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editorial

THE ART OF REPETITION

THE TERM NON-MUSICIAN has become almost as common (if not as acceptable) as that of musician these days. They've called the effects of new technology the "new punk", they've called it "the non-musician's revenge", they've called it everything under the sun but it hasn't gone away. And the "real musicians" desperately wish it would. (There's even a story that Pete Waterman tried to get S' Xpress' Mark Moore expelled from the Musicians' Union for claiming to be a "non-musician".) The truth is that you can't get rid of 'em and you can't ignore 'em, so what is the "educated" musical fraternity to make of the non-musician?

Let's start by evaluating what the "non-musician" is and what he's achieved. Last first: the punk analogy isn't a bad place to start, because of the resentment that's been stirred up within the musical establishment. But whatever the feeling of the old-style pros, the non-musician with his sampler and computer has proved that non-musician doesn't necessarily mean non-talent. Of course there has been a mountain of rubbish generated by non-talent attempting to jump on the badwagon, but that's as true of Yes and Genesis, and Kraftwerk and Tangerine Dream as it is of Steinski and S' Xpress.

So what *is* this non-musician? Well, he's someone who has avoided all the learning that, traditionally, qualifies someone to be a musician. Instead of learning musicial technique, he uses the quantise function on a sequencer, instead of learning drum rudiments he samples another drummer and instead of understanding a chord progression he edits something that sounds nice out of a series of random key presses. So he's a charlatan – passing off his tricks as musical skills.

Ultimately that question is up to each of us to answer for ourselves, as the value of music is both subjective and personal. but there are a number of facts that we should take into consideration. Certainly, the non-musician has defaulted on his obligation to learn the physical disciplines that accompany a musical instrument. He's also avoided gaining the insight into music theory that you gain while trying to master the usual exercises. And it's unlikely he'll have any use for manuscript paper. But then should you *have* to serve a ten-year musical apprenticeship before you're allowed to have an interesting musical idea? The reason most people become involved in music is that it excites them. How many would-be musicians have been deterred by the hours of scales and sight-reading exercises – we're talking about people who might play for their own pleasure as well as for a living here.

Where the non-musician would seem to be at his weakest is in understanding what he is doing: if you cobble together a brilliant piece of music but can't recreate it after the sequencer file is corrupted, do you deserve to have written it in the first place? The sampler and sequencer have allowed "non-musicians" to build up pieces of music on a trial-and-error basis; they don't need to understand what they're doing just as long as they can hear it taking shape. And communicating with other musicians? This previously essential skill has been made all but redundant as the computer has put one person in charge of all the musical elements.

But let's take another look at the popular musical establishment. Rock music (for want of a better term) was born (and is continually being re-born) as a means of rebellion. Why then should it not rebel against itself? How many "old rockers" welcomed punk? How many of those same musicians now agree it gave a stagnant music scene a much-needed kick in the pants? How many of them are currently bad-mouthing samplers? How much is a respected artist like Brian Eno dependent on non-repeatable circumstances to create his music? Or Robert Fripp, Tangerine Dream or David Sylvian... Didn't Allan Holdsworth quit UK because the record company insisted he repeat the solos he'd played on the album when the band played live?

Perhaps we're simply talking about insecurity in a business where insecurity is the biggest problem: after all, you're only as good as your last performance – public or private. The spirit of music is contained in how it sounds and what it communicates to you, not how it was created or who created it. ***Tg***

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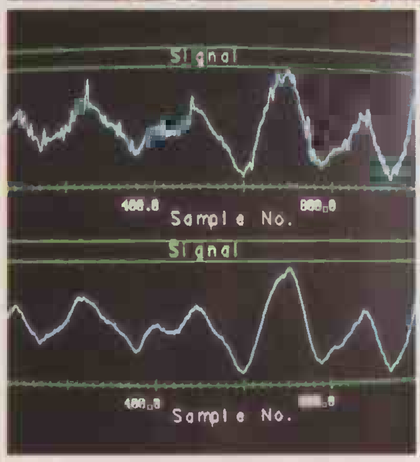

Signal
Sample No.
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newsdesk

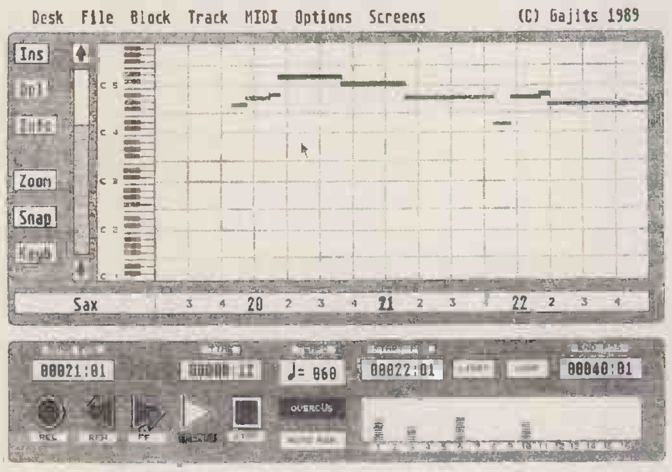
A MOVING TONIC

MIDI software specialists Tonic Audio have upped and moved themselves to a new address which is as follows:

Tonic Audio, Unit 20, Acorn Workshops, Harold Wilson Industrial Estate, Van Road, Caerphilly, Mid Glamorgan CF8 3ED. Tel: (0222) 863906.

Previously the company were principally a mail order operation, but with their new "bigger and sexier" location (what *do* you guys mean) they're opening up to the public (no appointment necessary), and there's a nice relaxed MIDI demonstration area with free coffee for the thirsty. Sounds very pleasant, I must say.

You can get to meet the lads from Tonic Audio from 10am-7pm Mon-Sat. ***St***



GAJITS SEQUENCE THE ST

Given the large number of MIDI sequencers already available for the Atari ST, the prospect of yet another one appearing is all but guaranteed to generate yawns all round. However, a glance at the screens and the list of features for a new 32-track sequencer from Gajits Music Software has me interested – especially when the price is a modest £79. Called Sequencer One (original title, Mr Gajits), it has Track, Step Edit (grid style) and Bar Edit screens, 192ppqn resolution, supports desk accessories, and includes cut, copy and paste operations and the ability to quantise, transpose, scale and shift selected MIDI data. Real-time controller remapping, graphic editing, import and export of MIDI Files, and a 40,000-event record capacity on a 520ST are just some of the other features of what looks like what could be a real value-for-money sequencer.

The program will be available from Gajits on a mail-order basis, with a 14-day money-back guarantee should you be dissatisfied (with the sequencer, silly), and the retail price will include access to the Gajits MIDI Helpline and entitle the purchaser to cheap upgrades as well as reductions on other Gajits software. The company are currently developing a range of synth patch editor desk accessories which will be able to run at the same time as the sequencer. Availability of the editors is expected in the next couple of months.

For more information contact Gajits on 061-434 2768. ***St***

LIVE REPORT

Thomas Crooke Musical Services claim to have the first MIDI studio of its kind in Europe, namely one that has been set up for musicians rather than programmers. What they appear to mean is that it's a studio designed for *players*. Hence there are MIDI controllers to suit a wide variety of musicians (who could come in to record by themselves or as a group), with Simmons SDX electronic drums, a Wal MB4 MIDI bass guitar, Yamaha G10 MIDI guitar and Yamaha WX7 MIDI Wind Controller as well as Yamaha DX7 II, Korg DW6000, and a variety of synth and sampler expanders hooked up to a 1040ST running Steinberg Pro24 III with SMP24 SMPTE sync to multitrack. Two Yamaha MJC8 MIDI Junction boxes and a MIDI merge box take care of MIDI routing and merging, with merging of up to five inputs. And a separate 520ST is used to run a variety of Dr T's patch editors for the noise-making instruments. Oh, and for the more experimental musician, a BSS MIDI noise gate allows MIDI triggering of notes from any audio signal. Just think of the possibilities...

The studio's multitrack is a Teac 80-8 $^1/_2$" eight-track with DBX noise reduction, with mastering onto Revox $^1/_4$". Sixteen- and 24-track tape machines and digital mastering are available on request. The mixing console is a 32:8:2 Studiomaster Series II with MIDI muting on all channels, providing semi-automated mixdown. Monitoring is provided by Quad, Tannoy and Yamaha NS40s, while effects consist of a BSS MIDI noise gate, Lexicon LXP1 reverb, Drawmer compression and two SPX90s.

If you fancy getting into some live action, you can give Simon Thomas or Ollie Crooke a ring on 01-729 3120. ***St***

CHAMELEON IN BATH

Keynote Software is a new British software production, publishing and distribution company based in Bath. Their first product, going by the name of Chameleon, is a programmable universal patch librarian for the Atari ST, with database-style librarian functions for accessing sounds. You can also create your own custom libraries for any type of MIDI data. Other features of the software are a bank editor, a MIDI monitor and disk utilities.

The program comes with a desk accessory version for use within other programs, and is compatible with all GEM-based sequencers. The software has been written in machine code for fast operation and low memory consumption, with the accessory and resource files taking up less than 7% of the 1040ST's memory.

Chameleon will be available from hi-tech music and computer retailers in the UK and through Keynote's mail order service. The cost? £89.95 including VAT. Watch out for a review in MT soon.

For the curious who don't want to part with their money straight away, a demonstration version with saving functions disabled is available free from public domain libraries or directly from Keynote if you send them a cheque for £3 to cover the disk, p&p and administration costs.

Keynote are also working on the Chameleon Programmable Patch Editor, which will allow users to construct and edit their own fully-featured editors. The program will be available in the New Year, and registered Chameleon librarian users will be able to upgrade to the editor for the difference in price between the two packages.

