of the easiest ones; the guitar and the accordion seemed miles out!"

Scott: "We're not having a go at the session musicians' playing, by the way; it seemed rock-solid to just the click. It was only when we layered everything else on top that it sounded out."

Eventually, the group were satisfied, and they laid the feel-corrected performances back to their multitrack. Then all that remained was the mixing! This in itself was no mean feat; over 90 separate tracks had been recorded, though Scott and Paul had reduced this number by sampling several tracks together and laying them back to the multitrack tape as stereo pairs. The trio favoured a variety of monitors ranging from battery-powered Sony multimedia speakers through their Spirit Absolute 2s and up to Lansdowne's top-notch ATCs. They also indulged in the time-houred trick of playing mixes on a small ghettoblaster in the control room and running out to try mixes on the engineer's car stereo.

Paul: "Different things would come out on the different kinds of monitor we used. That's what makes a professional recording different; on some speakers, you get sitars, say, coming out. On others, you'll get something else. On 'Carnaval', you'll get the agogo, say. On a cheaper desk, you just get a mush."

Scott:That's why we'd listen to each mix on five different sets of speakers; if it sounded OK each time, even if it sounded OK in different ways on the different speakers, we knew it had to be a good mix.

Once 'Carnaval' was finally mixed, moods lightened all around. Paul: "After that one was finished, completing the other tracks seemed much simpler, because we'd learned so much from 'Carnaval'! It was a bit of a baptism of fire, that track..."

Scott: "In many ways, we'd learned to use the session musicians to create a sample library really. We've now got all those sounds and riffs to use in the future, which is great. And there was so much stuff recorded which we didn't use, I'm sure it'll pop up on the next album. We haven't had time to go through it all yet!"

# HOME IMPROVEMENTS

Though he admits the first few weeks at Lansdowne were disorientating and worrying, Scott now writes the whole time off to experience: "I'm glad we went there, and went through with it. We couldn't have made this album any other way. Not an album with tracks like 'Carnaval' or 'Voices' on it, anyway. There's actually more live musicians on 'Voices', because there are the two choirs, and the 22-piece string section. Let's face it — there's no way we

# RECORDING 'SUNCHYME'

'Sunchyme' is an important track for Dario G in many ways. As their biggest hit worldwide so far (reports of total sales vary between 1.5 and 2 million copies), it obviously put them where they are today financially and in terms of clout with their label, Warner Brothers. Stylistically, too, though, it offered the blueprint for the sound present throughout SunMachine: driving electronic pop with an ethnic, world tinge to it, courtesy of the famous 'Life In A Northern Town' sample. That the same sample also drives the album's rather different closing track, 'The End Of The Beginning' (see separate box), is a testimony to the group's ability to derive a different feel from the same basic material.

Like 'The End Of The Beginning', the original 12-inch version of 'Sunchyme' was recorded in Scott Rosser's bedroom (prior to the relocation to their current hired studio facilities in the heart of Crewe, at the end of last year), which makes the track's subsequent history all the more remarkable.

The story of the initial inspiration for the track is told in the main part of this article. After sampling the chant from a CD of 'Life In A Northern Town', Scott and Paul had to timestretch the vocals in their Akai sampler to get them completely in time. Whilst trying out various ideas for the backing track, they made the next important find: Preset 044 from their Yamaha CS1x synth, 'Mega Hook', which sounded remarkably like a steel drum when they filtered it. This was the sound that helped to give the track its Caribbean feel; all they did was



accentuate the effect by layering the 'Mega Hook' patch with the preset steel drum from their trusty Korg X2 synth and sweeping the CS1x's cutoff. As Paul quite openly explains, "People read more into it than they should — they see us as some sort of 'world techno' outfit or something because of the vocal on 'Sunchyme' and the steel drum sound. The truth is, we were sodding around with a synth sound and a sample, and we got something that sounded good. So, if you want to try that at home folks, just switch on preset 044 of your CS1x, play E and G sharp, and sweep the cutoff from 9 o'clock to 3 o'clock. On every version apart from the one on the album, we just swept it manually. You can record it into sequencer if you like, but we didn't."

The original version of the track was run straight to DAT, live from Dario G's famously 'extracurricular' copy of Cubase for the Atari ST. Piano was also supplied by the Korg X2 and the trio's Akai sampler provided the bass sound, which had been sampled from the CS1x (Preset 056. 'Bass Sine') to save the polyphony on that synth. The only effects unit used was an Alesis Quadraverb II, although the sampled vocals were processed by an Aphex Aural Exciter to crispen them up slightly, and the entire track was compressed by an Alesis 3630 before going to DAT. As Paul says, "Everything we used on 'Sunchyme' was all cheap stuff, really." And the result: one international smash hit record. The total cost of the recording is the best bit of all: over to Scott. "Some time later, our lawyer said 'Do you know how much this record's going to make you? What were the recording costs? I can claim that back for you'. And we looked at each other and said 'Er... 40 quid!'. It was for the DAT. We didn't own one then, we just used to hire them in for mastering, and that was how much it cost!"

Subsequently, Paul, Scott and Stephen reorganised the track in *Cubase*, creating the so-called 'Radio Edit' which was the commercial single version, and both Scott and Paul's favourite version of the track. Once again, the mix was run straight to hired DAT, the only other difference being the enhanced amount of compression on the track, which both Scott and Paul thought made it perfect for radio play. Somewhere between 1.5 and 2 million people (myself included) clearly agree.



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could have done that in Crewe!"

Paul is similarly pragmatic about the Lansdowne experience, feeling it has helped them to shape their preferences for recording the next album: "I think in the future, we will still use studios like Lansdowne, but we'll just use them for the session musician recordings. I'd much prefer to do the mixing up here in Crewe, and go back to this level of setup, but with a better desk. I love it here, it's just so much less stressful, and I don't think there's any need to go to London really. That's why we want to get our own place; a base which is more like home than a rented place. We'd love to get a barn or something and kit it all out. Then you can go back to your own home at the end of the day, and you can write in your own studio..."

Scott: "Ideally, we'd like to move around October or November time — depending on how the next couple of singles do! When we stop releasing singles from this album, we'll definitely get somewhere custom-built."

RECORDING 'THE END OF THE BEGINNING'/'SUNMACHINE'

Dario G's current single 'Sunmachine' evolved out of the powerfully intense version of 'Sunchyme' that closes the SunMachine album. Recorded, like the original mix of 'Sunchyme', in Scott's bedroom, 'The End Of The Beginning' was originally issued on the B-side of the 'Sunchyme' white label promo single with a specific purpose. Scott: "'The End Of The Beginning' was supposed to be played at the Café Del Mar in Ibiza in the small hours of the morning. Our idea was to get to people on Ibiza 24 hours a day with 'Sunchyme'; so they'd go out dancing, go mad to the main version of the track, then come back to Café Del Mar to unwind and not be able to get away from that chant, only this time it would be in a slowed-down version, and would relax them after their night out."

The last addition to the track was the David Bowie sample, taken at Stephen Spencer's suggestion from the 1970 Space Oddity album track 'Memories Of A Free Festival'. Scott: "We put the Bowie vocal on as an afterthought; it was sampled directly off the original album, with all the background noise from the original backing track crudely EQd out with our Mackle desk as best we could... it just sounds like a radio in the background

now. We did try re-recording it later in Lansdowne Studios, but we realised we'd captured a moment with the original version, so we left it.

"We then decided we liked the Bowie sample so much that we built a completely new track around it. But it was such a dirty sample, it would never have worked on the radio, so we requested - and were sent -- copies of the original isolated vocal masters by Bowie's manager. We were worried that the backing track sounded a little cheesy with all the jangly house plano, and tried adding organ samples, but it wasn't until we got the Hammond XB2 that we were happy, as we could then try out whatever organ sounds we wanted, not just the ones we had samples of. We also hired two Leslie speakers in Lansdowne Studios to put the XB2 through, and It thickened and warmed up the Hammond no end; they gave it a sound which it just didn't have when we plugged it into the mixer directly

"The track also features a contribution from Bowle's old producer, Tony Visconti, on recorder, which replaced a flute line idea we had on an early version of the track, played from one of the 'Carnaval' session flute samples. Tony's contribution brought the track nicely full circle."

Paul's attitude of keeping London at arm's length for as much of the time as possible reminded me of the N-Trance approach [see SOS December '97], and I wondered if they had seen the interview. Paul: "We did see that; we were looking at their gear! They've got a better version of what we've got here, their setup is about three years ahead of ours!"

Scott: "The main thing we need is a new desk."
Paul: "I think we'd go one stage further than them.
We'd go for the acoustically designed approach and get something with Flying Faders. Then you can write a track and do a basic mix of it straight away. Later, with recall, you can go back to it and tweak it when you've worked out what you need to improve. I'd like something like a Soundtracs Jade... they're about 40 grand, aren't they? But when you consider the money you can spend on studio fees, it starts to make sense!"

Scott: "Who says you have to record an album on an SSL or a Neve anyway?"

Who indeed? Given the upcoming reorganisation of their studio and the important role computer-based digital audio recording had played (via Pro Tools) in the making of SunMachine, I wonder aloud whether Scott or Paul are interested in the put-everything-inthe-computer approach to studio design. It turns out that their interest is on the rise, though as the interview comes to a close, they are not ready to fling themselves headlong into the world of digital just yet. But they have both just bought PCs for home use on which they have been experimenting with Sonic Foundry's Sound Forge audio editing software. Scott: "That's probably the best buy we've made this year; it is quite a deep program, but once you get into it, it's really useful. Instead of booking half a day in an editing suite in London, which costs a bomb, we can just do it at home, and the quality's great. And when we move studios, we will definitely get a Mac as well, to run Pro Tools."

Paul nods: "That way, we can get into using a Mac as well, and we'll be capable of using all systems, Atari. PC, and Mac, wherever we go."

Scott stares fondly at the old STe. "I don't think we'll ever stop using the Atari altogether, though." And Paul quips "Not now we've got a kosher version of *Cubase*, anyway..."

505

Long may they shine.

# **RECORDING 'VOICES**

'Voices' is another standout track on the SunMachine album, featuring the same technologically enhanced ethnic or 'world' feel as many other Darlo G tracks but with a slow, dreamy feel. Restrained mandolins and strummed acoustic guitars provide a background wash over which glassy synth sounds tinkle and a ethereal vocal floats (courtesy of the half-French, half-Peruvian diva Vanessa from Espiritu). Towards the end of the track the 'world' feel is enhanced by the simultaneous entry of two choirs - one gospel, one composed of schoolchildren - chanting another African refrain, and the arrival of a 22-piece string section. It's quite marvellous, and will be the next single. A less stunning, but still impressive Acoustic mix is included as the penultimate track, minus the choir, strings, and more obvious synth sounds, and a different, far less ethereal Espiritu vocal is featured.

'Voices' was apparantly inspired by some strummed

mandolin phrases on a Steve Levine CD-ROM. From a variety of different chords, Scott and Paul pieced together first a chord sequence, then a melody over the top. The track was then demo'd by Dario G in Crewe by having a folk musician friend of theirs from college, Ben Broughton, provide the guitar parts. "Ben helps us out when we need guitar or electric bass parts," explains Scott. "He's got a wide variety of different guitars and basses, and can play in loads of different styles."

Following the demo, the decision was taken to add a vocal. Scott: "It was already developing a world feel as an instrumental, but we really decided to develop that feel with a vocal. We listened to demo tapes of various singers, but no one really grabbed us.

"Then we met Vanessa from Espiritu, and we were taken straight away because of her speaking voice; she's got an amazing accent, and we really wanted a different quality for that track. That's what made us choose her. She produced her vocal herself in her own home studio onto an ADAT — as she wasn't happy with

the results she got singing in Lansdowne Studios — and we spun it in last of all. She also added the ethereal phased chorus effect on her voice, which we enhanced with a further effect delay and reverb from our Digitech Studio Quad. That did have the unfortunate side-effect of increasing the sibliance on all the 'S' and 'T' sounds a bit much though, so we put the effected track and her unprocessed vocal into Pro Tools and de-essed it there. It was time-consuming, but worth it, as it increased the ethereal feeling even more. Also adding to that were the glassy synth sounds at the start of the track, which are a JV1080 preset. We slowed the attack and had it playing just a couple of the melody notes to give an indication at the start of the track of what was to come."

Paul: "For the acoustic mix of 'Voices', we used Vanessa's original Lansdowne vocal — but it sounded great on that one, the smooth vocal fitted OK with an acoustic backing. It just didn't sound tough enough for the main version of the track, really."



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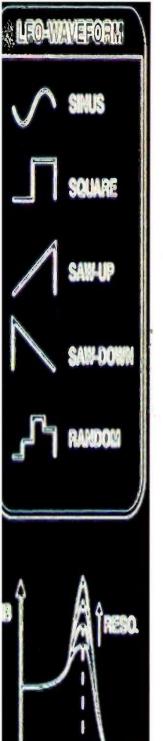
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# PART 12: THE WAY AHEAD

Will physical modelling continue to be at the leading edge of synthesis, or are there other methods moving up on the inside track?

PAUL WIFFEN winds up the Synth School series with a little crystal ball-gazing.

here are many lessons to be learnt from the various technologies we have examined in Synth School over the last year or so. The history of FM teaches us that a method of synthesis can go from being the be-all and end-all of the professional synth market to the lowest common denominator of computer video games in a relatively short time (and that despite this, Yamaha are probably making more money out of FM today than they ever did in the heyday of the DX7). The elevation of the fat analogue sound to the modern Holy Grail, when 10 years ago you couldn't give analogue-sounding machines away, warns of the dangers of selling off old gear in pursuit of the latest sonic fashion. But perhaps the most important lesson is a general one on how the relentless development of VLSI technology driven by the computer industry (to which we are but a very small sideshow) turns today's impossibility or very expensive luxury into tomorrow's staple product (which doesn't really get anyone excited anymore).

Take additive synthesis as a classic example; it is a much more powerful technology in its only current production incarnation, the Kawai K5000, than the infinitely more restricted non-real time implementations which the Fairlights and Waveterms offered 10-15 years ago. Even the early real-time implementations like the K5 and the never-released

Technox Axcel caused more of a stir than something wonderful which you can now buy for around £1000. Sampling is another classic example; the early Fairlight which turned the whole industry on its head had lower sample quality than the most despised Soundblaster-compatible PC soundcard. The former would have cost you £25,000+, the latter you can pick up for under a ton.

As far as physical modelling is concerned, I feel we are midway between these two extremes. Yamaha, who released the first commercial available physical modelling synth, the VL1, have now adapted that same technology to a £500 module or an even cheaper plug-in card for their computer-based system. Korg's OASYS, perhaps the most powerful modelling synth exhibited to date, has never been released, because the days of even megastars shelling out thousands and thousands of pounds for the first implementation of a new technology are over. This hasn't prevented the technology it contained being extremely successful (in this country at least) in the Prophecy. Korg's current Z1 covers more territory than any other physical modelling synth, from analogue and FM-type synthesis through to a host of string and wind instruments, but I often hear people complaining about it because it can only achieve 18-note polyphony and 6-part multitimbrality (PCM-based synthesis has made people blasé about amounts of polyphony, sample memory and multitimbrality which would have seemed like science fiction five to 10 years ago).

The current state of DSP technology means that certain areas of imitative synthesis are still no-go zones simply because of the sheer amount of DSP power required. But DSP technology is now progressing so fast that I suspect it won't be that long before all the sympathetic harmonic interactions between strings on that most complex of instruments, the grand piano, will succumb to

# SPRINKLE ON THE GRANULES

There are numerous references on the Web to Granular synthesis, a method which builds timbres out of very small snippets of sound stuck together to create completely new timbres. Having been informed by various authorities (including Leon Zadorin from some Antipodean seat of learning or other: www.academv.gut.edu.au/ music/newmedia/granular) that the content of the granules is less important than their size and shape (or, as he put it, "human perception of frequency, duration and amplitude tends to reside within a practical minimum)", I decided to dig out my sampler and have a bash myself. As long as your sampler does not restrict the smallest loop length you can have (as some of the early Akais and Rolands did), pretty much any sampler will do. The length of these 'sonic grains' (as each small snippet is known) should apparently be

less than 100 milliseconds, because anything larger than that starts to reveal the source sound.

I started by cutting and pasting a small snippet of sound (less than 1/10th of a second) to itself until I realised that way was going to take for ever. Then I realised the I could use the loop length to replay the small snippet over and over. As long as you keep the loop length very short, the granulated sound bears absolutely no apparent relationship to the source sample. To begin with I used the auto zero crossing feature on the Prophet 2000 to make loops with a smooth cycle crossing in them, which tended to produce very pure sounds with not too many harmonics present, but then I realised that was spoiling the fun. So then I turned to the Roland \$760, which doesn't automatically find zero crossings, and things got really Interesting. By setting the loop points almost randomly, you get some fantastically twisted angular timbres. I then found a way to move the fixed loop length around quickly within the sample, which made a very quick way of changing the timbre radically.

Reading further with my faceless Australian mentor, I discovered that another factor is the 'density' of the grains (ie. how much silence there is between them). So then I started to cut and paste some silence in at the end of the loop and found that this tended to make the timbres slightly more acceptable to those of a nervous disposition. Basically, adding silence between the grains seemed to act like adding water to Scotch, making the sound more platable to the sensitive soul. Mind you I never got to any sounds I could have played to my mother, but then isn't that what rock & roll is all about? In these days of techno and other industrial types of dance music, this technique seems to have a lot going for it. I strongly recommend experimenting with it, if you have a sampler and a couple of hours to kill.



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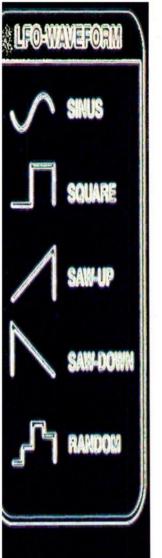
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# SYNTH PROGRAMMING

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The real challenge these days for physical modelling is not the perfect recreation of acoustic instruments or even the biggest sounding, most powerful analogue-style synth ever, but making the technology easy to operate by people who have never even learnt the basics of analogue synthesis (none of whom are amongst SOS readers, I am sure). The various solutions to this, from the increasing use of dedicated front-panel knobs or X-Y pads or ribbon controllers, through to SvsEx control by computer

systems which could attempt a reconstruction would be additive synthesisers. In fact, one of the earliest commercially available systems was a Dr T's program for the K5 that ran on the Atari. Although there were not really enough harmonics and envelopes available on the K5 to cope with really complex sounds, it would produce recognizable versions of simple sounds which made good starting points for sound design rather than having to set all the harmonics manually from scratch (in fact, if anyone out there still has a copy of this

The Kawai K5000 — the only additive synth still in production.



programs, have helped expand the market for physical modelling, but I still feel that this is just another example of 'dumbing down' technology so it can be sold. For the time being at least, the development of physical modelling seems to be its

consolidation into more marketable versions of the technology, and its integration into workstations (see last month's sidebar on "Combining Physical Modelling with PCM"). So what other contenders are there for the Future of Synthesis?

# **RESYNTHESISE!**

An old chestnut which periodically turns up is the concept of resynthesis. This is the name given to a generic process whereby an analysis of the sound (usually sampled) is made in an attempt to break it down into its constiuent parts, which can then be recreated piecemeal from basic building blocks. These building blocks are usually hundreds of sine waves which are used to build up the harmonic content of the sound, the sound having been analysed in the first place via a Fast Fourier Transform. Those of you who saw Duran

Duran's 'Reflex' video will have seen Fairlight displays of FFTs on its samples, usually compared to a plot of a mountain range or the seabed. The Fairlight was not the only system which could produce pretty FFT displays. They were even possible on the cult UK sampler *Lynex* in the late '80s which ran on the Atari ST. However, all these systems had one thing in common; they could produce a lovely picture from a sample, but they wouldn't let you change the harmonic content, because they couldn't actually turn the sound into its constituent harmonics, let alone convert it back to a sample.

Because FFT analysis breaks the sound down into harmonic content, it made sense that the first

software, perhaps they would contact me via SOS as I would love to get my hands on it once again). Of course, if someone were to do something similar for the current Kawai, the K5000, which has a much more flexible implementation of additive synthesis, this would probably get a lot closer to a useable resynthesis system.

Perhaps the best resynthesis I ever heard was on the Technox Axcel, a system which came originally came from Canadian academia, but which went through the inital phases of commercial marketing. It had a flexible additive structure which could assign more or fewer harmonics to each voice as required (although this meant more complex sounds had less polyphony), and at the Paris show in about 1989 they had got the resynthesizer analysis working. I heard a very respectable resynthesis of a flute sound, complete with the more demanding breath component (a flute on its own wouldn't have been that impressive, as the pitched component is a fairly simple harmonic series). However, I never got sufficient hands-on time to evaluate the potential of the system on really demanding sounds. I believe Jean-Michel Jarre bought that unit, but the company went in liquidation shortly afterwards and very few units were actually shipped.

Over three years ago our venerable editor wrote a piece about Oberheim Electronics (now owned by Gibson) having developed a similar system in conjunction with Berkeley, Stamford, MIT and IRCAM (see the January '95 issue) under the unlikely name of G-Wiz Labs, but we have no more recent information, so either the development process is taking longer than they thought or the project has been abandoned. Again, as its name implied (FAR — Fourier Analsis and Resynthesis) it seems to have used an FFT analysis of the source sample to set up harmonic components. One potential problem with resynthesis, the recreation



ENVELOPES (EG

The short-lived Technox Axcel promised powerful resynthesis capabilities.

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# SYNTH PROGRAMMING

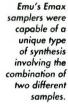
of unpitched noise components, was dealt with rather elegantly by comparing the result with the original and then creating shaped noise to fill out the differences. At \$10,000 plus a Macintosh, it was not cheap, but Paul's report mentioned a recognisable line from Suzanne Vega's 'Tom's Diner' being replayed at different pitches and tempos without any of the normal drawbacks of sampling. Certainly, resynthesis is one of the few systems which seems to have the potential for synthesising vocal performances.

The appeal of resynthesis is that it would have all the advantages of sampling, in that any sound which can be played in to the system could be reproduced, but without the disadvantage of samples playing back at different lengths when repitched. When a resynthesis is triggered at different pitches on something like the Oberheim FAR system, the replay time would be constant and noise elements in the sound would not be repitched at all. Looping would also no longer be a problem; you would merely extend the duration of the harmonic series in the sustain phase of the sound. Of course, the repitching would not

necessarily remove all the problems associated with sampling. Sounds which have been shaped by some sort of resonant chamber (human voice, bowed strings, guitars, etc) would have the harmonic boosts/dampening repitched, which introduces the Pinky and Perky/Carlsberg effect that often forces multi-sampling. This is where physical modelling triumphs as it splits the sound into the driver (which is usually repitched) and the modifier or resonator (which usually doesn't change).

Perhaps the ideal resynthesis system would be one which does not simply reduce each slice of sound to its constituent harmonics, but would instead look for the effect of a constant resonator in a longer sample of an instrument playing across its range, and would then recreate the harmonic spectrum of the driver separately from the resonant amplifier of the modifier. It might be referred to as 'remodelling'.

One drawback with resynthesis or 'remodelling' is that would leave nothing for the programmer to do. Just play the sound in, let the computer do its number-crunching and hey presto — your sound can be played back from the keyboard. Of course,





# TRANSFORMING SAMPLES

Transform Multiplication was a form of synthesis unique to Emu's Emax range of samplers, which used some heavy computational algorithms to combine two samples in a unique but timeconsuming way. The process came up with some weird and wonderful sounds ideal for futuristic timbres and sound effects, but it suffered from the same problem as many non-real time Implementations of synthesis: the process of tweaking a promising first try into a satisfying sound could take days. When a typical computation duration exceeds thirty minutes, the problem is not so much that creating a completely new sound from a set of parameters entered takes a long time (although this will deter the superficial user), but that each minute adjustment of those parameters, or to use the technical term, 'tweak'. takes exactly the same time. So to refine a promising sound can be soul-destroying, especially if you are at the experimental stage where you do not know exactly what each of the parameters will do. Changing a parameter in the 'wrong' direction or altering the 'wrong' parameter altogether means that you have sentence yourself to another long wait just to get back in the right direction. Indeed, to become as familiar with Transform Multiplication

as I am sure many of you are with the other forms of synthesis we have looked at might well take a lifetime, unless someone comes up with a real-time implementation, Perhaps Gerry Basserman, who did the demos for Emu for years, might well have reached the stage where he was confident of the effect that individual parameter changes to Transform Multiplication would have, but I suspect that there are precious few others. My experimentation with this technique often produced some fascinating results, but I never really felt like I was doing anything more than randomly combining samples which sometimes had serendipitous results. I certainly never felt completely on top of the method. However, if Emu or anyone else were to come out with a real-time implementation of this style of synthesis, you can bet I'd be first in the queue to master the technique. Sadly, the cynic in me suspects that the market for synthesis styles which create new sounds rather than attempt to duplicate old ones is not large enough to prompt Emu or anyone else to produce the expensive hardware this would need (probably leaving physical modelling far behind in terms of the raw horsepower required). In the meantime, if you can get your hands on a Emax SE, Transform Multiplication will certainly satisfy an appetite for new weird and wonderful sounds.

if the sound has been broken down into constituent harmonics, then the levels of these could be edited or adjusted in real time for creating new sounds or adding expression, but it still reeks of the increasing dominance of factory presets and lack of user editing and personalisation of the sounds. 'Remodelling' would be better as you could adjust the parameters of the model to make new sounds. But still I find I miss the challenge of 'pure' synthesis, where you have to be the brains and do the analysis of the sound yourself and then recreate it with the parameters available (or even make up a completely new sound).

# WHERE DO YOU WANT TO GO TOMORROW?

So if you are interested in synthesis and sound design for its own sake, rather than having specific timbres to recreate or gigs to do with the minimum number of synths, then where are the new frontiers? Where can you rediscover the thrill of finding a new way of doing things, or even a technology to misuse or trick into doing something unique? The answer to this question, as with so many these days, seems to concern computers and the Internet. In fact, most

new types of synthesis since the '80s have been developed at their theoretical and experimental stages through computers. Generally speaking, a designer/engineer had an idea or came across a phenomenon when doing something else which he thinks has potential. The cheapest way to investigate further was to set up some computations on a generic system, ie. a computer, which can be programmed to simulate (often not in real time) the effect which will be produced when certain novel configurations and/or processes are tried. He then took this to an electronic music company and tried to persuade them to take it a stage further. This sometimes took the form of developing specific hardware which is fast enough to do things in real time (like Yamaha's development of John Chowning's FM) or, alternatively, adding it to an

exisiting generic product like a sampler. A good example of this latter is Emu's addition of Transform Multiplication as part of the SE software upgrade to their Emax samplers (see 'Transforming Samples' box opposite).

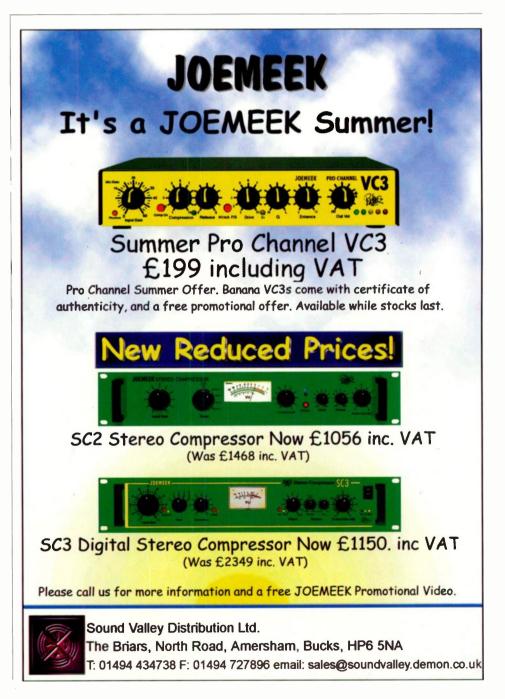
# **DIY SYNTHESIS**

So back then to our own computers and their umbilical link to the repository of human knowledge that is the Internet. Modern personal computers' CPUs are now so fast that they rival the computational power of systems that only major manufacturers or universities could afford 10 or 20 years ago. You also now have a direct link to the people in educational establishments who are trying to push back the boundaries. Lacking any other public forum to publish their ideas, many academics now post their ideas and sonic experiments on the Internet, just for the satisfaction of airing their concepts to a wider audience who can try their techniques out (indeed it is difficult to see how some of these methods could be implemented into a tradition commercial synthesizer). As a result, you can get into more or less esoteric forms of sound generation at the leading edge of academia via that PC or Mac sat in the corner of your living room. One that has been coming to SOS's attention over the last few months is Granular synthesis, explained elsewhere in this article.

The main lesson however, is that it has never been easier to get into weird and wonderful forms of synthesis yourself. With a computer and an Internet connection, you can do your own research, download examples and descriptions and then with a sampler or generic synth you can recreate some of the things described and try them for yourself. New types of synthesis without expensive new keyboards — sounds great to me. So Synth School is not exactly coming to a close but transferring to the Internet (a sort of *Open University* for the new millennium). Get your search engines

in gear and you can try three impossible methods of synthesis before breakfast.

And so we reach the end of the final instalment of Synth School. I have thoroughly enjoyed writing this series and I am particularly grateful to all those of you who have cornered me at trade shows or product launches and been kind enough to say how they have found it useful. Perhaps the most important message I have tried to put across is this: refuse to use factory presets and make up your own sounds using whatever tools come to hand — your music will be the better, or at least the more individual, for it. If you have been led by any of these articles to try out new ways of creating sounds, (or even return to some old ones you thought you had left behind) then these articles have done their job.



# The Art of Synthesis

The new Supernova from Novation is arguably one of the most powerful synthesisers on the market today. Based on Novation s proprietary Analogue Sound Modelling technology the Supernova faithfully recreates the fluid and liquid sound that until now was only available with vintage analogue equipment. The Supernova's Synthesis Engine features 3 completely independent esculators, a variable Noise source and 2 Ring Modulators per voice and these waveforms can be combined in the Mixer section allowing the creation of very fat and complex timbres. The signal is processed by a Self Oscillating Multimode Resonant Filter which has 12.18 and 24 dB per octave Cutoff slopes and can be configured in Low Pass, High Pass and Band Pass modes. The signal can be modulated by 3 Envelopes and 2 LFOs that are capable of oscillating at Audio rates. As can be seen, Analogue Sound Modelling Technology in many ways actually exceeds the capabilities of real Analogue equipment and is not justice to the real thing.

# Having that "Professional" edge

The standard of production in today's commercial recordings is very high and until now this has been unachievable with one synthesiser. With 16 or 32 voice polyphony and & Part Mullimmed capacity the Supernova can handle complex arrangements with ease. Industrial Comb Filter, Chorus Flanger Phaser, Delay, Rundo, Perning Tremolo and EQ effects are available on all 8 parts of the Performance allowing the Supernova to run 56 Effects Simultaneously. Each of the parts can be assigned to any of the 8 purposts and each output has a 24 bit 128 times Oversampling Delta Sigma Digital to Analogue Converter for unsurpassed Audio quality.



Novation pioneered the Rediscovery of Know on synthesisers and the Supernova takes this to the next level. All the Rediscovery Many Centrollers/NRPN and the Supernova has 28 of them. The user interface is very accessible with all functions laid out in a logical manner and a minimum of menus. This makes the Supernova very controllers and satisfying after all, we want you to make music, not fight the technology! When you have created That Sound it can be saved in one of the 512 Program and 256 Performance memories. There is a built in Finder system allowing you to try similar sounds very quickly without having to scroll through them one by one.

# Synchronisation and Arpeggiation

The 2006s are capable of synchronising to MIDI Clock or to Internal Clock at differing time conjunction with the built in Arpeggiator & Delay (which also synchronises to MIDI Clock or to Internal Clock at differing time signatures) many polyrythmic combinations of sounds are possible. The Arpeggiator is more like a real time music processor with assembly phonic Polypronic and user Patterns available. Sounds can be layered in Performances allowing Arpeggiated and sustained sounds to be played at the same time, in fact in Performance mode up to 8 Arpeggiators can be Active Simultaneously.

# An Expancable Future

The 16 Voice Supernova can be expanded by plugging in an optional carc that increases the polyphony from 16 to 32 Voices. Additionally this card doubles the number of sounds to 1024 Programs in 8 Banks and 512 Parlomances in a Banks. Future Software upgrades will be available From the internet and can be loaded via MID.



It's ace, It's completely great! The filter section is one of the most comprehensive I ve come across, offering options I never knew existed. It's got a groovy name, it looks cool and sounds absolutely brilliant.

Matt Thomas - Future Music - August 1998

The Supernova marks Novation's arrival in the big league Seductively rich, warm, smooth and natural Analogue Modelled sound a bright star in the synthesiser firmament for some time to come.

Short Trask - Sound on Journal - August 1999



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# Part Edit nudge 1 2 3 4 5 6 7

nudge



lfa 1

Ifa 2

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env 2

env 3

wheel

low

quency

sonance

mod depth







polyphony range



portamento



MOOG MUSIC LIMITED MINIMOOG 204E

The Minimoog rides again thanks to Welsh company Moog Music Limited. But how close does it sound to the original? We at SOS knew opinion would be split, so we got five of our regular synth reviewers, all previous or current Mini owners, to give us their views. Step forward NICK MAGNUS (main text), PAUL NAGLE, PAUL WARD, PAUL WIFFEN, & STEVE HOWELL...

egular SOS readers will probably be aware that a Cardiff-based company, Moog Music Limited, has acquired the rights to the Moog name and logo. Their plan is to re-issue products from that legendary family of instruments, starting with their replica of what is possibly the most famous household name in synthesizers, the Minimoog (see the July '98 issue of SOS for Steve Howell's preview). Rather than go into anorak-level detail about the history of the unit, this in-depth review is intended to answer the questions most likely to be at the forefront of every Moog aficionado's thoughts: just how accurate a copy is it? Would your granny be able to tell the difference? Since my granny is now eternally unavailable for comment, I did the next best thing and sat the new replica next to my own 1980 vintage Minimoog, fired them both up, and prepared to perform some critical comparisons.

Before launching headlong into the results, it's perhaps worth making a point based on my experiences with three different Minimoogs I've owned over the years. My first Mini (vintage unknown) was an earlyish model fitted with perspex pitch and mod wheels, and was extremely unstable in tuning. The merest breeze would send it out of key, but it had the sweetest, creamiest tone imaginable. It's not easy to put one's finger on something as subjective as 'creaminess', but that Mini had it in droves. Unfortunately, its instability made it a non-starter for stage use — indeed, even during recording it was necessary to stop the tape every few minutes and retune. So I decided to replace it with a newer one — vintage unknown again, but the pitch and mod wheels were of the later, white ribbed variety. This Mini had good tuning stability, and coped with life on the road unflinchingly. Tonally it was different to the older one, having a slightly brighter edge, and I loved it dearly. I was thus not best pleased when it was nicked from a rehearsal room.

Fortunately the insurance funded the purchase of a brand new Mini — the one I still own, vintage 1980, serial #11858. Major differences between this model and the previous two were improvements to the scaling and tuning trimpots on the back panel, together with even greater tuning stability. The tone was subjectively different yet again, having a slightly brighter edge than the second Mini.

Each of the three Minis had their own idiosyncrasies — the feel and response curve of the pitch/mod wheels, the feel of the keyboard — there were even subtle differences in the way the rotary pots behaved. The point I'm making is that, regarding analogue synths of this type, even three models (albeit different vintages) of the same synth can feel and sound different from each other. So if the word 'subjective' seems to appear a lot within this review, it's because comparisons between two such 'identical' instruments must be subjective when taking into account variables such as component tolerances, or whether a knob is fixed to a pot in exactly the same relative position or not.

### PHYSICAL ATTRIBUTES

The new Minimoog has been designed to unmistakably echo the original, with one or two enhancements. additions and alterations. Perspex pitch and modulation wheels hark back to the earlier Moogs' styling in true retro fashion, whilst the most obvious visible difference between the 204E and a vintage Mini is the use of flip switches where the original had rocker switches. These new orange and blue switches are reminiscent of those found on the ARP Pro Soloist, but smaller. They seem fine, although the old rocker types were less vulnerable to accidental knocking and damage. I suspect that the new type, having a smaller footprint, were chosen to accommodate the extra room needed for the additional switches at the top left of the panel. The three new switches are: Osc 1 PWM (pulse width modulation), Osc 2 PWM and +/- 1 octave transposition. Some original customised Minimoogs exist with PWM and oscillator sync added, but Moog Music Limited have opted not to include a sync facility on the 204E.

One oddity is the panel legending chosen to represent Sustain level for the filter and amplifier. These knobs on the original Mini were calibrated from 0 to 10, whereas the replica's are curiously labelled in the same way as the attack and decay knobs — ie. in milliseconds and seconds. Ultimately you would use your ears to gauge the correct level, but it is a little odd, using units of time to measure level...

Other changes include the migration of the Glide and Decay footswitch sockets from the pitch/mod wheel panel to the top of the control panel along with the output sockets. Adjacent to the pitch/mod wheels is now a green MIDI activity LED. The headphone socket has also made a similar move away from the front right of the control panel — maybe not so sensible, being no longer as accessible as it used to be.

The wooden case is deeper overall than before, by about 1cm, and the wood panel below the keyboard extends the whole depth of the case, whereas the original Minis had a chipboard base which created a 1cm gap between the front panel and the base of the synth. Weightwise, the new Mini is 32lbs, and feels slightly lighter than the original.

The back panel too sports a few variations. Gone are the oscillator and filter scaling trimpots and the A440 adjustment trimpot — more on the ramifications of this later. The panel's top edge now sports MIDI In/Out/Thru connectors, a rather fragile-looking detented trimpot for MIDI channel selection, and a set of four DIP switches to set various options (see box). The MIDI selector is labelled 0-9 then A-F. meaning that channel 1, for example, is at position 0, and channel 16 would be at position F. The S-trig input is at far left as it used to be, and the pitch, filter and amp external control sockets are adjacent to the MIDI ports. Glide and decay on/off footswitch sockets are at the centre, followed by sockets for high- and low-level audio outs and an external audio input (for processing whatever takes your fancy through the Minimoog's filters and envelopes). Finally we have the headphone socket, IEC mains input (the original Minis

# pros & cons M00G MINIM00G 204E £1499

### pros

- Authentic sound.
- Authentic looks.
- Additional features and enhancements
- . All the benefits of modern technology.

### cons

- Fairly pricey compared to a second-hand original.
- Square waveform not 100 percent as the original.
- Tuning calibration of demo unit was a bit iffy.
- Single/multiple trigger awkward to change.

# summary

A bold and successful replication of what is perhaps the most famous synth ever. Maybe not the cheapest way to acquire a synth bearing the genuine Minimoog logo, but possibly a better investment in the long run considering the age and condition of the surviving originals you're likely to encounter.



# PAUL NAGLE'S VERDICT

If anyone were to write a Synthesizer Concerto, which synthesizer do you suppose it would be for? Perhaps surprisingly, solo synthesizer design has been largely neglected for years, and for many players, the finest example of all is almost 30 years old. It was wonderful, therefore, to give this new Welsh Minimoog the once-over and see if it stirred any fond memories.

The review model had been hawked around quite a bit and was starting to show signs of shellshock, rather than the gentle aging which beautifies a 'real' Minimoog. The hinged panel had parted company with the body of the synth and was attached only by a slender cable, and I suspect the new-style switches are in need of filing down so they don't accidentally get snapped off. Other than the switches, the overall look was quite classy and familiar.

I was pleased to see a few features not present on the original, but looked in vain for an oscillator sync option or a dedicated LFO for modulation. By this you can deduce that I'm no purist (in fact, I sold my Minimoog some time ago, mercenary-fashion). It seems to me that Moog Music have placed more emphasis on building a replica than adding all the extras we might want.

My own Minimoog was a particularly early model and was forever out of tune. I think the subtly more polite character of this one is an acceptable trade-off for the stability and reliability of newer components. The sound is fat, thick and powerful, as you would hope, and during my short time with it, it remained steadfastly in tune. The filter is pleasing enough — it reminded me of the original Minimoog, certainly, but with hints of Sequential's Pro One too.

It's good that MIDI is included as standard and although its implementation is basic, it includes multiple triggering and velocity control. Activation of the latter has no effect on its own keyboard, which seems to be an opportunity missed. Considerable zipper noise was evident when controlling the overall output or filter cutoff via MIDI, and although the manual states a range of +/- 2 semitones could be set, this was actually +/- 3 semitones on the review model — apparently a MIDI software bug (see main review).

Although I'm sure there will be those for whom only an original will do, the majority of Minimoog seekers will find this replica a dream come true. Any criticisms of the lack of additional features or even the MIDI implementation are minor, because this isn't what the Minimoog was about. The important question is how close does it get to 'that sound'? — and, for me, the answer is 'pretty close', especially given that no two original Minimoogs sounded identical. I feel the price is rather high, even though MIDI is included, but this instrument has enjoyed a reputation that others have envied for years and I, for one, hope the new model succeeds.



New for '98 — a Minimoog with MIDI as

> had a fixed lead — ugh!), fuses, and two six-pin +/-10 volt DC, 50 milliamp output'sockets.

### THE CLONE ZONE

And so to the moment of truth... The replica Minimoog (henceforth referred to as 204E) and my own (henceforth referred to as 11858) were powered up together, and left to warm up for a while, as all good analogue synths like to do. Both seemed to have settled quite nicely after about 15 minutes, and by half an hour were pretty much stable. As the ensuing hours would reveal, 11858 needed almost no retuning to speak of, whereas 204E did (surprisingly) require a gentle tweak from time to time. The drifting was minimal, however, and may be considered within the bounds of what you might expect from such a beast.

The inbuilt A440 reference tone on 204E was actually at 442Hz, which is a fair way off the mark it must be presumed that, being an early production unit, the final calibrations had not been fully completed. The lack of an A440 adjustment trimpot could make this a bit of a problem if units were shipped thus, with the reference tone out of tune. Similarly, the next test revealed that the oscillators themselves were not scaled accurately — if any two oscillators were zero-beat tuned at the 32' range, they were significantly out when switched up to 4' or 2'. By contrast, 11858's tuning between oscillators was consistent across the entire range, despite not having had its scaling touched for over 15 years. As in the case of the A440 tone. one would assume calibrations such as these will be made with greater accuracy on later production models. particularly as the absence of scaling trimpots means the user cannot recalibrate the instrument themselves.

The next thing to do was to compare the waveforms. Setting the contour generators to a gate envelope and

Below: Moog Music have chosen not to include a number of improvements, like the addition of locking pots for oscillator tuning, which are frequently made to original Minimoogs (this one is Nick Magnus's modified Mini).



opening the filter wide, resonance fully off, each wave was compared in turn. The replica Moog scored five out of six here, as all but one of the six waveforms sounded absolutely identical to 11858's. The roque candidate was the square wave, which sounded as if a slight amount of sawtooth wave might be present. Played in the 32' range, it gave the impression of two oscillators, one octave apart, hard sync'ed together. By comparison, 11858 had that typical hollow, woody squarewave sound. Further investigation of this phenomenon involved setting the oscillator range to 'Lo', making the pitch so low as to sound like a series of clicks. Whereas 11858's square wave was a completely even tick-tick-tick, 204E revealed its square wave to have a slight 'limp' together with a slight emphasis on alternate ticks, sounding more like tick-a-tick-a-tick-a tick — as if it contained elements of pulse and saw. Since I had no access to an oscilloscope. I can't be more accurate in my description than this, but it would be well worth the designers having a closer look at this anomaly and correcting it, if at all possible.

The filter is generally attributed as being the real 'personality' of a synth, and the classic Minimoog filter certainly has a reputation in this area, so a direct tonal comparison between the old and the new is inevitable. I can confidently say that 204E's filter sounds and behaves as identically to 11858's as makes no difference. Even with the resonance up high, and sweeping the cutoff frequency through its range, the filter exhibited exactly the same characteristics as its older cousin. In fact, with the resonance at maximum,

# MIDI IMPLEMENTATION

- Modulation (Controller 1).
- Glide time (Controller 5).
- · Glide on/off (Controller 65).
- · VCA (Controller 11).
- Filter (Controller 12).
- · Pitch (Wheel).

### DIP SWITCH SETTINGS

- 1: inactive possibly for future developments.
- 2: On/off to assign Velocity to VCA, VCF, Channel pressure to Mod.
- 3: Single/multi trigger on/off.
- 4: Pitch wheel range quoted as +/-2 semitones, or +/-9 semitones.

# **EXTERNAL CONTROL INPUTS**

- Pitch and filter control inputs 1
  volt/octave.
- Amplifier input gain range spanned by 0-4 volts.
- Trigger input switch closure activates both contour generators.
- Aux DC power sockets +/-10 volts at 50mA.
- S-trigger input.

# PAUL WARD'S VERDICT

I suppose the real test of the new Minimoog is to put it up against the original, so I powered up my beloved Mini and matched up the controls on the two machines. The absolute positions of the two sets of controls were not consistent. but with a little trimming here and there I could pretty much match the sounds. At first I thought that the oscillators on the newcomer sounded a touch brighter than the original, but the more I listened, the more I became convinced that I was mistaken. The filter, too, initially seemed slightly less warm on the new Mini, but the difference was so subtle that I'm again unsure if I'm just hearing what I'm

expecting to hear. No — the more I tried to find differences, the more alike they sounded. So, to all intents and purposes the newcomer is the equal of the original in terms of raw sound.

As to the physical implementation — well. I think I would have preferred it if the manufacturers had resisted the temptation to construct such a close lookalike. From my own point of view, a rackmounting version would have been far better than having yet another keyboard in the studio, and I doubt that I'm alone in this view [Apparently a rackmount version features prominently in Moog Music's plans for the future — Ed]. Given that the new Mini comes with MIDI fitted as standard, the provision of

a keyboard is likely to be superfluous much of the time. The coloured rocker switches also give me cause for concern, since they appear to be prime candidates for being snapped off in transit. They are none too smooth in operation either, feeling quite 'gritty' and uncertain. In places, the switch surrounds cover the front panel legending, which gives a less-than-professional appearance — not good in this price bracket.

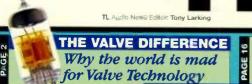
One final gripe... Almost as soon as I had a MIDI lead plugged into the new Mini I wanted to turn off velocity response. A dip switch on the back allows this to be done, but also turns off its ability to receive aftertouch. This is

not good — surely velocity and controller reception should be independently switchable? The irony here is that one of the other dip switches actually does nothing at all — please rethink this one. Moog!

Would I buy one? At this price, I'd have to say no. A second-hand original would still cost less than this, and has a certain desirability that the new machine can only earn over time. For the price of this monosynth you could have two professional-quality multitimbral synths and record entire arrangements on them. I wish Moog UK every success with the new boy, but at this price I think they have a fight on their hands.



# **ENEWS**



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# Jon Astley masters with **TL Audio**

**Howard Jones** 

City Correspondent

CURRENTLY one of the busiest mastering engineers in the UK Jon Astley has been making extensive use of TL Audio's EQ-2 Parametric Valve Equaliser, which recently became an addition to his state-of-the-art digital mastering set-up, which is based around a Sadie 96:24 sys-

Astley, whose previous production and arrangement credits include The Who, Eric Clapton and Debbie Harry, first employed the EQ-2 on the recent Led Zeppelin 'BBC Sessions' album, which he re-

A Place

mastered at his Thameside studio in collaboration with Jimmy Page. Since then he has put the unit to use on mastering projects for Level 42, Abba, Tears for Fears and Tori Amos.

Describing his choice of equaliser, Astley commented:

"I had auditioned other valve equalisers for the Led Zeppelin album, but the EQ-2 came out on top since it's sound suited the project so well - both Jimmy Page and I loved it for the sort of top end we wanted. I've found that since then a lot of my clients also like the warm bottom end that the EO-2 provides, and it seems to have the unique ability to make a



JON ASTLEY... Uses TL Audio's EQ-2 on projects for artists such as Led Zeppelin, Tori Amos & Tears for Fears.

DAT master sound like it's coming straight off analogue tape."

The latest project in Astley's busy and varied schedule is

'Tropicana di Cuba' - which he has produced for Harvey Goldsmith Entertainments and Atlantic Records.

# Ricky 'Wilde' about **TL Audio Ivory Series**



When Peter Barker (Chief Engineer at Sony Music Studios in Santa Monica), volunteered for his first day at A Place Called Home, a community studio in South Central LA. he recognised that something was missing - a first class vocal chain.

"The first unit that came to my mind" says Barker "was the TL Audio Ivory VP-5051 valve voice processor. I had a lot of experience with TL Audio and I knew the VP-5051 would be the perfect unit."

After the first session, Douglas Gibbs, the APCH Musical Director commented: I never knew our mics actually sounded that good!"

"Since the VP-5051 arrived it has been used almost every day and says Barker, "It's nice to let the students

Mention Select Sound and you immediately think of Kim Wilde: the Hertfordshire studio is her longtime recording base, and currently the studio is busy with the tracking and mixing of her forthcoming MCA album

Like all of Wilde's previous hits, the songs for the album have been written by brother Ricky, who alongside engineer lim Richards is also co-producing the album which has featured TL Audio Ivory range products heavily.

We've used the Ivory 5013 equaliser, 5021 compressor and 5051 voice processor on just about everything on the album, with

sources going through the lvory units to our 32 track Pro Tools system\* said Richards. "The 5051 handled all the vocals on the album: we used



News Editor

it in conjunction with a Sony C800 valve microphone and it has to be the best vocal sound we've ever achieved - really clear and unaffected."

With mixing of the album about to commence, the Ivory units have got plenty more work to do: the 5021 and 5013 are to be employed across the stereo mix buss, with the 5051 to be used for extra sweetening of Kim Wilde's lead vocals.

Ricky Wilde concluded by saying;

"What is so impressive about these boxes is their ability to process signals

heavily without you realising just how hard they are working. That's really what sets them apart from so much of the competition."

# TL Audio C-1 Compressor For CTS

CTS STUDIOS, part of the Lansdowne Group and one of Europe's largest independentlyowned recording facilities, has recently acquired a C-1 Stereo Valve Compressor from TL Audio. Already a favoured tool, Toby Wood, one of the resident engineers at CTS, explained:

"We have a huge choice of quality gear at CTS and any new item, however superficially attractive. has to make a genuinely useful contribution before we will decide to accept it - and we don't make these decisions lightly."

"The TL Audio compressor proved its worth very rapidly, sounding clean and transparent, and without any unwelcome artefacts - it also has an excellent internal dynamic range.

"The design is well thought-out and it's a very honest box - it does exactly what it says it will do on the tin!"

# **Lots more** warmth for Morcheeba

European Correspondent

ONE of the most individual and unique acts to emerge from the UK recently is Morcheeba, who are currently on a world tour to coincide with the release of their latest album 'Big Calm' on China Records, which has achieved instant chart success. The sound of vocalist Skye Edwards is an essential element of the band's appeal, and for the tour her vocal sound has been handled by a TL Audio Ivory 5051 valve voice processor.

The Front of House engineer is David Woolgar of Astra Audio, who installed the 5051 just in time for the opening date of the tour at the legendary Ronnie Scott's club in London. Having been a long-standing owner of a C-1 Stereo Compressor (as are the band themselves), he had no hesitation in choosing the Ivory unit. Prior to the start of the US leg of the tour, Woolgar told TL Audio:

"The 5051 has performed faultlessly, and regarding it's sonic performance it has lived up to my high expectations. I have used it on every show to date, and it has really helped bring out the subtle qualities of Skye's voice, the live sound of which has come in for a lot of praise. When sound check time has allowed, I have compared the mic preamps of the front of house consoles to that of the 5051, and I have always preferred the latter.

After returning from the US, the band will be embarking on an extensive European summer tour during which Woolgar indicated that "The 5051 will be with us for



DAVID WOOLGAR...On tour with a TL Audio Ivory 5051

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# STEVE HOWELL'S VERDICT

I differ from some of the other commentators here in that I don't own a Minimoog as such. Instead, I have a Studio Electronics MIDIMini. This is not to be confused with the later SE1 from the same company — the MIDIMini is not a replica but a genuine Moog with original Minimoog boards, recycled, modified and repackaged in a 19-inch rack. Of all the synths that have been in my possession (and that includes an ARP2600 and Odyssey, Oberheim SEM, Sequential Pro One and many more), my MIDIMini is without doubt the best-sounding and most playable synth I have ever owned. Suffice to say, it is now the only analogue synth I possess!

With that in mind, how does the new Minimoog compare with my (albeit bastardised) original? I can only say amazingly well! With a bit of tweaking on both instruments, I could get them to sound pretty much the same and to my ears, the new Minimoog sounds as close to the genuine article as you're ever likely to get. Bearing in mind that not all genuine Minimoogs were created equal, the new one may even sound better than some originals!

However, I have to voice some disappointment too. My MIDIMini not only has oscillator sync, envelope control of pitch, versatile front panel routing of velocity and aftertouch and many other refinements, but also sports a separate LFO dedicated to vibrato, leaving Oscillator 3 free to be used for audio duties at all times. Personally, I feel that Moog Music might have missed an opportunity to improve upon the original design by not including these features. I completely understand their desire to replicate the Minimoog exactly, but they have already strayed from the original specs with the addition of PWM, the Transpose switch, MIDI and a choice of single or multiple triggering — so why did they not go the extra mile and include these additional features? Along with a sprung pitch-bend wheel, they would have made the new Minimoog quite a bit more flexible and, in my view, more desirable.

That said, the new Minimoog is quite an achievement. It looks gorgeous, 'feels' gorgeous and sounds gorgeous just like the original in fact! ▶ 204E seemed to self-oscillate even higher into the ultrasonic range than my old 11858. Definitely no shortcomings there! Setting the keyboard tracking to full (both switches on) with the filter still self-oscillating showed the filter to track the keyboard with an accurate 1 volt per octave, meaning you can play tunes using the filter itself as an oscillator.

The personality of this filter was clearly demonstrated with this following test: I fed a simple, raw sawtooth sound from my humble Juno 106 into the Minimoog's external audio input (while triggering the envelope contour from the Moog's keyboard) and was not at all surprised to find that the Juno totally adopted the Moog sound. The next logical step was to send the MIDI out from the Juno to the Moog (to trigger the envelope generators in sync with the Juno's keypresses) and you end up with something rather like a polyphonic Minimoog with a monophonic envelope generator.

So how did 204E fare when requested to copy exactly sounds set up on the older machine? Well, the short answer is that there was nothing that I set up on 11858 that I couldn't replicate with near-enough total accuracy on the replica, with the exception, as previously explained, of some of the more square-wavey sounds. 204E has the additional advantage of PWM, so even richer sounds can be made with two oscillators, freeing up oscillator 3 to do the weird duties at which it excels. 204E has all the weight and solidity of tone that the original has, with a wonderfully authoritative bass end that manages to avoid being woolly.

# **COMPARATIVE FEEL**

Which brings us to the matter of how the new Minimoog feels, physically, to play. Naturally enough, improvements in technology that we enjoy nowadays have been applied where appropriate, and the keyboard is the obvious example. It has the original Minimoog's three and a half octave F-C range, but is of the modern digitally scanned type, rather than the old leaf-spring closure variety that was so prone to wear and failure. This keyboard has a tighter, springier feel than the one on 11858, but seems perfectly appropriate for the instrument. The older Moog's keyboard is actually acoustically quieter than the modern one, but this is hardly a major issue.

As I learned with my three Minimoogs, the pitch and mod wheels can also vary in feel and response across different units. The replica Moog's pitch wheel has a firm centre detent together with what seemed to be a slight dead spot, thus minimising any tendency for the pitch to wander away from the centre point. In this respect it is slightly better than my old 11858, which has little or no dead spot and relies entirely on the detent to stay centred. The mod wheel has a rather steep response curve, making it hard to accurately apply subtle amounts of vibrato — it does tend to come in a bit suddenly. This, however, is no different to the mod wheel on 11858, which is also a bit on the fierce side, so I guess we can say it's an accurate copy! It might be nice to see a mod wheel fitted which has a shallower logarithmic curve at the bottom of its travel — no need to abide too rigidly to the replication! Just a thought...

As with the original, the tuning pots for oscillators

2 and 3 are quite sensitive, requiring a little patience and a steady hand to get the oscillators detuned to an exact amount. To that end, I had a locking 10-turn pot (shown on page 170) fitted to replace 11858's oscillator 2 tuning pot, making the process a little less inexact. It may not be true to the original design, but I think it's something the designers might like to consider, maybe as an optional extra.

### SOME TIME LATER THAT DAY...

Other minor differences included the output level, which is higher on the older Moog than the replica. Both synths were running into identical mixer channels, set at the same level and (naturally) without EQ. The high level output of each synth was used. With 204E set at full output volume, the equivalent perceived volume on 11858 required a level of 6, according to the front-panel graphics.

One other curiosity concerned the way the oscillators beat together when tuned in unison, particularly audible when all are using the sawtooth waveform. Oscillators 1 and 2 exhibited a smooth, rolling liquid quality, but if I attempted to close-tune either oscillator 1 or 2 to oscillator 3, the results were not so smooth. The waveforms would go out of phase at the zero beat point, resulting in a distinct volume drop at that moment. This was especially noticeable at lower pitches like 32' (OK, OK, I was doing my favourite Taurus pedal impersonation...). Since oscillator 3 is quite often going to be used for modulation duties, this is perhaps being ultra picky but even having all three oscillators sounding at once didn't quite disguise that momentary phase cancellation. Incidentally, I checked 11858 to see if it had the same problem, and it doesn't.

The pitch wheel bend range is quoted in the manual as being +/-9 semitones, (as on the original Mini) or +/-2 semitones when DIP switch 4 is in the alternative position. In fact the actual ranges turned out to be +/-11 and +/-3 semitones respectively — something that needs to be checked if Minimoog convention is to be fully honoured!

The original Minimoog's envelopes were single-triggering only, meaning you had to release the keys altogether between notes before the envelopes would perform their complete cycle again. The replica Mini can be switched to multiple triggering (the envelopes retrigger whenever any new note is sounded) using the third DIP switch on the top panel. Since this is a feature that one is likely to want to access quickly and often, I wonder why a fourth flip switch couldn't have been added to the main front-panel controls for this purpose — there's certainly enough room. There may be internal constructional constraints, but if not, maybe Moog Music might consider moving this switch so that it becomes practical, especially during live performance, when you just don't have time to lean over the back of the synth with a matchstick, a magnifying glass and a torch...

Last in the list of critical observations is the maximum decay time with the decay switched to 'on' (introducing a release phase to the envelope). Comparing 204E to 11858, the older Moog had approximately five seconds more decay time to play



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# MOOG MINIMOOG 204E



with. Such a discrepancy may well be found comparing two vintage Minimoogs, however — as mentioned earlier, component tolerances are quite likely to be the reason for this.

### MIDI

As can be seen from the list in the Specification box. the new Minimoog adds MIDI to the original spec. providing velocity response (applied to the VCA and VCF) plus a number of controllers permanently assigned to appropriate parameters. In practice, I found that reducing the velocity range of the external MIDI keyboard (in this case a Roland A50) produced the best results. If the velocity range was set to the full 0-127, the Moog tended to end up with the filter pushed wide open unless you played with a featherlight touch. Of course, the external keyboard's velocity range and the Moog's cutoff, contour amount and envelope controls are highly interactive as you might expect, so a little experimentation is needed depending on the extremes of response required. The pitch wheel range as received via MIDI was also closer to the quoted spec than that of the Minimoog's own

pitch wheel, for some reason, although this is apparently a MiDI software bug that Moog are already tackling.

### **ROUNDING UP**

There's no guestion that Moog Music have made a largely faithful copy of the Minimoog, at least as far as comparison with a 1980-vintage original is concerned. Just one or two points need to be addressed (the accuracy of the square waveform, the oscillator and A440 calibrations, the pitch-bend range) and one or two other potentially beneficial enhancements could possibly be considered, such as bringing the single/multi trigger switch round to the front, providing a slightly less ferocious mod wheel, and offering a 10-turn locking tuning pot, either as standard or as an option. Despite all my minutely critical comments (which I believe are the sort of details any other Minimoog aficionados would investigate themselves) this replica is, to all intents and purposes, the real thing.

The final question to ask is: should you buy one of these or a second-hand original? Alternatively, if it's just the Minimoog sound you're after, and the physical design and appearance of the thing isn't an issue, there's also Studio Electronics' SE1 (reviewed SOS January '94), a rackmounting, MIDI-equipped module that boasts a circuit design based on that of the Minimoog together with a host of additional features.

At £1499 including VAT, the 204E doesn't come cheap — second-hand Minis pop up from time to time in the classifieds at prices that vary from sublime to ridiculous, depending on which trendy britpop/techno outfit was last known to use one. Finding one for something comfortably (maybe very comfortably?) under a grand shouldn't be impossible, but bear in mind that you'll be buying whatever problems it may have, too. Unless you really know what to look out for, and are prepared to pay a bit extra to have, say, the keyboard contacts and pots cleaned up or even replaced, you might find it better in the long run to go for the newer model. It has the advantage of a guarantee, it's built with modern components which are at the start of their life, not 20 years into it, and you won't need to shell out the extra cash for a MIDI retrofit or a MIDI-to-CV converter. For those of you who are VAT-registered, the price starts to look even less daunting.

From what I've experienced of the 204E, I really am looking forward to seeing which other instruments from the Moog range will make a reappearance — maybe some brand-new products will be developed that have all the classic Moog trademarks. What would be top of my wish list? OK Computer, replicate me a set of the original Taurus bass pedals and I'll be a happy boy...

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# PAUL WIFFEN'S VERDICT

As it had been a while since I used a Minimoog, I rang my producer friend Martyn Phillips who uses one regularly in his productions and sound design, and we set it up in his studio next to his original.

To me, the new machine sounded very much like Minimoogs I have known and used over the years, but Martyn commented fairly quickly that it sounded a little 'cleaned up'. After A/B-ing, he also remarked that the envelopes on the new unit had been speeded up, which we were able to confirm using an oscilloscope. The VCA's minimum attack/decay time was visibly shorter, down to half that of the vintage Minimoog, although that may be an idiosyncrasy of Martyn's machine.

I remembered most Minimoogs as having been modified for oscillator sync (as is Martyn's), and I was disappointed not to find this on the new unit, as it has become a staple of my sound design. As far as deliberate front-panel alterations were concerned, we both liked the inclusion of separate Pulse Width Mod routings for Osc 1 & 2. With a fastish LFO speed it would give that slightly out-of-tune effect so beloved in rave music, although Martyn measured the maximum variation as only 20 percent of the duty cycle (is. only moving between 40-60 percent Pulse Width). I was surprised this was so small, but I suppose you can't complain, given that the original doesn't offer PWM

at all. Having found the single/multiple triggering DIP switch, we agreed this was a nice addition. The fixed single triggering of the original always drove me nuts, as its low-note priority still does.

The overall quality of the filter was noticeably different between the two machines, with the new having a sharper, colder character. Martyn's serial number is in the 6000s (earlier ones tend to have a more 'rubbery' character, whereas later ones can be a bit 'flaccid'-sounding) Whilst the new machine didn't stray to these extremes, we both felt it didn't quite have all the balls of his original. This is by no means a bad thing — it was a little reminiscent of the Roland System 700, or even a Prophet, and both these give a very usable sound in themselves. We found that some compression on the newer machine helped compensate for this subtle difference between the two.

Martyn felt that the new machine's MIDI implementation was less flexible than the Kenton modification on his original, although the pitch wheel range switch was a nice addition. With respect to the price, we felt that £1500 was a bit steep, as you can get a second-hand original for £800. I guess if you allow for VAT and a years' warranty, however, this is pretty reasonable. In addition, most original Minimoog keyboards are now rather beaten up, so it is nice to play one from a young keyboard with springs that still have some vigour in them.





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Superficially, it may look no different from other soundcards, but Yamaha's new DSP Factory is a real TARDIS when it comes to facilities. MARTIN WALKER explores a soundcard that's bigger on the inside than it is on the outside.

f you were offered a brand new soundcard for under £600, which not only provided hard disk recording facilities but also contained the inner functions of a Yamaha 02R digital mixer, you might suspect that it had fallen off the back of a lorry. But there's nothing shady about the DS2416 digital mixing card, which will be available from all Yamaha dealers by the time you read this. The DS2416 forms the heart of Yamaha's DSP Factory hard disk recording system, and is a PCI soundcard which supports up to 24 channels of digital mixing and 16 simultaneous channels of audio playback from a hard drive.

The secret of the DSP Factory's amazing price is that while it provides onboard DSP (Digital Signal Processing) functions that will make many people's jaws drop, the I/O on the basic soundcard has been kept to a sensible minimum. On the backplate of the card, therefore, there are just six phono sockets — In L and R (analogue), Out L and R (analogue), Digital In, and Digital Out — although the system can be expanded to provide more external inputs and outputs if required (more on the expansion options in a moment).

By now, however, you may be slightly confused: what's the point of having 24 channels internally if there are so few hardware ins and outs? The secret is in the 02R mixer functions provided by the DS2416's onboard DSP chips. If you are using the DS2416 by itself, you can record mono or stereo audio channels separately to your hard disk at up to 32-bit resolution (depending on the software you use). When it comes to playback, however, up to 16 channels of audio can be streamed from your hard drive simultaneously, each with its own internal mixing channel which provides a four-band parametric EQ, dynamics processor, six aux sends, 10 buss outputs, and comprehensive metering. There are also two on-board stereo multi-effect units (based on the Yamaha REV500), and these provide a choice of 12 reverb types, 11 modulation types, two distortions, three dynamics processors<sub>a</sub> and 12 combination effects.

The DS2416 is also free of the limitations faced by some other systems where resources must be shared between the channels — you will never have to decide whether to remove some EQ from existing mixer channels to release enough DSP power to add compression to another, for instance. The DS2416 can simultaneously run a total of 26 channels (by default these are mapped as the 16 hard disk audio channels, four effect returns, two external analogue inputs, two external digital inputs, and a stereo master output channel), 104 bands of parametric EQ (four bands for each channel), and 26 dynamics processors.

All of this, moreover, is accomplished without using up any of your computer's CPU processing power at all, since the processing is all done by the soundcard's DSP chips. Given the number of people struggling to run a small selection of real-time plugins with their chosen MIDI + Audio sequencers, DSP hardware effects support is more than welcome. Although most modern soundcards have at least one DSP chip which normally controls audio mixing and routing, and several manufacturers have promised future updates with some of their spare DSP power devoted to proprietary effects, it is much safer to rely on a system that ships with this built in from the start.

# **EXPANDING YOUR HORIZONS**

Although the DS4216 is a standard PCI expansion card, it is only seven inches long, and should therefore fit into nearly all PCs or Macs. Little touches of quality abound, such as the black anodised finish of its

# pros & cons

# YAMAHA DSP FACTORY (599

### DFOS

- Staggering facilities for the price
- Effects take no computer processing nower.
- Will work well with any make of computer processor,

### com

- Difficult to control fully using
- software alone.

  No control software provided.
- Needs a minimum of a 1024 by 768
- resolution screen, and preferably a

  19-inch or larger monitor.
- Even after the Mac drivers arrive, the
   AX44 expansion won't fit Mac computers.

### summary

An extremely varsatile and powerful system that will provide high enough audio quality for most people at a bargain price, but very dependent on third-party support to get the most out of it.

SOUND ON SOUND

backplate, complete with gold-plated phono sockets. The analogue inputs and outputs both feature 20-bit converters, and the S/PDIF input and output will operate at up to 24-bit resolution. If you only tend to record your music a track at a time, this basic I/O will probably be enough, but four additional internal connectors are provided along the top edge of the circuit board for expansion purposes.

The IO-A and IO-B connectors let you add one or two optional AX44 expansion units. Each provides an extra four analogue ins and outs using unbalanced quarter-inch jack sockets, as well as a headphone output, attaches to the DS2416 by an internal ribbon cable, and is fitted into a spare 5.25-inch drive bay on the front of a PC (see box for further details). The audio streaming engine supports up to eight simultaneous

recording channels, and with a full complement of a DS2416 and two AX44s, you will have a total of 10 analogue inputs and 10 analogue outputs, as well as the digital in/out. An 16-channel ADAT-style optical interface has also been mentioned for future release (both the IO-A and IO-B connectors can accommodate either four- or eight-channel expansion units).

The other two internal connectors are Serial In and Serial Out, which allow either a further DS2416 card to be cascaded for 48-channel operation, or the integration of the forthcoming SW1000XG card. This adds a 64-voice polyphonic MIDI synthesizer, complete with 20Mb of ROM waveforms from the MU100 MIDI module, and a further five multi-effects processors. The SW1000XG should run in perfect sync with the DS2416, with the former's MIDI voices having access to all of the latter's 02R mixing and effect functions

# **INSTALLATION**

The DS2416 requires a single IRQ and no DMA, and since PCI cards have their IRQ settings chosen automatically, installation is simple. Once the new hardware has been recognised by Plug and Play, Windows requests the supplied floppy disk containing the Multimedia driver files, and you should be up and running in only a few minutes.

The drivers appear to Windows as eight stereo output pairs (DS2416 #1 to #8 Wave Outs), and four stereo input pairs (DS2416 #1 to #4 Wave Ins). Mac drivers, as well as ASIO drivers for *Cubase VST*, are both promised in about October.

Because of the Multimedia drivers, the DSP Factory should immediately work at the basic recording/playback level with any Windows 95 or 98 audio application, which means that anyone already using packages such as Logic Audio, Cubase VST, Cakewalk Pro Audio, or one of the stereo sound editors like Sound Forge or Wavelab, will be able to



get useful work done straight away, without having to learn a new recording package.

There is little to see once the drivers have been installed — when you run the Setup.exe file (also on the driver floppy disk) a small Check utility is installed which reports on how many DS2416 cards have been found and whether the drivers have been installed properly, and checks for correct functioning of the onboard DSP chips. A 1kHz sine wave test tone can also be sent through all analogue and digital outputs, including any connected AX44 expansion unit outputs, which is useful when checking your external wiring.

On the accompanying CD-ROM (along with the PDF version of the supplied printed manual and various demos), a separate Patch.exe utility is also provided. This provides basic input/output patching, word clock source and digital I/O format selection, if you don't have an audio application that directly supports the DSP Factory (see the lower screenshot on page 184).

Cakewalk Pro Audio 7 already has a free update to support the DSP factory available from its web site. The EQ, Dynamics and DSP effects can be chosen and adjusted using pop-up windows as shown here.

# AUDIO SPECIFICATION

### **DSP FACTORY SYSTEM**

Sampling rates: 44.1kHz or 48kHz internal, 41.45kHz to 50.88kHz internal varipitch, 30.08kHz to 50.88kHz external.

Frequency response: 20Hz to 20kHz, -3/+1dB.

### DS2416 DIGITAL MIXING CARD

Inputs: two off analogue (20-bit 128-times oversampling A-D), one off stereo digital S/PDIF (coaxial).

Outputs: two off analogue (20-bit eight-times oversampling D-A), one off stereo digital S/PDIF (coaxial).

Nominal levels: -10dBV.

THD: less than 0.02 percent (20Hz to 20kHz). Dynamic range: A-D + D-A typically 93dBA, D-A typically 94dBA.

# MIXER FACILITIES AVAILABLE ON EACH OF THE 26 CHANNELS

Four-band parametric EQ (12 types), dynamics (six types), six Aux Sends, eight Bus Assigns, Pan, Meter, Fader.

Effects: Effect 1 (39 types), Effect 2 (40 types).

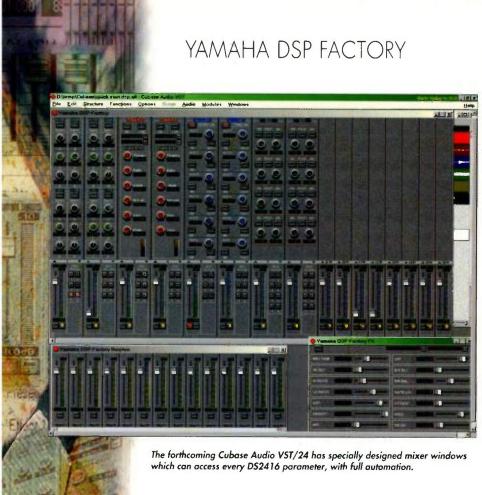
# **AX44 AUDIO EXPANSION UNIT**

Inputs: four off analogue (20-bit 128-times oversampling A-D).

Outputs: four off analogue (18-bit 8-times oversampling D-A), headphone output hardwired to outputs three and four.

Nominal levels: -10dBV, but inputs one and two are switchable between Line (-10dBV) and Mic (-50dBV) sensitivity.

THD: less than 0.01 percent (20Hz to 20kHz). Dynamic range: A-D + D-A typically 100dBA, D-A typically 106dBA.