For more details contact Keynote Music Software at 13 Duchy Road, Clandown, Bath BA3 3DQ. Tel: (0761) 32610. ***St***

THE MUSIC CENTRE

Islington Music Workshop is a music complex situated in downtown Islington, London which includes a 24-track studio, computer-based 24-channel pre-production suite and rehearsal facilities.

The studio spec includes a Trident console, MCI 2" tape machine, DAT mastering, two Yamaha SPX1000s, a Lexicon PCM70 and an Alesis Quadraverb. You can book 30hrs in the studio complete with an in-house production engineer, hire of 2" master tape and digital mastering for the concessionary rate of £329 including VAT. This price is *not* available to bands with publishing or recording deals, but recent commercial clients have included Rhythm King, Desire Records and Bucks Music.

The pre-production suite contains an Atari/C-Lab sequencing package, a 24-channel in-line desk, Akai S950 sampler, Roland R8 drum machine, Yamaha DX7 and Roland JX8P synths and a Yamaha SPX90 multi-fx processor is available for programming, writing and demo work with a Programmer at an hourly rate of £5 (unwaged) plus VAT. And if rehearsing is your thing, a comfortable rehearsal studio with PA and three mics can be had on a 20-hour booking for £20 plus VAT (unwaged).

IMW also run recording and hi-tech courses at the complex, all at reasonable prices (some for the unwaged). If you're interested in a 24-track recording course, separate women's 24-track recording course, a remix weekend, a sampling/sequencing/MIDI course (including Atari/C-Lab sequencing and Akai S950 sampling), a women's electronic music/programming course, a computer sequencing weekend (C-Lab and Steinberg) or women's and mixed backing vocal courses, contact IMW on the number given below.

IMW is financially assisted by Bucks Music Ltd, GLA, Islington Council, ILEA, City Parochial Foundation and Secret Promotions. All courses, packages and hires are available at Community rates/Concessions. You can call IMW on 01-608 0231. ***St***

TIME FOR XRI

XRI Systems have been keeping busy recently, and have just announced an upgrade for their XR300 SMPTE Synchroniser which provides a SMPTE restripe function and MIDI Time Code compatibility (making it useful to users of Steinberg's Cubase, which can read MTC). Present XR300 and XR03 owners can upgrade their units for £49.95 inclusive of VAT.

XRI are also releasing a new unit called XR20 MTClock which generates, reads and displays the four SMPTE rates and outputs MTC. At less than £200 it's ideal for direct time-locking MTC-equipped sequencers to tape.

And as if all this activity wasn't enough, the company are also offering a free MIDI System Design Service. You tell them what gear you have and they will draw you a personal MIDI map (conveniently, for XRI at any rate, designed around an XR400 MIDI Mate MIDI patchbay) to help you get the most from your setup. Sounds intriguing, yes? Well, if you're intrigued you can ring XRI on (021) 382 6048, or fax them a message on (021) 377 6914. ***St***

WEST COUNTRY FAIR

If you live down in the West Country then you'd be well advised to leave the weekend of 18-19th November free in your diary. Why? Well, those two days see the Bristol Music Fair taking place at the The Watershed, Bristol, with synths and other hi-tech products on display from Roland, Yamaha, Casio, Korg, Akai and Kawai, music software from C-Lab, Steinberg and MIDI Music, home recording equipment from Fostex, Tascam, Alesis and MTR, PA and amplification from Trace Elliot, Bose, Toa, Carlsboro, Fender and Gallien Kruger, and guitars and accessories from Aria, Boss, Fender, Rotosound, Superwound, Washburn, Warwick and Steinberger. Phew! Now if there isn't something in that little lot to interest you, what are you playing at?

The Watershed's 50-seater theatre will be in use throughout the show with live demonstrations and clinics.

The show is being jointly organised by ABC Music and John Holmes Music, both of whom have retail stores in Bristol (nice bit of co-operation there, lads).

Admission is a modest £2 (£1.50 for students), and this includes a free prize draw with the chance to win over £500 of musical equipment. The show is open from 1pm-8pm on Saturday 18th November and 11.00am-6.00pm on Sunday 19th November.

For more information contact Kim Joseph on (0372) 66195. ***St***

SIMMONS RIDE AGAIN

If you've been lamenting the passing of Simmons and their products, fear not. A new company has been set up which has acquired the rights to the new Simmons gear which was launched at the NAMM and Frankfurt shows earlier in the year – namely the SDS2000 digital drum kit, Trixer, ADT and the Drum Huggers. All past and present warranty agreements will be honoured, and much new finance has been raised to complete further new designs for release in 1990.

Trading under the old Simmons Digital Music name, the company can be contacted at 6A Sun Street, Hitchin, Herts SG5 1AE, where they have new office and factory premises. ***St***

communiqué

dongle difficulties

As a semi-pro user of software with more sense than money, I would fully support what David Crombie of Evenlode says about the need for software copy protection (MT, September '89). But there is one area where Steinberg – and all the other companies who make use of dongles – could help us punters.

With the advent of multitasking, more and more of us are going to want to run multiple programs together; but there's only room for one dongle on the damn computer. And the expanders that are available are VERY expensive. Since these companies are (presumably) raking in the dosh because their programs are so well protected, couldn't they invest some of it in developing a cheap way to have multiple dongles connected? How about giving each dongle a "thru" port so that you could plug another dongle into it, for instance?

Any chance chaps?

Piers Landmann
Hatfield
Herts

workstation alternative

This idea of a "workstation" – everything you need to compose with in one box in your bedsit – is both a blessing (for those with little money) and also a trap. A trap in terms of sonic possibilities – a trap where you find yourself restricted to working with the same mode of synthesis for many years to come. Surely there is another approach.

My own personal idea of a "workstation" would be a good mother keyboard. Built into this would be a 32-track sequencer with a large clear LCD and a TV modulator (as on the Atari) so that, for home use, the TV screen that nearly every musician owns and doesn't use whilst working on their music, can provide a larger, clearer display. Programming of percussion parts would be via eight or so velocity-sensitive pads to the left or right of the LCD, with all information being stored in the built-in disk drive.

And that's it. What, no sounds? Exactly – I'm talking racks, I'm talking cheap, I'm talking borrowable, swappable and upgradable. Let a manufacturer bring out this workstation and I could probably only afford something like an MT32 to go with it (giving me keyboard sounds and drums). But, in time, I could upgrade in any way I wanted – this or that method of synthesis, sampler, drum module and so on, whilst retaining the workstation I've become familiar with.

The important point is that this idea of a workstation does not tie you down to any one manufacturer's way of making sounds. The keyboard, percussion pads and sequencer are our "brushes" – give us these of a high quality and flexibility in one box (with four MIDI Outs) and we'll choose our own 19" "palettes" of sound, as and when we can afford them. But without being trapped by those built into our workstation.

David Pears
St Austell
Cornwall

Your points are duly noted, David, and they're certainly not without merit, but try answering these questions about the "Pears Workstation".

How much memory space are you going to fit as standard – can you be sure you're not going to find yourself running out in a couple of years time? What sort of storage system are you going to opt for – floppy disk, hard disk. . . ? What happens if someone comes up with a better storage alternative the day after you go into production? Are your pads going be too small to play with drum sticks or too big to play with your fingers? What about MIDI – is it always going to be fast enough for you and is it sophisticated enough to accommodate all the innovations that are sure to appear in the future? And this TV business, will your modulator allow you to use the workstation with high definition TV when it becomes available?

Perhaps you've described a Roland A80, Octapad II and a Mega4 ST – a sort of kit-form workstation – in which case your ideal working situation is already on the market. I feel you're identifying the shortcomings of the workstation principle without coming up with a genuinely new alternative, and you've completely failed to take into account the marketing considerations that accompanied the conception of the workstation.

But congratulations all the same, at least you've recognised the flaws in the new system and looked for an alternative. Now you know (in part) what designers of new gear are up against. ***Tg***

SOS

I am probably one of less than five owners of a Chase Bit One keyboard in Canada. I purchased it only recently but the previous owner had let the memory battery die and so it only contains about seven sounds he'd written (and they're very sad indeed).

Since no stores in Canada sold this keyboard, I cannot find anywhere or anyone who can provide me with a copy of the factory sounds on cassette. So I was wondering if anyone at your excellent magazine or amongst your readers could possibly help me out? It would be sincerely appreciated.

Many thanks.

Richard Nirth
Toronto
Canada

Sorry to say nobody here at MT ever owned a Bit One, but if anyone else can help Richard out, they can contact him c/o Music Technology at the editorial address. ***Tg***

checkpoint

A few queries for you: first of all, could you tell me whether Kraftwerk will have an album out soon and whether they intend to tour here in Britain? Secondly, would I need a MIDI merge box in order to play my K1m from my SixTrak and sequence it at the same time? Thirdly, have DMS (Digital Music Services) who produced the excellent 8- and 16-track sequencers for the Yamaha CX5M gone bust or are they still around? Finally, what about an interview with Telex, who released an LP called *Looney Tunes* earlier this year?

Jason Adkins (Made In Japan)
Flitwick
Bedfordshire

You're not related to Roger Cook are you Jason?

EMI – Kraftwerk's UK record company – say that they're as much in the dark about Kraftwerk's activities as the rest of us at the moment. The band are supposedly in the studio at present recording for another album, but there certainly won't be anything from them before February. As for a tour...

If you're going to avoid swapping MIDI leads around you'll certainly need a MIDI merge box of some description. You can check out the Philip Rees and Groove Electronics mergers (both reviewed MT, April '89) and we have a feature on the whys and wherefores of MIDI merging lined up for a future issue if you want to know more.

Of DMS we can find no trace, so presumably they have ceased trading. But in case we're wrong: DMS, are you out there?