# THE AX44 AUDIO EXPANSION UNIT

If you need more inputs and outputs, the AX44 is a neat solution. Housed in a standard 5.25-inch drive enclosure, this fits in your computer exactly like a CD-ROM drive, and connects internally by a ribbon cable to the DS2416 card. Four inputs and four outputs are provided, all on quarter-inch unbalanced jack sockets. The first two Inputs each have an associated silde switch which selects either Mic (-50dBV) or Line (-10dBV) operation, while the other two are both at Line level. All feature 20-bit, 128-times oversampling A-D converters.

All four outputs are identical, with a -10dBV level, and using 18-bit eight-times oversampling D-A converters. In addition, outputs three and four also appear at a headphone output alongside, which has its own level control. A useful touch is the LED power indicator, which can be interrogated from the Check utility — the LED can be made to illuminate by clicking on a button, and this can also be useful if you connect two AX44 units to a single DS2416, and wish to identify which is which.

Since the case provides reasonable shielding from the rest of the computer, noise levels are fairly low, and although you can't expect the mic inputs to compete with those of an external mixing desk, they are still very capable, with a quoted equivalent input noise of -120dBV.

## SOFTWARE SUPPORT

The DSP Factory is primarily a hardware product, and Yamaha are relying on third-party developers to add support for it in new or existing software. Given the exciting nature of this product, there is no shortage of companies who are adding the required low-level calls to the Yamaha hardware so that their software can talk to it directly. It is up to the individual developers to decide how these extra facilities are marketed — some may provide free updates downloadable from a web site, others may introduce them in a chargeable upgrade, and there are some completely new products as well.

At the time that this review was written (late August), much of this software was still in beta form, but even so there were various applications being demonstrated at the Yamaha press launch, some of which I was allowed to take away. By the time you read this, more of these applications should have been launched.

Cakewalk have been quick off the mark — there is already a free update (DSPFactory.exe) available on its web site for *Cakewalk Pro Audio 7*, which installs and registers the various audio effects plug-ins that are supported by the DSP Factory. All the MIDI and audio channels appear in the Console view (see screenshot on page 181), and the right-hand side of this shows the eight new DSP Factory stereo track pairs (the Master sections). By right-clicking the patch-point in any Master section module, you can patch in any DirectX or DSP Factory function. DirectX Insert effects can be used both as track inserts and in aux busses, but the DSP Factory FX can only be used as master effects.

In essence, you can use DirectX plug-ins (if required) on individual audio channels, and then

# SYSTEM REQUIREMENTS

Since so much of the functionality of the DSP Factory is provided by the onboard DSP chips computer requirements are modest, and depend largely on how many audio channels you want to achieve. Yamaha suggest a minimum of an Intel Pentium 100MHz with 24Mb RAM, and recommend an Intel Pentium 166MHz and 48Mb RAM. For once the question of using other makes of CPU is largely irrelevant, since the audio processing is carried out on the soundcard itself. However, if you want to run DirectX real-time plug-ins as well, then an Intel processor is recommended, and preferably a Pentium II.

During my time with the review model, I sometimes found using such a well-endowed software mixer with a 17-inch monitor screen a little unwleidy — even at 1280 by 1024 pixels some software will struggle to display more than a section of the mixer. This is a fundamental stumbling block with any digital mixing console controlled via software alone, and each software developer will have a different idea on how to design the user interface so that you can quickly and easily access any parameter without losing sight of the whole picture.

route any number of these channels to any of the eight stereo pairs of DSP Factory channels for further EQ, dynamic or effect processing. This allows more than 16 channels of audio to be played back and mixed simultaneously. Controls to edit individual channel EQ, Dynamics and Effects appear on demand in separate floating windows, which keeps the main display comparatively uncluttered. Cakewalk also seem to have cleverly re-engineered the DSP Factory effects as DirectX compatible plugins — after installing the *Cakewalk* update I found three extra entries for the Equaliser, Dynamics, and dual Multi-effects in my other DirectX compatible applications, with identical *Cakewalk* windows.

I was lucky enough to be authorised to try out a beta version of the forthcoming Cubase Audio VST/24 version 3.6, which also has specific DSP Factory support. This is an upgrade to Cubase Audio VST (and not the standard VST and Score versions). It wouldn't be fair to comment on any of the other new features of this software here, since it wasn't a completed version, and some things may well have changed before the release date. However, there were three completely new windows specific to the DSP Factory, controlling the Mixer, twin Effects processors, and the Buss/Aux outputs (see screenshot above). Steinberg have implemented the mixer with mono channels (rather than the stereo ones of Cakewalk), so each has its own pan control. Although this seems more versatile, you currently have to set up alternate channels in the VST mixer as Buss 1 left, Buss 1 right, Buss 2 left, and so on, so that they are routed correctly to the DSP Factory mixer.

The VST mixer graphics look wonderful, and to cope with the huge number of extra controls, various display options are available — these are switched by clicking on the narrow strip running horizontally across the mixer above the faders. The 'Narrow' option shows only Pan, Fader, Meter, and Mute and Solo buttons at the bottom of the channel strip, whereas the EQ, Dynamics, Buss Send, and Aux Send options each expand the channel to double the 'Narrow' width, and provide the appropriate controls for each of these functions in the area above the fader section.

The new DSP Factory Mixer console can be used alongside the existing *VST* mixer console, to provide

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# YAMAHA DSP FACTORY



C-Console (from C-Mexx) provides a more traditional mixer view, which may suit some people better. It provides snapshot facilities, as well as libraries for functions such as EQ and Effects, and if you are using SEKD's Samplitude some automation is also available.

n/Patch	OutF	Patch   WordClock												
	REC 1/2	REC 3/4	REC 5/6	REC 7/8	10-9 1/2	10-R 3/4	10-8 1/2	10-B 3/4	D/A	SPOIF	10-A 5/6	10-A 7/8	10-8 5/6	10-8 7/8
BUS 1/2	1	1	1	1	1	11	1	1	1	1	1	1	1	1
BUS 3/4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
BUS 5/6	5	5	5	5	5	5	5	5	5	5	3	5	5	3 5
BUS 7/8	7	7	7	7	7	7	7	7	7	7]	7	7	7	
AUX 1/2	1	1	1	1	1		1	1	1	1	1	1		71
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The supplied Patch Utility provides basic routing facilities.

# TECHNO TALK

The bulk of the DSP Factory's clever bits are contained within five Yamaha DSP3 custom DSP chips (three for mixing, one for audio streaming, and one for the effects). These can also be found in both the 02R and 03D mixing consoles, and there is also one on the forthcoming SW1000XG soundcard. Unlike most other manufacturers who use third-party chips (often from the Motorola range) Yamaha actually design and manufacture their own DSP chips, which are apparently optimised for audio use.

However, there are other proprietary chips on the DSP Factory circuit board — the 20-bit A-D converters are CS5335s, made by Crystal Semiconductor, which are also found on the Event Gina/Darla cards. The converters on the AX44 expansion unit are even better, and typical noise levels are several dBs better than on the DS2416 (though these are pretty low already).

The mixer sections feature a 32-bit data path, 24-bit coefficient, and 42-bit accumulator, and the EQ has a 44-bit data path, 32-bit coefficient, and 54-bit accumulator. This all sounds suitably awe-inspiring, but it is the host software that determines the recorded bit depth, and all the applications I looked at only work at 16-bit resolution at the time of writing. The same situation applies to aspects ilke sync'ing to MIDI Clock, MTC, and SMPTE timecode, all of which is

dependent on the host software to a large extent. The DS2416 has its own internal clock, but it is up to individual applications to support this facility.

Software has to communicate with the DS2416 using fairly low level API (Application Program Interface) calls, but it is also possible for the software to provide MIDI control of some of the functions, which is apparently what Cakewalk Pro Audio 7.0 does. This means that if any hardware control surface is released, it will also need special drivers - the sheer numbers of possible controls make it difficult for MIDI controllers to be used, and the amount of SysEx data needed for real-time MIDI automation doesn't bear thinking about.

▶ access to both hardware effects and software-based effect plug-ins, and every one of the hundreds of new DS4216 controls can be fully automated. Since the twin effects of the DS2416 are more easily used for providing more global effects such as reverb, I found myself using the *VST* Channel Inserts for specific DirectX plug-in effects to supplement those of the DSP Factory. My main reservation here is that to access both ActiveMovie and DSP Factory effects, you currently need to run both mixers (*VST* and DSP Factory) side by side, which not only takes a bit of getting your head around, but also needs a large monitor to fit everything on screen at once. However, these are early days, and by the release date there may be more integration.

Emagic's Logic Audio Gold and Platinum are also being provided with DSP Factory support, and these are again up to the beta stage, although I didn't manage to try the new facilities for myself. The update will be free to registered users, with release expected by the end of September. However, Emagic's approach seems to be a combination of those taken by Cakewalk and Steinberg. Each of the 16 Tracks can use up to six Inserts (any combination of DirectX plug-ins or the Yamaha EQ or Dynamics),

as well as two Effect Sends to the DSP Factory multi-effects. Control of the two effects and the stereo Master channel is on the right-hand side of the mixer.

The advantage of this approach is that you only have to deal with a single integrated mixer, and each of the 16 channels can have its own Pan (or Balance) control. However, without any further submixing facilities, there will be a maximum number of 16 channels available for audio use. *Logic Audio* uses the Yamaha multimedia driver for playback and recording, and therefore their PC AV driver (for other MME soundcards) cannot be used simultaneously with the DS2416, although (as is often the case with Emagic) parallel operation with Audiowerk8 is still possible. At this stage, it's not clear whether *Logic* will

offer support for multiple cards, or just one.

If your favourite hard disk recording package doesn't provide direct support for the DSP Factory system, there are also stand-alone programs which you can run alongside it. C-Mexx have already produced several pieces of software which provide remote control and a computer front end for other Yamaha digital mixers such as the 02R and 03D. Their C-Console provides a more traditional mixer view for the DSP Factory (see top screen above), which may suit some people better than the other virtual interfaces. It has snapshot facilities, as well as providing libraries for functions such as EQ and Effects, and if you are running it alongside SEKD's Samplitude package, up to six parameters on each channel can be chosen for automation. However, while well designed and graphically easy to use, at £149 (including VAT) it is an expensive way to gain access to functions that other sequencer manufacturers are providing as free updates or for a modest upgrade fee.

#### IN USE

I was able to spend some time using most of the applications listed above, and was very impressed with the DSP Factory's audio performance — as you might expect, considering the excellent SOS reviews already received by the O2R and O3D digital mixers (August '95 and June '97 issues respectively) and the REV500 reverb (March '97 issue). Audio sound quality was excellent, and although all of the packages I used were currently only capable of 16-bit operation, background noise was still very low. Using my standard Sound Forge test for A/D conversion, I measured signal/noise ratio at –90dB, which would equate to about –93dB when A-weighted (exactly what the manual claims).

I was particularly interested in comparing the effects to other DirectX plug-ins at my disposal. There are 39 algorithms for Effect 1, and 40 for Effect 2 (the extra algorithm provides "High Quality Pitch Shift"). These range from various reverbs, early reflections and gates, through echoes and delays, chorus, flange, and phaser, to more unusual options such as ring mod, an amp simulator, dynamic filter, and various combinations of effects such as distortion and delay. These are all up to Yamaha's normal high standards, with clean smooth reverb tails and low noise (although, as you might expect, you do have to be careful with the distortion options where unwanted noise is concerned)

Yamaha's reverbs, in particular, sounded very smooth when compared to a variety of DirectX plug-ins (including Waves' TrueVerb, the Hyperprism Hyperverb, and the TC Native Reverb), and I suspect this may be due to having the luxury of more processing power allocated from the DSP chips than anyone could afford to give to a DirectX plug-in. All of these reverbs sound good, and I would happily use any of them in a track, but of course the beauty of the DSP Factory effects is that switching them in gave absolutely no increase in the computer's CPU overhead — it almost seemed too good to be true.

#### CONCLUSIONS

Many people need to record only a single mono or stereo track at a time, but still want multitrack outputs to patch in external effects (largely because you normally need such a powerful computer to run many effects in software). The beauty of the DS4216 is that with high-quality integral effects (which take no processor overhead from your main computer CPU at all), the requirement for multiple outputs becomes less important. The onboard DSP mixing power may also enable your computer to manage a larger maximum number of simultaneous audio channels.

In case you do decide that you want more access to the outside world, however, buying an

AX44 in addition will give you a total of six analogue ins and outs for a total outlay of just under £800. £1000 will get you a DS4216 with two AX44 units, giving 10 ins and outs (not to mention the stereo S/PDIF digital I/O). You can even cascade a second DS2416, giving a potential 48 mixer input channels. The DSP Factory looks destined to appear on many musicians' shortlists. It sounds good, and provides an incredible amount of hardware capability on a single soundcard.

My main reservation is in the area of the user interface. Although you can use the DS2416 immediately with any Windows 95/98 application for recording and playback, access to the mixer functions relies on third-party software support. Whilst developers are beavering away adding facilities to existing software, each of them is accessing the hardware features in a different way. At the time of writing, Logic Audio seems to have the most elegant implementation (at the expense of having a maximum of only 16 audio channels, and no confirmed support yet for an additional DS2416). Cakewalk takes the straightforward option of effectively letting the DS2416 provide eight additional stereo subgroups to its previous maximum of 64 audio tracks. Cubase VST provides the most ambitious interface, and you can quickly create a huge virtual mixer alongside the existing VST one. This, however, can rapidly get unwieldy, especially when inserts have to be set up on one mixer and DSP Factory effects on the other, although things may well have changed by the time of the release version. There are currently no options for a hardware control surface, which would make day-to-day operation a lot easier. Given that every implementation of software is different, however, additional hardware support may be unlikely to appear.

Yamaha are to be firmly congratulated on their hardware achievement. When I first mentioned the DSP Factory way back in the March '98 PC Notes, the only mention of likely price was 'under £1000'. Now that it has arrived, with a shipping price of £599 (including VAT), it represents remarkable value for money. The DSP Factory blows most of the competition out of the water in terms of facilities, but whether or not you find these facilities easy to use will depend largely on your choice of software.

Yamaha DSP Factory £599;
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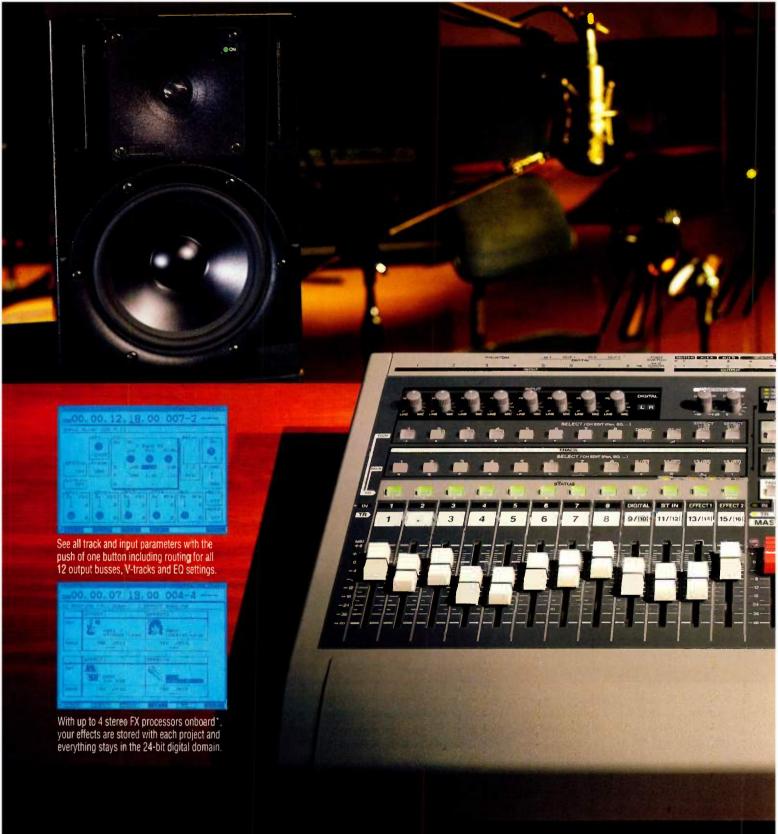
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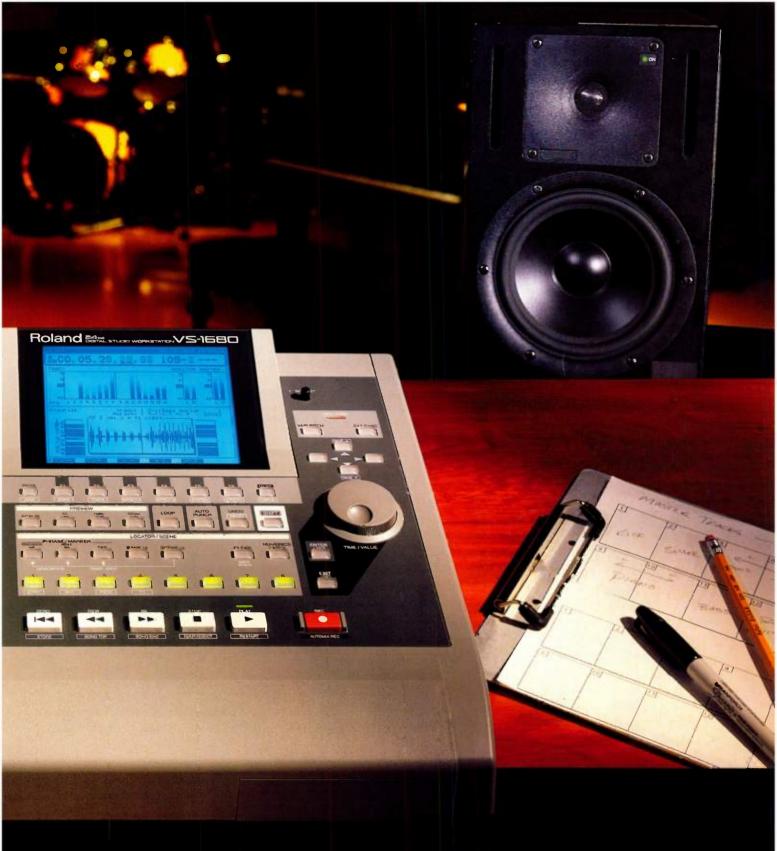


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PAUL WHITE tries out something that he wishes had been available back in his intensive gigging days — a box that automatically puts your vocals in tune in real time!

ack in the August 1997 issue of SOS. I reviewed an impressive piece of software by Antares called Autotune designed to correct imperfectly pitched vocals. At the time it was only available for Pro Tools TDM systems, but has since been made available both as a Cubase VST plug-in and as a stand-alone product. The program I reviewed had two basic modes of operation: an automatic mode that corrected a monophonic vocal line to the nearest notes in a user-definable scale, and a graphical mode that allowed surgically precise corrections to be made to individual syllables via a graphical interface. The device reviewed here is a single-channel hardware box running a real-time version of Antares' automatic pitch-correction algorithm.

The ATR1 works by tracking the pitch of a monophonic voice or instrument up to a maximum pitch of C6 and then comparing the measured pitch with an input MIDI note (either from a keyboard or sequencer), a preset scale or a scale set up by the user. If the signal is correctly pitched, no change is made, but if the pitching is out, a clever pitch-change algorithm increases or decreases the pitch to match the selected MIDI note or the nearest note in the currently selected scale. Because the pitch of the original signal has to be read

before the pitch-shifting can operate, there is a slight processing delay depending on the pitch of the original sound, but this is claimed to be less than 4 milliseconds, which in the context of a vocal line isn't long enough to be noticeable.

Because the ATR1 relies on pitch tracking, it can't work on complex mixes or ensemble voices, and even a solo voice can resist tracking if it includes very breathy, non-pitched sounds. Though there's little that can be done about ensemble sounds, the ATR1 does include a Sensitivity control that makes it a little more forgiving when difficult-to-track breathy sounds are being processed.

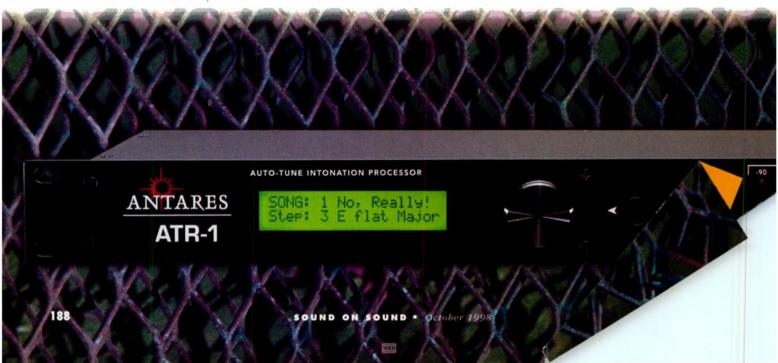
A real vocal performance is never precisely in tune but instead fluctuates a little to either side of the pitch centre. To remove all these fluctuations would make the voice sound unnatural, so the ATR1 provides control over how rapidly off-key notes are brought to the correct pitch. Some musical instruments benefit from fast correction whereas a voice that includes natural glides and vibrato needs to have a slower processing response time. In addition to being able to correct pitch in this way, the ATR1 can also add vibrato to a voice with similar parameters to the modulation you find on a synth — depth, rate and onset delay.

#### **HARDWARE**

Physically, the ATR1 is a 1U rackmount device powered from an included external mains supply adaptor. It has balanced XLR inputs and outputs as well as a balanced jack input and an unbalanced jack output. A further jack socket accepts a footswitch that can be set to operate as a Bypass or to step through Programs and Songs, but given that this unit is also intended to be suitable for live use, it seems somewhat penny-pinching not to have supplied two footswitch jacks so you could do both. To help minimise ground loop problems, there's a switch to choose between circuit ground and chassis ground — you simply try both and use the quietest. There's also a MIDI In socket for remote program selection, but no MIDI Out for SysEx dumps. However, pretty much all the internal parameters can be accessed using SysEx, so there's no reason somebody couldn't write an editor for this machine.

The front panel is simple, clearly labelled and





smartly businesslike, though there's no power switch. Dominating the left-hand side of the panel is the 20-character, two-line backlit LCD display with an adjustable viewing angle accessed via the System setup page. Data entry is via a large knob connected to a shaft encoder, and a pair of buttons move the cursor in the display window. Program accesses the edit pages for Program and Song editing modes while the Page button cycles through the available edit pages. You can't reverse the direction of cycle, which is mildly irritating, but there are relatively few pages to go through, so it's not too much of a problem. Other than that, there's the System button for setting global parameters, such as MIDI, LCD angle and so on, and a Bypass button to switch the processor out of circuit. This works silently so it could be used live.

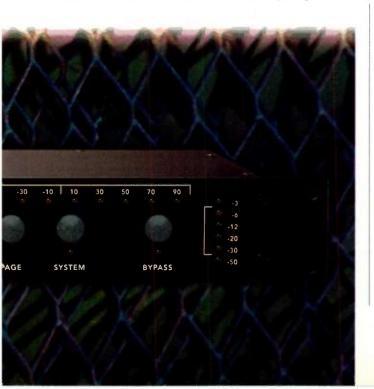
Finally, there are two LED meters — one to show the input level and one to show how much pitch change is being applied up to a maximum of plus or minus 90 cents.

#### **MODES**

The ATR1 operates in one of two modes, Program mode or Song mode. In Program mode, you can use any one of 50 Programs, each of which comprises a musical scale, a Speed setting and any vibrato settings you may wish to apply. If a song uses the same musical scale all the way through, this is probably the most convenient mode to use, though if there is a key change, you can step between two or more programs using the footswitch or via MIDI Program Change commands. One of the factory Programs is chromatic, so providing the singer never drifts by more than half a semitone, you can use this for everything. However, you'd be surprised just how many singers do wander outside these limits on occasions, so specifying a scale is safer! The user can set up any scale required, but there's also a useful facility for bypassing certain notes within the scale so they aren't processed. For example, if a singer only has problems pitching Cs and Ds, all the others could safely be bypassed so as to reduce unnecessary processing.

The other option is Song mode, which comprises 20 Songs, each of which can hold up to 15 steps. Each step can contain one Program with its associated scale or one of several so-called Navigation controls that allow the user to insert loops of Program groups or to include steps where no processing is required. This would probably only be used for live performance as, in the studio, you can stop recording and switch to a different program. During performance, you can move through the steps using the footswitch or via MIDI. When in Song mode, the Song's vibrato and tracking Speed settings over-ride those in the individual Programs, so the Programs are really only defining the musical scale valid for that section of the song to which they relate.

Pitch and vibrato may be controlled via MIDI, either directly from the keyboard or sequencer as explained earlier, or by using the bend



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and mod wheels on a keyboard up to a maximum of +/- one tone bend range and up to the maximum vibrato depth set in the Program. It's also possible to assign a MIDI controller to vary the Speed setting by overriding the value set in the current Song or Program. When the program or Song is changed, the stored Speed value is again used.

#### **USING THE ATR1**

To use the ATR1, you can either use one of the musical scales provided, create your own by the simple expedient of turning on or off each of the notes in the chromatic scale until you get what you want (notes that you don't want processed can be bypassed individually by placing an asterisk beneath the note name), or you can input the correct pitches in real time via MIDI.

Once you've chosen a scale to suit the piece of music being worked on, all you need to do is feed audio through the box, though if the master tape isn't in concert pitch, you can offset the tuning of the ATR1 first. It is possible to use the ATR1 live or while recording, but it's important to prevent the singer hearing the corrected sound or their pitching is likely to go all over the place as they attempt to compensate. For stage use, the uncorrected vocal should be fed through the stage monitors.

For singers who are reasonably precise and don't use excessive vibrato, chromatic scale works pretty well. The trick is in setting up the Speed parameter to get a natural result. Set it too fast and the voice almost yodels to the correct pitch, especially if it was a long way out to start with, but if you set Speed too slow, the note still won't be fully corrected by the time a new pitch is sung. If the singer tends to use a lot of vibrato or to scoop notes, then the chromatic scale is likely to throw up unwanted semitone trills and slurs, and if the pitching is poor, the closest note might actually end up being a semitone out from the correct one — which is a dead giveaway. In such cases, using the appropriate scale invariably gives better results as there are no 'illegal' notes to jump to. Providing the original performance is reasonably competent, it's usually possible to bring about a great improvement without the voice sounding processed. Really hopeless cases require more work to hide the side effects!

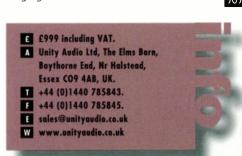
In addition to correcting intonation errors, the manual makes several creative suggestions, including a way to fake double tracking by mixing the corrected and uncorrected vocals. The ATR1's detuning and vibrato can be used to emphasise the effect if needed. Furthermore, by selecting a

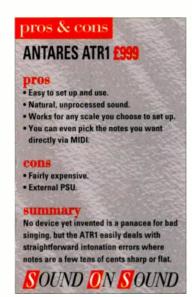
"As a stand-alone solution to vocal (and some monophonic instrument) intonation problems, the ATR1 is unique..."

scale with only a few notes in it, then by using a fast Speed setting, you can simulate some ethnic vocal styles or impossible octave leaps and trills.

#### **SUMMARY**

As a stand-alone solution to vocal (and some monophonic instrument) intonation problems, the ATR1 is unique, though it isn't as flexible as the non-real time, graphical editing capabilities of its software-based counterpart. For example, using the Autotune software, a single drooping note can be edited by dragging curves on a screen to achieve a very natural result. The automatic mode of the Autotune software is comparable with the way the ATR1 works, and the fact that it's so easy to operate means that you are likely to use it far more often than off-line graphical editing. Singers with apparently good pitching can usually be tightened up a little further with this unit, and even fairly indifferent performers can be made to sound much more precise. Providing the pitch correction required is in the order of tens of cents rather than whole semitones, there are few if any discernable processing artifacts, and user parameter adjustment is largely limited to varying the Speed for the most natural result. Of course there are vocalists who even the ATR1 can't help, but perhaps their money would be better spent on singing lessons!





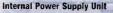






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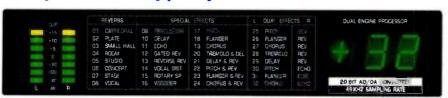
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# PRACTICAL ACOUSTIC TREATMENT

PART 4: Continuing his quest for the perfect listening environment, PAUL WHITE looks at ways to treat a control room without having to bring in the builders.

ver the past couple of months, I've looked at some of the techniques that can be used to vary the reverberation time of rooms at different frequencies. To apply this information in a meaningful way, it's necessary to understand what happens to sound within a control room. You also have to understand that sound absorbers are only one of a number of tools for controlling room acoustics — in addition, you have to take into account sound scattering (or diffusion) and placement of key items within the room.

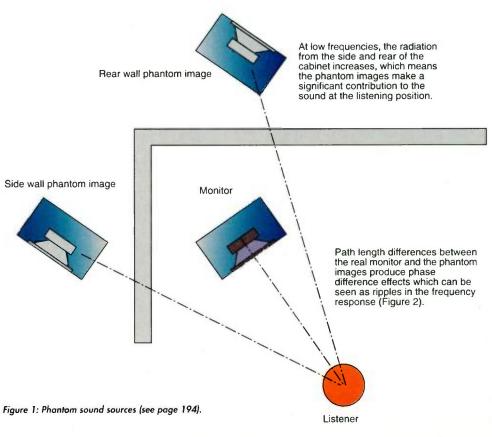
The source of all the 'wanted' sound in your control room is the loudspeaker system, so it makes sense to start by considering what happens to the sound after it leaves the speakers. At mid and high frequencies, monitor loudspeakers have

a reasonably controlled directivity. As a broad generalisation this means that most of the sound emerges as a cone of energy from the front of the box. However, this cone widens as frequencies get lower, until at very low frequencies, the speaker cabinet is effectively an omnidirectional radiator with as much energy coming out of the back and sides as out of the front.

However, attempting to absorb all the sound that misses the listener and instead hits a room surface is generally impractical and undesirable. There are designs for studios that are virtually anechoic chambers, but most people find them oppressive to work in — a completely absorbent control room renders speech very dry and quiet as there are no wall reflections to give it life. Also, because so much energy is being absorbed, you need a very powerful monitor system to get the desired sound level.

#### TIME FOR REFLECTION

In a normal music listening environment, sound coming from the speakers is reflected from the walls and other surfaces in ways that can be both musically constructive and destructive. So the secret of good control room design is to try to avoid the wrong type of reflections, while encouraging and controlling the right type. A well-diffused



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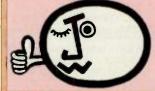
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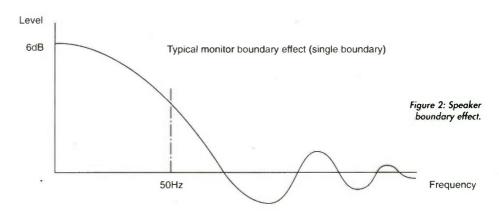
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# PRACTICAL ACOUSTIC TREATMENT



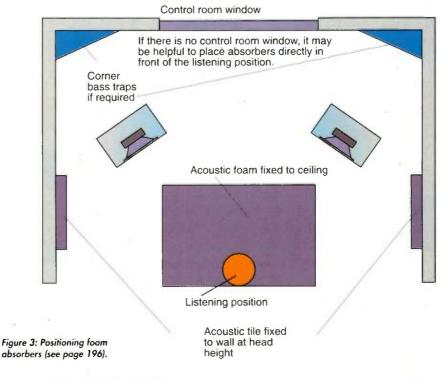
"...the secret of good control room design is to try to avoid the wrong type of reflections, while encouraging and controlling the right type."

194

reverberation with an RT of around 0.3 seconds is generally considered to be about right for professional control rooms, though the project studio might get away with a slightly longer RT. Well-diffused, spectrally neutral reflections, arriving very shortly after the original sound, tend to fuse with it and increase its subjective level. However, these reflections should be at least 10dB lower in level than the direct sound for the best results, which usually means avoiding reflections that originate from surfaces close to the speakers themselves. It also means avoiding reflections from materials that only reflect a part of the audio spectrum. Longer delays caused by reflections in larger rooms (over 40 milliseconds) are audible as slap-back echoes and are clearly undesirable. This would correspond to a front-to-back room distance of around 20 feet (6 metres)

#### **SPEAKERS CORNER**

It helps to understand what's going on if we split the audio spectrum into two bands. In a typical room, frequencies up to around 300Hz are mainly influenced by room modes and by the physical position of the monitors within the room. At higher frequencies, most of the problems are associated with multiple reflection paths. Looking at the loudspeaker position first, you can see from Figure 1 (on page 192) that if a speaker is positioned on a stand somewhere out in the room, sound from the back and sides of the cabinet will hit the side and rear walls of the room and then reflect back into the room. This is known as the speaker boundary effect. The best way to imagine what effect the reflected sound will have is to visualise the walls covered with mirrors. Everywhere you can see a reflection of the monitor, a phantom sound source will be created. Because the walls aren't perfectly reflective to sound, and because the sound radiating from the sides and back of the speaker is mainly at low frequencies, the phantom sources are effectively low-pass filtered so that only low frequencies come back. These low-pass filtered reflections combine with the direct, low-frequency energy from the front of the speaker as shown in Figure 2, above. Because of the distance the reflected sound has to travel, it will never be exactly in phase with the direct sound. But at very low frequencies, where the



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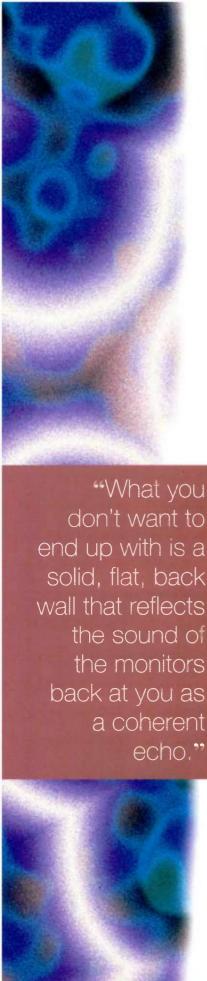
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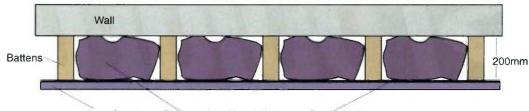


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## PRACTICAL ACOUSTIC TREATMENT



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Figure 4: A rear wall trap (see page 198).

wavelengths are long, they're sufficiently in phase to cause some constructive addition.

In simple terms, this means that putting a speaker close to a solid wall will cause an increase in bass energy, as some of the low-frequency energy normally lost from the back of the cabinet is reflected back to the listener. As the frequency increases, the path length difference between the direct and reflected sound will correspond to a different number of wavelengths, so that at some frequencies the direct and reflected energy will add, while at others it will cancel. That's why the graph shown in Figure 2 shows a series of ripples in the amplitude response.

If the speaker is placed close to a corner, reflections from both the rear and side walls combine to produce a greater bass rise and more pronounced ripples in the low frequency response. If the floor reflections are also included, the bass rise can be very significant. While some users might view this as a simple way to get 'free' extra bass, the deep ripples in the low-frequency response can lead to problematic hot spots and dead spots in the bass end. The only way to avoid this is to keep monitor speakers away from corners and to try to randomise the distances between the speaker cabinet and the nearby room boundaries. That's why in small studios, it's often best to place the monitors along the longest wall and away from the corners, rather than along the shortest wall, nearer to the corners. If the speakers are placed exactly the same distance from the rear wall, the side wall and the floor, the bass boost can be up to 18dB at very low frequencies with huge ripples extending into the bottom couple of octaves of the monitor's response.

The only practical way to utilise the rear-radiated energy from the speaker cabinet without incurring phase difference problems is to actually mount the speaker monitor flush with the room boundary. That's why so many large studio monitoring systems are built into the front wall. This way, all the low-frequency energy is forced to radiate into a 180-degree space rather than being allowed to radiate into a 360-degree space. Also, because there is no distance between the monitor and the boundary, there is a near perfect doubling of low-frequency efficiency with no ripples. To obtain a flat frequency response from flushmounted speakers, the monitors themselves must be designed with a corresponding drop in low-frequency efficiency so that the net result is flat.

By contrast, speakers made for standmounting are designed on the assumption that the boundary

will be some distance away, which is why many manufacturers include advice on the positioning of their monitors relative to walls. It's also for this reason that some active monitors include bass-end tailoring controls to help compensate for the effects of positioning.

Because a standmounted speaker invariably produces some peaks and dips in the low-frequency response curve, it can be helpful to use a studio design software program such as *AcousticX* (see last month's instalment of this series for more on this) to determine the optimum speaker placement within the room. This particular PC program also shows the size and position of the optimum listening area.

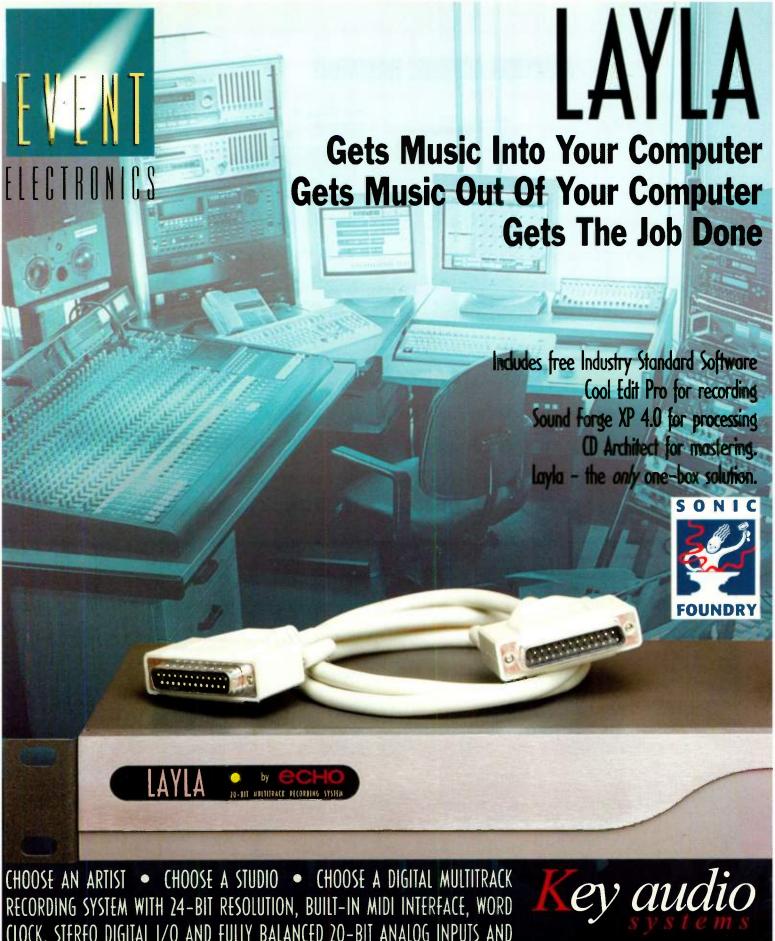
#### **GEOMETRY**

Positioning speakers optimally with respect to the room boundaries will minimise low frequency response anomalies, but it is also necessary to minimise the level of any early reflections due to the sound from the front of the speaker striking a nearby surface and reflecting back to the listener. In a professional studio with flushmounted monitors, this is often done by combining areas of absorption with wall and ceiling geometries carefully planned so that any reflections that can't be avoided are deflected away from the listening position. This is rarely practical in the project studio, especially where standmounted monitors are in use, but it is possible to position areas of relatively simple mid/high-frequency absorber on the walls and ceiling to intercept the strongest reflections. Figure 3, on page 194, shows areas of foam acoustic tile on the side walls and ceiling that do this job very simply and cheaply.

If you're not sure exactly where to place these, get a friend to hold a mirror against the studio wall. When you can see the reflection of the monitor in the mirror from your normal listening position, you have the location of the centre of your acoustic tile. An area of one square metre of tile per side wall is generally quite adequate, but use the thickest type you can get, as it will be effective to a lower frequency than the thinner type. Something around 100mm thick is ideal. Do the same for the ceiling.

#### LIVE AND LET DIE

This approach to minimising strong early reflections is part of the so-called live-end/dead-end control room design philosophy which, despite a few changes, still prevails in modern control room design. The speakers are located at the dead end of the room (inasmuch as the front of the room is



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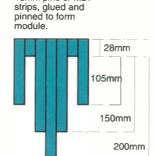
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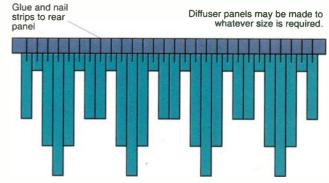
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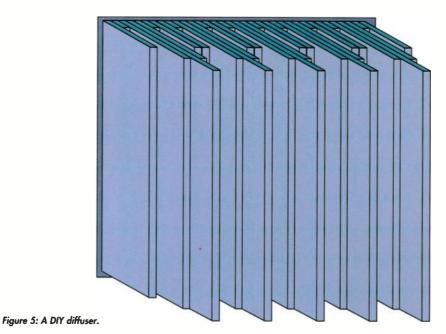


## PRACTICAL ACOUSTIC TREATMENT



18mm pine or MDF





#### **SOUND SCATTERING**

Sound scattering, sometimes called diffusion, is the mechanism of breaking up reflected sound so that the energy is returned to the room evenly dispersed rather than as a solid, coherent echo. A properly designed diffuser will spread the reflected energy out over a full 180 degrees, though the effectiveness falls off at lower frequencies. As mentioned elsewhere in this piece, when you get down to around 300Hz, the room modes take over as the principle factors in

One way to create diffusion is to provide an uneven surface - although to have any effect at mid-range frequencies. the random humps and bumps in the surface need to be in the order of 150 to 200mm deep. Partially filled bookshelves are ideal for this purpose, but commercial diffuser panels are available comprising wooden cavities of different depths where the depth and spacing of the cavities is determined by a mathematical formula based on something called quadratic residue (don't ask!). Several tests have been carried out that indicate the design of these diffusers is not as critical as might be indicated by the complex mathematics, and randomly chosen sizes seem to work perfectly adequately.

Figure 5, above, shows a simple DIY diffuser that can be made from MDF or wood. The way these diffusers work is that the reflections coming back from the differently spaced depressions return to the room shifted in phase with respect to each other.

This results in new wavefronts that propagate in different directions, rather like bending light through a prism. By contrast, a flat surface reflects a lphase-coherent wave that follows the 'angle of incidence equals angle of reflection' law. Properly diffused sound can help reinforce the sound from the monitors without compromising the overall monitoring accuracy or adversely affecting the stereo imaging.

▶ designed to produce minimal early reflections), and the rear of the room is designed to scatter reflected energy back into the room in a way that's as random and well-diffused as possible. What you don't want to end up with is a solid, flat, back wall that reflects the sound of the monitors back at you as a coherent echo. Design strategies include angled sections of the rear wall, semi-cylindrical constructions and purpose-made diffusers.

This live-end/dead-end approach has to be modified further for small studios, because in rooms where there isn't a lot of front-to-back distance, it isn't generally possible to break up the rear wall reflections sufficiently. Because of the small distances involved, the reflections may be stronger than desirable. In such cases, it is common to employ a mixture of heavy trapping and diffusion on the rear wall. For example, a barrier-mat covered Rockwool trap around 200mm deep may be constructed with a further layer of 50mm acoustic foam on the front surface to prevent high-frequency energy reflecting from the barrier mat. This form of trap construction is shown in Figure 4, on page 196.

To introduce some scattering, randomly spaced wooden slats could be fitted over part of the surface of the trap, though a more pragmatic solution for the private studio might be to use

the rear walls to accommodate shelving for tapes, computer disks, manuals and so on. Shelves full of assorted objects provide excellent sound scattering, and if you have a soft sofa for your clients, place this along the rear wall where it will do the job of some of the trapping.

When it comes to positioning other trapping that may be required, the main thing to bear in mind is to keep the room as acoustically symmetrical as possible. Bass traps tend to be fitted into corners as this is where the main room modes are anchored. In a simple setup, two rear corner traps may be all that's needed with the area in between them taken up by scattering surfaces such as shelving. If larger monitors are being used and the boundary reflections are causing problems, it may also be desirable to fit bass traps in the front corners or directly behind the monitors. However, in a typical project studio using suitably chosen nearfield monitors, it's often possible to get away with little or no bass trapping other than that provided by the furnishings. 1303

Next month, I'll be providing a little more pragmatic guidance on creating a good listening space.



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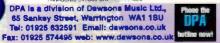






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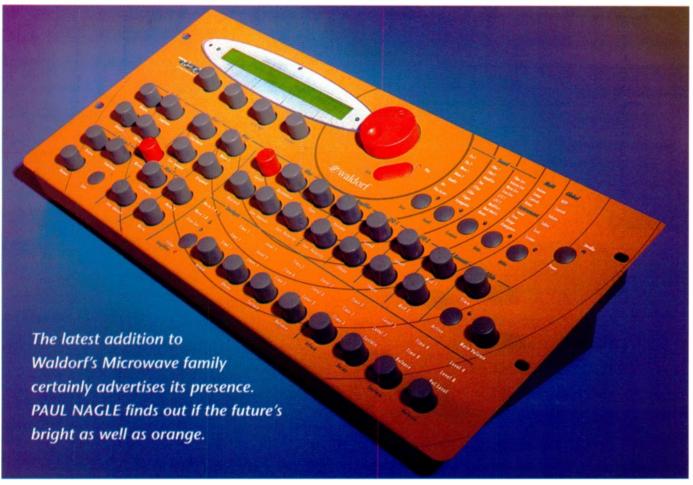








# Tangerine waldorf Microwave XT WAVETABLE SYNTH DREAM?



#### SOME SOFTWARE

Microwave owners will be pleased to hear that a Windows 95 software editor/librarian is already available on the Internet. This shareware program handles all the Microwave's parameters and has a rather cool mix/morph/mutate feature to generate new patches based on two existing ones. If you want to create your own wavetables, the freeware programs Wavetowave and .wave+ offer the means either by additive synthesis (very cool) or interpolation between two waves.

Check out the programs at: (for the Editor)

www.www.intelios.com/Synth/ microwave.htm

(for Wavetable Creation)

www.robotnik.com/the\_lab/ software/ oasting possibly the most extravagant colour scheme yet seen on a synthesizer, the Waldorf Microwave XT is no shrinking violet. Brashly elbowing the more demure Microwave II from its 'top Microwave' spot, the XT is the newest, biggest and most orange member of the family ever. Why orange? I can't say, but it certainly stands out in a rack — it positively demands attention! If you are a lover of small black boxes full of piano samples, stop reading now, because you won't like the XT. The mad scientists in Waldorf castle have created a monster — the head of a Microwave II grafted onto the body of a knobby analogue-style synthesizer.

#### **WAVE HELLO**

The Waldorf Microwave XT is a 10-note polyphonic digital synth sturdily housed in a large rack/desktop case (if racked it occupies five spaces). As it shares a common operating system with the Microwave II, please read the review from July 1997's Sound On Sound for a reminder of the joys of its wavetable synthesis, digital filters and extensive MIDI control. Since that review, Waldorf have been busy (as is their wont),

upgrading and improving the operating system. These enhancements have been provided over the last year free of charge, in the form of simple MIDI files. The improvements include Oscillator FM, a new wavetable - True PWM, an extra 6dB output boost (for the XT only), a patch randomiser (which creates great 'starting points' and strange sound effects), four new filter types and DSP effects. I really should mention the filters which are: Waveshaper (a 12dB low-pass filter combined with a wave-shaping filter, the wave selected from the current wavetable), a Parallel Low Pass/Band Pass filter, an FM filter (whose frequency can be modulated by the output of Oscillator 2) and the Sample and Hold filter (which lowers the sampling rate of the signal before routing it through a low-pass 12dB filter). The DSP effects include Chorus, Flangers 1 and 2, AutoWah (Low Pass and Band Pass), Overdrive, Amplitude Modulation, Delay, Pan Delay and Chorus Delay. These are quite impressive as freebies, but Waldorf must have felt the urge to show off with some new hardware as well, and thus the XT was born.

So what else makes the XT the hottest Microwave yet? Well, its D/A convertors are 20-bit (as opposed to

the Microwave II's 18 bits) but, for now, let's concentrate on what *really* sets the XT apart from its smaller sibling. We're talking knobs, and not just a few.

#### A PROGRAMMER'S DREAM

Everyone's rediscovering knobs these days, and Waldorf obviously believe that a more 'hands on' interface will bring their wavetable synthesis to the masses. In fact, the Microwave II was already very easy to program with its simple matrix, alpha dial and 2x40-character display. Under this display, four continuous knobs were used to make all edits, and could also be freely assigned as 'Play Access' controls in each patch. These features are carried through unchanged to the XT. The addition of 40 more knobs, plus three additional switches and a dedicated volume control is nothing short of luxury, providing direct access to all the Microwave's major features. Only one of the knobs, Main Volume, is of the traditional 'absolute' variety. The rest are continuous, a design which makes tweaking filter, envelopes and so on a real pleasure. There are no more sudden leaps because the knob's real position doesn't match the stored one — the stored value simply increments or decrements smoothly. This is superb for live work, and easily the best solution I've seen since synths first got patch memories. Those knobs which control discrete parameters (oscillator octaves and semitones, filter types, wavetable selection and LFO waveforms) have subtle notches for more accurate editing. As you turn a knob, the new value is temporarily displayed in the top right-hand part of the screen; if I could suggest any improvement, I'd like to see the original stored value appear next to it too.

The knobs are divided into sections: Oscillators, Waves, Mixer, Filter, Amplifier, LFOs, Modulation and Envelopes. With a few exceptions, anyone familiar with traditional subtractive synthesis should be able to find their way round instinctively (check out the panel in the photo). Some parameters, such as Wavetable Select and Startwave, are unique to Waldorf, so the provision of dedicated knobs is surely good news for those setting out to explore wavetable synthesis. The envelope section consists of eight knobs and a selector switch — these are the only multi-function knobs, controlling the filter and amplifier envelopes and also the eight-stage wave envelope and the free envelope. The rest are all pretty self-explanatory with the exception of the two Modulation knobs, which control the amount of modulation used by the first two entries in the modulation matrix (if you remember from the Microwave II review, this stores up to 16 assignable routings). By careful programming, you can select the first modulation entry to connect LFO1 to overall pitch and the second to connect LFO2 to main cutoff frequency, and in this way recreate many traditional synthesizer routings without delving through the pages of parameters which aren't accessible via dedicated knobs.

#### **EXTERNAL AUDIO INPUT**

Turning to the rear of the synth (or the top, if racked) we see another important newcomer. Located in a convenient recess, past the dreaded external power connector, past the four assignable audio outputs, and next to the MIDI In, Out and Thru sockets is an audio input jack, by means of which you can process external signals using the XT's filters and effects. As on

Waldorf's Pulse Plus, you must trigger the synth's filter and amplifier envelopes before you can hear anything. I'd like to see a 'static' mode similar to that of the Access Virus, so you could control the incoming audio's filter cutoff and resonance without providing a trigger. At present, only mono signals may be processed but since this input is actually a stereo connection (apparently two mono jacks would not fit on the main board), future operating system upgrades may give full stereo operation. I hope so, because the results I got feeding drum machines, samples and the like through Waldorf's selection of filters were very promising, although I felt the input sensitivity settings were a little coarse. If you want to dirty up a drum loop, the Microwave XT's Waveshaping or Sample and Hold filters are great starting points, and that's even before you even get to the onboard effects.

#### **EFFECTS**

I have always found the Microwave to have a rich and complex raw sound, but felt that a modern synth should have some form of onboard effects too. I was, therefore, delighted when some rudimentary effects appeared in an earlier Microwave II/XT system upgrade. As well as Overdrive, Flanger and so on, the XT delivers Delay, Pan Delay and Modulation Delay from additional DSP memory. Though simple, these effects are handy, and Waldorf intend to extend their capabilities, for example by adding MIDI Sync to the delays. Unusually, delay times are shown in note lengths at a given tempo in bpm rather than in milliseconds. Original Microwave II owners (such as myself) miss out on the delay effects, but the good news for anyone purchasing a Microwave II as of today is that it is supplied with the necessary extra DSP RAM onboard as standard. Finally, if used multitimbrally, three patches keep their effects settings; the remainder may use only chorus. For an instrument with 10 notes of polyphony, this seems a workable compromise.

#### CONCLUSION

I've long been a devotee of the grungy Microwave sound, so please forgive any excessive gushing on my part. Its range encompasses squelchy analogue and hard digital with lots of weirdness in between, but it's never conventional or boring. The XT incarnation, with its external input and knobs, is the most tweakable and inspiring Microwave format so far, and making the knobs continuous is a brilliant idea for smooth changes during performance. And because they transmit MIDI controllers, I've discovered a variety of uses for the XT as a control surface while it's been here in the studio. In fact I've started to have little panic attacks already as I face up to the awful thought of returning the review model — some days this job is tougher than you imagine! If a Microwave has seemed tempting before but perhaps a little daunting, try turning a few knobs on this one.





#### MICROWAVE XT FEATURES

- Two wavetable oscillators plus noise generator and ring modulator.
- Oscillator Sync and FM.
- 10-note polyphonic, 8-part multitimbral.
- 256 User Patches, 128 Multi setups.
- Arpeggiator forms part of patch meaning up to 8 simultaneous arpeggiators can run in multi mode.
- Arpeggiator and LFOs can sync to MIDI clock.
- Two filters with a total of 12 filter types.
- DSP effects the first three parts in a multi performance can use their full effects settings, the remainder are limited to chorus.
- External signal input to filters/effects.
- 65 wavetables plus 32 user wavetables.
- 44 knobs, 9 switches, 2 x 40 character display, shift key, alpha dial.
- All major parameters have a dedicated MIDI controller numbers.
- Knobs send MIDI controllers.
- Quite large (5 rack units).
- . And it's orange!

Roland have repackaged their techno-centric Groovebox, the MC505, adding a keyboard and removing some of the performance features. The result is the JX305. But have they thrown out the baby with the bathwater?

DEREK JOHNSON finds out...

nyone who keeps an eye on hi-tech musical manufacturing and marketing might have predicted it: since the all-singing, all-dancing, all-arpeggiating silver dance boxes that have enjoyed such a vogue in recent years lack only one thing — a keyboard — the next logical step in their commercial exploitation must be to add a keyboard. It's an obvious move — both Roland and Quasimidi, in developing tools which sought to emulate the sound and immediacy of earlier analogue instruments such as the TB303, came up with some highly usable and creative ideas for the musician, and what better way to repackage them than in a keyboard format?

Take Roland's mega Groovebox, the MC505: it would certainly seem logical to bolt a keyboard on to a tool like this, to make it completely self-contained and more suited, perhaps, to the musician with traditional keyboard skills — and that's just what Roland have done, in the shape of the JX305. But what really made the MC505 so special was its user interface. Have Roland preserved this important advantage for the new instrument?

#### **SOME YOU WIN...**

First impressions don't suggest a family relationship between the MC505 and the new JX — the funky silver metal body of the 505 is replaced by a conventional modern plastic synth casing in dark blue. And though an encouraging total of 10 knobs and 56 buttons, plus an alpha dial for parameter adjustment, adorn the front panel, there are none of the 505's dinky, retro-styled sliders, faders or chunky flashing lights, though the 505's old-fashioned pots are carried across to the 305. The new synth looks like a late '90s instrument: sleek, with low-profile buttons, pinpoint LEDs and a group of

twiddlable Real-time Modify knobs to go some way towards satisfying the need for hands-on control. Most of the physical knobs and switches have several functions, and a system of three-colour labelling, as on the MC505, tells you what's doing what in any given mode. A 61-note synth-action keyboard, with velocity and aftertouch sensitivity, is fitted, as is Roland's traditional combination pitch-bend/mod controller.

The MC505 exuded a feeling of quality in its presentation, and this impression was bolstered by its internal power supply and six audio outputs. The 305, by contrast, settles for a wall-wart external PSU and has the standard mid-range keyboard complement of two audio outs. The 505's Part Mixer faders have gone, and its slider-based envelope controls are substituted on the 305 by the Real-time Modify knobs, which also double up for other functions. The 505's large red Current/Next Pattern number LED indicator, which used to keep you fully informed if you were doing on-the-fly Pattern juggling, is also missing on the JX305. In addition, the new synth lacks the Low Boost control which emphasised the bottom end of the MC505's audio output, while one or two operational features are also missing. Perhaps the saddest omission on the new instrument is the wonderful D-Beam infra-red controller, which will surely make the 505 sought after on the second-hand market in years to come. However, its distinctive 'turntable' effect can be replicated by the JX305's pitch-bend controller.

On the positive side, the JX305 has three footpedal sockets to the 505's one, so you can plug in a sustain pedal, a volume pedal and a programmable switch. The front panel also has Portamento, Split and Dual controls, so you can instantly set up keyboard splits and layers. Also new is a front-panel switching routine that lets you turn off the effects completely, which will be



welcome in some patch-programming situations. In spite, or perhaps because, of the fact that there are fewer controls on the JX305's front panel, its control layout is certainly easier to comprehend at first sight than that of the MC505, which is no bad thing. Internally, the 305 benefits from additional waveforms and sequencer Patterns, and is 100 percent compatible with the MC505 in terms of Pattern and sound data. The reverse is not true, however — the JX305's new waveforms mean that some Patches will not translate to the MC505

#### INSIDE THE BLUE MAGIC BOX

The JX305 is a maximum 64-note polyphonic, 8-part multitimbral synth with a built-in eight-track patternbased sequencer and fully-featured arpeggiator. Roland's Realtime Phrase Sequencer (more later) extends the capabilities and apparent multitimbrality of the instrument, by allowing up to 16 'phrases' to be played or triggered alongside an eight-part sequence. On the sound front, the JX305 contains an S&S synthesis engine, with over 600 waveforms available as raw material for your sonic machinations. A healthy 640 factory Patches (as opposed to the MC505's 512) and 32 Rhythm Sets (the 505 only had 26) are on board. User Patches can be saved in 250 memory locations, and when these slots are full you can save your creations to a Smart Media card, just as with the MC505, along with sequencer Patterns and Songs. Unless, of course, you're saving over MIDI to a computer with a patch librarian (and saving money at the same time, since the cards cost £30-£40 each).

As you'd expect, the 305 has digital effects processors — three, to be exact. One provides reverb in various flavours, one delays, and one offers a selection of more exotic treatments, such as enhancer, overdrive, chorus and phaser.

#### **SOUND STUFF**

Where the MC505 offered, appropriately, 505 raw sample waveforms, the JX305 boasts over 600, comprising the MC505's set (synth and drum machine waveforms, sound effects, percussion and a few 'real' instrument sounds) plus an additional bank of traditional instrument sounds such as you might find on a GM Synth — violins, pianos, harpsichords, lots of ethnic instrument samples, and so on. These additions tend to make the JX305 more of a general-purpose instrument than the MC505, though it's certainly not General MIDI.

Just as with the MC505, the sound generator within the JX305 is from the Roland JV family, and allows you to combine up to four Tones to make a Patch, though four-Tone Patches cut down on the available polyphony. Each Tone is a raw waveform which has passed through a collection of modifying stages — two LFOs, a pitch envelope, a filter (with envelope), and an amplifier (with envelope). The synth also offers a set of 10 Tone Structures, which define how pairs of Tones will combine within a Patch. Some of the Structures include a ring modulator, for example, while others add a 'booster gain' effect which is described as controlled distortion. You can, of course, use a simple Tone Structure that just configures four Tones in parallel.

Patch editing is via the LCD and a collection of 16 buttons on the far right of the front panel. The Patch button under the LCD takes the display into Patch mode, whereupon you select a Patch to work on. The Edit button in the Edit/Utility section of the panel now makes that Patch ready to edit, and you can switch Tones on and off in the Patch, select them for editing, and access such parameter groups as:

• Wave: choose the waveform you want to assign to a Tone, offset its gain in relation to the other Tones,

#### pros & cons **ROLAND JX305 £949** • Extra waveforms, preset Patches and Patterns. . Velocity/aftertouch-sensitive keyboard. • Good translation of MC505 features to a different user interface. · Still fun! • Loses MC505's D-Beam controller and Low Boost feature External power supply. · Only two audio outs, compared to the MC505's six. Cosmetically not as exciting as the MC505 summary It's not as sexy as the MC505, but the JX305 has 99 percent of the functionality and inds just as good — with the bonus of a keyboard and a clutch of new waveforms.

SOUND ON SOUND







The JX305's control panel features seven assignable Real-Time Modify knobs.

➤ and apply frequency cross-modulation (FXM).

- Pitch: transpose Tones, apply a Random Pitch effect for a more analogue feel, and impose a pitch envelope.
- Filter: set a filter type (low-pass, band-pass, high-pass or peaking), define filter cutoff frequency and resonance, and set a filter envelope.
- Amplifier: set an overall level for a Tone, plus pan position and an overall amplitude envelope.
- LFO: choose LFO (Low Frequency Oscillator) waveform (triangle, sine, sawtooth, square, trapezoid, sample and hold, random or chaos), set LFO rate, and access the option to sync the LFO to incoming MIDI clocks. The onset of the LFO can also be delayed or faded in here.

For quick tweaking of key sound parameters, take a look at the seven Real-time Modify knobs on the left of the panel. Two of these adjust filter cutoff and resonance; or tone level and pan position; or portamento time and fine tuning. You select which pair of parameters you want to access with the adjacent switch. The remaining five knobs have an associated switch that lets you use them to edit the envelopes. LFO 1 or some of the effects parameters. If, for example, you've chosen to edit LFO 1, the five knobs give immediate access to LFO 1 rate, fade time, pitch depth, filter depth and amp depth. This seven-knob system is not as good as having a dedicated knob for each function, but it's a lot better than having to rely on the two-line LCD and some obscure parameter-access menu. Roland have also chosen their key sound parameters well, and 90 percent of the time you could make just the right changes to a sound using them.

The real-time knobs also come into play outside Edit mode, where they can be used to alter exactly the same parameters, but for every Tone in a Patch simultaneously. If you achieve a sound you like with this kind of on-the-fly twiddling, you can save it as a new user Patch. Dynamic movements of the knobs can also be recorded as part of a sequence, but more on that later.

As you'd expect, Rhythm Sets can also be edited; each sound within a Rhythm set has its own set of synth parameters. When the Coarse Tuning parameter is used with rhythm sounds a strange 'feature' comes to light: as soon as you reach +24 semitones the waveform starts to play backwards. This is referred to very obscurely in the manual, and though it could come in handy it would be nicer to have a dedicated switch for reversing waveforms.

#### **SEQUENCER STATEMENTS**

The JX305's Pattern-based sequencer is functionally identical to the MC505's, but there's sometimes a difference in feel because of the JX305's different user interface. For a more detailed look at the 505 sequencer's facilities, take a look at the MC505 review in the April

1998 SOS. For now, here's a lightning tour.

The sequencer offers eight tracks, with real- or step-time recording and sophisticated quantising, including Roland's version of groove templates. If you read the MC505 review you'll notice that the 505 offered a grid-style step-time recording option like the classic TR909 drumbox. Anyone who's fond of this technique can rest easy — you can do it on the 305 too, with an LCD-based grid display.

The sequencer comes ready-stuffed with 768 preset Patterns (as opposed to the MC505's 714), in a variety of styles, though of course you can save your own Patterns. Movements of most of the 305's front-panel knobs can be recorded as part of a Pattern, so you can introduce quite a lot of dynamic interest. Those of you familiar with the MC505 will remember that machine's eight Part Mixer faders, which altered level, pan, effects sends and transposition of the eight parts that can make up a Pattern. Movements of these faders were also recorded as part of a Pattern. On the JX305, of course, there are no Part Mixer Faders; however, a couple of key presses get you to a Part Mixer page in the display. You choose what parameter you want to tweak and the seven Real-time Modify knobs, plus the Quantise knob, then affect that parameter for the eight Parts in a Pattern. It's only slightly less friendly than the MC505's way of doing the same thing.

To make a Song, up to 50 Patterns, each up to 32 bars in length and with a tempo of 20-240bpm, are chained together, and though 50 steps may not seem like many, each step can have different effects and Part Mixer settings, so there's really no excuse for a dull-sounding Song.

Editing facilities are exactly as you'd expect from a high-spec sequencer of this type — you can copy, paste, erase, delete, insert bars and Patterns, move Pattern data in time, alter velocity and transposition, thin controller information, and fix a quantise value. The MC505's sluggishness when saving Patterns was noted in the *SOS* review; the JX305 is slightly better, in that saving Patterns takes about half the time of the MC505.

Adding to the versatility of the 305's sequencer is the Pattern Set feature. When you're in Pattern Set mode you can assign up to 16 Patterns to the 16 Patch/Pattern select buttons, for real-time triggering. This is more of a performance feature than a compositional aid.

#### **ABOUT THE ARPEGGIATOR**

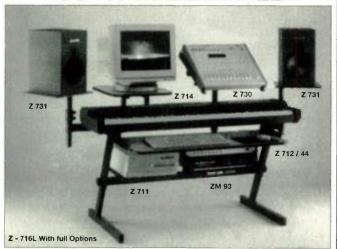
The 305's arpeggiator is exactly the same as the 505's, and even the 305's altered user interface makes little difference to how it is used. In fact, the only slight change is for the better: the dedicated Hold button which was provided on the MC505 panel is in a better location on the 305, right next to the Arpeggiator button.

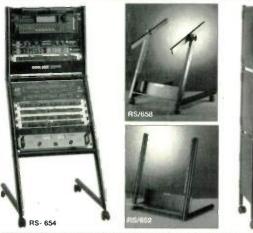
You can produce anything from a simple up or down chord arpeggiation to a bossanova extravaganza with this device. In fact, it edges towards home-keyboard type auto-accompaniment in some ways. First, you choose a Style of arpeggiation, of which there are 43, plus slots for 10 of your own. Styles range from House to Tango by way of Waltz, Shamisen and more. Then you can tailor the arpeggio, by using different Motifs, which define in what order

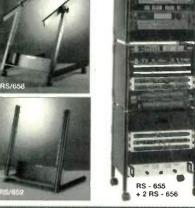
**BRIEF SPECIFICATION** 

- 61-note velocity/aftertouch-sensitive keyboard
- 8-part multitimbrality (plus 16 RPS parts)
- 64-voice polyphony
- 640 preset and 256 user Patches
- 32 factory and 20 User drum sets
- 3 effects processors
- 8-track sequencer: 96ppqn resolution; 768 preset, 256 user Patterns; 50 Songs; 50,000 notes; plays internal or external sounds
- Arpeggiator with 43 Styles
- Real-time Phrase Sequencer
- 7 Real-time Modify knobs plus Quantise and Arpeggiator knob
- Full MIDI spec: all knob movements recordable over MIDI; sequencer syncs to or from MIDI clock
- Smart Media card slot

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the notes in a chord will play, and Beat Patterns, which alter accent location and length of notes. Add the ability to vary 'shuffle' rate (which, to be scientific, makes the result more 'bouncy'), and to set a three-octave range (up or down) over which the arpeggio will play, and you can see the potential. When you have a result you like, you can record it into a sequencer Pattern too.

Real-time Phrase Sequencing crops up in most recent Roland sequencer-equipped instruments and offers a way of quickly and interactively creating a new performance, or adding 'fills' to existing Patterns. A Phrase, in the Roland universe, is simply an individual part, such as a bass line or a drum pattern. You can use any part from any Pattern within the synth, a preset or your own, to create an RPS 'set' (there are 60 on board, including snare fills, short chord sequences, lead lines and sound effects). RPS phrases are triggered on the JX305 with the bottom 16 notes of the keyboard, but it's not possible to jam with RPS phrases and record the result into a new Pattern. If you like a particular performance, you'll have to make a note of which phrases you used, and create a new Pattern by copying those phrases into it. When using the RPS to add fills to a playing Pattern, apparent multitimbrality increases, since phrases play alongside the eight parts of a Pattern.

#### **EXPLAINING EFFECTS**

As with the MC505, Roland have provided reverb, delay and 'multi' effects, and as well as giving them parallel routings you can also choose from a few serial routings (Multi-effects -> Delay -> Reverb -> Output, for example), which can give you a little extra sonic versatility.

The reverb effect is simple, though perfectly serviceable: six reverbs — two rooms, two stages and two halls — with basic editing parameters including reverb time, level, and high-frequency damping. The delay processor simply offers short or long delays, though the latter can be sync'ed to the current pattern's tempo. Editing parameters available here include delay time, feedback, high-frequency damping, and level.

The multi-effect processor doesn't, as you might hope, provide several effects at once, but several different (ie. not reverb or delay) effects, of which you can use one at a time. There are 24 options, amongst which are various choruses, phasers and flangers, compression, tremolo, overdrive and gated reverb, and a bunch of strange processes such as Lo-Fi, which "simulates low-fidelity sound", and Noise Generator, which can add hum, disc noise and pink noise to your lovely clean digital sounds. There are no 'insert' effects that you can apply only to individual Parts.

#### **GETTING INTO THE GROOVESYNTH**

Despite the fact that it lacks the MC505's high knobsto-square-inch ratio, the JX305 is just about as easy to use. In some cases, the front panel's spacious layout — including the parameter access system — is easier to navigate from scratch, which should suit newcomers. The JX305's Patch and Pattern numbering system (as with many Roland synths, each bank is itself broken down into eight sub-banks of eight Patches or Patterns) is actually friendlier than the MC505's, where you have to scroll through the complete list to find what you want. Everything the MC505 can do is achievable on

the 305, bar the Mega Mix and D-Beam functions (which depend upon hardware the 305 doesn't have). Even Tap Tempo is available; the JX lacks the dedicated button, but one of the foot pedals can be assigned to it.

The many keyboard-specific tricks — instant splits and layers from dedicated buttons, three footpedal inputs and pitch bend/mod wheel — bring added value to the package, and about the only thing that gets in the way of smooth operations is the manual, which is pretty much a verbatim reprint of the MC505's. All the big issues are covered reasonably thoroughly, but there are some features you won't discover unless you happen upon them by accident. Neither the index nor the contents pages are as comprehensive as they should be. When you're using the Part Mixer's Key Shift function, for example, shifting the Rhythm Part past a certain point causes all sounds in that Part to play backwards, rather as with editing Rhythm Set sounds. This is an excellent feature, very effective in performance, yet there seems to be no reference to it in the manual.

#### A WOLF IN SHEEP'S CLOTHING?

Roland have essentially taken the guts of an MC505 and transplanted them into a conventional synth-shaped package, but at the same time the JX305 isn't exactly a keyboard-equipped MC505, as contradictory as this might seem. The radical retro styling and controllerladen front panel of the 505 went a long way towards making it what it was. The D-Beam controller, the silver metal case, the Low Boost feature, the chunky flashing lights and finger-friendly knobs and sliders were pretty much non-essential — but they added sparkle and fitted the 505 perfectly for its role as a top dance tool. Although the JX305 is more practical than the MC505 in many ways, it's certainly less hip in appearance. Having said this, Roland have made a very good job of translating the 505's features to a different user interface, and have really lost very little of its fundamental functionality in the process. The JX305 will appeal to the player looking for an instrument that will do more than one job — that will accompany him to a pub gig as easily as to a rave, and double as a writing and recording tool in the studio, courtesy of its decent complement of traditional waveforms. The buying public seem to like the look of the spec, too: apparently Roland are already back-ordered on the 305.

While it's a shame that Roland didn't go the whole hog and create a retro keyboard as beautifully styled as the MC505, the JX305 is a very well-thought out workstation instrument (with an understandable analogue/dance bias) which gives you everything you could reasonably need to create virtually any style of music.

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The JX305's factory Patches comprise a brilliant collection of varied synth sounds and textures, plus some pretty well-programmed Patterns. The new 'real instrument' factory Patches, using the extra waveform ROM, help make the JX305 more of an all-rounder and include a good variety of pianos and other keyboard simulations - Patches 121 Rhodes and 122 Hard Rhodes are excellent, while the two new harpsichord examples are bright and playable. New guitar Patches include a pair of nice nylon-strung guitar/string layers, plus 164 Guitar FX - dive-bombs, amp noise and so on. There's not so much variety amongst the string and wind Patches, although the quality is consistent and some of the ensemble strings (186 Stereo Slow Strings is very lush and atmospheric) are welcome additions to the set.

The 305's new Patterns cover more pop territory: its two Motown Patterns are pretty authentic, and D81 Grunge is better than it should be, but several Patterns are a bit too slick for their own good — D85 AOR and D84 Slick Groove, for example. A handful of extra contemporary dance grooves, based on almost recognisable hits, are also provided.

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PART 4: Just when you thought it was safe to dip your hand in your pocket and buy that ideal studio, PAUL WHITE throws digital mixers into the frame.

# & SOFT OPTIONS

## **CHOOSING A RECORDING SETUP**

ast month, I looked at various combinations of MIDI and recording gear that could be used to set up a studio, and as you've probably gathered by now, it's not a simple question of analogue or digital, but rather picking the best machine for the job in hand. Now we have digital mixers to add to the equation, but what's the right reason to buy one? On close examination, they seem to give with one hand and take away with the other. For example, having dynamic or even

snapshot automation of all levels, effects and EQs is appealing, while moving faders look very cute. But it would be a mistake to think that just because a mixer is digital, it must therefore be better than analogue. In fact, the real reason mixers are going digital is because it's now got to the point where it's cheaper to build an automated digital console than an automated analogue console — and it's the automation that everybody wants.