As for Telex, WEA (their record company) were unsure of what the band are up to at the time of going to press, but have promised us more information. Watch this space...

Now, anything else you need to know – the price of rice in Japan, why the dinosaurs died out, the real colour of Wendy James' hair, results of the recent Pro-Celebrity Grave-robbing Championships – don't

NEW ARRIVALS

XRI, XR400, RHODES MK60 P. REES M-CV CONVERTOR RHODES MK80, ATARI MEGA ST, ALESIS HR16B, ALESIS 1622 MIXER, FOSTEX R8

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Continuing E-Mu System's policy of product longevity after THREE years of Emax here comes the Emax Mk2 . . . whereas some manufacturers totally disregard last year's model and replace with something else Emu have "openended" their product in as much all existing discs are compatible. OK you've got to buy a Mk2 as it's based on a new 32 voice chip, but how much have YOU made with your own Emax? IN STOCK NOW!!! Part-exchange always possible.

PROTEUS

£899 (SORRY ABOUT THE DELAY - FINALLY IN STOCK)
Conclusions: If you'll forgive us for indulging in a little crystal-ball-gazing, **Proteus** looks as if it's going to be one of the top contenders for *Keyboard's* Technological Innovation Of The Year award in 1989. It's a perfect combination - great sounds, oodles of polyphony, output routings, flexible enough for any studio, and a rock-bottom price. When the biggest thing you can find to complain about is that a synth needs more memory to store patches, you know you're looking at a winner.

Since the demise of the Drumulator, E-Mu hasn't really had an entry-level instrument in their product line. Instead, they've concentrated on high-end technology. What we're seeing in **Proteus** is the trickle-down theory in action. The high-level research that went into the Emulator Three is paying off in a device that just about any serious musician can afford. If you're shopping around for a rack module to add to your sound resources, don't take your chequebook until after you've heard **Proteus.**
Keyboard Player (USA), August, 1989

PROTEUS XR AVAILABLE SOON. HAS ORIGINAL 128 ROM PRESETS PLUS 256 USER PRESET = TOTALLY 384 - £1,169.

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in brief

STUDIOMASTER MA36 MIDI Analyser

PHOTOGRAPHY: JAMES CUMPSTY

BACK IN THE good ol' days when men were real men and computers weighed a ton, the only serious communications standard between machines was a system called RS232 (or V24). This "standard" was usually based on a 25-way "D" connector with pins 2, 3, 6 & 20 connected to each other. Sometimes, however, other pins were used (and there were 21 "other" pins at each end) or lines could be crossed or even shorted together. To further complicate matters, the BBC micro used a 5-pin "Domino" DIN connector, IBM introduced the 9-way "D" connector, and some companies used even more absurd connectors and cables. All this, just for a "standard" communications link that needed just four connections.

It was a nightmare to try to make sense of all this, since for any combination of computers, or computer plus printer (or modem) there were an enormous number of possible combinations of connections, and it was almost impossible to work out which piece of cable was carrying which piece of information. Enter a neat little device called a "Break-out Box". This device, which fitted in the palm of your hand, allowed you to ascertain what signals were coming in on each line, and also what signals were expected by the device at the other end of the cable. Clever.

Fortunately, the MIDI world isn't nearly as complex as RS232. After all, a MIDI cable is a MIDI cable – plug it into the right hole and away you go. But there are still times when it would be useful to know what signals are passing up and down your cables. If you have a large or complex MIDI system, it can be quite tricky remembering what's going where, and why. So Studiomaster have given us the MA36 MIDI Analyser – the musician's answer to the Break-out Box.

The box itself measures 125mm x 71mm x 29mm so nobody will have any difficulty finding a home for it in their setup. It will run on batteries or a 9V adaptor. There are only two MIDI ports on the MA36 – In and Thru – and you connect the box by placing it in-line with your setup. Suitable configurations might be: Master keyboard – computer – MA36 – MIDI Thru box – expanders; or MIDI keyboard – MA36 – expander; and so on. The MA36 doesn't have to be switched on to allow MIDI signals to pass through, which means you can leave it permanently in-line without flattening your batteries. You can, of course, just connect the MIDI Out of your keyboard to the In of the MA36 for direct analysis of the output of that one device.

There are no instructions with the MA36, which is a bit lazy on Studiomaster's part, but quite honestly, you don't need any. There are 36 LEDs on the top panel (plus a power-on LED) which give you (surprise surprise) 36 different pieces of MIDI information. These are; MIDI channel (1-16), Note On, Note Off, All Notes Off, Poly Pressure, Control Change, Program Change, Channel Pressure, Pitch Wheel, SysEx, Song Position, Song Select, Tune Request, End Exclusive, Timing Clock, Start, Continue, and Stop. The first eight of these are keyboard-orientated, the following nine are for use with other MIDI gear such as sequencers. Finally, to complete the 36 functions there are indicators for Active Sensing, System Reset, and MIDI Error.

Internal construction is very sturdy – simply because there's only one chip in the whole thing. This is a proprietary 64-pin chip made for Studiomaster by Mitsubishi. Apart from the LEDs there are 17 other components, including the connectors. But it works, and it should continue to do so for as long as you're likely to need it. Is it worth £50? Well, if you have a use for a MIDI analyser, then it's worth it. If you don't, it isn't – an easy decision for a change.

■ *Gordon Reid*

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MM1 KEYBOARD MIXER

PHOTOGRAPHY: JAMES CUMPSTY

The Tascam MM1 offers many of the facilities of a professional mixing desk and mix automation for around the cost of a cheap synthesiser. Review by Tim Goodyer.

IT'S THE SORT of problem that you'd normally associate with a nightmare – an uncomfortable knowledge that follows you around, allowing you to forget about it for a while, only to return to your thoughts when least expected... What could it be, that could cause an innocent musician such unhappiness? Where could you find an innocent musician to ask?

Fortunately for you I am such a musician, and I'll tell you all about it. It goes like this: once you're hooked on little bits of hi-tech gimmickry like synths, samplers, drum machines and effects processors, you just can't get enough. Equipment manufacturers and the laws of physics appear to be equally aware of this and conspire together to offer you ever more attractive pieces of kit at ever more attractive levels of expenditure. Before you know it, you're surrounded by technology, all of it promising to help you realise your musical dreams. And all of it demanding some method of making itself heard.

To begin with, The Problem is a small one; you might plug your first synth into your hi-fi before graduating to a dedicated PA amplifier or – more likely – a small mixer, amp and speakers. But it escalates: the number of audio outputs on your gear quickly surpasses the number of inputs on the mixer; the connection of reverb units and effects processors demands auxiliary sub-mixes and the instruments all require subtly different equalisation. It is at this point you first acknowledge The Problem: you need a "proper" mixing desk. At first you dismiss it as an expensive luxury, and continue to "make do", but The Problem persists until you realise that you really can't live without a 16 – or more – input mixer, and you don't have the necessary £1500 or so that will buy you even a modest one.

Unlike real nightmares, there's a happy solution to this particular problem, however. It takes the form of a new mixing desk from the inventors of the Portastudio, and is called, perhaps unimaginatively, the MM1. The MM1 is a 20:2, 19" rack-mounting mixer with two-band EQ, four aux sends, four stereo aux returns and programmable MIDI muting that will cost you a mere 700 quid. Now you can sleep again.

THE HARDWARE

LET'S TAKE A closer look at what the MM1 has to offer. The unit is the rack-standard 19" wide so that it can be tucked away with your expanders and reverbs for live work (primarily) if you so wish. Here we encounter the first of the unit's pluses: using a couple of thumbscrews it can be angled away from the vertical, making it much more comfortable to work with. The MM1 can also be used flat, and for this purpose the mounting ears can be removed and a removable palm rest is supplied – in its rack-format this rest can be re-fitted on top of the unit to conceal the cable connections.

There are actually 16 faders controlling the 20 input channels on the desk. The first four input channels will accept stereo inputs or act as standard mono inputs – bringing the capacity of the desk down to 16 channels.

Each channel has its own trim pot (for balancing input levels), two-band EQ, effects sends, pan, mute/solo button with red staus LED, and fader with LED level indicator. The master outs also have mute buttons and status lights and sit directly below the master effects sends and returns. The remaining panel space is given over to the mains switch, LED output ladders, headphone level and jack, footswitch jack (for remote switching of mute "Scenes") and programmable MIDI muting controls (including a 14-segment display).

The rear panel, meanwhile, houses all channel inputs (on quarter-inch jacks), 16 direct outs (one from each of the first four pairs of channels, one each from the rest), effects outs and ins (on quarter-inch jacks), MIDI In, Out and Thru, master outputs (on jacks and phonos), two effect buss inputs and the power socket (fed from a separate transformer).

The first eight channels have two inputs so that the stereo output from a drum machine, say, can be connected using two standard mono jack-to-jack leads. Only the effects sends require a stereo-to-two-mono jack leads (of the type used for insert points).

Because of its 19" rack-mounting format, all the controls on the panel of the MM1 are small. Looking at a photograph, you'd be forgiven for assuming the faders are the usual half-inch or so wide, In fact they're nearer half-a-centimetre wide – which should give you some idea of the scale of the EQ and other controls.

THE SOFTWARE

ONE OF THE big selling points of the MM1 is its MIDI muting capability. What this actually allows you to do is store patterns of channel mutes in one of 99 Scenes. These Scenes can be recalled at the touch of a button (actually several touches of a couple of buttons), or over MIDI. And as the muting is MIDI addressable, it can be recorded, along with the rest of your note and patch data, as part of a sequence.