I've tried out a few low- to mid-price digital mixers, some of which are exceptionally good notwithstanding their ludicrously low price. However, I think I'd be fair in saying that digital EQ currently leaves a lot to be desired when compared with the analogue equivalent, even though the digital model may offer no less than four fully parametric bands. Deficiencies in the EQ department may not worry you if, say, you have a nice outboard unit you can use when the going gets tough. However, this can beg the question of how you plug it in. Low-cost digital mixers are only low-cost because everything is done in the digital domain, and that means few, if any, analogue insert points. And while some low-cost digital desks have insert points on the analogue inputs, so you can patch in effects while recording, these aren't available when you go in digitally.

There's a lot to be said for having a digital multitrack recorder connected to a digital mixer via a fibre-optic bootlace in terms of keeping the signal clean, but you may find you've created a virtually closed system that forces you to use the processors, effects and EQ provided within the mixer ratner than giving you the freedom to patch in whatever does the job best, as you could with an analogue desk.

Furthermore, you may have to dig deep into the operating system to adjust all these inbuilt

#### SAMPLE RATES

Digital studios can occasionally throw up problems when different pieces of gear want to run at different sample rates. For example, if you have the old black-face ADATs that can only work at a 48kHz sampling rate, the rest of your digital studio must be set to run at 48kHz too. But as you can't mix sample rates in the digital domain without a sample rate

converter, what then happens if you want to bring in an audio file taken from a sample CD at 44.1kHz?

- In this case you have three possible options:
- bring the signal in via an analogue input;
- bring it Into a computer that has a sample rate conversion facility;
- use a real-time hardware sample asynchronous rate converter such as the now-discontinued Alesis Al-1

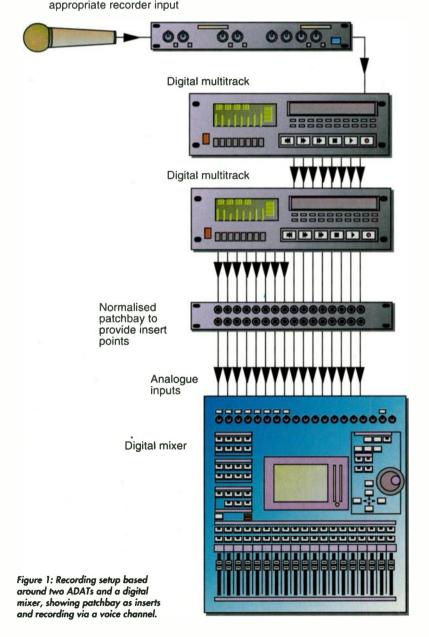




effects and processors. Another of the cost-saving features of digital design is that you have fewer knobs to access a greater number of functions, so most of the time you can find yourself wandering around 'menuland'.

In defence of small digital mixers, the automation is wonderful, not necessarily because you always want to automate every aspect of a mix, but rather because they let you recall a session and get back all the level, pan, EQ and effects settings you had at the time. What's more, the effects built into some of these mixers are pretty serious. When you compare them to the cost of the analogue alternative (even with basic VCA automation), plus a couple of half-decent effects boxes, there's really no contest. As always there are pros and cons. The trick is to use the technology for what it does best and to find ways around its limitations.

Voice channel input device patched to



"The trick is to use the technology for what it does best and to find ways around its limitations."

#### **HYBRID SOLUTIONS**

One possible approach is to connect the multitrack recorder via a digital desk's analogue inputs, even if the multitrack recorder is digital and has a perfectly acceptable fibre-optic interface compatible with the desk. Rather than connect it directly, you go via a normalised patchbay, which functions as a set of analogue insert points when you're mixing. If you want to add outboard compression or some other process during recording, and the desk itself has no insert points, it's a simple matter to use an outboard mic preamp before your compressor, or even go the whole hog and record using a 'voice channel' type of product patched directly into the multitrack's inputs. This may involve a little repatching, but it should produce better results than using the mic preamps and digital processor in a low-budget digital mixer. Figure 1 shows just such a setup. If this unnecessary digital-to-analogue and analogue-to-digital conversion seems sacrilege, there's no reason not to leave your fibre-optic link in place and switch from using analogue to digital inputs when you don't need to insert an external device. Of course, if you're using an analogue recorder such as an open-reel multitrack, then you'll have to go in analogue anyway, but you'll still need the patchbay to give you insert points on mixdown.

Though combining analogue with digital may seem an odd way to go, I think most studios will use a mixture of the two technologies for the foreseeable future. There's a lot to be said for using an analogue tape machine with a digital mixer or even a digital tape machine with an analogue mixer, since an all-digital signal chain still tends to sound over-clinical, especially to those people brought up on the sound of analogue tape and recordings made in analogue studios.

Indeed, the main benefit of putting together an all-digital system linked exclusively by digital means is not necessarily the sound quality, even though keeping everything in the digital domain is technically neater. Almost of equal importance is the fact that using fibre optic links cuts down on wiring, and if you're satisfied with the effects and processors inside your digital desk, then you can set up a very compact, tidy system that is immensely powerful.

#### **DIGITAL SYNC**

A digital mixer used as part of an otherwise all-analogue system may be configured in much the same way as a normal analogue console.

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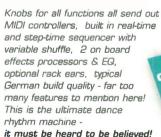
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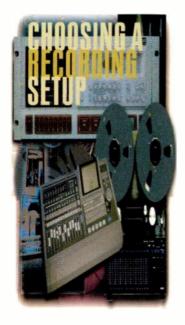
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equipment connected in the digital domain. there's the issue of synchronisation to consider. For digital systems to work together, not only must their sample rates be the same, they must also be synchronised to the same sample clock, otherwise there will be audible ticks and glitches as the sample rates of the two devices drift relative to each other (this subject is addressed in far greater detail in Hugh Robjohns' Digital Basics article on page 232). However, the basic rule is that only one device can function as a master and all the others become slaves set to external sync mode as in Figure 2 (Yamaha have tried to simplify this by making mixers such as their 03D capable of working out for themselves whether they should be master or slave). In a system comprising a digital multitrack recorder and an external digital signal processor connected to the mixer via a digital link, the recorder would normally be the

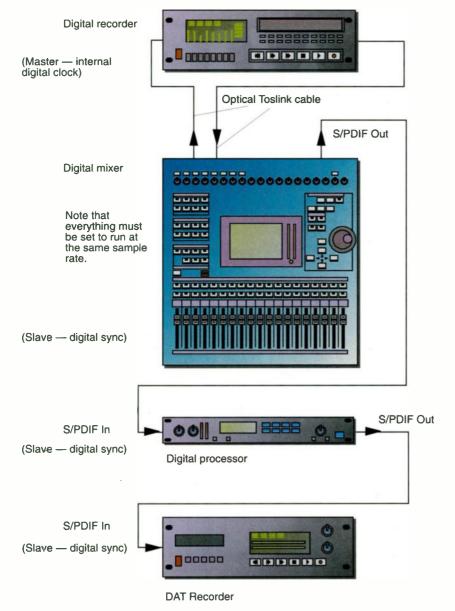
#### COMPUTER-ADAT LINKS

If you have a system based on ADATs or ADAT-compatible recorders along with a computer running audio software, it's most definitely worth considering adding a computer interface that can transfer data from the ADAT to the computer and vice versa in the digital domain via a fibre-optic Toslink cable. This really brings you the best of both tape and computer worlds by allowing you to move material from tape, edit it, and then return it to tape exactly where you want it.

master, with the mixer and effects processor functioning as slaves.

In more complex systems, clocking errors can occur from daisy-chaining too many pieces of gear together, in the same way as MIDI instruments misbehave if connected to the end of a long Thru chain. In such a system, it's better to use equipment

Figure 2: Digital sync master and slaves.



"There's no single 'right' technology, but rather an array of choices, and the best solution for one user may not be the best solution for another."

that can sync to word clock and then feed word clock to each from a master generator, such as an Alesis BRC, as shown in Figure 3, right. Unfortunately, not all the equipment used in a typical project studio has the facility to work with word clock, so it may be necessary to adopt a hybrid approach.

#### **MIDI SYNC**

To synchronise a sequencer to a conventional analogue tape machine, it's necessary to use one track of the analogue tape to record timecode via a sync interface that converts the timecode into a form that can be recorded as an audio signal on tape. The two common sync formats are SMPTE and MIDI Clock, though most interfaces now convert SMPTE to MTC (MIDI Time Code), which is supported by the majority of serious modern sequencers. MIDI Clock is still used on some budget equipment, but providing the sync interface exploits MIDI Song Position Pointers, it works perfectly well. Without SPPs, the song must be started from the beginning each time the tape is stopped.

In theory, you could record timecode on to one track of a digital disk or tape recorder in

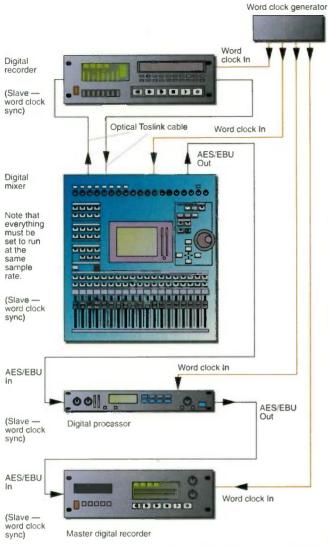


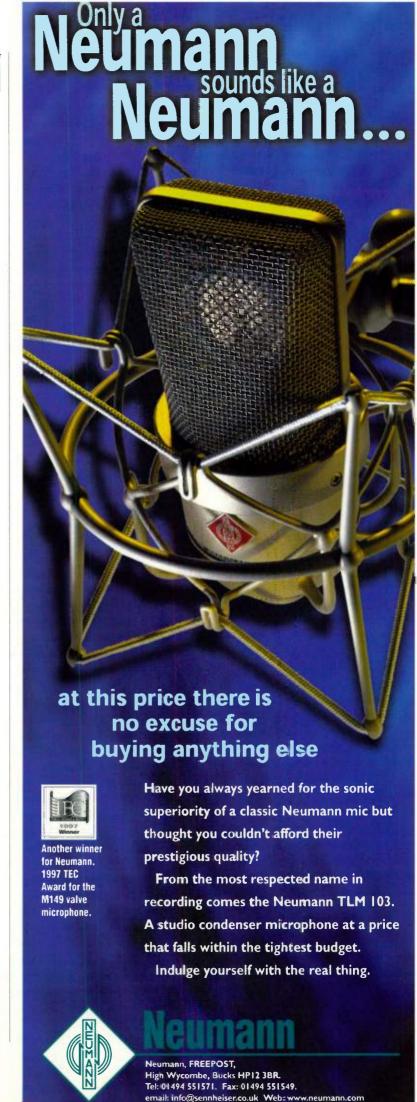
Figure 3: Digital sync via word clock.

exactly the same way, but that's seldom necessary. More often, a dedicated interface is used to convert the timing sub-code from the recorder to SMPTE, MTC or MIDI Clock so that a sequencer can be locked up without having to waste an audio track. Indeed, some dedicated hard disk recorders have MTC output as standard and can also chase lock to MTC. Unfortunately, the manufacturers of digital multitrack tape recorders rarely include an MTC output, so some form of additional interface or card is necessary. With the Alesis ADAT for example, equipment such as the Alesis BRC (or a third-party interface) utilises the data from the nine-pin sync socket on the back of the tape machine to derive the required timecode.

#### SUMMARY

Hopefully this series has helped you put the various recording options into perspective. As I said at the beginning, there's no single 'right' technology, but rather an array of choices, and the best solution for one user may not be the best solution for another. What you need to do is think carefully about what you want to achieve and how you best like to work, then choose your system components on that basis.

Next month, I'm going to describe a system that I put together combining hard disk recording, digital tape and both analogue and digital mixers. Some of the things I've done are slightly out of the ordinary, and I'm sure that some changes and additions will be made before I'm finally happy with it, but at least it might provide a useful case study that gets you thinking in different directions.



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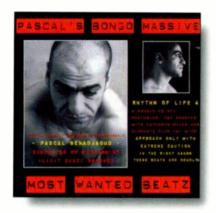
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# Our regular look at the hottest new sample CDs and CD-ROMs.



#### PASCAL'S BONGO MASSIVE



(AUDIO CD)

One of AMG's well-regarded Rhythm of Life series of CDs, this is by no means new - 1996 is the date on the sleeve. Then again, its musical value does not depend on the month or the year in which it was released — Pascals's Bongo Massive is a timeless issue. Those of you who have read Sample Shop regularly and avidly over the past five years will have a good idea of what the Rhythm of Life series is all about. For the other 99 percent of you, here's the lowdown. First, there's the vibe -- forget upfront compressed and effected club sounds and think instead of naturally played and cleanly recorded percussion. Next, the format: huge layered (but not congested) loops, long enough to build a short song upon, are presented together with their breakdown products.

And so to the noises. Pascal hails (I suspect) from a French-African colony, judging by his musical accent. North African bongo rhythms underpin much of the set. Other instruments include djembe, darbuka, bata, cabasa, rainstick, swirler, various bells, shakers and tambourine. However we are not talking merely raw ethnic power here; the African instruments are blended effectively with timbales, cowbells, vibraslap and the like.

On first listen, the flagship 'song' patterns seem inordinately long and repetitive, but the idea is to give you plenty of scope to produce as natural-sounding a rhythm track as possible. In

more transparent mic- rather than MIDI-driven recordings, where you might actually hear a song being sung or guitar being strummed, even an eight- or 16-bar loop repeating could become obvious on repeated listen.

After each full stereo mix we get stereo submixes with some of the instruments missed out, and individual mono element loops, presented two at a time panned hard left and right to save space on the CD. I generally preferred submixes to full versions, which sometimes seemed to contain one or two overdubs too many.

As well as offering a dozen of these constructed and deconstructed percussion 'songs' at a variety of tempos, Pascal gives you a hundred or so individual percussion patterns, plus associated single hits. These are aimed more at the dance market, and all loops start at 98 or 130bpm.

If you are looking for well-recorded and played background percussion of a non-'ethnic' Afro-Carribean persuasion to warm up your dance tune, or a well-produced rhythm track to hang an atmospheric composition on, then consider waving your credit card in the direction of Pascal via AMG. *Bongo* is another credit to this fine series. *Wilf Smarties* 

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SKINNED (AUDIO CD)



With track names such as 'Pig Bugger', 'Mental Warfare', 'Nukem' and 'Washing Machine' you get the feeling that this CD's creators, Russell Nash and Cevin Key, probably won't be inundated with calls from Chris de Burgh to join him on his next world tour. This 84-track, 70-minute CD is not only a peek into the sample archives of techno/industrial pioneers Skinny Puppy, but also seems to be a darkly unpleasant though largely rewarding trip through the twisted and dripping caverns of its creators' minds.

The disc kicks off with a section called 'Horror Movie' and gets darker from there on, presenting us with a series of soundcapes and snatches of noise all heavily processed, chopped about, chewed up and spat out again. Loads of creepy harmonics and weird bottom-end rumbles have been woven into the timbre of the sounds, and most seem to defy categorisation simply because you're never really sure if they are supposed to sound like that or if there is a problem with your CD player.

The fun continues and there are some great vocal snippets consisting mainly of ironic sound bytes taken from American news reports, as well as some really nasty guitar riffs and effects. Analogue synths feature heavily throughout but, as with everything else, it is the distortion, wild compression and cutting-edge sonic mutilation that takes centre stage. The collection of 50 or so drum loops could hardly be described as conventional, with massive use of analogue filter sweeps and abrasive EQs, but things never get too frantic and most samples (even the really hardcore ones) remain extremely usable. Effects-wise there are tons of short whooshes. sweeps and stagers, some of which go off the scale of madness rendering them useless, but most are very effective and inspiring.

In terms of value for money, *Skinned* scores very highly indeed, and the sheer amount of usable material will win it many friends. On the downside, however, the devotion to all things harsh and twisted seems at times to be just a little too relentless and whilst Spectrasonics' *Distorted Reality* (a similar type of release) gave us room to breath with some softer, more mellow sounds mixed in with the chaos, *Skinned* is about as soothing as a Brillo-Pad toothbrush. Obviously with a sample CD such as this the 'sound' is its real selling point and the effects



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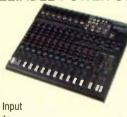
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work alone deserves an award, but its real creative core seems to come from the choice of source samples. Anybody who mixes D50 presets with cow noises and gives their tracks names like 'Distorted Distortion' wins my vote any day of the week. Zero-G have come up with another winner, and while it certainly won't be to everyone's taste, those who are brave enough to have a go will reap the rewards. Paul Farrer

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#### FULL PHAT — AMG CATALYST SERIES VOL. 1

(AUDIO CD)

Track one here is a demo from the band Terminalhead, two-fifths of which are Lee Groves (AMG's house engineer) and drummer Pete Marett, who together produced this CD, and it's a whole lot less of a sub-Tackhead experience than the last CD of theirs I reviewed. Terminalhead may not yet have found their own unique identity, but at least they have more or less managed to shed somebody else's.

The meat begins with Pete's drums. About a hundred new live patterns are exceptionally well recorded by Lee. The kit sounds are very natural, quite tight but not light. Compression has been used to add energy to the natural decay envelopes of drum hits, but though the effect is profound it is not overt. There's no such thing as 'transparent' heavy compression, but this is as close as you get. The playing I'd call assertive without being too tricksy — these patterns would cut through an energetic mix. Tempos are eminently sensible, being mainly around 100-125bpm.

After the drum patterns come 'Gated FX', which sound like outtakes from a Terminalhead recording session. The source sounds are pretty mean, but the gating sounds a bit soft.

Anyway, you like to design your own gate patterns, don't you? 'SH101 Riffs' are testament to that instrument's under-rated raw power. However, patterns are few, and the chances are they won't fit inside your tune. 'Dub FX' are atmosphere hits you could drop anywhere, any time to add interest to a track. Sample the lot and keep them in reserve.

'Rhythmic Riffs & Phrases' — there are quite a few of these, and the majority are of a one-bar riff repeated while somebody plays around with an envelope. There are some winners here. 'Effects' — the sleeve asks 'How would you describe these unusual sounds?' How about deep spacey, synthy and reminiscent of vintage 'Best Service'?

Other sections include short-wave radio snippets, mostly with applied echo to dub them up. 'Pads and Sweeps' are always welcome, and plenty of 'deep and meaningful' examples are provided here.

The concise live drum patterns are *Full Phat's* strongest suit. I don't recall hearing loops quite like these before, which is odd, because they are so obviously useful. What prevents this product from being an absolute soaraway success is that much of the remaining material comes from Terminalhead recording sessions, and is not specifically designed for you and me to use. A bigger selection of tones and noises, with less attention paid to riffs, would have been a great improvement. Almost worth the money for the loops alone, though. *Wilf Smarties* 

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#### CHEMICAL BEATS



#### (AUDIO CD & AKAI-FORMAT CD-ROM)

The central idea behind the layout of *Chemical Beats* is to provide tons of cutting-edge drum loops with as many played combinations and single hit samples as you could possibly need, thus giving the user infinite combinations and variations on a selected theme. As you might expect, the main focus of this release is on drum loops and rhythm grooves, each lasting between two and four bars.

Stylistically, the loops fall somewhere between the Chemical Brothers, Daft Punk, Underworld and the Prodigy, with a good deal of ethno, R&B and hardcore rock influences thrown in for good measure. The overall sound quality is faultless with creative use of effects processors, filters and compressors to give even



the simplest drum loops bags of attitude and a real '90s flavour. The programming and performances are also near perfect with as much careful attention being given to the smallest electronic hi-hat and tambourine patterns as is afforded to the almost unbelievably powerful acoustic rock kit sounds.

One of the most impressive things about Chemical Beats (apart from its amazing sound) is how much stylistic variety you get for your hard-earned cash. Everything from soulful R&B through to manic Industrial loops, with as much nasty compression and effects as you could shake a stick at. The Tab a loops also work beautifully and creative use of the stereo field makes nearly all of these samples highly usable in either a traditionally ethnic or contemporary context. The CD-ROM cleverly groups all the individual single hit samples together with the breakbeats they come from (and even has the intelligence to list all of this in the sleeve notes!) making customising and tweaking the loops to fit your track a painless and very enjoyable process. Obviously rhythm is king here, and the handful of tracks that contain a few choice pads, basses and stabs seem to be thrown in more as a token gesture rather than a serious attempt to give the release a 'workstation' feel.

The CD-ROM is a joy to use with everything listed with its tempo, its size in Mb, and relevant performance notes; even those with only 60 quid to spare for the audio version, however, can take comfort from the fact that this disc will inspire you and prove useful time and time again. Chemical Beats has a very flashy streetwise and hip exterior, but those who understand how crucial rhythm is in today's music will find levels of subtlety, creativity and musicality that will surprise and delight. Paul Farrer

- Audio CD £59.95; Akai-format CD-Rom £119.00 (includes audio CD as well).

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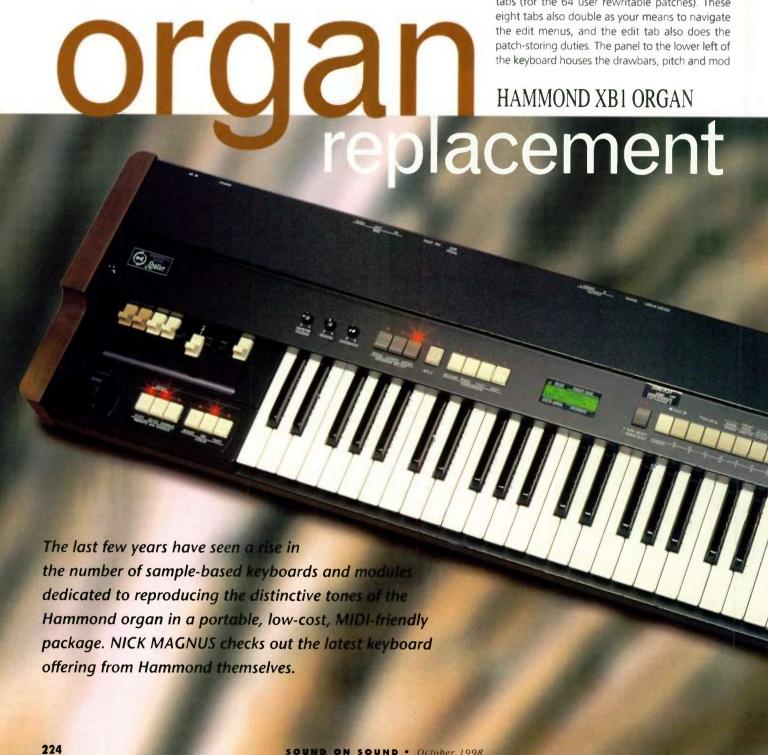
he Hammond organ, with its distinctive sound, remains as popular as ever, a fact confirmed by the growing numbers of keyboards and modules on the market which are designed to replicate tonewheel organ sounds. Roland, Korg, Oberheim, Voce and Hammond/Suzuki themselves are among those manufacturers who have quested to put an end to the strangulated hernia once and for all by giving us tonewheel soundalikes that can be tucked under one arm and installed snugly on to any modest, lightweight keyboard stand — unlike the backbreaking original Hammonds.

So far, Hammond's recent XB/XM-series has brought us the single-manual XB2, the dual-manual XB3 and XB5 (see review in SOS March '93), and the XM1/XMc1 module/remote control combination (reviewed May '97 by yours truly).

The XB1 is the latest addition to the clan (wot, no XB4?) and is the logical progression from the XB2, being the brain of an XM1 module (near enough) and the body of an XB2 ....er, near enough.

# LAYOUT

Dimensions are similar to those of the XB2, although the XB1 is 1.5cm slimmer heightwise, lending it a sleek appearance. Whereas the XB2 had a wooden top, the XB1 now sports a control surface of knobs, tabs and an LCD display, thus combining the editing and control facilities found on both the XM1 module and its XMc1 remote unit. These controls consist of three rotary knobs for master volume, reverb amount and overdrive amount; then four tabs for drawbar select and keyboard split, four for percussion settings, one bank/number select, and eight bank/patch number tabs (for the 64 user rewritable patches). These eight tabs also double as your means to navigate the edit menus, and the edit tab also does the patch-storing duties. The panel to the lower left of the keyboard houses the drawbars, pitch and mod



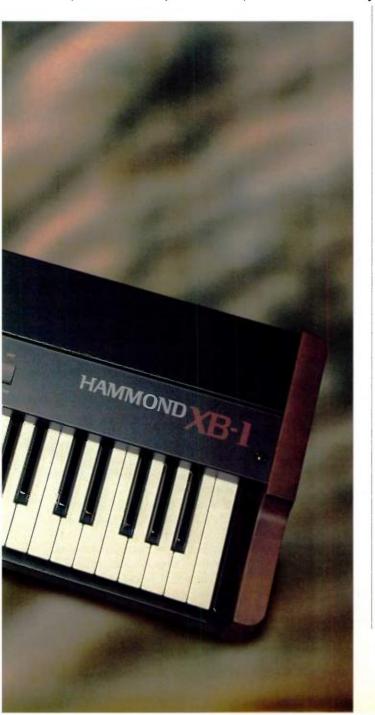
wheels, three Chorus/Vibrato tabs and three Leslie tabs.

Round the back we find the usual (but vital) fare — IEC socket for mains, MIDI In, Out, and Thru, one footswitch socket (assignable to various tasks), an expression pedal socket, stereo audio outs, headphone jack and also an 8-pin DIN socket to output the signal to a real Leslie cabinet, should you so wish. This DIN socket has to be used with the optional Hammond XLD1 Leslie adapter box, which in turn provides the necessary 11-pin Leslie socket. Quite why this arrangement exists is unclear — especially as the older XB2 had an 11-pin Leslie socket on its back panel, negating the need for a further box and cable.

The XB1 addresses many of the operational shortcomings of the XB2, and adds some extra bells and whistles along the way. Among these are a hugely improved Leslie simulator, immediate hardware access to parameters such as vibrato and percussion settings which were previously software menu items, the addition of a Pedal 'manual' — I'll explain those single quotes in a minute — and improved editing of the drawbar settings, notably those of the lower 'manual', which is now easier by several orders of magnitude.

# **KEYBOARD ARCHITECTURE**

If the mention of upper, lower and pedal manuals seems confusing (there being only the one obvious keyboard visible) then it should be explained that the keyboard can be split at a user-definable







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# HAMMOND XB1 ORGAN



The XB1's drawbars now send out continuous controller information over MIDI when moved — great for storing on-the-fly timbral changes in your sequencer.

point, thus giving you the choice of upper/lower, upper/pedal or lower/pedal configurations. All three 'manuals' will respond to their own separately assignable MIDI channels from an external MIDI source (default channels are 1, 2 and 3). You could also connect a set of MIDI bass pedals to get live access to all three sounds. The keyboard can also be used as a MIDI master controller. There are two external zones, each of which can be set to transmit on its own channel with independent settings for (take a deep breath) pitch bend, modulation, damper, bank changes, program changes, key range, max/min volume, velocity curve, and octave transposition (+/- four octaves).

The internal zones' settings (those that affect the organ's own sounds) include split point, upper/lower, upper/pedal or lower/pedal keyboard configurations, lower-manual transpose (0 to 2 octaves), upper/lower/pedal bend ranges, mod wheel mode (off, Leslie, overdrive) and key range.

# **MIDI FUNCTIONS**

Happily, the XB1 sends virtually every panel control over MIDI. I was initially surprised to find that the vibrato, percussion, overdrive and Leslie on/off and brake controls sent no MIDI data, but I soon discovered that the System default for transmitting and receiving NRPN messages was off. Turn it on, and everything goes just fine. The drawbars send their data too, which means you can record dynamic timoral changes into your sequencer and have them play back just as you performed them (this is a feature XB2 owners have always wanted, and to their credit. Hammond have taken note and implemented many improvements to the XB2 software to bring it very c'ose to the XB1 specifications). Tests showed that in order to make this work correctly with a sequencer, it's advisable to add a program change at the start of the sequence as a 'known' starting point — otherwise the XB1 won't be able to follow the controllers' history properly if you start the sequencer in the middle of a song. Usefully, the drawbar data is sent as MIDI Controller messages, not SysEx —

which means it is very much easier to edit afterwards. Data dumps can also be made of the current drawbar and switch settings, as well as the entire instrument.

# THE BELLS, THE BELLS... & WHISTLES TOO

### • THE LESLIE

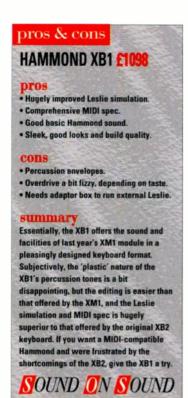
The most noticeable sonic improvement of the XB1 over the XB2 is the built-in Leslie simulator. The front panel even has the screenprinted legend 'Animation by Digital Leslie', including the Leslie logo in Gothic type. And they have reason to be pleased with themselves, as it's in a different league altogether to the Leslie effect supplied with the XB2. This new version (also featured on the XM1 module) has many editable parameters including speed, rise and fall times, mic placement/distance and horn/rotor balance. Of course, with so many variations possible, it makes sense to have somewhere to store them. Rather than storing the actual Leslie settings as part of a patch, there are five separate editable Leslie memory locations, and you can choose which of these memories to store as part of a patch. This number differs from the XM1 module, which offered 10 memory locations, but five is probably plenty — I'm sure most people will make up just one or two favourite Leslies and stick with them for the most part. Rather importantly, the effect actually sounds quite good. On a personal level, I would have preferred the effect to be slightly more pronounced at the slower speed, and the overall speeds' rise/fall times as written into the factory settings seemed a bit on the sluggish side — but the latter can easily be changed to bring things in line with your own requirements.

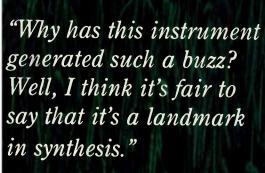
# • THE OVERDRIVE

This is designed to simulate the valve distortion that occurs when a Leslie preamp is driven hard. While the XB1 offers many improvements over the XB2, this is one area in which I feel the XB2 did marginally better. To my ears, the XB1's overdrive sounds just a tad too fizzy. It performs at its best when you apply it in subtle amounts, which is fine when the organ is fairly exposed in a musical arrangement, and you can hear the effect clearly. However, when competing with other instruments, the overdrive is somewhat masked, so you have to crank it up a bit to compensate, which leads to an attack of the fizzies. The XB2 overdrive fared better in this department, having a distinctly warmer, growlier quality. However, in its favour, the XB1 stores the overdrive amount as part of a patch, and any changes in overdrive level can be recorded over MIDI.

# • THE REVERB

Four Reverb algorithms are provided — Room, Live, Hall and Church. No edit parameters exist for these — the only thing you can change is the level. This, too, is stored as part of a patch — but in common with the other X-model Hammonds, the maximum times and levels of reverb are a bit on the mean side, which counts out any long, ambient effects unless you add outboard reverb, which you'd possibly want to do anyway in a





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Paul Nagle, Sound On Sound, April 1998.

An anecdote about Patch synthesisers.

Remember old analog modular patch synthesisers when you would make up one patch after hours of tedious patching? When you created a sound to your taste, ohh it sounded so good, but you needed to totally re-arrange your patch cords and knob settings to create new sounds. The process would have to start all over again and that great mono sound might never be heard again (unless you took the time to draw a comprehensive diagram of your settings and patches). To sample a patch is not the solution. Sampling is static and cannot reproduce random nuances.

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# HAMMOND XB1 ORGAN

"The XB1

addresses

many of the

operational

of the XB2.

some extra

whistles along

and adds

bells and

the way."

shortcomings

recording. Being able to vary the internal reverb's level and have it recorded in a sequencer is a plus point worth mentioning.

### VIBRATO

All six of the classic Hammond vibratos are available, with three depths each of Vibrato and Chorus Vibrato. Delving into the edit pages reveals that there are five speeds to choose from — slow, mid, normal, mid-fast and fast. The vibrato is applied to the both upper and lower manuals, but not the pedals.

### • OSCILLATOR PHASE CONTROL

An unusual parameter, it nevertheless does make a small difference. When set to on, all the oscillators' phases are locked to provide a tighter sound. When switched off, the oscillators' phases are independent, having the effect of slightly thickening the sound when more than one note is played — not an easy thing to put into words. This is definitely quite subtle, and really only noticeable when the XB1 is being played solo. But don't expect the audience to leap up in uncontrolled appreciation...

# KEY CLICK

This can be set independently for the upper, lower and pedal manuals, and is intended to replicate the 'spitting' quality of dirty key contacts found on older organs. Soft, normal, max and off are the choices and a fifth option adds a slow attack to the drawbar tone, almost like a bowed effect. To complement this, there are also four choices of sustain (release time to you and me); off, short, mid and long; this is very useful for chime-like effects. I wasn't completely convinced by the key click — it's more of a scratchy 'tick' than a 'spit', and it appeared to sound much the same regardless of the level setting, even after I'd made guite sure I was editing the right manual! On closer examination, the click has a randomness to it it's never quite the same level on two consecutive. key presses. The same goes for the key-off click. which is sometimes present and sometimes not. This randomness is a nice touch — at least I presume it's a nice touch, as I wasn't sure if it was intentional or not. If it is an accident, it's a happy one.

## • THE PERCUSSION

As on the original Hammonds, second- and third-harmonic percussion is included, with the option of slow and fast decay times, soft/normal levels, keyboard scaling and single/multiple triggering. This is quite comprehensively editable, and can be customised to suit each drawbar registration. There is even the choice of having the drawbars dip in level by 3dB, or staying unaltered when either of the percussion tabs is selected. These percussion tones can also be selectively routed via the Leslie effect or left dry, depending upon your tastes — an improvement over the XM1 module which didn't route the percussion via the Leslie at all.

The percussion is my major niggle on the XB1, and it's all to do with the attack time (which is viciously fast) and the decay envelope, which is rather too exponential. In other words, the initial attack is too violent, whilst the tail of the sound drops in level too quickly, regardless of the decay

time setting. This lends it a sort of 'plastic' quality, and to my mind, it doesn't sit with the main drawbar tones guite as successfully as it did on the old XB2.

### DRAWBARS

There are three tonal choices for each of the three manuals: Brite (sic), Mellow, and the classic B3 type. These differences are most noticeable in the



Connection to an external Leslie speaker is only possible via the the optional XLD1 Leslie adapter, which connects to this 8-pin DIN socket on the XB1's rear panel.

lower registers of the keyboard. Drawbar foldback settings can be set individually set for the upper and lower manuals — this regulates at what point the 16' and 1' drawbars 'wrap around' the octave at the extremes of the keyboard.

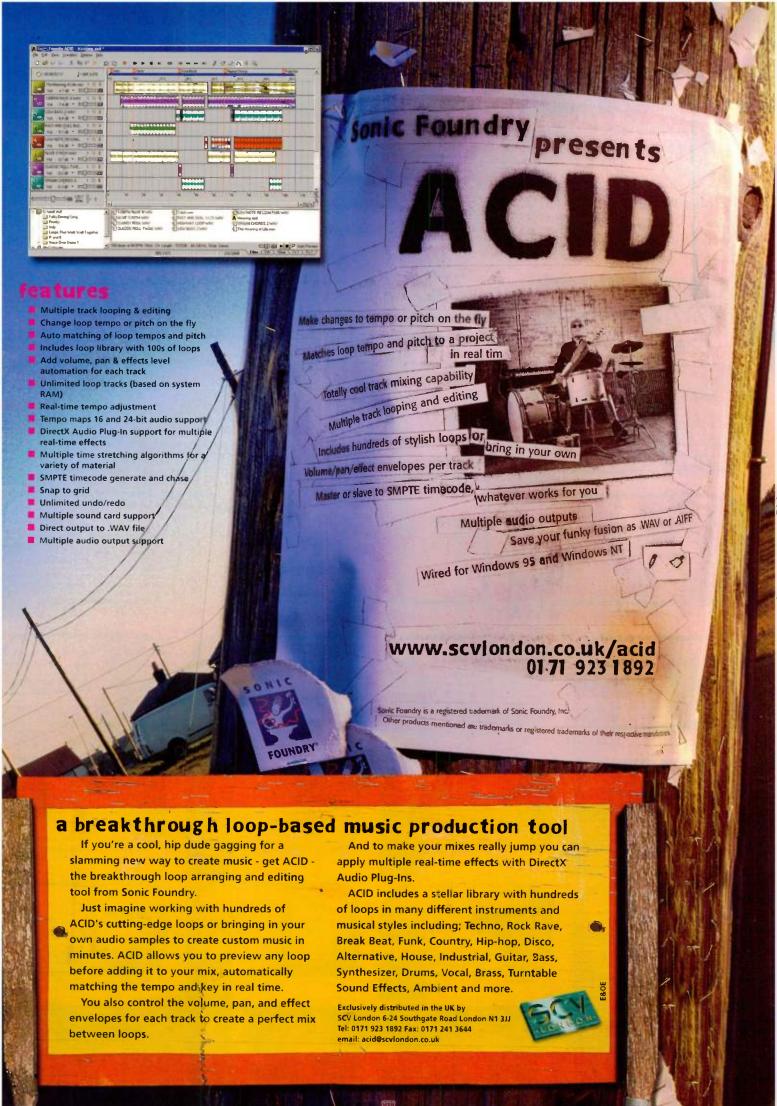
# **CONCLUSION**

Putting aside my reservations about the percussion and overdrive, the XB1 has a very good basic sound, subjectively an improvement over that of the XB2. The Leslie simulation is certainly a major improvement, and the comprehensive MIDI implementation allows it to integrate fully into the MIDI studio environment. For around the same price as the XM1/XMc1 combination, you're getting all that those units provide, plus a perfectly playable MIDI master keyboard into the bargain. The current competition of note would come in the form of the Oberheim OB3<sup>2</sup> and the Roland VK7. The differences between these units begins to look increasingly marginal, and how those differences are perceived is entirely up to the prospective purchaser. Looks, brand name and price are inevitably considerations; the XB1 certainly has the pedigree name, it looks very slick and attractive, and it sounds very much like... well, a Hammond. Go check it out — it may be just the thing you're looking for.

E XB1 £1098; XLD1 external Leslie adapter £160. Prices include VAT.

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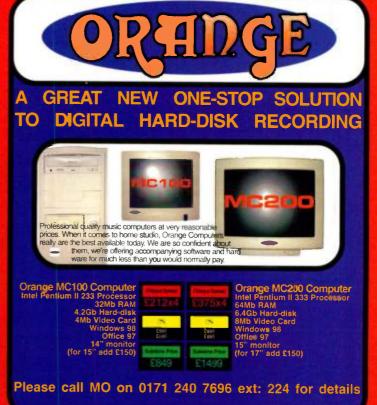
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# One of the final One of the One o

instalment of our series on the techniques and technology of digital audio, HUGH ROBJOHNS contemplates plugging it all together.

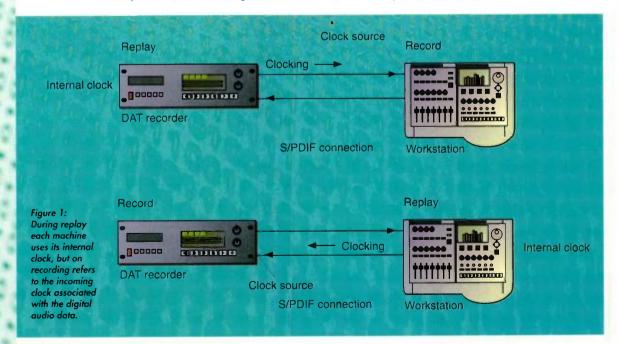
e have at last reached the fun and frustrating part of digital audio, plugging it all together! Having considered the fundamentals of digital audio, and the technology of the various tape and disc formats, we can now think about interconnections and constructing an all-digital signal path. The key to a successful and trouble free set up is in the clocking — an often neglected element — but let's start at the beginning.

To interconnect equipment, we need an interface — and, in true audio industry tradition, rather than getting to grips with one established standard, we have to cope with at least nine! The first and most basic (and some would say the most accurate and reliable!) is Sony's SDIF2 interface, a dual-channel plus separate clock format (see Common Digital Interfaces box), but we also have AES-EBU, S/PDIF, Toslink, and Yamaha's Y2 format. These are all stereo or two-channel interfaces. For multichannel applications MADI, ADAT, TDIF1 interfaces are the most common.

Needless to say, none of these interfaces are directly interchangeable with any of the others. With the exception of interconnecting AES-EBU and S/PDIF

interfaces (which can usually be persuaded to work to a useful degree with little more than a suitable 'bodge lead'), digital interface conversion needs a lot more than a cable with suitable plugs on each end. Channel coding, voltage levels, bit sequences, numbers of bits, auxiliary data, status flags and control data all has to be translated or transcoded, requiring semi-intelligent signal processing in a dedicated format converter such as Otari's UFC24 or Spectral's Translator for multichannel applications, or something like Audio Design's stereo digital format converter. It is also worth bearing in mind that this data involves frequency components of many megahertz — not dissimilar from television signals — and so needs rather different care and attention to conventional analogue audio signals.

In any practical installation, it is highly likely that several different interfaces will have to be used: perhaps S/PDIF or AES-EBU for stereo sources, and TDIF or ADAT Optical for multichannel devices. It is sensible to purchase equipment with compatible interfaces to minimise the number of format conversions which have to be made, and invest in decent and appropriate cabling for digital signals. It also pays to keep cable lengths as short as practicable but most important of all, work out a stable and reliable clocking arrangement with the best master reference you can afford because this defines the potential quality of the entire system.



# **CLOCKING**

Clocking — the correct application of word clock signals — is the most crucial aspect of any digital installation, and an area all too often neglected. With the increasing number of affordable digital sound desks, and the growing trend towards digital audio workstations, interfacing equipment digitally is now commonplace. However, I have encountered many systems which are unreliable, constantly need to be reconfigured, produce random clicks and splats, and suffer timing or synchronisation problems with MIDI or timecode-based devices.

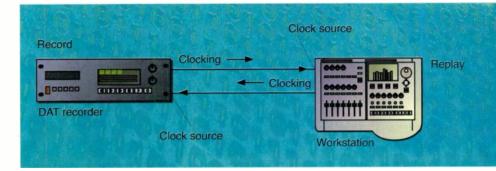
Plugging digital audio equipment together may seem as trivial as interconnecting analogue equipment, and sometimes it is, but there are some critical underlying technicalities waiting to catch out the uninformed.

In transferring digital audio between equipment, the receiving equipment has to be able to interpret the data correctly and part of that involves understanding where each data bit belongs in a complete sample, which sample belongs to which channel, and what the precise sampling rate is. The key to this interpretation is the word clock signal a metronome if you like, which beats out the data timing and enables each bit to be understood correctly. The more elaborate digital interfaces incorporate word clock within a single data stream as part of the channel coding, while other systems rely on separate cables to convey clocking signals.

### A SIMPLE SYSTEM

Perhaps the simplest system to consider would be a DAT recorder connected to a digital audio workstation via S/PDIF or Toslink interfaces. The DAT is used to load material into the workstation for editing, and to record the finished mix from it. Since the channel coding of S/PDIF and Toslink incorporates a word clock signal appropriate to the audio data, word clock routing is effectively built in to the interconnections. When loading material into the workstation the latter can synchronise itself to the incoming clocks from the DAT, and when dumping a mix out to the DAT, clocks from the workstation are present with the data to lock the DAT. All nice, simple, and probably completely automatic.

There are potential snags, however. Workstations typically have numerous options hidden away in menus somewhere. There will almost certainly be a section determining the word clock source which



will include an internal reference, one or more external digital inputs, perhaps a dedicated word clock input, and maybe an automatic mode. The last uses the internal clock during replay and when recording via internal A-D converters, but selects the clock derived from a digital input when recording from external sources.

However intelligent these automatic modes may be, an inappropriate selection will result in clicks, splats, or worse! Consider a workstation permanently configured to use only its internal clock. During editing, mixing and replay all is well, but when loading data from the DAT there will be occasional clicks and splats - often erroneously put down to errors and glitches on the DAT recording. The problem here is that although both DAT and workstation have their internal clocks set to the same nominal value, say 44.1kHz, they are very unlikely to be running at exactly the same rate. One might be 44101Hz and the other 44100Hz. Even with this timing difference between the machines, many thousands of data samples will be correctly transferred without any obvious problems at all. However, as the timing drifts further apart eventually some data will be misinterpreted or lost altogether, resulting in an occasional click or splat. Depending on the audio material these data errors may go unnoticed — slow sustained piano music or a steady 1kHz tone is the best test of such problems. Indeed, I would strongly recommend recording a test tone through any newly configured digital interfacing to prove the clocking arrangements are working correctly.

A more dramatic clocking error, but one which is almost as common, is to force the workstation to permanently clock from the S/PDIF input connected to the DAT. Loading material into the workstation is fine, and provided the DAT is left switched on during editing and mixing operations, they will work satisfactorily too. The problem comes when dumping

Figure 2: A word clock howlround! The workstation is configured to use the DAT as its clock source which is fine until the DAT is switched to record...

"Clocking is the most crucial aspect of any digital installation. and an area all too often neglected."

# COMMON DIGITAL INTERFACES

technical detail of the common interfaces to use th effectively, but should you feel the need, The Digital Interface Handbook is very comprehensive

(Rumsey/Watkinson, Focal Press, ISBN 0-240-51333-9).

The most common stereo or dual-channel interfaces are SDIF-2, the trio of AES-EBU related formats, and Yamaha's Y-series. SDIF (Sony Digital InterFace) is the oldest and simplest, using three BNCs to carry data one for each channel and the third for word clock. The word clock connector from this interface is retained on virtually every digital machine. Both the mono and stereo Yamaha Y-interfaces employ an 8-pin DIN socket with separate pins carrying balanced word clock and balanced digital audio. There is also a facility to enable data transmission only when a suitable destination is

detected. The two versions are compatible (Y2-Y1: left only to a mono socket; Y1-Y2: mono on the left channel only to a stereo socket).

The AES-EBU trio share similar structures, but differ just enough to make interconnection between the formats unreliable! The AES-EBU system uses XLRs and carries a balanced signal encoding data, word clock, and lots of signalling and auxiliary data. S/PDIF is the domestic version which runs as a smaller, unbalanced signal on phono connectors. In fact, the domestic version is better defined than the professional AES-EBU system. For example, it can carry CD and DAT track information where the professional system cannot. Not all XLR connectors labelled 'Digital' are AES-EBU format — many just carry S/PDIF data balanced for transmission along longer cables! A short phono-to-XLR lead will usually allow functional interconnections to be made between pro and semipro gear.

Toslink (Toshiba Optical Link) is an S/PDIF signal causing an LED to flash on and off very quickly. The light passes down a length of plastic pipe and at the receiving end an opto-sensor regenerates the S/PDIF signal. Although Toslink avoids electrical interference and ground loop problems, it is not a panacea — cheap optical leads can introduce a lot of jitter to the data signal and only short runs are practicable.

The most common multichannel interfaces are the optical ADAT system, which is a re-engineered version of Toslink carrying eight channels, and the TDIF format for the DA88 family of machines using 25-way D-Sub connectors. MADI (Multichannel Digital Audio Interface) is used on big open-reel digital multitracks and carries up to 56 channels. It is usually connected as a single BNC-terminated cable for audio data with a second for word clock, but optical versions are also available.

# ALL ABOUT DIGITAL AUDIO Clocking Digital mixer DAT recorder Workstation Figure 3: Multiple sources connected to a digital mixer must share a common clock source. Machines recording the output of the desk can make use of their digital inputs as a clock reference during playback.

"Despite their importance, master clock units are surprisingly rare..."

a completed mix back to the DAT. The workstation looks to the DAT for its clocking reference, but during recording from a digital source, the DAT automatically clocks from its digital input — the workstation. So each machine tries to clock from the other and end up in a mad spiral of digital chaos!

At best, the entire system will crash, hopefully with helpful warning indications on the two machines. Alternatively, there could be an ear-splitting howl as the digital data is grossly misunderstood—but at least these two situations quickly draw attention to the problem. The worst scenario is that the clock rate might gradually rise or fall until some range limit is reached by one or other piece of equipment. This is a nasty result as it is surprisingly easy to miss and you may only become aware of the problem later on when replaying the DAT, only to find it seeming to run too fast, slow, or not at all!

# **DIGITAL MIXERS**

If this extremely simple setup makes you think twice about the complexities of clocking, how bad can it be to try to build a larger digital system around a digital desk like Yamaha's O3D, with numerous digital sources like CD, DAT, outboard A-Ds, workstation and ADAT machines? Well, the simple answer is that it could be a complete nightmare, but with a little care and planning, the system can be made to work perfectly reliably without too much difficulty.

The basic problem when a digital mixer becomes involved is in ensuring each source is synchronised correctly with the other sources and the mixer itself. In order to mix two or more signals together, their data must arrive at the mixer at exactly the same time — bit for bit — and that means they must all be clocked from the same master.

Most manufacturers of multitrack digital recorders recommend using their recorder as the master clock source (ie. set to internal clock) to a digital mixer, and there will be a facility within the mixer to select its reference word clock in much the same way as the workstation described earlier. Options will include an internal clock, an external reference word clock input, or any of the digital inputs (usually in pairs). Once the mixer is clocked, the other devices in the system can be assigned word clocks.

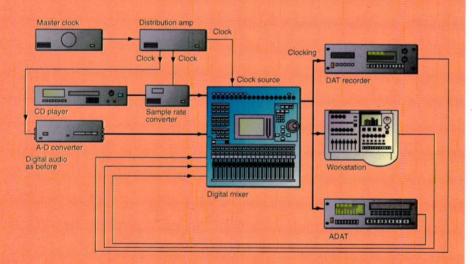
Stereo recorders connected to the mixer's digital output will automatically receive the correct clocking via their S/PDIF, AES-EBU or Toslink interfaces. Digital sources such as outboard A-D converters and CD players will need separate word clock feeds, usually derived from one of the word clock output sockets (normally a BNC connector) on the digital mixer.

And this brings me to a couple of practical points to beware. Not all DAT machines (even supposedly professional models) can be word clocked from their digital inputs during replay, and very few CD players are equipped with an external clock input. The DAT problem can easily be checked by replaying a known good recording or tone whilst listening very carefully for occasional clicks or splats — if there are none, the DAT is being clocked correctly. (You can prove the point by disconnecting the digital input, when occasional but regular clicks should be heard). If you do not happen to have a CD player which can be externally clocked, DO NOT be tempted to make it the master system clock reference (in the deluded hope of avoiding the problem!).

The majority of domestic and semi-pro CD players have relatively unstable and inaccurate clocks, and although acceptable in a stand-alone situation you are asking for major trouble using a £250 CD player as the reference for a multi-thousand pound digital recording setup!

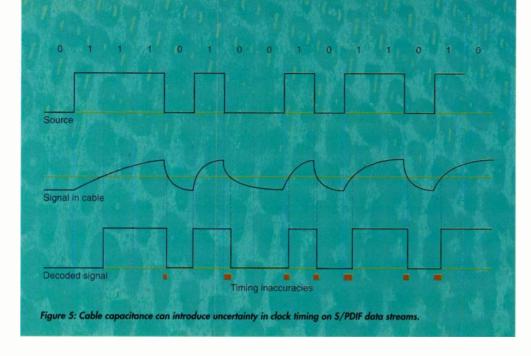
There are two realistic solutions to the CD problem. Either invest in a sample-rate converter which can be clocked from the desk to provide accurately timed data from a free-running CD player, or connect the analogue outputs from the CD player to the analogue inputs of the mixer (or an external A-D converter suitably referenced to the master word clock). Think of analogue interconnection as a 'universal sample rate converter' because with the quality of modern A-D and D-A converters, the analogue route is usually the quickest, easiest, cheapest, and most pragmatic solution — and no one will know it's not digital if you don't tell them! One or other of these techniques

Figure 4: In an ideal installation, a master word clock source is distributed to all equipment via distribution amplifiers. Tidy, functional, reliable and hard to get wrong!





# ALL ABOUT DIGITAL AUDIO



# THE JITTER PROBLEM

Jitter is not really a problem in a properly engineered system, but can create havoc in a poor installation. Jitter refers to the digital equivalent of wow and flutter — tiny timing variations in the data stream or clocking signals which cause samples to be encoded or decoded at the wrong time. The effect is not dissimilar to taking incorrect sample measurements at the right time, and produces quantising errors which typically manifest as high frequency noise, and unstable or vague stereo imaging.

Jitter can be caused in two ways: either by an erratic clock generator, or by passing a data stream through inferior or excessively long cables (including fibre-optics). The first cause is obvious, the second applies to channel coded interfaces like the AES-EBU and S/PDIF where the word clock is embodied within the data stream. Cable capacitance reduces high frequencies resulting in rounded corners and sloping edges to the original square wave signals. Since the word clock timing is defined by the midpoint of the edges between data bits, any move away from vertical creates timing uncertainty and thus jitter.

Since the effect of jitter is similar to quantisation errors, it follows that jitter can be a limiting factor to bit resolution: the higher the jitter, the lower the resolution. A 20-bit recorder clocked from a jittery source may only be able to resolve 15 or 16 bits — the rest will effectively be carrying noise! Hence the importance of a very stable master clock in high-resolution systems.

Jitter can be removed by re-clocking the data to a more accurate word clock, and in any case is of little concern within a digital data chain provided it is not excessive. It only becomes a problem when signals are converted to or from analogue (during recording and auditioning) when the timing errors convert to pseudo-random amplitude errors with potentially audible effects.

would also be required if you wished to be able to varispeed a digital source, or had to accommodate a wacky sampling rate.

You may feel a glowing sense of satisfaction from configuring a sensible clocking system with the digital multitrack as the master clock source, but life may still be far from perfect. Most digital multitracks won't record from their digital inputs without an external clock source, so you may have to continually reselect clocks between the desk during recording and the multitrack during mixing (so what happens when overdubbing?).

But even if you are prepared to put up with the hassle of that, there is the problem of jitter associated with unstable clocks to think about (see box). I have come across precious few pieces of digital equipment with internal clocks sufficiently capable of jitter-free operation to allow working above 16-bit resolution (and some barely allow that!). Clock your 20-bit recorder from most 'budget' digital desks and the resulting conversion to analogue for monitoring will rarely exceed 16-bit resolution, no matter how many bits the converter claims to employ! So, we need a better clocking solution if you want your investment in a digital desk to be capable of taking full advantage of 20-bit (and higher) resolution recorders.

# **MASTER CLOCKS**

The key to a happy life with any digital setup is to invest in a decent master word clock generator, distribute it to every digital machine (which will accept external reference clock signals), configure the system once, and get on with the far more pleasurable business of making and recording music. A master word clock generator and the associated distribution amplifier may initially seem an expensive luxury, but they will more than pay back in terms of better system reliability, ease of use, and higher quality recordings, as well as allowing easy future upgrading.

Master clock generators are available to various accuracies defined as a frequency stability in parts per million. A Grade 1 (AES definition) clock has a long term accuracy of +/-1ppm (part per million) and a Grade 2, 10ppm. For comparison, the IEC specifications for domestic digital equipment are: Level I (highest accuracy) +/-50ppm, Level II (normal)

+/-1000ppm, and Level III requires a calendar — hence my earlier comments about not referencing a digital system to a domestic CD player! Some well-known digital mixers are specified as employing only IEC Level II internal clocks, so watch out! For most applications a Grade 2 master clock would be perfectly sufficient, provided you make sure it can accept a more accurate external reference (such as stable video) to allow upgrading for 22- or 24-bit recorders.

Despite their importance, master clock units are surprisingly rare in the pages of pro-audio distributors' catalogues. However, suitable units are available from specialist manufacturers including Aardvark, Audio Design and Probel. HHB Communications and The UK Office are among the few distributors who supply and advise on suitable units.

# PRACTICAL INSTALLATION

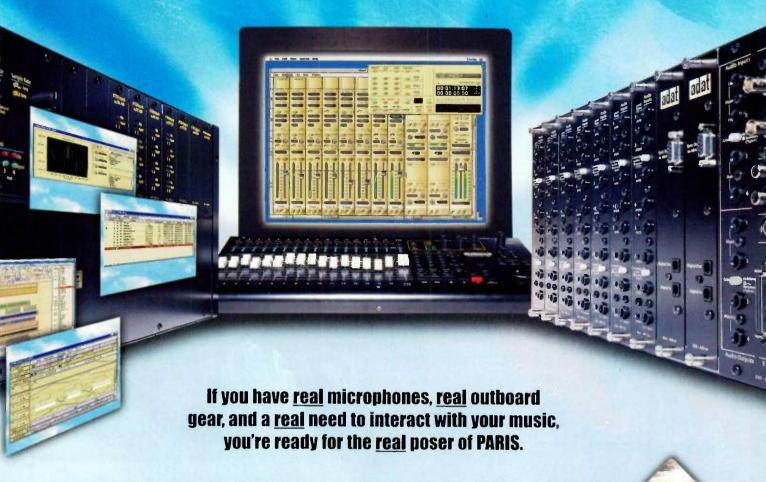
It is really a matter of common sense. Avoid 'daisy-chaining' word clock from one piece of equipment to another as unacceptable delays can build up towards the end of even short chains. Instead, use star-distribution, ideally with proper digital distribution amplifiers providing buffered word clocks to each piece of equipment.

With all equipment switched to reference from this master word clock everything will be accurately clocked and stable, and it will not be necessary to change the clocking source on the mixer for recording, mixing or overdubbing ever again! Furthermore, changing from 44.1 to 48kHz is simply a case of resetting the master clock source — everything else should update automatically.

# THE FUTURE

I hope you have found this series on the technology and techniques of digital audio informative. The analogue audio industry started around 100 years ago and will no doubt be with us for a while yet. However, I find it quite amazing to think that digital audio has become such a dominant feature of the industry in under 20 years. There are still debates over how to improve things, and not everyone likes the nature of digital recording, but it is certainly here to stay and by understanding the underlying technology, you will be able to use it to the full.

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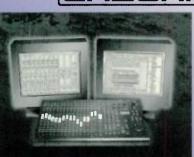
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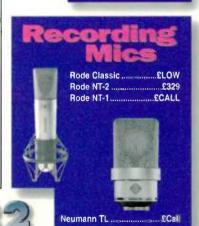
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# Double Hundred

# DIGITECH STUDIO \$200 DUAL ENGINE MULTI-EFFECTS PROCESSOR

Sitting in Digitech's Studio range between the \$100 and the Quad 4, the new \$200 combines the functions of the former with the ergonomics of the latter. HUGH ROBIOHNS checks it out.

> he S200 multi-effects unit is a re-engineered version of the \$100 (reviewed in the April 1998 issue of SOS) which retains the latter's dual DSP engine system as well as the attractive electricblue front panel. However, the new model features a large backlit LCD, which has produced some important operational improvements over the \$100, and its integral power supply is a definite step up on the more

> Like the \$100, the new machine provides stereo bypassing the machine altogether.

in which the engines are linked to form just one powerful processing module providing the longest delay times, the most processing power and the best-sounding reverberation programs. All the other modes split the machine's capability across two DSP engines in various ways: stereo in/stereo out with the two modules connected either in series or parallel, dual mono processing with independent processing in each channel, or dual input with separate processes combined to a single stereo output.

## **TECHNICALITIES**

The \$200 retains the same hardware as the \$100, with 128-times oversampling converters and the same bizarre internal sampling rate of 46.875kHz. The audio bandwidth is a full 20Hz to 20kHz, and the noise floor is acceptably quiet, although not perhaps as good as might have been expected from 20-bit converters.

One particular aspect of the S200 which is a vast improvement over its junior sibling is that it employs an internal mains power supply with a standard IEC mains socket instead of an external plug-top unit. So plus 100 points for that... Unfortunately, though, I have to subtract 1000 points, because there is no externally accessible fuse, nor any kind of power switch on the front or rear panels. Once this machine is plugged in it is powered forever! Also, the IEC socket on the review model seemed rather poor and the slightest movement of the mains lead caused the machine to crackle, thump and re-boot.

The rear panel is virtually identical to the \$100's, with a 'set-once-and-forget' input volume control which, although adequate when the unit is permanently connected to a mixing console's aux send, is frustrating if you need to adjust the input gain occasionally — and particularly annoying if you want to mount the unit in a rack! There are unbalanced quarter-inch sockets on the rear panel for two inputs and two outputs (the left socket of each pair is used for mono connections) and another quarter-inch socket provides the footswitch facility. A lone MIDI socket receives program change commands.

# **IN USE**

The backlit LCD always shows the selected program number on the left-hand side, graphical configuration and parameter details in the centre, and a variety of legends in a column on the right-hand side informing the user of the current operating mode (factory or user presets, standard or edited settings, utility mode

basic unit's 'wall wart'.

inputs and outputs, a 24-bit signal path (with 48-bit internal processing), 20-bit A-D and D-A converters (with a 96dB signal-to-noise ratio), five effects processing configurations, and 99 factory programs including 'studio' reverbs, the usual modulation effects (flanging, phasing, chorus, tremelo, panners, and even rotary speaker simulation), compressor and de-esser, plus some rather more weird and wonderful programs like vocoders and ring modulators. Standard MIDI control functions are provided, as is a footswitch socket for stepping through the presets or

Signal processing is very flexible, with five different DSP configurations, all of which include a noise gate and three-band EQ on the input. The two DSP engines can be combined in virtually every possible way, the first option being a simple stereo in/stereo out mode

· No mains power switch. summary Essentially a re-engineered version of the S100 multi-effects processor with a useful range of programs. Offers nothing new in the way of effects, but is a good jack of all trades, and has a very good user interface allowing fast, intuitive operation.

pros & cons

**Pros**• Attractive design

programs

graphics.

special.

DIGITECH S200 £300

Very flexible DSP configurations.

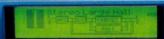
Wide range of effects and reverberation

• Excellent ergonomics and clear LCD

· Effects are competent, but nothing

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Midi bypassable via midi program changes. Utile: sample rate, A/D input and output, Midi functions, Sysex functions.

Gate



Set parameters for threshold, ratio, attack, hold, release, and output gain. See the effect of your settings on the graphical display, as well as on the gain reduction and audio level meters, they all interact in real time with your manipulation of the parameters. Start with a threshold setting of about -60dB to clean off the noise in between the vocal takes. You can save your final gate settings as a "gate preset" building block and recall it into any other setup you do.

Compressor



The effecte of the gate settings are visible on the graphic display to help you determine where to set your compressor threshold. Move through all the regular parameters (displayed in real time), like threshold, ratio, attack, release, and output gain. For vocals use a threshold of about -25dB, a ratio of about 3:1 or 4:1, and a slow attack and fast release for the most natural sounding effect. Your compressor settings can also be saved as a building block to be called up into any other preset.

Limiter



Changes you make to the limiter settings are also seen on the graphical display. You can adjust the level and also the speed at which the limiter lets go of the signal as it goes below the threshold. This is truly smooth limiting, with patented dbx PeakPlus™ algorithms, so rest assured that wherever you set your threshold level, your tape will not distort. And like the other parts of the processor, your limiter settings can be named and saved for later recall.

De-esser



De-essing works the same way; see the effects of your settings displayed on the graph. Parameters here are the common ones: threshold (BOOHz to BkHz), and amount (%). Other processing includes EQ - both in-path and sidechain - for special-effect types of processing. When you are editing any of the building blocks, its icon is visible on the display, and the parameters are shown on the graph, so it's always easy to know where you are.

and More



You can also work in stereo, or set up a completely different and Independent processing chain for the other channel. Optional digital output with the TYPE IV™ Conversion System with TSE™ (Tape Saturation Emulation) provides up to 24-bit output in either AES/EBU or S/PDIF formate with the trademark digital processing of TYPE IV™. The DDP also has full MIDI/Automation capability, with separate midl in and thru jacks.

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# DIGITECH S200

and so on). To the right of the LCD is an aide-memoir listing the program number groups for the various types of presets (delays, reverbs, multi-effects, and so on) which helps to track down the desired effect quickly.

When a program is recalled the display initially shows the configuration of inputs, outputs, DSP engines, and feedback paths in a clear block diagram. Pressing the Engine A/B button selects each DSP module in turn allowing its algorithm to be changed from the preset via the data wheel. As a new selection is made, soft-key labels above the four Parameter buttons change accordingly.

The parameters of a selected process can be modified by pressing one of the four Parameter buttons, causing the display to change. In most programs, the display redraws to show four virtual knobs with markers indicating the nominal position

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# BETTER BUTTONS

Though the S100's 1U-high front panel features a curved and milled aluminium extrusion identical to the S100's, its user interface is considerably different. The control buttons and large LCD are neatly grouped in the centre of the panel and are much better those of the \$100. proving far more intuitive to use. Twelve slimline push buttons in a row beneath the display look similar to the \$100's, but there are several subtle changes for example the four parameter buttons are now directly below the display, and operate as 'soft-keys' according to labels shown on the LCD. The nicely weighted data input wheel is used to scroll through the various memories and adjust parameters in the usual way, but seems to operate at a fixed speed and

When I reviewed the \$100 back in April, I was concerned that the legends on the push buttons would not survive prolonged use, but the \$200's buttons appears to have a tougher paint job! Also, the \$100's buttons were not all printed squarely, but I'm pleased to report no such problems with the \$200. There were also problems in seeing the semi-hidden secondary legends below the buttons of the \$100, but the introduction of the LCD has allowed these to be dispensed with, making the \$200 much quicker, simpler, and above all, more intuitive.

of each control (a numeric value is also included directly above the soft-labels). In the reverberation algorithms, a level vs time graph is provided showing the relative pre-delay and decay times, or HF damping. A small slider graphic shows output level. A similar display is used for the delay programs, but with discrete vertical lines representing individual output echoes in place of the solid block representing a dense reverberation tail. Dynamics programs are provided with a transfer plot of input level against output level clearly showing the threshold and ratio settings, together with a second display indicating attack or release times.

As a parameter is adjusted, not only does the graphical display alter, but the numerical readout doubles in size to make it clear just what is being altered. Some values are accurately scaled (delay times in mS for example), but most are arbitrary 1-10 or 1-100 values. A 'Preview' button replays a rather crude sample of a snare drum to assist in adjusting program parameters by ear. However, the sample is extraordinarily noisy, making it rather difficult to assess the early reflections in the reverb programs. A good idea, but badly implemented, I'm afraid.

The 20-page user manual is sensibly brief and so stands a good chance of being read! However, anyone with even a rudimentary understanding of what multi-effects machines are about will rarely need to refer to it other than for the occasional utility function. In fact, there are only three menu pages of utilities anyway, which are all pretty obvious. They include facilities for setting the MIDI channel, whether the dry signal should be mixed with the processed signal or

not, adjusting the display contrast, allocating functions to the footswitch, and resetting the factory presets.

The remaining buttons are just as intuitive. The first (labelled Program) simply recalls the main configuration display, allowing the preset program to be changed. The adjacent button (Configuration) allows the DSP configuration to be altered for users who have a specific processing structure in mind. Alternatively, users can scroll through the presets to find a ready-made program which is close to their needs, and then alter the algorithms and parameters from there.

A button labelled EQ/Gate toggles between the equaliser and noise gate function. The EQ is a three-band affair with top and bottom shelf responses (+/- 12dB range) and a parametric mid-band with the same boost/cut plus an adjustable centre frequency accurately scaled between 25Hz and 20kHz. The simple noise gate provides threshold and release parameters.

Next to the EQ/Gate button is the Utility facility, followed by the Preview button to fire off the drum sample as already mentioned. Finally, the last two buttons store a modified program setting and bypass the signal processing.

The S200 seems to have the same families of effects programs as the S100, which are perfectly usable although not the last word in studio quality. The reverbs are typically rather 'metallic' and 'boingy', but will suit hi-tech music perfectly well. The time delays and related effects (phasing, flanging, chorus and so forth) fare rather better, with some very rich and usable sounds being easily achievable. The Vocoder and Ring Modulator programs are fun to play with and will doubtless find occasional applications somewhere, but the pitch-shifting and detuning options are best avoided for anything which will remain audible in a mix (unless you like the sound of glitchy pitch-shifters)!

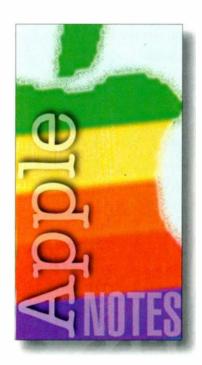
# CONCLUSION

The S200, while improving significantly on many operational aspects of its junior sibling, doesn't appear to offer anything new in the selection or quality of the effects, and is considerably more expensive. However, it is definitely far easier to use than the S100, and can be recommended on the basis that ergonomics are certainly a very important aspect of a complex machine like this. In terms of sound quality, the S200 is OK, but doesn't excel at anything — there are better affordable reverb units around, for example. Nevertheless, it remains a very flexible machine capable of a very wide range of usable effects, making it a good jack of all trades, even if it is master of none.





for more information



MARTIN RUSS looks at some of QuickTime 3's new features, and considers why the 'computer-as-completerecording-studio' approach isn't always the best one...

've mentioned software synthesizers a few times recently; in combination with a direct-to-hard-disk recorder/MIDI sequencer, they dangle the tantalising possibility of a complete studio in a computer before many hi-tech musicians. If you intend going this route, however, you will immediately require additional hardware on top of the computer, because for any serious work, you will need more than the computer's basic stereo audio ins and outs, which means buying at least a multi-I/O PCI card, and perhaps even separate D-A/A-D converters to talk to the card. And then you'll probably still need a master keyboard. But even discounting these significant objections, perhaps you've still got the unshakable notion that you can replace everything with a computer?

Let's look at this idea more closely. Modern MIDI + Audio sequencers double as sample replay devices, so the only limit is the number of audio channels your computer can handle at once — and with a fast G3 processor you should be able to run quite a few simultaneously. But don't forget the software synthesis you need to produce sounds of your own, as opposed to pre-packaged samples off a CD-ROM — that will eat up quite a bit of processing power. Audio playback, especially in near-real time, takes a huge amount of processing power all the time it is running almost the exact opposite of a word processor or spreadsheet, where the computer is mostly twiddling its digital thumbs waiting for the next

input from the keyboard. Worse still, although you might still get double-figure polyphony in playback with this type of all-in-one setup, there's another complication, and it is all to do with the way computers work.

Have you ever wondered why it is that MIDI + Audio sequencers allow you to change the relationship between the audio playback timing and the MIDI timing? It's because it takes a finite amount of time for the audio information to come off the hard disk and appear at the audio output — and this time is dependent on factors like the hard disk, the processor speed, number of buffers, and so on. It all adds up to two things: one, you need to adjust your audio so that it matches the MIDI playback timing, and two, because of the time delay, you need to load the audio samples off the disk before they are played back. This has serious consequences when you try to play along with your backing in real time — because any delays in the software synthesizer or the sample replayer are going to affect notes from the master keyboard. Playing ahead of time is easy for computers, because they know what's coming up, but for most keyboard players it is a hard skill to master! Typical time delays can easily reach and pass the limit of human timing perception — about 10 milliseconds — and then you can start to hear the effect.

Optimists might comment at this point that we now have a software-only solution, because if you can't play a keyboard live, then you might as well build up all of the playing from the on-screen keyboard instead. Personally, though, I'm not the greatest fan of using a mouse for live note entry, and for solos, chords and improvisation, on-screen note entry is simply not an alternative.

Software synthesizers are very powerful tools for making sounds which would be impractical or impossible using analogue (or even digital) gear, but their place is as part of the synthesist's off-line sound programming arsenal, not a replacement for live reality. And it's a braver man than I who takes a computer on stage with no way of recovering quickly from a crash...

You may think that faster processors will solve these problems, but this is not necessarily the case. Computers are built to respond quickly to events that are important to them — mouse clicks and other user interface functions, for example, have a powerful effect on the user's perception of the computer's speed, and these functions are usually assigned priority. The redrawing of on-screen graphics is often high on the priority list, yet for real-time music use it is probably one of the least important. Although the overall time taken up by these functions will decrease as processors get faster, the problem of priority will remain unaffected. It is possible to get into the inner workings of the operating system and rework it (and the Mac apparently has some advantages over the PC in this respect), but then you can end up with a computer whose real-time performance is fine for the things that matter to a musician, like audio, but whose response to mouse clicks or keyboard commands is a little jerky at best.

Furthermore, computer operating systems are becoming increasingly sophisticated, which means that they perform more and more background tasks that you may not be aware of. Faster processors like the G3 and its successors

# **MAKING MOVIES**

Russell Clarke's Play It Cool 3 is a \$15 shareware QuickTime and QuickTime VR movie player and simple movie editor that allows you to make standalone self-playing applications from QuickTime movies (which normally default to using Apple's Movie Player). The resulting application is doubleclickable, blanks out the whole screen to a background colour of your choice, fades smoothly between up to six pages of title text that you define, and then plays your movie. On my test movie, the resulting application was only a few hundred bytes bigger than the original 1.9Mb movie. You may be able to think of one or two ways of using this for promoting yourself, your music, or your band (did anyone say showreel, CV, business card, promo video...?) Nicely implemented and very useful. In a word: it's cool!