These Scenes can be used in two ways. The first is to minimise unwanted noise: if an instrument isn't actually playing anything, muting the appropriate mixer channel will cut out any background noise that might otherwise appear in the mix. This can be particularly effective if you're dealing with less than top-of-the-range gear as it's more likely to produce the sort of noise that quickly builds up to degrade a recording. The second use of automated muting is musical: muting everything except the drums and bass during a bridge, for example.

The same buttons that mute the mixer channels double as channel solo buttons. Pressing Solo brings up "SL" in the display, after which pressing any channel Mute/Solo button mutes all other channels, allowing it to be heard on its own. Pressing Solo will unmute all channels and return you to normal operating mode. Alternatively, pressing the solo'd channel's Solo button again unmutes all the other channels but leaves you ready to solo another channel. If further channels are solo'd without un-soloing the first, all solo'd channels will be heard together.

IN USE

PLUGGED IN, POWERED up and ready to go, the MM1 looks the business. Everything is readily accessible and readily assessable at a glance – the controls are easy to "read", and the red status LEDs and Scene number display make the automated functions as transparent as possible.

While it would have been nice to see four-band EQ or even quasi-parametric EQ on the MM1, the simple two-band shelf-type (12dB cut or boost at 100Hz and 10kHz) is adequate for most applications. I tried a variety of sources from a TR808 bass drum to CD and was always able to get what I wanted.

As already mentioned, the first eight channels are paired to give four stereo channels. These are intended – and are ideal – for drum machines and multitimbral expanders with stereo outputs, and have a balance control where the remaining channels have pan. This arrangement puts the stereo signal under the control of the same volume and tone controls – a very comfortable arrangement when mixing. The only drawback is when these channels are used with instruments with *pairs* of outputs rather than stereo outs, or when you want to separate one drum sound from the other for special EQing or treatment. Take my old Jupiter 8 which has two audio outs; in Whole mode (the same sound across the keyboard) the same signal appears at both MM1 inputs: no problem. In Dual or Split modes the instrument assigns one sound to each output. Here the two sounds will always be panned hard left and hard right. If you want to assign a drum machine's bass drum to one of its stereo outs and the remaining voices to the other (so that you can EQ the bass drum separately) you have a drum kit with a bass drum on one side of the mix and the remaining shells and cymbals on the other. It's a small point given that so many current instruments carry suitable stereo outputs, but it's worth bearing in mind when you're working out whether the MM1 has enough channels for your requirements.

On to the muting. To select and recall a mute Scene manually, you step through the Scene numbers using a pair of Up/Down buttons (there's no means of inputting a number directly) until you come to the required Scene. The display now flashes to tell you that it's ready for selection. Pressing Recall causes the appropriate channels to be muted and unmuted, ➤

"As the MM1's muting facility is MIDI addressable, it can be recorded, along with the rest of your note and patch data, as part of a sequence."

and the display number stops flashing.

There's also a convenient method of finding the next free Scene – holding down Recall and simultaneously pressing Scene will bring up the highest Scene that holds a program. Step to the next Scene and press Scene and Store/Copy and your Scene is saved in that memory location.

But the most powerful use of the MM1's muting facility is in conjunction with a MIDI sequencer. As previously mentioned, mutes can be used to help reduce noise levels, as part of the musical arrangement, or both. Perhaps the best musical application is experimenting with different mixes of a song – muting the bassline here, the snare drum there... If you're slaving your sequencer to a multitrack recorder then you could also be muting the vocal or acoustic guitar lines.

"The MM1's MIDI muting is, simply, excellent – it's no substitute for full mix automation, but it is a perfect complement to today's MIDI setups."

First of all we've got to get the MM1 onto the MIDI highway. This is done using the familiar MIDI In, Out and Thru on the rear panel and then resorting to the Scene/MIDI Ch and the Up and Down buttons. Pressing Scene/MIDI Ch once takes you into MIDI Channel Send mode, and lights a green LED marked Send immediately below the panel display. From here you can step through all 16 MIDI channels, and Omni "on" and "of" (as in off) modes using the Up and Down buttons. Having selected the required send channel, a second press of the Scene/MIDI Ch button takes you into MIDI Channel Receive mode (accompanied by a green Rcv LED). The same procedure allows you to set the receive channel. The one remaining function that can be set is whether or not the MM1 will respond to individual channel muting (more in a moment). This is set by holding down Store/Copy and pressing Up or Down. The display will toggle between "on" and "of" as you press Up or Down.

There are two ways in which the MM1's mutes can be recorded in a sequencer – as Scene numbers or as individual channel mutes. If you use Scene numbers the whole pattern of mutes is recorded and recalled as a MIDI program number. This is quicker and easier than using individual channel mutes but requires you to have the correct mutes stored in the appropriate patterns before running the sequence. The alternative is to store each channel mute (and unmute) as a MIDI Note On event – what Tascam have called "dynamic automation".

Each of the MM1's audio channels has a MIDI Note number associated with it (C1-F2), and note velocities of 64 or more will cause the channel to be muted while note velocities below 64 will cause it to be unmuted. In this way a MIDI C1 Note On command, velocity 127 will mute channel 1 on the MM1. These MIDI muting events can either be entered into the sequencer from a MIDI instrument with a velocity-sensitive keyboard or by pressing the mute buttons on the MM1. The main advantage of this method over storing Scene numbers is that all the information required to automate the mix will be in the sequence file – you won't have to make sure the MM1 has the correct mute patterns in its Scene memories.

In case you're worried about stray Note Offs, the MM1 sends these although it doesn't actually use them itself. Presumably this is to prevent lone Note Ons causing "hung" notes if the MM1's MIDI information is overheard by an instrument.

VERDICT

SMALL THEY MAY be, but I found the controls on the MM1 comfortable to use – the secret seems to be to allow enough space *around* the controls to allow you to operate one without upsetting another. Whatever the design principle, Tascam have mastered it. The result is a mixing desk that is easy and enjoyable to use.

The only aspect of the MM1's compact design I found to be a drawback was the relationship you have with the desk during a mixdown. The situation would never arise if the desk were only to be used in a live situation, but with my attention focussed on it, the MM1 didn't give me the same feeling of control (power?) as a desk that is physically bigger. Obviously the problem is a psychological one (I have many), but I'm sure there's something about the physical relationship you have with the mixing desk that contributes to the finished music.

One of the most important areas of a mixing desk is its equalisation. (Even SSL desks come in for some stick here.) The two-band EQ on the MM1 could have limited its application to live use where you can get away with more, and the whole keyboard submix could have been re-EQ'd at the main desk. Instead, it proves to be more than adequate on a desk of this price. If you do find yourself dealing with more demanding sound sources – as you might with certain samples – you could always resort to outboard parametric equalisers.

The MM1's MIDI muting is, simply, excellent. It's no substitute for full mix automation – fading, panning and so on – but it is perfectly matched to today's MIDI setups and there are ways around some of its limitations. For example, by bringing the output of a digital delay on one of the mixer channels proper (rather than an effects return) you can set up an echo effect and leave it on a muted channel until you need it.

The most critical it's possible to be of the MM1 is to point out that it lacks the necessary subgroups to make it usable with multitrack tape machines. If you're using a personal multitracker you can patch the MM1 in as an expansion of its facilities – including patching the multitracker's effects busses into the MM1 on the Effects Buss In jacks – giving you quite a flexible and powerful setup. If you're looking at an 8- or 16-track reel-to-reel, you can use the MM1's direct outs to circumvent the unit's stereo outs, but you're going to have to do a lot of re-patching somewhere down the line. But you're asking the desk to do something it wasn't designed to do and, as I say, this is as critical as it's possible to be of the MM1.

More realistically, the MM1 is going to find itself the communications centre of a MIDI studio, for which it is ideally suited. Even its size is a huge plus point here – who's got room for a 48-input SSL desk at home, even if they can afford it?

Given the desperate need for a mid-priced mixer to meet the requirements of the many, many MIDI recording setups now in (enthusiasts') bedrooms and (pros') pre-production suites, the MM1 can't fail. Another first for Tascam. ■

Price *£803.85 including VAT*
More from *Tascam, 5, Marlin Court, The Croxley Centre, Watford, Herts WD1 8YA. Tel: (0923) 225235.*

"The MM1 is going to find itself the communications centre of a MIDI studio, for which it is ideally suited – even its size is a huge plus point here."

THE COMMODORE AMIGA

THE ATARI ST MAY BE *THE* MUSIC COMPUTER OF THE LATE '80S, BUT THE DEMANDS OF MUSICIANS AND SOFTWARE ARE PUSHING IT TO ITS LIMITS. WHAT COMES AFTER ST? TEXT BY MICHAEL BROOKE

AS MOST ASPIRING bands gradually discover, success doesn't automatically accompany virtuous techniques and brilliant material; at some stage you've got to convince the record-buying public that you're worth their attention. And so it is with the computer industry – there's no point in having the most dazzling graphics and sound since Walt Disney if you can't convince people to write software to make use of them. The home computer's brief history has been littered with prodigies that couldn't overcome this basic hurdle. One machine currently battling its way out of this situation is Acorn's Archimedes, which features literally everything you could reasonably ask for – including an optional MIDI interface – together with an operating system several times faster than anything in its price range. All it needs is the right software...

The situation isn't quite as bad for the Commodore Amiga, but the Atari ST has become such a familiar sight in MIDI studios around the world that it often seems surprising that anyone would even consider buying and using anything else. There's little doubt that the ST is by far the overall leader in the sheer quantity of MIDI software available, and there's not much doubt as to the reason for this – it's the cheapest of the holy trinity of the ST, PC and Macintosh, and thanks to inspired design (which seems obvious now, but revolutionary back in 1985) it features MIDI sockets already built in, meaning you could just plug it into your rack of hi-tech music gear and switch on. It has been the clear choice for the MIDI musician on a budget (and some that aren't) for a while now – such a clear choice, in fact, that it might seem like the height of perversity to opt for a different machine – in the case of the Archimedes or Amiga, a machine that isn't compatible with either ST or Mac in its basic form. But I've been using my Amiga for nearly two years and I wouldn't change it for anything. And that's not just blind sentimental affection – "Amiga" may well mean "girlfriend" in Spanish, but I don't speak Spanish. Just as well, probably.