W www.kagi.com/rwc/pic.html (365K)



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Studio, MaxiSound, MOTO 2408, and others. Call for quotation and info.



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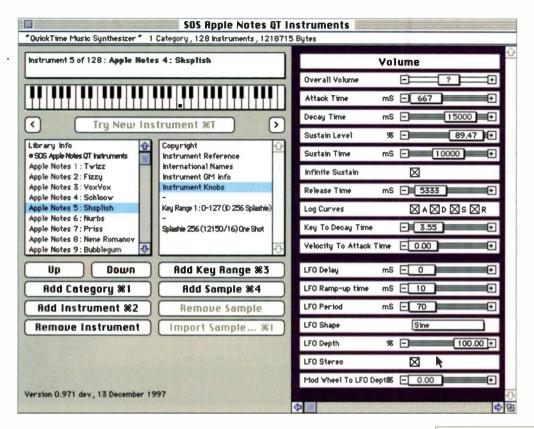
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# Apple NOTES



David Van Brink's Atomic Editor if you want to make your own QuickTime musical instruments, you know where to come.

> Part of the new GS MIDI-compatible QuickTime Musical Instruments set.

are going to make Macs run ever faster, but you can be sure that there is plenty of operating system software ready to use up almost all of that power.

The upshot of all this is that real-time applications and current general-purpose computers aren't a good marriage — someone loses, and it is almost always the real-time stuff. Dedicated hardware may be more expensive to develop and sell, but at least it is optimised for real-time performance.

# **QUICKTIME 3**

Everything that was promised for previous versions of QuickTime has finally arrived in version 3: true cross-platform equality, broad importing options, video effects, customisable streaming for web delivery, and more. The downside is that there are two versions: the freeware replay-only one, and the \$30 Pro version which lets you do editing. Unlike previous versions, *Movie Player* now only plays — it does not let you assemble movies.

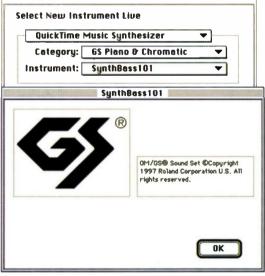
In addition to the video aspects of QuickTime 3, it is easy to forget that it is also a powerful tool for audio distribution. Adding a sound track to a movie (or a panorama) requires wide file-format compatibility, and QT3 can import AIFF, WAV, AU, MPEG Layer 2 and now Digidesign's Sound Designer II files as well. The catch with the MPEG Layer 2 audio is that QuickTime 3 for Windows won't have this for a couple of months. Then there's the MIDI

playback capabilities — and this is an often overlooked way of adding music to moving images. QuickTime 2 had a 0.5Mb QT Musical Instruments file containing a minimalistic set of General MIDI sounds licensed from Roland. QuickTime 3 has a much improved 2Mb GM set that also offers Roland GS MIDI compatibility, and makes QuickTime 3's MIDI playback overall rather less 'music-by-numbers' and a lot more creative.

QuickTime 3 also allows you to

discover some of the joys and perils of software sound synthesis without spending a fortune (OK, you might have to splash out on \$30 for QuickTime 3 Pro). All you need is QuickTime (just about any version) and the *QTMA Atomic Editor*. It's a kind of freeware version of the rather more primitive synth editor that was available in the Developer Version of QuickTime 2 and 2.5.

Charies Wiltgen's QuickTime support and resources pages (address below) have been a rich source of information for some time, and should definitely be your first stop after downloading QT3 and some demos from Apple's site. In the software area there's a very useful techie utility for OS installer fans, whilst David Van Brink's QTMA Atomic Editor is likely to appeal more to musical readers of this column. It allows you to create your own sounds



for playback via the QuickTime Music Architecture (which is what the QTMA stands for). Since this is a beta version, there's no documentation, just the program, and it can take a while to figure out what is happening. You can edit sounds and create your own, and by importing audio samples you can make your own custom instruments for QuickTime, which can then be saved as a System Extension. Editing is of the classic single-oscillator S&S (Sample and Synthesis) type, with a volume envelope, two additional envelopes, two modulation LFOs, and a resonant low-pass filter.

www.quicktimefaq.org/software/



# Talented tape sync

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

The TS1 has a built-in mains power supply.

TS1 MIDI Tape Sync Unit ..... £99.00

# Amazing MIDI to CV

For an amazingly ultra-low price, the



Little MCV lets your MIDI system control your analogue synths with their great sounds and friendly knobs

This versatile

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

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

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

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

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

Little MCV MIDI to CV Converter., £75.95

# Merge box magic

You can't combine MIDI signals just by joining the wires together. Merging MIDI datastreams is a job for a microprocessor. There is one at the heart of each model in our famous range of MIDI merge units.



The new mighty Little 2M handles all types of MIDI data including MIDI Time Code and System Exclusive.

The compact low-cost Little 2M is powered via one of its MIDI IN lines. Thus, it needs neither batteries nor an external adaptor.

Our larger merge boxes employ more conventional power supply schemes. This means that they can support extra



The classic 2M merges two sources, the 3M merges three, the 5M merges five, while the 9M impressively merges nine! These devices can also handle all types of MIDI data. Many automatic features

The 2M and 3M units have built-in mains power supplies. The 5M and 9M units are now supplied with external mains adaptors.

enhance performance and convenience.

Little 2M MIDI Merge Unit £	39.95
2M MIDI Merge Unit £	69.95
3M MIDI Merge Unit £	99.00
5M MIDI Merge Unit £1	25.95
9M MIDI Merge Unit 51	60 05

# **MIDI line driver choice**

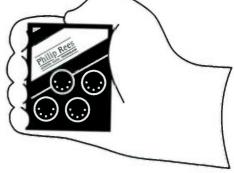
These line driver systems overcome the 15m limit of standard MIDI hardware, by converting the signal to a differential (balanced) format.





**MLD** is unidirectional and has a range of 1km. The bidirectional MTR system has a range of 150m. Both systems have built-in mains power supplies.

MLD MIDI Li	ne Driver		£89.95
MTR MIDI Li	ne Driver	•••••	£99 <sub>.00</sub>

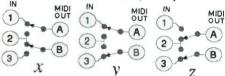


# Functional simplicity

Changeover switch

The 3B is a MIDI switcher, which will let you bypass your computer or sequencer without recabling hassles.

The 3B has three MIDI inputs (1, 2, 3) and three MIDI outputs (A, B), connected via a three position (x, y, z) rotary switch.



The **3B** requires no external power source. 3B MIDI Selector ..... £29.95

# Low cost thru units

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

The V3 is a battery powered 1-into-3 thru box. The V4 has four outputs and is line-powered.



inputs and 8 outputs (in 2 banks of 4), is supplied with an external ac adaptor. The V10 is a mains-powered 1-into-10 unit. The mains-powered **W5** has independent source selection for each of its 5 outputs.

V3 MIDI Thru Unit	£12.95
V4 MIDI Thru Unit	£19.95
V8 MIDI Thru Unit	£35.95
V10 MIDI Thru Unit	£39.95
W5 Dual Input Thru Unit	£55.95

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Produced by Perry Geyer and Greg Hawkes for East West.

Fat phase-shifted and ring-modulated filter sweeps, eerie vibrato tones bouncing through a delay line. Theremin glissandi, chuffing machine clanks, crispy white-noise explosions, distant klaxons buzzing, whippy burbles, carvernous whispers - it's all here. The production values on Hypnotica are almost too high. Many of the samples consist of two or three layers of sound, almost like mini-production pieces of the trance/ambient variety. Reverb and chorusing add richness and space to a mix that glistens with high end. Truth be told Dr. Who never sounded this good. CD-AUDIO: \$59.95

**BLACK BUTTA (9/10 REVIEW)** 

Produced by Madjef Taylor for East West.

MadJef Taylor's album credits include artists like Janet Jackson, Michael Jackson, Boyz II Men, New Edition,

Karyn White and many of the albums produced by Jimmy Jam and Terry Lewis.

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ELECTRONICA 9/10" - Future Music (UK).

Produced by Perry Geyer and Greg Hawkes for East West

With a range of tempos from 68bpm to a pounding 21b bpm, the spectrum of applications for these samples is reassuringly broad, and as a mixed mode CD.
Electronica not only gives you audio samples - both as loops and individual hits - but also all the loops as MIDI files, allowing you to load the data into your sequencer and adapt or adjust the loops for yourself. The loops are generally excelling, and varied enough, both rythmically and in terms of effects and production, to indicate that some serious time and effort has gone into this disc.

Verdict - There's a broad range of applications for these well produced samples. The MIDI files are a big boous as well.

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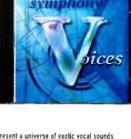




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TS1 MIDI Tape Sync Unit ..... £99.00

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Little 2M	MIDI Merge	Unit £39.95
2M MIDI	Merge Unit	£69.95
3M MIDI	Merge Unit	299.00
5M MIDI	Merge Unit	£125.95
9M MIDI	Merge Unit	£169.95

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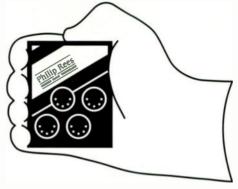
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MTR	MIDI	Line	Driver		299.00

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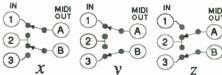


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V8 MIDI Thru Unit	£35.95
V10 MIDI Thru Unit	£39.95
W5 Dual Input Thru Unit	£55.95

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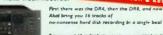
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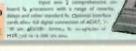
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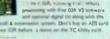
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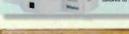
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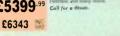


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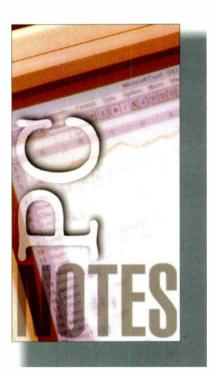
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media tools



This month, MARTIN WALKER finds that it's good to talk, and uses a PC utility to burn his Akai-formatted hard drive sample collection onto Akai-format CD-R disks.

'm sure many of you with Internet access have already visited the SOS web site (www.sospubs.co.uk), but if you haven't done so recently, you may not be aware of the new Discussion forums that are now up and running. You can click on an option in the main page to access the forums, but the quickest way is to add a bookmark to www.sospubs.co.uk:8080/~SoundOnSound. People are already accessing the forums from all over the world, and they are an ideal way to post a query, express an opinion, or simply eavesdrop on what others are saying. Of course many of the SOS contributors are also likely to pop in from time to time to find out what's happening, and to add thoughts of their own.

I regularly scan various forums to find out what people's feelings are about the latest software, any bugs that they have found, and what their frustrations are. However, the all-in-one approach taken by many of them can File Edit View Go Window Help POST REFRESH SEARCH MARK ALL MORE... HELP LOGOFI Conferences Conferences | 1 New Messages SOUND ON SOUND (49) TOP GEAR (0) ■ COMPUTERS: General (38)
■ MUSIC + MUSICIANS (3) ■ Beyond 2000 (27) **■ Digital Audio (16)** ■ Education (1) **■ MIDI** (5) ■ Recording (15) ■ Sampling (10) • Sequencing (5) ■ SHOWS & EXHIBITIONS (4) ■ Studios (1) **■ Drum Machines (3)** ■ Effects (10) **⊕** Guitars (3) **Keyboards & Modules** (16) ■ Live Sound (3) Microphones (7) **■ Mixing Desks** (4) Monitor Speakers (1) Recorders: Analogue (0)
Recorders: Digital (22) **PC Music** (38) PC Music: Frequently Asked Questions (22) Document: Done

There is a host of different conferences already running on the sospubs forums. My Frequently Asked Questions section on PC Music topics can be seen at the bottom of this screenshot.

make looking for information on a particular topic a bit hit and miss. The SOS forums feature a huge number of different Conferences (see screenshot), and this should help you to find the information that most interests you more easily. There are also Search facilities so that you can find all the postings containing information on a specific subject. Many healthy discussions are already going on between readers, including a heated one about Year 2000 issues.

# FAQS FOR THE MEMORY

Ever since the SOS web site first appeared we have received many emails concerning the PC — in fact it seems that every other one is PC-related! So, having already got a fair idea of many of the most common subjects that cause problems, I have now been appointed to the role of PC FAQmaster, and have already posted a selection of frequently asked questions and answers in my own 'PC Music: Frequently Asked Questions' conference on the forum. If you are having specific problems with your PC, do take a look, as there may already be a relevant topic

which helps — new topics will be added on a regular basis. This Conference is read only, but if any of you would like to see a specific subject covered, please drop me an email at pcfag@sospubs.co.uk.

If you just want to browse the conferences, you can log in as a guest. To post a message, you will need to become a registered user, but this is quite simple to do - you just need to choose a login name and password, and then provide a few extra bits of information, such as your real name and email address. Once registered, you can either reply to an existing message, or start a new topic in an existing conference. Preview and

spelling checks are available so that you can see how your message will look in a conference — if you're not happy you can use the Back button in your browser to return to the editing window before posting it. When replying to an existing message, you can do this publicly (so that it appears within the Conference) or privately (in which case it will be emailed directly to the person concerned).

Once you have accessed the forums and browsed through the existing messages, the easiest way to keep your future visits more manageable is to click on the button at the top of the Conferences screen labelled 'Mark All Read'. This allows you to selectively (or globally) mark any conference once you have finished reading its current contents, and then, when you next log on, only messages posted since your last visit will have the NEW icon next to them. You can even click on the New Messages link below the main title (this shows '1 New Messages' in the screenshot), and then only these newer messages will be displayed.

As you get more experienced with the Conference options (an extensive on-line help file is available), you may prefer to have conferences emailed directly to you, rather than always logging on to see new messages. Mailing lists are on a per-conference basis, so you can subscribe to those which particularly interest you — new messages will then be emailed to you, either individually as and when they are posted (non-digest format), as a daily digest, or as a zipped digest (sent as an email attachment).

See you there!

When running software in the real world, the results are rather more blurred, especially when you discover that for the price of a 233MHz G3 Mac you can buy a 400MHz Pentium II machine with similar facilities. You could say that this isn't comparing like with like, but most of the comparative tests I've seen are based on a specific price point. Some packages then run faster on the PC, and some faster on the similarly priced G3 Mac (largely I suspect depending on which platform was used for initial development). It's a confusing world out there!

# DIRTY MAC CAMPAIGN

I know that Mac owners seem to delight in every opportunity to pour scorn on the PC, but the new G3 processor has Apple evangelists waving their flags everywhere. Sadly, the speed tests that have been published seem to be largely based on CPU/memory benchmark performance rather than a complete system, which does rather colour the results, and I was pleased to see that Martin Russ didn't succumb to this smokescreen (see last month's Apple Notes).

250





# USING A PC TO BACK UP SAMPLE LIBRARIES

Many musicians with samplers and computer-based CD-R drives would like to back up sample libraries that they currently have on Syquest, Zip, or even Jaz drives. Unfortunately, when samplers format cartridges for their own use, the directory structure is unique to each sampler manufacturer. This means that none of them can be read directly by the PC (since the directory is not in the expected place, the PC regards them as unformatted). However, raw SCSI (blind) copying is still possible if you have a suitable utility program although the PC is still totally unaware of any files on the cartridges.

Enter Disk2File, a useful Windows
95 shareware utility from Jean-Philippe
Cuvade. This will copy the contents of any size
of SCSI hard drive, which can then be saved as
an \*.iso standard image file on your PC hard
drive. You can then use this image in another
application to burn a CD. Obviously there is a
maximum limit of 650Mb that will fit on a CD,
but most Akai samplers have an upper hard
drive size limit of 500Mb anyway. Once you
have burned your CD, it should be able to be
read by your sampler. You can download this
useful utility from the excellent Zicweb site
(www.zicweb.com), which also has a wide
variety of other music-related shareware.



Disk2File does exactly what it says on the (virtual) tin — reads any formatted SCSI disk, and then transfers the contents to a file. Ideal for PC and sampler owners everywhere (see main text).

Having created an image file from one of the Syquest 270Mb cartridges that I use with my Akai sampler, I ran into initial difficulties when trying to use this image to burn a CD-R. Adaptec's Easy CD Creator (version 3.01a) refused to recognise my file as a valid \*.iso image. I then tried Cequadrat's WinOnCD (version 3.5 OEM), but there was no mention of a suitable procedure in its help file. However, I persevered, and eventually managed it as follows. Select File/New, and then click on Track Image (not mentioned at all in the help file). You should then be able to drag your image file

from the upper right Source Window to the lower Destination Window.

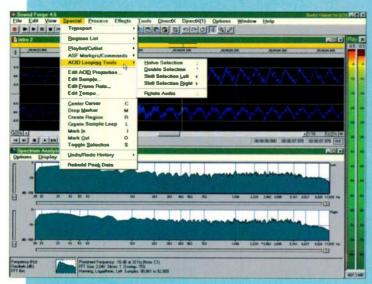
Mine was ignored (perhaps since the file type was not recognised). However, by dragging across a random WAV file instead I managed to get a dummy entry for the Track Image. You can then right-click on this to select Properties, which then allows a new file to be selected (this crashed my PC every time, but the Norton Utilities Crashquard allowed me to continue, and point to my image file). If you then click on OK you should have the valid image file in your Track Image window. Now re-enter Properties, and check that the settings for File format are '2048 - Mode 1 or mode 2 Form 1 Data Only', and Track Format 'CD-ROM Mode 1'. You can now go for the burn, using 'Close CD' fixation, 'Disc/Session at once'.

My problems may have been due to clashes with Adaptec CD software on the same machine, but having saved this project file once, I could then open it again and point to a different image file for other burns. You may have other CD-burning software that proves easier to configure. I certainly feel a lot happier now that I have my own Akai format CD-ROMs containing all the unique samples that I have made over the years. Jean-Philippe Cuvade tells me that his utility should work fine with any Akai or Emu sampler hard disk, but was not sure about Roland ones.

# **NEW PC RELEASES**

Sonic Foundry have released a new version of Sound Forge. Version 4.5 has been a long time coming, but I found it rather disappointing. As a long-term user, I installed the new version and jumped straight in to peruse all the new

features, but had to resort to reading the manual and box to find out what had changed. It is better value for money, since it now includes the Batch Conversion and Spectrum Analysis options that were optional extras with



version 4.0. An extra set of *Acid* looping tools is also provided (useful if you are using the *Acid* loop creation program). Apart from this, I dare say that a few other things must have been improved, but there is nothing obvious, apart from some nice colour shading on the level meters. Most disappointing of all, there is still no support for any bit depth other than 8 or 16 — if you have 20- or 24-bit recording capability on your soundcard, then *Sound Forge* cannot help you. I suspect that rumours about a 24-bit multitrack version of *Sound Forge* may remain just that.

Adaptec have released an update to DirectCD, their packet writing software which allows you to use a CD-R or CD-RW drive like a hard drive. Version 2.5 (available to registered owners of the previous version 2.0 via a mammoth 4350K download from www.adaptec.com) supports CD-R drives under Windows NT 4.0 (only CD-RW were previously supported), as well as being up to 60% faster, and

more efficient at using space. It also claims increased longevity using a new technique called 'sparing', which only rewrites previously written but now 'erased' sectors when the remainder of the disk is full. A new Scandisk utility allows corrupted data to be repaired.

XGedit 95 is now up to version 2.60, with added support for the Yamaha SW1000XG (including an extensive wave output mixer), an updated help file, improved voice list, and several bug fixes. However, the most obvious improvement is a new way of sending the data to whichever XG synth you have - an XG reset command is sent, followed by only those parameters that have been edited. This is much faster, not only when refreshing the synth, but also when initially downloading a bank a clear case of lateral thinking paying off. As always, existing registered users get the update free of charge. Point those browsers at www.cybertheque.fr/galerie/GGregson (watch out for the capital Gs).

The latest update to Sound Forge 4.5 includes Spectrum Analyser and Batch Converter tools, along with extra looping tools for applications such as Acid.

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- Groovebox quantise module
- Integrated QuickTime movie support
- Graphic Tempo Editor

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# **main Features**

- Intuitive graphic user interface
- Up to 64 tracks of 16-bit audio
- Virtually unlimited number of MIDI tracks
- 30 staves of music notation
- Groovebox quantise module
- Integrated QuickTime movie support
- Graphic Tempo Editor
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# DEREK JOHNSON checks out two ST freebies that could help you tame your synths...

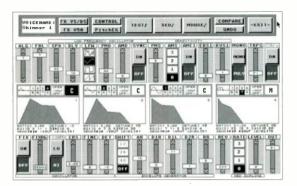
Imost since the Atari was introduced, it's been well supplied with editor/librarians for sundry MIDI-equipped hardware. For some reason, three familes have been particularly well supported: Yamaha 4-operator synths, Kawai's K1 range, and CZ-series instruments from Casio. Perhaps it was due to the affordability of the three ranges — even when new, they all featured entry-level pricing — or to the fact that owners easily became frustrated with small displays and fiddly buttons. I was recently surprised to discover a new version of a Yamaha 4-op editor, Martin Tarenskeen's YSEditor Plus v2.64, which was unleashed in April of this year. Full details are available on Martin's web site (www.telebyte.nl/ ~mt/yseditor.htm), and it's from here that you can download the software.

### **SMOOTH OPERATOR**

The background to YSEditor Plus reveals that it has some of its roots in the work of Joost

# ATARI COMPUTINGS TOP TENTH!

It's great to see Atari Computing magazine reaching its 10th bi-monthly issue. We've plugged this subscriptiononly title before, and are happy to keep doing so. Issue 10 is full of the usual varied editorial: reviews (including MagiCMac 2 and SpeedoGDos v5.7), shareware, tutorials (including STe sound programming and HiSoft Basic) and more. You can buy a single copy, to try it out, for £3.50 (or £5.50 with reader disk), or subscribe. Three issues costs £10.50 (£16.50 with disk), and six issues costs £21 (£33 with disk). European and overseas rates can be obtained from the web site (www.ataricomputing.com), or by contacting Atari Computing Subscriptions, 73 Bentinck Drive, Troon, Ayrshire KA10 6HZ. Cheques should be made payable to Atari Computing Group. Note that local distributors have been appointed in Germany, Sweden, Norway, USA, New Zealand, Australia and the Netherlands.



Overmars (of Kawai K1 editor fame). The software's strange name reveals more of its past: it has been, in the past, an editor for Yamaha's Y5100 and Y5200 synths, but the similarities between all 4-op synths are more numerous than their differences, so it was a logical step to modify the software to handle every instrument's features. The result is that not all parameters will be accessible to all synths, but this conundrum is handled with no inconvenience to the user. One other trick that YSEditor Plus manages is being able to read sound banks in virtually any format that they might come in — raw SysEx or formats native to other PD and commercial editing software.

YSEditor Plus has been in development in one form or another for around 10 years, and the result is an elegant and bug-free program. When you boot up, you're greeted by the bank manager page; click on edit, and you have the options of 'quick edit' (with Attack, Release, Volume and Brilliance sliders) or full edit, with nearly all parameters on one screen. There's even a basic multitimbral performance editor. Of course, single voices and whole banks can be requested from and transmitted to the synth, and saved to disk. Whichever patch you're currently edited can be auditioned via a mini-sequencer, or using the mouse; my Atari is currently patched into my Mac multi-port MIDI interface, so it's easy for me to audition sounds from my master keyboard. And if you get stuck, call up the online help document. This software has nearly everything! One things it lacks, however, is compatibility with Yamaha's FB01, but the YSEditor Plus site has an early version of a separate FB01 editor, together with a utility for transferring patch banks between the FB01

Again, check the web site or contact the mag for details.

One interesting bit of news from the new issue of Atari Computing is that the mag is behind a dedicated Atari show in November — the Atari Computing Convention (ACC '98) on Saturday the 14th, at Bingley Hall, Staffordshire Showground, Stafford. The show runs from 10am to 4pm, and tickets cost £3 on the door; there are discounts for Atari Computing subscribers, and further reductions for children, OAPs, students, and UB40 and orange card holders. The Showground is accessible from junctions 13 and 14 on the M6, and has lots of free parking; there'll also be a shuttle bus running from Stafford railway station. The mag hopes to be able to organise a coach for London show visitors if there's enough demand. Many specialist Atari hardware and software dealers will be present, including Titan Designs, Club 16/32, FaST Club, System Solutions, Floppyshop, Abingdon

YSEditor screen.

and other 4-op synths.

If you want a copy of the software — and as an owner of any 4-op synth (V50, DS55, DX11, DX21, DX27, TX81Z, B200, WT11 or TQ5) and an Atari, you really can't be without it — go to the web site quoted above, which also features a folder full of factory presets from assorted 4-op synths.

If you lack Internet access, check out your favourite PD library. But if you like and use the software, do send Martin a postcard. That's all he asks for!

# ON THE RIGHT TRACK (MAN)

A few months back, we informed you that Hollis Research's classic Trackman v2.5 pattern-based sequencer was available to download, completely free, from John Hollis' web site. I bring this up again because recently, while passing by the Hollis site, I've discovered that John's companion software to Trackman. Midiman, is also available as a free download. Midiman is a kind of universal editing controller that runs as a desk accessory. It integrates particularly well with Trackman and uses a simple graphic interface, consisting of a screen (or several screens) of sliders assigned to synth parameters. A collection of over 40 synth profiles comes with the software, but since support is nil (the software's free, remember!), any more profiles will have to be written by third parties. The profile language is accessible, but learning it might be tricky without a manual. This might become available on the web site at some point in the future: user requests have resulted in the Trackman manual becoming available for download from the Hollis site. It's in Calamus (.cdk) format, so you'll need the software to read it. But there are apparently a few copies of the original printed manual left (punched but unbound) and one can be yours for £10; email john@hollis.co.uk. For Midiman or Trackman go to www.hollis.co.uk. Trackman was previewed in SOS November 1988, and reviewed in December 1988; MIDIMan was reviewed in October 1989. 505

Synthesis Projects, Electronic Cow, and ImPrint Solutions. For the first time ever, InterActive and CyberSTrider will be accepting registrations for shareware 'live' at the show.

The show is being organised with the help of Sharward Promotions and is actually being combined with that company's twice-yearly general computer and electronics show, so you effectively get two shows for less than the price of one. So as well as checking out the latest Atari stuff, you can browse around stands offering general computer hardware, accessories, cables, CDs, books, satellite, telephone and radio electronics.

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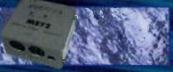
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HYPNOTICA 8/10 (KeyboardUSA)
Produced by Perry Geyer and Greg Hawkes for East West.

Flource by Perry Geyer and Greg Hawkes for bast \times \text{West} \text{
Fat phase-shifted and ning-modulated reweeps, errie vibrato tones bouncing through a delay line. Theremin glissandi, chuffing machine clanks, crispy white-noise explosions, distant klaxons buzzing, whippy butles, carvernous whispers - it's all here. The production values on Hypnotica are almost too high. Many of the samples consist of two or three layers of sound, almost like mini-production pieces of the trance/ambient variety. Reverb and chorusing add richness and space to a mix that glistens with high end. Truth be told Or. Who never sounded this good. CO-AUDIO: \$59.95

you won't believe the re-(Akai CD-ROM: £149.00).

BLACK BUTTA 19/10 REVIEWS

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ELECTRONICA 9/10" - Future Music (UK).

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Fingersiques

drum&bass

Produced by Perry Geyer and Greg Hawkes for East West.

With a range of lempos from 68bpm to a pounding 214 bpm. the spectrum of applications for these samples is reassuringly broad, and as a mixed mode CO. Electronica not only gives you audio samples - both as loops and individual hirls - but also all the loops as MIDI files, allowing you to load the data into your sequencer and adupt or adjust the loops for yourself. The loops are generally excellent, and varied enough, both rythmically and in terms of effects and production, to indicate that some serious time and effort has gone into this disc.

Verdict - There's a broad range of applications for these well produced samples. The MIDI files are a big

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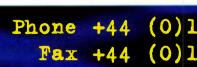
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mpo selection covers every modern music style.

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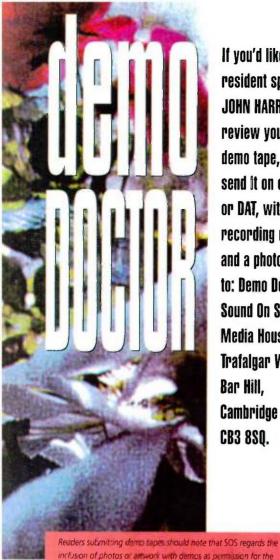












If you'd like our resident specialist JOHN HARRIS to review your demo tape, just send it on cassette or DAT, with recording details and a photograph, to: Demo Doctor. Sound On Sound. Media House, Trafalgar Way. Bar Hill, Cambridge CB3 8SO.

#### NOOK

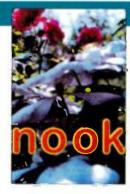
Recording Venue: Home.

Recording Equipment: C-Lab Falcon Mk 1 running Steinberg Cubase Audio, Mackie CR1604 mixer, Digitech Studio Quad multi-effects, Behringer Mastercom mastering compressor, Spirit Absolute 2 monitors, Sennheiser HD450 headphones, Tascam DA 30 and DA20 DAT recorders.

Michael Judge was reviewed in Demo Doctor way back in June '95, and since then he's been busy improving his recording setup and creating more music. Although the music is still all instrumental, Michael makes an effort to create the samples himself and to mix real and synthesized sounds.

The first track, for example, uses his own sampled drum loop which sounds like it's a collage of several sound sources, possibly using the Boss DR660. real hats and occasionally the Irish drum - the bodhran. There's also a real kit ambiently miked on one of the breaks and sometimes the combination of sixteenth-note hi-hat and a cabasa sound gives the impression that there is some backwards tinkering too.

On 'Palmy Days', the second mix on the demo, Michael goes for dub/electronica and uses real bass guitar and pipe over a groovy rhythm track. The hi-hat groove for this piece is heavily reliant on an in-tempo echo that takes the hat from side to side of the stereo. and the pipe sound merges gracefully



into a synth sound in a similar frequency register. Short but sweet, this mix could have been improved with a weightier bass sound, as it never really got close to the dub I'm used to hearing.

'Rubberbend' is the final mix on the demo and relies on a mellow funky groove anchored by the bass. This is mixed high and occasional breaks are enhanced by a little high-resonance synth lick cunningly mixed to give the bass an almost fretless quality. The harder-sounding percussion fits well around the mellow bass while cabasa and bell take the top end of the frequency spectrum. Finally, the production is enhanced by some trumpet samples and real pipe playing, dropping in for the occasional break

Most of the pieces are short and manage to fit a variety of sounds in without tedious repetition or ever losing the plot. I've no doubt that the mixes could be expanded if necessary but I think Michael's got it just about right.

## **OLIVER SHEEN**

.....

Recording Veave: Unknown.

any review of the accompanying tape

Recording Equipment: Yamaha ProMix 01 mixer, DX266 PC clone running Steinberg Cabase Score v1.04, MOTU Express PC Interface, Soundscape Plus hard disk recorder, Alesis RA100 amp, Yamaha NS10 studio monitors, Rode Classic mic, ART Tube MP Mic preemp, Aiwa XD S1100 DAT recorder.

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Stevie Wonder is one of O iver's big influences

and you can certainly hear shades of the wonderful Songs in the Key of Life album in the first song's production. The groove is excellently sexy and the breathy backing vocals are a real treat, but the portamento synth counter melody is a dead giveaway. Given the digital recording process, the whole production ends up sharper than even the CD release of the aforementioned album, but it's still an excellent mix from Oliver I could only add subjective improvement by running it through my wide-band valve EQ

to warm up the sound fractionally. One other point involved the snare reverb sound on the chorus where the production sound becomes bigger. To my ears there was too much reverb in the mix and the bandwidth of the reverb was too low, resulting in a muffled, poor-quality spring-reverb-style sound.

The first song runs cleverly into the second. and there's a perceptible but well-executed change in level upwards, which is a real attention grabber. Here the song goes for a fairly standard funk production and a tight mix. The vocals should have been louder but I wondered if they were mixed a bit low because Oliver seems to struggle a bit with the key in places. He's never out of tune, but the performance isn't as comfortable as on the

Evidence of more classy songwriting is to be found on the third song 'Is It You'. Although he claims that the music isn't exactly fashionable (ie. not dance) there are lots of artists who could cover songs as good as these, especially in America. I would suggest



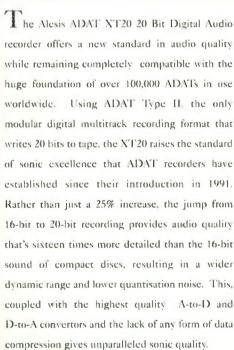
targeting publishers and management companies who deal with the artists Oliver likes and getting this tape to them as soon as possible.

In addition to having a good ear for sounds, whether synthesized, sampled or real (the muted trumpet is a real treat) Oliver knows how to operate a sequencer without over-quantisation. The result is tight without ever being wooden, and gives a modern production sheen to his penchant for '70s material I









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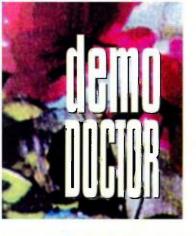
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#### MICHAEL MAROUSSAS

Recording Venue: Manchester MIDI School. Recording Equipment: Steinberg Cubase VST on Mac, Behringer 24:8:2 mixer, Akai \$3000XL sampler, Behringer Composer,

Digitech Studio Quad, Alesis Midiverb, Tascam DAT recorder.

All the tracks on this demo were put together at the Manchester MIDI School where Michael has recently completed a studio recording diploma course. He's also been MCing at clubs and bars around Manchester for the last 3 or 4 years with hip-hop and jungle DJs, and has used this experience well in the recording of this demo.

'Bionic Hip Hop' is the first track up and has some fun lyrics involving taking your insides out and replacing them with Meccano, computers and other hi- and low-tech bits. Of course there has to be a reference to Robocop too and the story is well rapped through by Michael and his brother Nicky. The vocal sound is clear but a bit clean, and a classic case for one of those vocal preamps with EQ and compression. Some high-frequency boost at 12kHz and usual cut at around 1kHz soon sorts out the vocal, and in combination with compression gives the sound more urgency as well as bringing up the level of some quietish sections of rapping.

The vocal sound is improved for the second mix and I'd say this is because brother Nicky is closer to



the microphone for this take. Once again, the choice of sounds from the Roland JV1080, Waldorf Pulse and Akai sampler are good, particularly the choice of brass, electric piano and guitar licks. Some improvements could have been made by warming up the bass with a couple of dBs' cut at 200Hz, where the harder element of its sound is a bit similar to that of the kick drum. It might also have been interesting to try out some phase effects on the hi-hat occasionally.

My favourite track, as soon as I heard the opening bars, was the third - 'Set My Style Free'. This wasn't technically the best mix, with less clarity than the others, but it had more energy in the performance, and a wonderful slippery groove with a full-sounding bass end.

#### HAL

.....

Recording Venue: Home

Recording Equipment: Soundscape SSHDR1 hard disk recorder, PC running Cubase v2.6 and Sound Forge v4, Yamaha CDR400T SCSI CD-writer, Spirit Studio 16-channel desk, Spirit Absolute 2 monitors, Yamaha SPX9011, Zoom Studio 1204, and Yamaha FX500 multi-effects, Alesis 3630 compressor, Behringer Dualfex 2 spectral enhancer, Beyer dynamic microphone.

Chesterfield-based Glenn Boulton leads a dual existence as Hal. By night pumping out the pop favourites to working men's club audiences, by day slaving over a hot recording set up with co-writer Vinny and producing a different kind of club mix

On this, his first demo, the mix is remarkably well handled on the opening dance track 'The Sign'. This slice of groove soul has all the right ingredients for the commercially acceptable face of dance, and could easily be a chart contender. Hi-hats are phased and delayed to produce a neat swing feel, while a simple fat analogue style bass

line and straightforward kick/snare pattern anchor the rhythm. I guess that what really makes the track happen are the vocals, where Glenn turns in an excellent performance on both lead and harmony parts. The latter are well arranged and somewhat reminiscent of Stevie Wonder (seems to be popular this month) and Prince. Technically everything seems to be in

place and the sound from the self-blown CD is clean without being harsh.

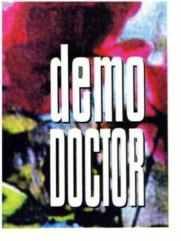
A somewhat over-modulated chordal pad leads us into the second song, but once again the sounds are big and there's a fat slice of tension on a long faded-in chord ending in a multitracked vocal refrain. This sort of attention grabbing coupled with a fine vocal performance should interest record companies and publishers as this is another song with a very commercial sound. My monitors showed up a slight problem with the bass end of the mix caused by an echoed and reverbed kick drum. The actual idea is rhythmically effective but it does sound like the bass end of the track is a bit waffly and out of control, so some of the LF frequencies should have been rolled off the effects return to tighten up the sound. On a Spirit Studio console this could have been achieved with a simple 3dB cut on the LF control.