This isn't an in-depth review of the Amiga; it's been around for far too long to justify that, and there's plenty of information available for anyone who's interested in its other abilities (mainly on the graphics side of things, where the machine's best reputation lies). What we're going to be looking at is the Amiga's potential as a musical instrument – both as the nerve centre of a MIDI setup and on its own with no additional hardware. In both these fields – particularly the latter – it's an exceptionally powerful machine, but the fundamental question must be whether it is preferable to an Atari ST, which, in addition to having infinitely more software available for it, also costs some £100 less.

I don't think anyone would seriously recommend another machine if all you wanted to do was control MIDI instruments. On the other hand, the ST has several limitations in other areas, and in terms of hardware capability and overall potential the Amiga beats it hands down.

ENTERAMIGA

THE AMIGA CAME out at about the same time as the ST – back in 1985 – but from the start it was seen as being a graphics machine; its considerable musical potential was virtually ignored while the ST cleaned up the market. The fact that the Amiga initially cost £1400 didn't help much – it was lumped together with all the other brilliant but disastrously overpriced machines of this world. It seemed to be destined to become yet another glittering casualty of the micro wars – too expensive for the hobbyists and not enough software backup for the professionals.

But in 1987 Commodore cleaned up its act and started marketing the machine properly. The original Amiga 1000 was discontinued and replaced with the A500 for the home user and the A2000 for the professional – there are only a few basic differences between the two machines; the A2000 is more expandable and comes with one megabyte of memory as standard, compared with the A500's 512K – although both machines are expandable to eight megabytes. The A500 was also considerably cheaper at £499 (it has since fallen to £399, thanks to the machine's success). At one point last year, it was actually the same price as the ST, which suffered an unfortunately-timed price increase.

So, why should the Amiga be worthy of any musician's attention, particularly since the ST seems to have the budget MIDI market sewn up? Well, the short answer is that the hardware is much more advanced. As we've already established, the Amiga's reputation lies with its graphics, but we're more concerned here with its sonic potential – what it can do without resorting to MIDI. After all, there are plenty of muscians out there studying reviews of MIDI equipment with intent to spend money, yet they can only afford one basic computer.

Virtually all computers these days are capable of producing some sort of sound, but most of them use an embarrassingly primitive system dating from Clive Sinclair's ZX81 days. I mention them because the ST, despite its apparent aural superiority, actually uses the same sound-generation chip as the humble Sinclair Spectrum and, in all honesty, doesn't sound that much better. This is because the ST is only capable of generating one basic waveform – a square wave – which creates obvious limitations. Admittedly, an IBM PC usually sounds even worse, but that's not saying much, and nobody in their right mind would buy a PC for the purpose of making music without the assistance of MIDI equipment.

The Amiga can produce four channels of sound without any extra hardware. The ST doesn't seem that far behind with three, but there the similarity ends. Whereas any advanced sound manipulation on the ST has to be handled in software – with a corresponding decrease in processing speed – the Amiga hardware allows the building-up of complex waveforms by means of sampling technology built into one of its custom chips. There are three of these, designed to handle the boring repetitive tasks concerning graphics and sound, which leaves the 68000 processor free to handle the more complex demands of the software – which is what makes the Amiga so fast. In comparison with, say, an Akai S1000, its sampling facilities are fairly primitive, as it's only an 8-bit system (the original Fairlight was "only 8-bit"), but it's versatile enough to reproduce most sounds – and they don't have to sound as if they came out of a computer. It also has a range of nine octaves, the audio output is in stereo, and the twin phono outputs kindly provided by Commodore are compatible with any reasonable amplifier setup. In addition, a large number of very cheap samplers are available to be used with Amiga – prices tend to be at around the £70-100 mark, allowing you to get into sampling without having to sell any of your internal organs. In addition, one of the best design features of the Amiga operating system is the provision for a standard format for storing graphics and sound on disk. If the software respects this – and most packages do – music and sounds can be ported from one package to another without going through the kind of insanely ➤

"ANYONE WHO'S CAUGHT A GLIMPSE OF *THE CHART SHOW* OR *THE LATE NETWORK 7* WILL HAVE WITNESSED AMIGA GRAPHICS IN ACTION" complicated conversion process that file transferring usually involves. Oh yes, and for people who can't resist pointless gimmicks to show off their computers, the Amiga also has a built-in speech synthesiser complete with text-to-speech conversion software and a choice of voices – male, female, robot and "natural" (?) – though as all the voices tend to sound much the same (like "computer" voices from old sci-fi films), the novelty fades after a while. It's great for impressing people with, though, and I daresay more than a few Amigas have been sold on the strength of the demonstration program.

"WITH A VIDEO RECORDER, SUITABLE GRAPHICS AND ANIMATION SOFTWARE, AND A CAMCORDER, YOU CAN CREATE VIDEOS FOR YOUR MUSIC."

SOFT WARS

WITH THE ADDITION of a MIDI interface (there are several on the market; I use Datel's, which for £34 gives me a MIDI In, Thru and three MIDI Outs, thus neatly sidestepping the Atari's problem with the non-standard wiring of its MIDI Out), the Amiga is potentially the most powerful package you can get for under half-a-grand. Unfortunately, the problem that has plagued innovative machines since the micro was invented now begins to surface – will anyone write any software for the beast? Well, the Amiga does have one important advantage over many of its competitors – it uses the same 68000 microprocessor as the ST, which means that most software packages can be ported to the Amiga with very little difficulty – although it's generally fairly easy to spot an ST conversion, as they tend to ignore the extra benefits of the Amiga's hardware. Sadly, only a few companies seem to be taking advantage of this, with Dr T's the most prominent – you can get virtually everything they produce in an Amiga version, including the MRS, KCS and KCS Level II sequencers, the three versions of Copyist, and a vast range of patch editor/librarians. Most of these are identical to their ST counterparts in price as well as features, though the Amiga version of KCS can also use the machine's internal sampling to provide four extra voices if your MIDI equipment becomes too stretched. It's just as well KCS is such a powerful sequencer, because for a long time it was the only serious sequencing package available. Happily, this is about to change as more "quality" software begins to appear – Steinberg's Pro24, Passport Designs' Master Tracks Pro and the very promising Music-X from Microillusions (reviewed last month), a 250-track sequencer with built-in generic editor/librarian and SMPTE compatibility. All of these packages are available now, with more ST conversions on the way.

For the less well-heeled, there are a number of excellent software packages at the cheaper end of the market that don't even require any MIDI equipment to produce impressive sounds. The best of these is Electronic Arts' Deluxe Music Construction Set (not to be confused with their Music Construction Set for the ST – the Deluxe version is so much more advanced that the two programs aren't really comparable), which for £50 gives you a notation-based sequencer package that can play sounds either through the Amiga's own hardware – it comes with its own set of sampled instruments – or via MIDI. The notation aspects of the system certainly aren't up to the standards of, say, Dr T's Copyist, but they're not to be sniffed at either – the program can handle triplets, slurs, tenor and alto clefs, lyrics, guitar boxes, and cope with most scores. Up to eight staves are possible, and each stave can have two separate melody lines. Scores can be printed out on any printer supported by the Amiga's standard printer drivers (most printers) – again, the results can't seriously compete with a professional notation package, but the standard is well up to most of the budget notation programs reviewed in MT over the last few years. Notes can be entered either with the mouse, placing them at exactly the right point on the stave, or via MIDI, though not in real time, unfortunately – which means that you really have to be able to read music in order to get the most out of the program.

At roughly the same price is Aegis' Sonix, which has a similar function, though it's less powerful as a score editor. Its strong points are that it uses the Amiga standard SMUS format for storing files, which means they can be ported over to a more sophisticated sequencer at a later date, and that it incorporates a program that does a pretty good job of imitating an analogue synthesiser, thus giving you more control over the actual sound than DMCS. If you have both packages, you can create the music on DMCS and the sound on Sonix, to provide impressive-sounding music without needing anything other than a basic Amiga and an amplifier.

GRAPHICALLY YOURS

WHAT ABOUT THE Amiga's strongest selling-point – its graphics? And, more to the point, what has being able to perform high-speed three-dimensional animation of startling detail got to do with making music? Well, anyone who's caught a glimpse of *The Chart Show or the late Network 7* will have witnessed Amiga graphics in action – those little multicoloured captions that come up over the videos. And you don't need a fully-equipped TV studio in order to use them – a simple £100 genlock unit is all that you need to overlay stunning graphics on your own music videos. The graphics really are stunning: 4096 colours, 640 by 312 resolution and the ability to "overscan" pictures, so they can stretch right out to the edge of the TV screen – all other micros produce their graphics within carefully-defined boundaries. With a normal domestic video recorder, an Amiga, genlock and suitable graphics and animation software, and a camcorder of the kind that you can rent for a weekend from most high-street rental chains, you have more than enough to create videos of your music that, while they might not be snapped up by MTV immediately, will be guaranteed to impress anyone who's ever had to sit through endless Super 8 home movies as a child. My own musical version of *Who Framed Roger Rabbit?* is still some way off, but I've got the basic tools.

The Amiga is now well past the stage of being an expensive toy for computer buffs, and more than merits serious attention as the centre of a music setup. For the budding MIDI musician whose ambitions are perhaps greater than his budget will allow, a basic Amiga and something along the lines of Deluxe Music Construction Set will create a genuine music workstation that will still leave change from £500. This basic MIDI setup can be improved as and when funds become available. In the meantime, who knows what software may be developed or how much more "affordable" the hardware will become?

If this was a proper review and I was given to using clichés, I'd say I was so impressed with the Amiga that I went out and bought one, but as I've already had mine for the past two years and been delighted with it in every way, it would be a little bit pointless. The only serious drawbacks lie in the availability of software, and this has improved dramatically over the past six months – I bought KCS when there were literally no other professional sequencing programs available, but now I'm spoiled for choice. Particularly significant is the long-awaited arrival of Music-X, which promises to be the first genuine Amiga sequencer – created and developed on the Amiga – and a program that (for once) really pushes the machine to the limits. This should be well worth waiting for. ■

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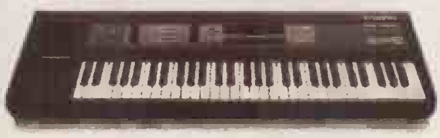

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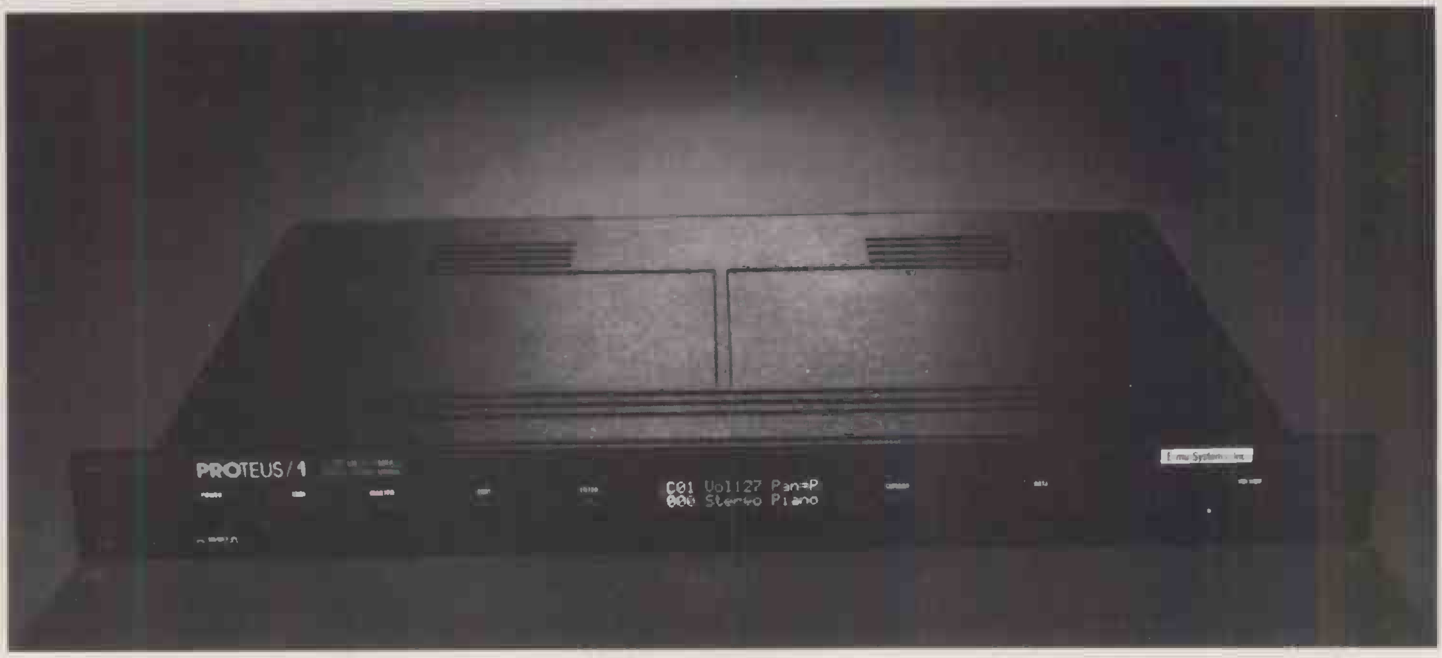

Everywhere it's been seen, Proteus has been in demand – so much so that it's hard to get hold of a review model. Just how good is E-mu's budget sample-reading baby? Review by Vic Lennard.

THE USES OF a sampler are far too numerous to be listed, but suffice it to say that no musical environment is complete without one these days. However, the problems in trying to build a good library of sounds are manyfold and most of us rely on manufacturers or third-party programmers to do much of the dirty work for us.

E-mu Systems are renowned for their Emax and "Emulator" series of samplers – the Emulator III being their current flagship. Anyone who has heard one of these machines cannot fail to have been impressed by its performance. Sadly, its price tag has kept it the instrument of the professional. Imagine taking the best sounds from this and putting them into a £900 box – this is precisely what good ole E-mu have done to bring us the Proteus.

DESCRIPTION

THEY SAY THAT appearances can be deceptive and in this case it is certainly true, because Proteus comes in a 1U-high 19" rack-mountable case which appears to be either made of plastic or to have a layer of plastic around it. It definitely looks a bit cheap, if modernistic. The front panel has push buttons for Master menu, Edit menu and Data Entry along with a further two for cursor movement and data entry. Lights for each of the buttons, along with one indicating the presence of MIDI messages, and a rotary volume control complete this face of the unit. The rear panel has three sets of stereo audio outputs along with the usual MIDI In, Out and Thru complement of sockets.

The basis of Proteus is as follows: four Megabytes of internal ROM stores 125 Tones – some of which have been sampled in stereo – and each Tone has the necessary samples to provide a complete keyboard layer. Two Tones and any editing they have received reside in a Preset, of which there are 192: 64 being programmable and the remaining 128 being set in the factory. Up to four presets can be linked to play at the same time, and the unit boasts an impressive 32-note polyphony. An extra four Megabyte ROM is to be made available.

PRESET MAKE UP

THE ORIGINAL SAMPLES in Proteus cannot be edited, but various parameters affecting the playback can. As mentioned above, each Preset can have two associated Tones assigned to layers named Primary and Secondary – although either of these can be given a "null" Tone if required. Many of the parameters are independent for each layer: the range of notes along the keyboard; volume, which acts as a balance between the two tones; pan across the selected pair of audio outputs for the Preset with 15 selectable positions; coarse/fine tuning; chorus, which duplicates the tone and then slightly detunes it, consequently halving the polyphony, and determining whether or not Solo mode is required to synthesise the feel of a monophonic instrument.

Other parameters tend to reflect the situation for which the Preset is catering. For instance, it is possible that you'd want a piano attack along with a string section decay. The attack portion of the strings has to be lost, for which the Sound Start edit is used. This dictates where the playback of the strings Tone commences. Then the string part has to be delayed. This is accomplished by using the Delay option which will allow a delay of up to 13 seconds to be introduced. Each of the Tones will have its own envelope which will have been set at the time they were sampled, but here we need to make the piano tone decay more quickly. In order to facilitate this, each layer can have an Alternative envelope imposed upon it. This gives control over attack, hold and decay times, sustain level and release time (AHDSR).

It is also possible that one Tone is to be crossfaded into another – either depending on the key velocity or cleanly switched. Again there are editing parameters for this which include the direction, balance and amount of crossfade and a velocity/note switch point.

There is also a third category of edit, which affects the Preset as a whole. The degree of channel/polyphonic aftertouch and pitchbend range can be set per Preset, even if presets are linked together. This means that you can use aftertouch on selected Tones amongst those being played at any time. Similarly a velocity curve can be selected (from four that are available) or a "global" setting can be used (more of which later). Finally, the intonation of the centre note can be set, for this a selection of five different keyboard tunings are on offer. Proteus also has two Low Frequency Oscillators (LFOs) each of which have a selection of five waveforms along with controls for rate, delay and variation.

E-mu Systems have attempted to make Proteus as flexible as possible and so have implemented a facility for allowing you to use the key number or velocity of a note to vary the characteristics of the LFOs and Tones. For instance, you could select the velocity of the note played to change the pitch of the secondary Tone up to a maximum amount – which you can set – so the harder you hit the keys, the greater the change in pitch. Or you could make the attack time dependent on the key number. In this way you can compensate for the slower playback of a sample. In all, up to six of the 33 possible programming parameters can be affected simultaneously in this way.

Some of Proteus' parameters can be set globally under the Master menu so that they hold for whichever Preset is chosen. Some of these are as would be expected – master tune, transpose, global pitchbend and velocity curve – while others can be used to override selections within Presets. These include the assignment of audio outputs and the ability to set up a user key tuning table by selecting the increments from one note to another in steps of 1/64th of a Tone. Finally there is a viewing angle adjuster so that you can read the screen no matter what height Proteus is perched at in your rack. Someone cares.

MIDI

PROTEUS GLOBAL MIDI settings deal with the mundane aspects of the spec – like MIDI channels to be ignored, individual MIDI channel volumes and pans and the setting up of a patch change table so that MIDI program changes do not necessarily call up the Preset of the same number. This also allows you to assign four continuous MIDI controllers to Proteus controllers A, B, C and D, as well as three MIDI footswitches to Proteus switches 1, 2 and 3. So, for instance, you could assign MIDI volume (controller #7) to Proteus controller A and MIDI soft pedal (controller #67) to Proteus switch 1.