The inevitable ballad is left to the third track on the CD, but this rather standard composition is once again well arranged and produced. It's interesting that Glenn has expressed some doubt about the vocal sound from the Beyer microphone (type unknown) which he picked up second-hand for 50 guid. As it happens, the vocal sound is fine, and its slightly thinner sound (if compared to an expensive condenser) slots in well to the very full backings that Glenn and Vinny write for the songs. I've always found that Beyer dynamic microphones work really well, and have a Soundstar myself, which I use live as it has more presence than a Shure SM58. Of course, a good singer such as Glen will usually sound fine on any decent microphone.

# too hot to be printed







### QUICKIES

**NEMESIS**: An atmospheric slice of folk and rock from this Christchurch-based band, opening with a song based on the film Braveheart. I think they should be careful about using soundbites without crediting their source (the Uileann Pipes intro) but, such things aside, the ED has a consistent sound with a lively band performance. This has been achieved by recording the backings on to two tracks (owing to the limitations of a Tascam 388) in a rehearsal room, bouncing this to a digital recorder and adding the vocals and other instruments as overdubs. Given the recording procedure, the balance is excellent, and the drums in particular have come out well. Nemesis sound like a band who have done a lot of gigs and are therefore quite capable of knocking out the rhythm tracks live. All you need to do this is a good set of ears to make sure sounds and balances are right, and obviously someone knows what



they're doing on this group effort. The track they were most pleased with ('Waterlily') sounds excellent on my expensive and rather revealing speakers. I especially liked the acoustic and the electric guitar sounds — clear, dynamically controlled and best of all, well played.

THE PRAYER: Reviewed twice already by SOS in the past in '96 and '97, The Prayer seem to be going from strength to strength. Once again, there's a strong vocal performance, but the rock sound is updated by the growing use of sampled grooves as the band appear to have lost their



drummer during the making of this CD album. The best-sounding track by far is the opening one which, when compared to the third on the CD, sounds like a completely different band. I'd be tempted to do some EQ work on the harsher-sounding mixes to get some continuity for the album. For instance, the aforementioned track three can be brought into line with a small cut in the 600-800Hz region and a small LF and HF boost. Otherwise, a fine-sounding CD from a band who should really be picked up on by a major label.

JULIAN DALE: Another of Julian's tapes was reviewed some time back under the title of Eldritch Croon. Now as then his compositional strengths are amply



demonstrated by a simple set up involving Logic software on a Mac driving a Proteus module recorded directly to cassette. He

tackles classical and jazz with great success, being let down occasionally only by the limitations of the gear, notably in the equalisation and effects selections. The excellent 'Percussion Quartet 1' that kicks off the tape, for example, employs a reverb that is a touch too long and has an unnatural fizz to the top end because of its high bandwidth, where a room reverb with an 8kHz low-pass filter would have been a more natural choice. Such minor criticisms do not take away the fact that Julian's musical efforts are worthy of a larger audience. Although it's a competitive field there must be room for someone of his talent in TV, film and theatre work. Anyone interested can contact him on email at julian.dale@sls.co.uk

MARK TAYLOR's Dance of the Arachnoids tape aims to demonstrate his compositional skills in a variety of styles. The opener, for example, is an avant-garde piece based around a scampering piano, whereas the second track follows a standard

melodic approach using flute and classical guitar. Mark's music is accomplished but the tape occasionally lacks production finesse. On the second piece the classical guitar and accordion patches seem curiously devoid of reverb, which accentuates the lack of sustain, particularly on the guitar arpeggios. The later dance track is a fairly tame affair, if well mixed, bringing in brass



stabs which seem out of context with the rest of the groove. However, Mark sounds more at home on the turbulent fourth piece, the aptly

named 'No Quarter'. Here heavy brass, strings and tubular bells produce a sombre and dissonant mood.

#### DAVID COOPER ORTON:

Described by others variously as 'lyrical and groovacious', and possessing a 'minimalist delicacy', David composes his music on guitar using loops and effects. The loops appear to be created using digital delays and a Lexicon Jam Man and the result is a somewhat thinner version of the kind of thing Fripp and Eno used to get up to on No Pussyfooting. Personally I would have liked to hear more variety in guitar sounds and less reliance on one clean guitar tonality. As David only appears to have a minimalist recording set up, recording live direct to cassette, this may be something for



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guitar, miked-

up semi-acoustics, amps and more! Still, it's a good ambient late-night listen, and I always enjoy hearing the E-Bow in action.

SOUND FOUNDATION: Shaun Davies encountered a couple of technical problems when recording his instrumental demo. One was a discrepancy in level between his cassette deck and others on record and playback, which sounds like a lineup problem. It's worth making sure that the heads are clean, too, before taking the machine to a professional engineer for alignment. Having said that, the cassette

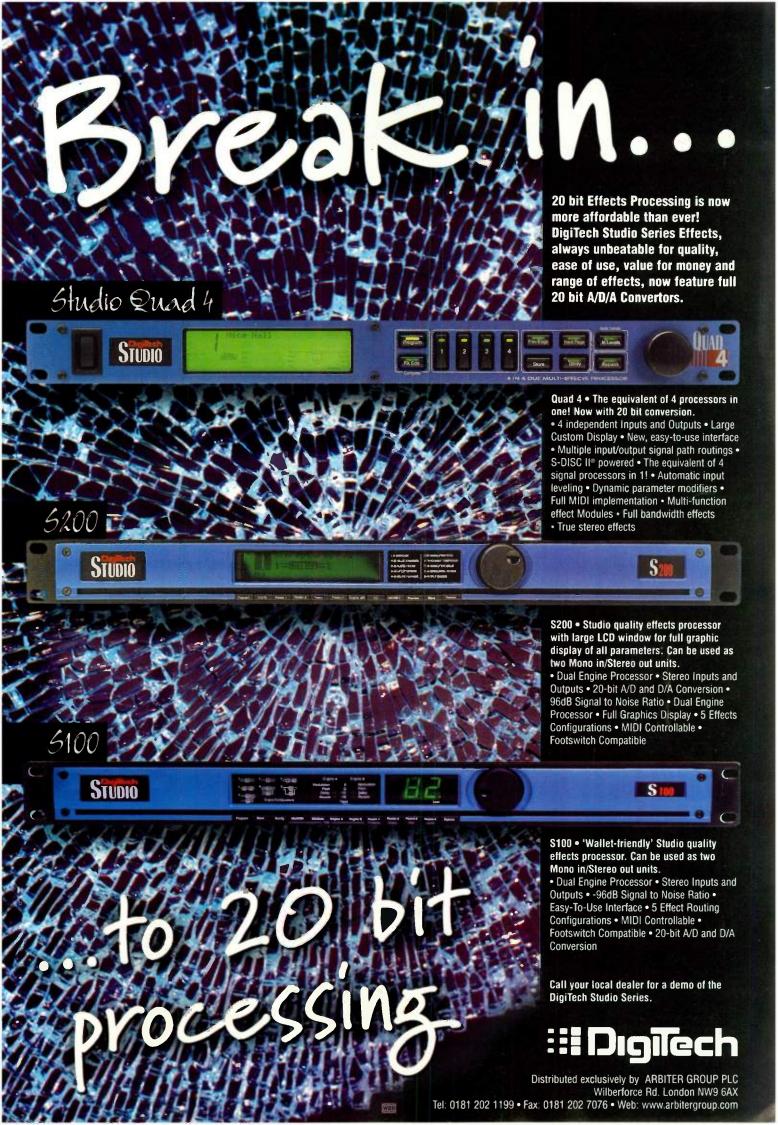
supplied played back at a good level on my machine, and was remarkably free of the dreaded hiss! Musically the 'watered down' dance (to quote from the letter) is well put together, but the mixes are a bit heavy in the 150-200Hz area, as Shaun himself notes. A post-production cut of 2-3dB takes care of this nicely, and while you're at it, a couple of dBs' HF boost wouldn't go amiss provided it doesn't accentuate noise too much. Favourite track 'Fear and Loathing'.

PAWEL ULANOWICZ: Pawel is a 23-year-old Polish composer with aspirations to writing film scores. Using a Korg Trinity and a Yamaha VL1M he has created a wonderfully big sound on the short opening piece of music. Heavily reverbed timpani with plenty of bass reverb and a wonderfully deep cello line help create this big sound, but weaving above it are strings and bells to create a strong melodic ensemble. A touch of brass, fairly low in the mix,



serves to bring attention to any big chordal dynamics sections. The second piece follows a similar path in terms of orchestral texture and it is interesting to hear how Pawel manipulates explosive reverb from massed percussion hits (usually with an in-tempo predelay) to create that classic Hollywood hyperbole. All the mixes have a heavy-but-solid bass end and this suits the musical style. Large reverbs are very much in evidence and on such medium-paced material are very effective.

PHIL REYNOLDS: At last! My first demo of progressive/epic house. This one's from a Durham-based writer and it's also the first time he's sent in a tape. On the basis of this track, he's doing some well-balanced mixes and making good use of the Music X program run on an Amiga 1200. The Emu ESI32 and Novation BassStation rack combination works well, with some fat bass sounds, classic hard kick drum and wide stereo voice and pad chord patches. At certain times, these swirl around the stereo using a circular pan effect that sounds brilliant on my speakers — the phase really makes the sound jump out at the listener. Shame there's only one mix!





n the beginning there was the tonewheel Hammond organ. It was very big, very heavy and was rarely used without a Leslie speaker cabinet. Leslies were also big and heavy, but necessary for the unique sound their rotating speaker generated. These days, sadly, the classic Leslie and tonewheel Hammond setup is prohibitively expensive, as well as remaining as heavy as it ever was!

Hammond's recent XB/M series of keyboards and modules aim to deliver the sounds and controls of a traditional Hammond tonewheel organ, whilst providing the kind of MIDI specification and editing facilities expected on any modern keyboard, all within a

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compact portable package. The XB1 design follows on from the existing XB2, XB3, and XB5 (see the SOS review in March '93), and the XM1/XMc1 modules reviewed in SOS May '97. The XB1 costs £1098 in the shops; this month, however, SOS in association with Hammond UK are giving one away for nothing. For a full review of the XB1 you need only turn to page 224 of this very issue. Otherwise, read on...

The SB2 is comprehensively fitted out with a 61-note keyboard, ptich-bend and mod wheels, and is 32-note polyphonic. Just about every panel control can send MIDI data, including the nine harmonic drawbars (using continuous controller messages rather than hard-to-edit SysEx), allowing full playback of sequenced performances. MIDI In, Out and Thru sockets are provided on the rear panel. Sockets for headphones and two footpedals are also present.

A Leslie speaker can be connected to the rear of the keyboard via a hardware interface, catering for those musicians satisfied with nothing less than the real thing. However, the XB1 has its own built-in Leslie simulator which offers a great deal of programmability, from editable speed to mic placement/distance, rise and fall times and horn/rotor balance.

Many of the unique characteristics of original Hammond tonewheel organs were the products of mechanical imperfection rather than design. So as not to neglect these subtle components of the Hammond sound, the XB1 offers an 'overdrive' function, simulating the valve distortion created by overloading the speaker preamp, and 'keyclick', reproducing the distinctive attack noise originally caused by dirty key contacts.

The XB1's Harmonic Percussion provides variable decay and time settings, level, touch and sensitivity adjustment and key tracking. Two touch buttons allow you to select second and third harmonics. Other effects come in the form of vibrato (with three settings), oscillator phase control and reverb.

By now, you're probably now asking yourselves what's required to win our splendid XB1 prize and carry home the classic Hammond/Leslie sound. Well, it couldn't be simpler. All you have to do is answer the questions on this page correctly, invent a witty tiebreaker, and post the whole lot to the address at the foot of this page. Oh, and make sure your entry arrives with us by the closing date of Friday 6th November.

#### the small print

# **QUESTIONS**

#### 1. What type of speaker does the XR1 simulate?

- a. Keith
- b. Leslie
- c. Nigel
- d. Darren

#### 2. How many harmonic drawbars does the XB1 have?

- a. 16
- b. 32
- c. 9 d. 10

#### 3. Which of the following features does the XB1 have?

- a. Arpeggiator
- b. Ring modulation
- c. Random note generation
- d. Reverb

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THE RŌLAND ALPHA JUNO SERIES

Prepare to shed a tear in another near-miss tale of a desirable analogue synth swept aside by the rise of digital technology. GORDON REID reveals himself as a closet Alpha romeo.

he Alpha Juno's earliest ancestor was Roland's first true polyphonic synthesizer, the Jupiter 4. Launched in 1978, this was a contemporary of Sequential Circuits' Prophet 5, the Oberheim OBX, the Yamaha CS80, and the Korg PS-series. Unfortunately, it was no match for any of them. For one thing, it had just one oscillator per voice, and offered only four-note polyphony played from a four-octave keyboard equipped with neither velocity- nor aftertouch-sensitivity. While its chorus/ensemble, sample & hold, unison and arpeggiator were first class, these could not disguise its limitations, which ensured that most of its sounds were thin and uninspiring.

On the other hand, the little Roland was affordable. OK, £1,800 was far from chicken feed in the late '70s, but the Jupiter 4 undercut each of its competitors by around 50 percent. Consequently, the list of its owners became a 'Who's Who?' of the era, including Kitaro, Gary Numan, Tangerine Dream, Stevie Wonder, Tomita and, perhaps most famously,

Nick Rhodes of Duran Duran.

Ultimately, the Jupiter 4's home-organ styling and sonic underachievement guaranteed that it would never become a classic. That accolade was reserved for the Jupiter 8 — a top-of-therange instrument with a price tag to match. Unfortunately, the launch of the Jupiter 8 also represented Roland's disappearance from the affordable end of the market. So it was archrival Korg that smashed the £1,000 price barrier with the landmark PolySix. The first 'Everyman's' polysynth, the PolySix used the same SSM oscillator chips as early Sequential Circuits instruments, and also copied their sleek good looks. It was no wonder that it quickly became known as the 'poor man's Prophet'.

Korg probably believed the synthesizer world was at their feet. But it wasn't to be. With a stroke of marketing genius, Roland announced that its next instrument would be a digital synth that would cost less than £1,000. To understand why this was such a coup, you must remember that, in 1981, the keyboard world was besotted with unaffordable digital technologies. Instruments such as the Fairlight CMI and Synclavier II promised almost unlimited sonic creativity, but cost more than the houses in which most musicians lived. So everybody held their breath and waited to see what Roland was planning. The answer was the Juno 6.

When it arrived in 1982, the Juno looked a sure-fire winner. It was sleek and professional, and its beautifully arranged control panel echoed Roland's flagship Jupiter 8, rather than 'knobbier' synths such as the PolySix. It was

six-note polyphonic, sported a high-quality keyboard, had well-placed performance controls and a powerful arpeggiator. It also incorporated Roland's now-classic (if somewhat noisy) chorus ensemble. At just £699, it was also excellent value. Roland had hit the bull's-eye.

As we now know, the Juno wasn't a digital instrument at all. It was the first of a breed of hybrid synths that replaced the older voltage controlled oscillators (VCOs) with new, stable, Digitally Controlled Oscillators (DCOs). Despite having the word 'digital' in their name, these retained a traditional analogue synth's ability to create thick sounds, principally by allowing you to use a combination of sawtooth, pulse-width modulated, and sub-oscillator waveforms simultaneously.

There were limitations, though. For example, the Juno's filters lacked the powerful 24dB/octave response of the PolySix's filters, while its VCF and VCA shared a single ADSR envelope generator. Nevertheless, it sounded superb. The only thing that it lacked was memories.

Less than a year later came the Juno 60, an instrument in most ways identical to its predecessor. There were a couple of minor changes, such as the shift from a continuously variable High Pass Filter to one with just four possible values. More important was the addition of DCB, a pre-MIDI interface that allowed Juno 60s, later Jupiter 8s, and Roland sequencers to communicate with each other. But the biggest change, and the one that justified the extra £300 Roland charged for their new baby, was the addition of 56 patch memories. The Juno had come of age.

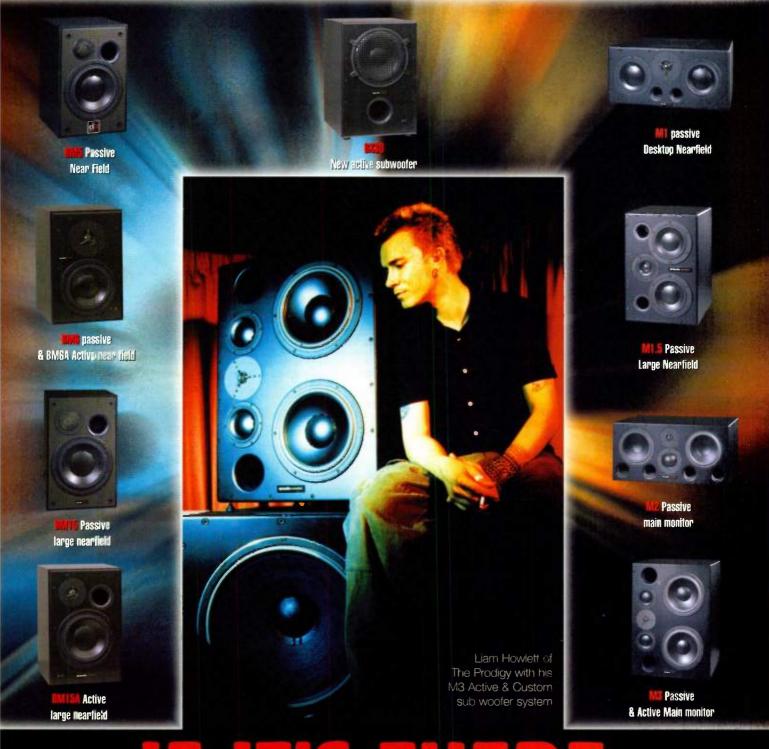
#### **MIDI COMETH**

Unfortunately, 1983 was also the year that Roland, Sequential and Yamaha launched the world's first MIDI synths. Roland's own JX3P and, in particular, the all-conquering Yamaha DX7, appeared to consign the Juno to the trash can of yesterday's heroes. So Roland responded yet again with the Juno 106, a



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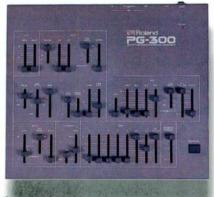
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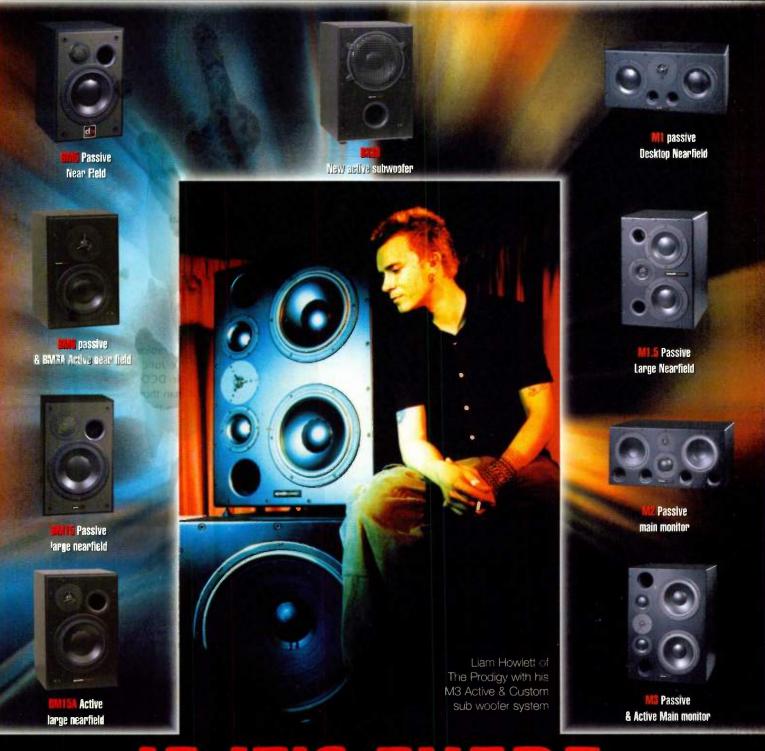
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The Alpha Junos' immediate predecessor, the hugely successful Juno 106, introduced MIDI into the range.

sleek redesign that looks as attractive in 1998 as it did when it first appeared in 1984.

The 106 was significantly different to its older brethren. First, it offered a remarkably advanced MIDI implementation that allowed you to record notes, performance information, and control panel changes, making it possible to sequence the programming controls themselves. Second, the number of patches leapt from 56 to 128. And there was also the introduction of Roland's now-standard left/right/push performance lever for pitch-bend and modulation. Not everything in the garden was rosy though. The 106 lost the 60's arpeggiator and one or two minor programming capabilities, but Roland had again hit the jackpot. At just £799, the Juno 106 quickly became Roland's most successful product, and remains one of the best-selling synths of all time.

In 1985, Roland had two more rabbits to pull out of the Juno's hat. The first was the HS60 'Synth Plus' — a Juno 106 with built-in stereo speakers. Never a success, this suffered from its similarity to a home keyboard, although it was in every other way an unmodified Juno 106. Finally, there was Roland's first multitimbral expander, the MKS7 Super Quartet, which combined a velocity-sensitive, seven-voice bass/poly/lead synth (based on the Juno 106 engine), with the drum sounds of a Roland TR707. At less than £500, the MKS7 might have been the bargain of the decade except for one failing: you couldn't edit and store sounds, even with a computer.

#### **ENTER THE ALPHAS**

By this time, Yamaha had consolidated its world domination with a huge range of FM-based synthesizers and modules. Partly because of this, Moog had gone out of business, while Sequential and Oberheim were well on the way to doing so. By contrast, Roland had not only survived, but had managed to prosper by concentrating on producing cheaper, yet desirable, analogue synths. But it was time for a change!

In the winter of 1985, Roland announced

two new Junos. These were the four-octave JU1 (Alpha Juno 1) and the five-octave JU2 (Alpha Juno 2). These offered many improvements over the original instruments, with several new programming capabilities, backlit screens and on the JU2, a velocity- and aftertouch-sensitive keyboard. The JU2 even offered a cartridge slot for storing patches. At just £575 and £799 respectively, it appeared that Roland had again hit the mark.

Strangely, the world appeared unmoved, and the Alphas made very little impact. Why? It couldn't have been a reflection upon their quality, because their excellent construction would have graced synths costing much more. Nor could it have been a reaction to a lack of facilities. Although Italian manufacturers Crumar and Siel had already produced cheap touch-sensitive synths, the Rolands had far better MIDI specifications, more voicing capabilities, a slick keyboard action, and better programming systems. Nor should it have been a consequence of the Junos' cosmetics because, with the exception of Roland's so-called 'alpha dial' (which replaced the up/down buttons found on most other synths), their top panels imitated the all-conquering Yamahas. The Alpha Junos even allowed you to connect the optional PG300 proclaminer, making every parameter instantly accessible and editable with a dedicated slider or switch. OK, so this added £200 to the price, but a quick glance through the adverts of the time shows that a fully featured 'knob-laden' polyphonic costing less than £1,000 was still something of a bargain in 1986.

So what was the problem? Maybe it was something to do with the voice structure itself? The Alpha Junos' voices were very different to those of the Juno 6, 60 and 106. For example, their DCOs were much more sophisticated than those found on any other Roland, including the top-of-the-range JX8P and Super JX10. They offered 14 basic waveforms including pulse-width modulation of both the pulse waves and sawtooth, and six sub-oscillators: four that were pitched one octave down, two that were two octaves down. Many of these additional waveforms were harmonically complex, and they made it possible to create timbres that sounded more 'digital' than ever before. But along with that, the Alphas retained the original Junos' ability to mix a pulse-wave, a sawtooth and a sub-oscillator for lush analogue-style sounds.

The Alphas also retained traditional analogue VCFs. The problem was that these

#### JUNO THE RIGHT RETROFIT?

Nowadays, a MIDI-less synth is of limited value. Fortunately, you can upgrade even the earliest Junos with a MIDI retrofit. Back in 1980s, the now-defunct Groove Electronics offered such upgrades for the Juno 6 and 60, but these had a reputation for poor workmanship and unreliability. In all likelihood, you should avoid instruments with these fitted. A safer bet would be a Juno 6 or Juno 60 incorporating a retrofit from Kenton Electronics. These offer more control, have proved to be very reliable, and are backed up by a well-known manufacturer.

Alternatively, if you prefer not to dig holes in your vintage synth, Kenton provides a MIDI-to-DCB interface that allows limited control over a Juno 60 using MIDI and also allows you to play MIDI modules from the Juno. The Juno 106 needs no such upgrades, but common wisdom suggests that its sound is not equal to that of the Juno 60. Although I hate to get caught up in these fashion-dominated arguments, I must say I have to agree. I can't

describe the difference, but there is something more involving about a Juno 60.

The current disinterest in the Alpha Junos is thoroughly undeserved. With their increased programming capabilities plus touch- and pressure-sensitivity, they are more flexible and more articulate than the earlier instruments. Having owned a Juno 6, two Juno 60s, an HS60, and an Alpha Juno 2, I would recommend that you consider two models. Like an old sports car that does not go as fast as a modern model, and is neither as comfortable nor as able, the Juno 60 is a classic. On the other hand, the Alpha Juno 2 is a superb little instrument that offers far more than its conservative looks might suggest. With a PG300, it's an excellent analogue synth that complements rather than conflicts with modern digital workstations and expanders. It's easily controlled, immediate, and offers a wide, if not all-encompassing, variety of analogue sounds. If you're prepared to step outside the bounds of today's dance grooves and fashionable obsession with squelchy filter sweeps, you should try one. You may be surprised.

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ROLAND SBX80 sync box for SMPTE-to-MIDI clock conversion, audio input, clock out and DIN sync for sync'ing older analogue gear, 80. • Roger 01525 840995 or email roger@fxrentals.co.uk (Beds)

ROLAND V580 multitimbral synth, 16-part MIDI, good sounds, easy to edit, £450 ono. \$\tilde{\pi}\$ Stuart 01895 251251 (Uxbridge).

ROLAND VS880 V-EXPANDED digital multitrack recorder, built-in effects, manual,

immaculate boxed, £1000 ono # 0131 662 4273 (Edinburgh)

ROLAND VS880 V-EXPANDED, eight-track digital recording workstation including 2Gb hard drive and VS8F1 effects board, excellent condition, home use only, boxed with manuals, £1150. 

■ Martin 0181 699 9627 or email martin 0 vol-in demon.co.uk

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SONY JE510 Minidisc deck, brand new, guaranteed until 2003, with 4 Minidiscs, £160; Anwa DAT recorder, with 5 tapes, £225; Alesis Microverb 3, £85, DOP sequencer, £60, SMS8 copy, £45; PZM mic, £20; Digital Orchestrator with sequencer, £75. # Steve 01827 703562 (Staffs)

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email drush@uk.orade.com (Bristol)
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ROLAND MT100 5-track digital sequencer, module, disk drive, disks, over 500 sounds, 8-part multitimbral, 32-note polyphonic, manual, flightcase, immaculate, £150, will swap for a Zoom 1204, TG100, P50M or similar. \*\*0 1639 768103 (South Wales)

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YAMAHA MDF2 MIDI-file player, great for live sequencing, £145. \*\* Rob 01203 728542 or email artandartists@compuserve.com (Coventry)

YAMAHA MDF2 MIDI datafiler, stores bulk data on 3.5-inch 2DD disks, quality professional gear, excellent condition, box and manuals, £150. \$\text{steve 0191 240 1004 (Newcastle)}

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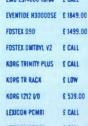
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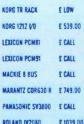


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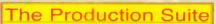
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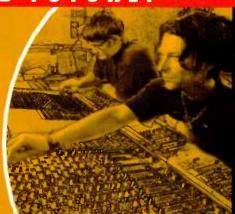
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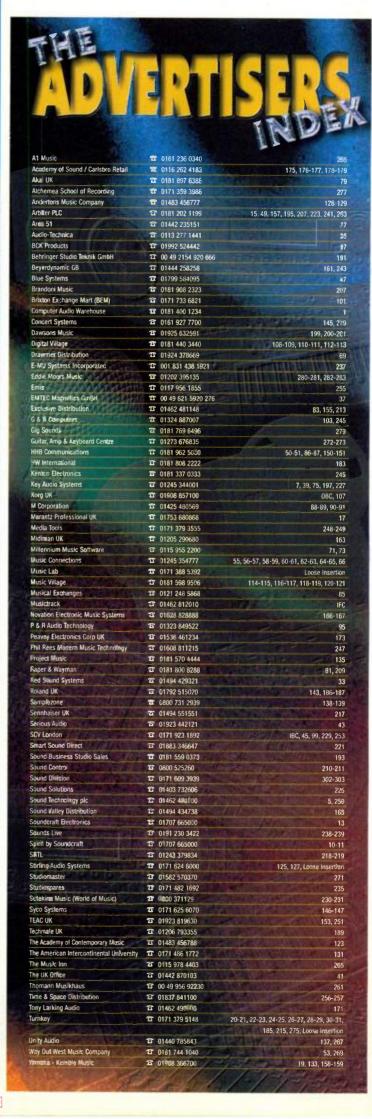
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ou may have seen Courtney Pine playing with a jazz improvisation program on *Tomorrow's World* recently. The program played fluid jazz lines in the style of Charlie Parker, over a tune that was composed 10 years after Parker died, and was described by Pine as 'bloody brilliant' and 'the best he had ever heard'.

Does this mean, then, that computers will make musicians redundant? Will we, in future, press a button to instantaneously generate a new composition in a particular style and sit back and listen? Will we dispense with people and improvise with machines? Will machines be creative? Well, I would like to answer these questions because I wrote the jazz program and I would like to explain why.

The main motivation for writing the program was a lifelong fascination with the way in which some musicians are able to improvise music without recourse to any notation. Before the development of written musical representation, music was

learnt and assimilated by ear without any

intermediate stage between hearing the music and playing it. Some musicians

have a greater or lesser ability to do this, which raises the question of why this is so, and why some people have an incredible natural facility for improvising music which is way beyond that of normal ability. The main question for anyone interested in how the mind works is: how do they do it? If we are to understand how

the mind works we have three options.

We can cut brains up and do neuroscience.

we can observe behaviour and do experimental psychology, and we can build models in computers, as I have tried to do. If a computer model does yield some understanding of how the mind works, we can then explore possible applications, to see if it can be employed in ways that will benefit musicians. Is it possible to use the model to hold different cognitive representations of musical structure according to the needs of the user, whether that be learning how to play an instrument or as an ideas generator for a new composition or for live performance?

My program is based upon an approach to music cognition that assumes that melodic structure is learnt in chunks, rather than at the note level. In other words, the idea is that when we hear a melody we like, we segment the tune into selective chunks based upon our own personal preferences and experience. When we learn a new musical language such as Be-bop, we select phrases that we particularly like and reinforce the pathways to these phrases. The program is based upon the idea of preferential selection of specific chunks that are used in the construction of new phrases. The difficult part is the selection of the phrases and the way in which they are recombined to create new material Brilliant musicians do this in a very organic way that unfolds into a beautifully balanced solo.

Many people would argue that music is something that

cannot be reduced to simple phrases, and they would most certainly be right. Charlie Parker believed that music could not be separated from life itself: "Music is your own experience, your own thoughts, your wisdom. If you don't live it, it won't come out of your horn. They teach you there's a boundary line to music. But, man, there's no boundary line to art."

We cannot model the complexity of human experience, however. Current thinking in Artificial Intelligence research is moving towards a view that suggests that intelligence can only be understood in terms of a complete organism in its environment. It is argued that the idea of abstracting out music from a person is far too reductionist and simplistic, in view of the overall complexity of a person's being in the world. What is needed, it is said, is a much more holistic approach that tries to understand the complex web of interaction between the person and their world. In fact, some people would go even further and argue that it's simply not possible to 'understand' the world; it's much better to meditate and just 'be' with the world.

It is certainly true that a relatively simple computer simulation has nothing like the complexity of a human being, let alone a genius musician. It has no imagination or consciousness, no spirituality, no feelings for itself or others and, more importantly, it has no ability to develop any of these attributes. It is merely a set of rules for acting on a set of data. What's more, it cannot modify itself of its own volition and adapt to a new environment. If we tried to program it to attempt to do this the program would be so complex that it would never respond in time. If we used a more biological approach to try to overcome some of these problems we would very quickly reach a complexity threshold above which even if we could produce a good model, we would not understand how it worked. My program does, however, capture something of the music of Charlie Parker. On some level, therefore, it can help us understand how the mind carries out musical improvisation.

Beyond gaining theoretical insight into the workings of the human mind, though, does a computer model of human musical creativity have any other uses? Does the possibility of such a model in a computer offer anything to people interested in the use and development of technology for making music?

Given that musicians have always been limited/enabled by the current level of technology, be it simple drums, nose flutes or virtual synthesizers, it means that the model can be used to generate new material that might not have been thought of, in ways that might not have been considered. Future multimedia will increasingly develop cognitive representations that allow the user to take advantage of variable levels of cognitive ability that the program can develop in conjunction with the user. This does not mean a push-button world where a 'creative machine' will do everything and we become progressively more obsolete. It means using technology as a high-level interface into exploring and developing new ways of learning and creating.

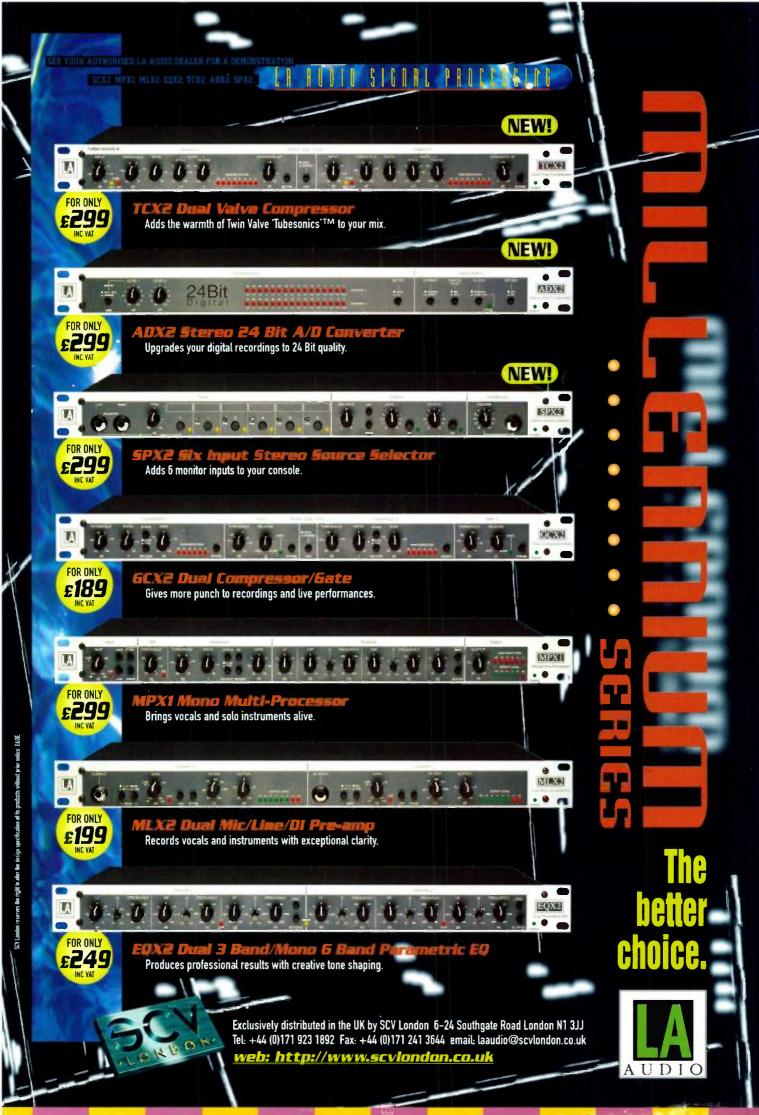
Paul Hodgson is a jazz musician and programmer and is currently working on new interfaces for making/learning music using modern technology. He can be contacted via SOS.

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It's all in the mind...
music, that is. A computer
can't begin to make
music without a human
being... or can it?
PAUL HODGSON explains
the current way of thinking
at the cutting edge of
research into music
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If you'd like to air your views in this column, please send your ideas to: Sounding Off, Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambs CB3 8SQ.

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