Within the Edit menu for each of the unit's Presets you can choose what each of these controllers will do. Proteus' switches can switch sustain or alternative envelope in and out as well as cross-switching between the primary and secondary Tones. The controllers open up an aspect of MIDI which few, if any, instruments ordinarily allow – let alone an instrument as modest as a preset sample reader. Using the Realtime Modulation Control function, the four selected controllers can be mapped to affect various of the parameters – such as the amount and frequency of the LFOs and pitch, level or envelope of either the primary or secondary Tones – in much the same manner as the key value and velocity are used. This form of control is called "MIDI addressing" and is immensely powerful as it allows you to use MIDI facilities which you would not usually have a good use for – such as soft pedal and aftertouch. Along with these controllers you can use the LFOs or another envelope which exists especially for this purpose, the "auxiliary envelope", and has its own AHDSR properties. Up to eight functions can be real-time MIDI controlled simultaneously, and the amount by which the incoming value will be offset is controllable for each of them.

So each of Proteus' parameters can be controlled by MIDI and/or key note/velocity. This provides a powerful system in which the only limitation should be your imagination (to use an old but appropriate cliché). That is as long as the quality of Proteus' samples is good...

HEARING IS BELIEVING

BEARING IN MIND that Proteus' sounds are 16-bit resolution sampled at 39kHz from the Emulator III, they certainly should sound the business. Running through a few of the Presets, the strings are about as good as anything existing anywhere, including those on the Fairlight III. 'Hall Strings' and 'Xprsive String' are stunning. They are rich and clear, and have plenty of bottom. So many string samples end up sounding like a mess of instruments without any real definition, but not so these.

Where brass sounds are concerned, 'F. Horn Section' is a gem which would fool most of the people most of the time in the mix. And in 'Tiki Threat', I'll swear you can clearly hear the beater hitting the steel drum. The harmonic content is impressive and emphasised because the output section of Proteus is so quiet. If E-mu haven't used a noise gate of some description, then they are certainly to be applauded. 'Phantazia' and 'NoiseFree LA!' are very D50-ish and without extraneous noise.

Listening to some of these samples brings to light the lack of bass we put up with when using most of the ➤

"Proteus' controllers open up an aspect of MIDI which few instruments allow – let alone an instrument as modest as a preset sample reader."

"I didn't have time to experiment with overlaying Tones thoroughly, but I'd say there are some great overlays just waiting to be discovered."

current crop of 12-bit samplers. 'Lo Oct Bones' delivers a great bottom-end punch, and 'Jet Boom' pans across the stereo image in just the way NS10 monitors would probably prefer they did not. 'Latin Drums' sound like real congas – largely because of this accuracy of bass reproduction. 'Blue Ice' and 'Fat Boy Bass' (who thought of these names?) are just two more examples of this.

Many samplers fall down on the quality of their piano sounds, but 'Winston Grand' gives a good (though maybe not exceptional) account of Proteus. The movement from one keygroup to the next is not unduly apparent, and the tonal quality is consistent without the sustain falling away too quickly. This is achieved by using two piano layers, one soft and the other loud, and velocity crossfading between them.

There have to be compromises to fit this number of sounds into 4Meg of memory. This feat has been achieved by using short loops wherever possible. The rub is that this is most noticeable on solo instruments where you hear the attack clearly but then lose the quality as soon as the sustain loop is reached. Here the sound becomes characterless comared to the non-looped portion of the sample. 'Solo Trumpet', 'Solo Trombone' and 'Alto Sax' are three such examples of this and, while sections can be bolstered by overlays and the linking of Presets, this is difficult with a solo instrument.

Another area in which savings have been made is with the number of samples used in the setting up of a Tone. 'Choir' only has three samples spread across the keyboard, and the bottom end is rather muffled as a result. That said, it's not nearly as bad as it would be if you repeated such a setting on most normal samplers, and the Tone remains very usable. This saving will also be obvious on any Preset which has a precise envelope such as 'Section Falls' which sounds like fall-away trumpets. The length of the fall varies heavily with the key which is played, and makes chords a little less than convincing, even though the actual sound is accurate. This can also lead to audible steps from one keygroup to the next. Listen to the jump from the notes D3 to D#3 on 'String Orch'.

With a sampling frequency of 39kHz, the bandwidth will be around 18kHz, which should be beyond the monitoring systems of most studios. This doesn't help explain why some instruments sound muted, especially the drums. In fact, this is one area of sounds which is poorly covered. There's no open hi-hat or decent crash cymbal (too memory greedy) and, with the odd exception, there's a rather uninspiring selection of bass and snare drums.

There is, however, a fair selection of interesting sounds which show what can be achieved with Proteus. 'Radical Drums' has the original sound on the left-hand side of the stereo image followed by the sound in reverse on the right-hand side. 'Space Texture' pans from left to right and then warbles away on release.

The accuracy of looping is impeccable throughout Proteus' samples. There's not a glitch to be heard.

ADDITIVE SYNTHESIS

OF THE 125 Tones (complete layers) in memory from which the Presets can be built, 22 of them are made up from odd and even harmonics across six octaves. This takes us into the realms of additive synthesis. Sound is made up of layers of harmonics and by building them in the correct manner, most timbres can be achieved. This is a pretty tall order and I'm certainly not expounding the idea that Proteus can be used to create anything you want, but take the example of the solo trumpet with a weak sustain loop: by using the correct harmonic as the secondary Tone, delayed so that it coincides with the sustain part, it should be possible to enrich the harmonic content of the trumpet without making it sound too synthesised. I didn't have enough time to experiment with this thoroughly, but as there are 16 brass Tones, I'd say there are some great overlays just waiting to be discovered. Once you start to overlay harmonics and use chorus and intelligent delays, the sky's the limit.

Apart from these, there are 21 single-shot samples which can be used for the attack portions and 13 looped samples (such as plucked and malletted sounds, synth strings and stray voices) which can be overlayed with natural sounds to create timbres which sound just a little bit unusual.

The fact that Proteus has three sets of stereo audio outputs (Main, Sub 1 and Sub 2) is rather useful, as linked Presets can be sent to separate effects units. However, there's more to come: Sub 1 and 2 outputs utilise stereo sockets wired so that the signal can be sent to an external effect unit and returned to the unit. The effected signals are then summed for left and right and sent from the main outs. Effectively you have two sets of effect send/returns. If you route all Proteus's sounds to the main outs only, you could use the return side of the Sub outputs to introduce a couple of extra synths which could be merged with the internal preset from the main outputs.

VERDICT

MANY OF YOU may be left thinking that, because Proteus is a preset sample reader, everyone will end up using the same sounds – the basic Tones are what you get, full stop. But the degree by which changing parameters affects the sounds is immense and it is difficult to think of many instruments to which an approximation could not be made. The inclusion of harmonics as separate Tones is a master stroke, and goes a long way towards negating the side effects of short loops. Add to this one excellent manual and probably the best MIDI spec seen on any machine to date, and Proteus is guaranteed to be a winner – if only enough of them can be brought into the country. ■

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THE RIGHT TIME

A band such as Can could probably only have been formed in the '60s, but they may be a welcome influence in a world now governed by the politics of dancing. Interview by Simon Trask.

1968: A TIME OF EXCITEMENT, OF HOPE, OF revolution. One month after the Paris uprising of May '68, a small group of musicians came together in Cologne, West Germany with the intention of making a spontaneous music without leaders, a sort of instantaneous collective composition. They came from diverse musical backgrounds, and were by no means a young band – three of the musicians were 30 years old, with a wealth of musical experience behind them. Keyboard player Irmin Schmidt was an accomplished pianist and orchestral conductor who had conducted orchestras including the Vienna Symphony Orchestra, given chamber music concerts and piano recitals of contemporary music, and studied ethnic music at Cologne University and contemporary composition at Cologne and Darmstadt (with the likes of Karlheinz Stockhausen, Pierre Boulez, John Cage and Luciano Berio). Bass player and sound technician Holger Czukay had also studied contemporary composition with Stockhausen at Darmstadt in the early '60s, discovering rock music in 1966 when he met guitarist Michael Karoli, in turn opening Karoli's eyes to contemporary music. Karoli, who was ten years the junior of the other musicians, started out playing banjo in a dixieland jazz band at school before graduating to the electric guitar, developed musical tastes ranging from jazz and blues to Tamla Motown and ethnic music, and played anything from *avant-garde* jazz to rock 'n' roll. Drummer Jaki Liebezeit, meanwhile, had spent the first half of the '60s playing jazz in Barcelona with the likes of trumpeter Chet Baker and pianist Tete Montoliu before joining the Manfred Schoof Quintet to play free jazz from 1966-'68. But it was a common desire to develop music which merged free jazz, rock, contemporary music and ethnic music within a collective improvisational context which brought the four musicians together in 1968.

They played their first concert at a castle called Schloss Norvenich in the suburbs of Cologne. The music was an improvisational and eclectic mix of rock, "serious" music, ethnic music and sound collages, with tapes of the Paris revolution and choral music by the Renaissance composer Pierre de la Rue mixed into the lineup of guitar, keyboards, bass and drums. The owner of the castle subsequently agreed to let the group use one room as a studio, they adopted the name of Inner Space and began to rehearse. Can had their "home studio" years before the concept became common currency, and it allowed them to develop in a way which they couldn't had they been restricted by studio fees. Their freewheeling approach to making music meant that recording sessions would often last for hours on end. Rather than go into the studio with carefully worked-out ideas, their only idea was to start with no preconceptions at all, attaching more importance to atmosphere and spontaneity. Tracks on record were almost invariably edited-down versions of what the band actually played. Similarly the group approached their live gigs with no plans or preconceptions, playing spontaneously as the mood took them. Their longest ever gig, at Berlin in 1974, lasted for seven hours.

Schloss Norvenich remained their centre of operations until December 1971, when they moved their studio to an old cinema about 20 kilometres from Cologne, naming it Inner Space. Meanwhile, the group had lost American composer and flautist David Johnson, who had worked with them from the start, acquired a "singer" in the form of black American sculptor Malcolm Mooney, and changed their name to Can (the word means "life" in Turkish, while "kan" means "feeling" or "emotion" in Japanese). Mooney stayed with them for a year, to be succeeded in 1970 by a Japanese musician, Damo Suzuki, who Czukay and Liebezeit came across busking outside a café in Munich. Suzuki stayed with them until late '73, when he left to become a Jehovah's Witness. From then on Karoli handled most of the vocals, though Indonesian singer Thaiaga Raj Raja Ratnam worked with them for several months in 1976. Later that year bassist Rosko Gee joined the group (freeing Czukay to explore other instrumentation), followed in 1977 by percussionist Reebop Kwaku Baah.

Can remained together for ten years, producing a succession of albums which, while they fall into the realm of rock music, defy ready categorisation. No two Can albums are alike, yet all are recognisably Can. Their musical policy was one of no compromise, and their music still has a freedom and spontaneity about it which is at variance with all that today's commercially-centred culture stands for. Perhaps a band such as Can could only have come about in the late '60s. Twenty years later, as we stand poised on the edge of the '90s, is there a place for a band such as Can?

Although Can split up in 1978, they frequently worked together on one another's albums. Of the four core musicians, Czukay is probably best known in the UK, not only for his own albums but for his collaborations with David Sylvian. Now Can have returned with a new seven-track album *Rite Time* which sees them reunited with Malcolm Mooney. Mute Records are currently in the process of releasing all the old Can albums on CD, Phonogram Records are releasing the new album, and Czukay's latest collaboration with David Sylvian, an album called *Flux and Mutability*, is being released by Virgin Records. So it is that I'm sitting with Czukay and Karoli in a back garden somewhere in Notting Hill on a balmy summer's afternoon. The owner of the hotel where they're staying has taken exception to interviews and photographs, and we've taken refuge at a nearby house owned by a friend of the band. Czukay confirms that Can's aproach to music-making is in stark contrast to today's get-rich-quick mentality:

"Today people want to be successful, they want to have a hit. If you want to do that then you have to calculate very clearly, you have to shape the product towards the formulaic way of listening. But Can was never thinking about being commercial, even though we had two hits. What we planned was that our music would survive as long as we lived, and be our life insurance. That has happened for the last 20 years, and I hope it will happen for the next 30 years. It has kept the whole group alive all the time.

"Can is a very uncompromising group. The only arguments we have are musical arguments. And also being a life insurance, you have to be totally convinced that whatever the reaction of someone is, you don't care if they like it or not. You can call that arrogant, but that attitude has always worked. It is real, the life insurance. And we were lucky, people even followed us."

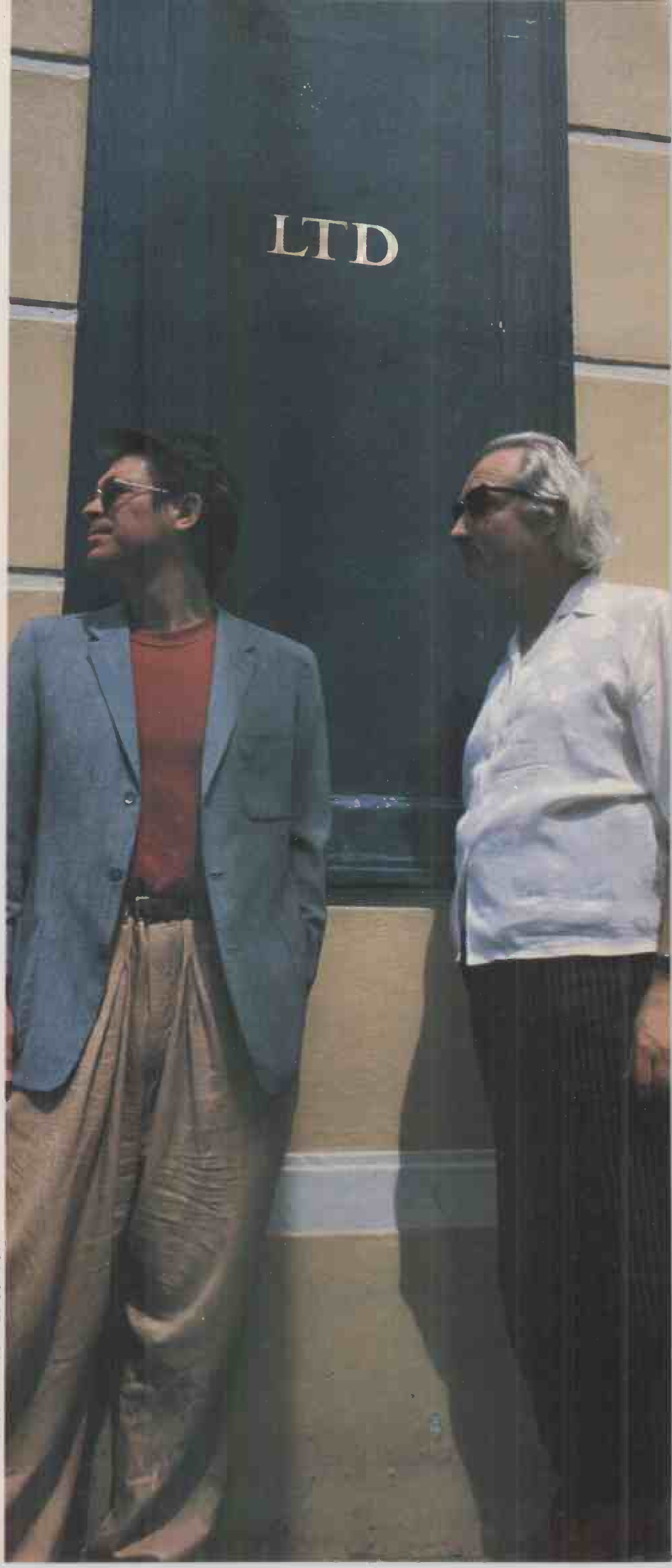
And what of the new album? Has their musical approach changed at all?

"Nothing has really changed in the way we work when we're recording. Even the fights are the same! About the same stupid things, with the same sort of aggression. These things are the fate of the band. We are always thinking that Can is a band and has to remain a band; if you lose that then I think you miss the point."

The Can studio started out with a couple of two-track tape machines, a Studer B62 and a Revox A77. An eight-track mixer (built by Czukay) was added after the first two Can albums, *Monster Movie* and *Soundtracks*. The recording process involved recording the complete band on one machine, then dubbing that performance onto the second machine while adding further parts live.

Czukay: "When you make a two-track recording you still have the choice to erase, to put holes into it! The holes are sometimes even more important than the actual sound."

"You can cut away some of the dubbed version and ➤



PHOTOGRAPHY: JAMES CUMPSTY

splice in bits of the first-generation tape", adds Karoli. "We did a lot of that. We would also make, say, three different overdubs and splice together bits of different dubs. That way of working was quite fun, actually."

Czukay: "Of course, you always lose quality on the overdubs, and this is why we were so restricted. The band has to play the first recording in such a way that the next overdub – by the whole band – has to make optimum sense. If you miss the point then you just make a bad record."

The band continued with this way of recording through four more albums. Then for the recording of *Landed* in 1975 they took delivery of an MCI 16-track tape machine.

"I found it more difficult to work with the 16-track machine", comments Czukay.

Karoli continues: "Because the atmosphere that was captured in the earlier days, once it was on tape it was there. If you have to remix afterwards, it's harder to recapture it. Especially with *Landed*, which we had to remix with somebody who we hardly knew, and who hardly knew our music. But in the end both ways have their advantages and their disadvantages."

Michael Karoli: "The more limitations you have the luckier you are."

Can experimented with a drum machine as long ago as 1971, on a track called 'Spoon' from their fourth album *Ege Bamyasi*.

"It was from a Farfisa organ", reveals Czukay. "The cheapest and first development of a drum machine, with switches for selecting preset rhythms like samba and bossa nova."

"But on 'Spoon' we turned the rhythm over", adds Karoli. "We had, I think, a samba rhythm, and we started our count on three-and-a-half, so we were playing against the rhythm."

Czukay again: "Just by changing where we started playing we changed the understanding of the rhythm. But Jaki became a big critic of drum machines. He always says that he started first with them and he has the most experience with them, and he knows how stupid they are. Not that they make him unemployed; he's a very good drummer, you can't make him unemployed."

"People play rhythms into a sequencer from an Octapad or a keyboard", says Karoli, "and they can play rhythms that a drummer couldn't play with his hands and with his feet. I think people will find out in the long run that some rhythms have to be played with the hands and the feet. The feet work differently from the hands. Jaki's bass drum rhythms are very organic."

Czukay: "Hip hop patterns are very sophisticated, but organic? I make a big question mark. The worst thing is quantising, which gets the human being out. Now people are putting feel back in with the humaniser and the groove. Then I can have a puppet on a string.

"Can was always uncopyable. Even if someone wants to make a cover version of Can music it becomes strong, different. But if you make a cover version of something that has been quantised and then

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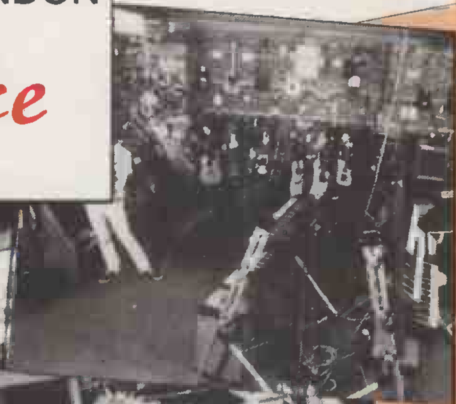

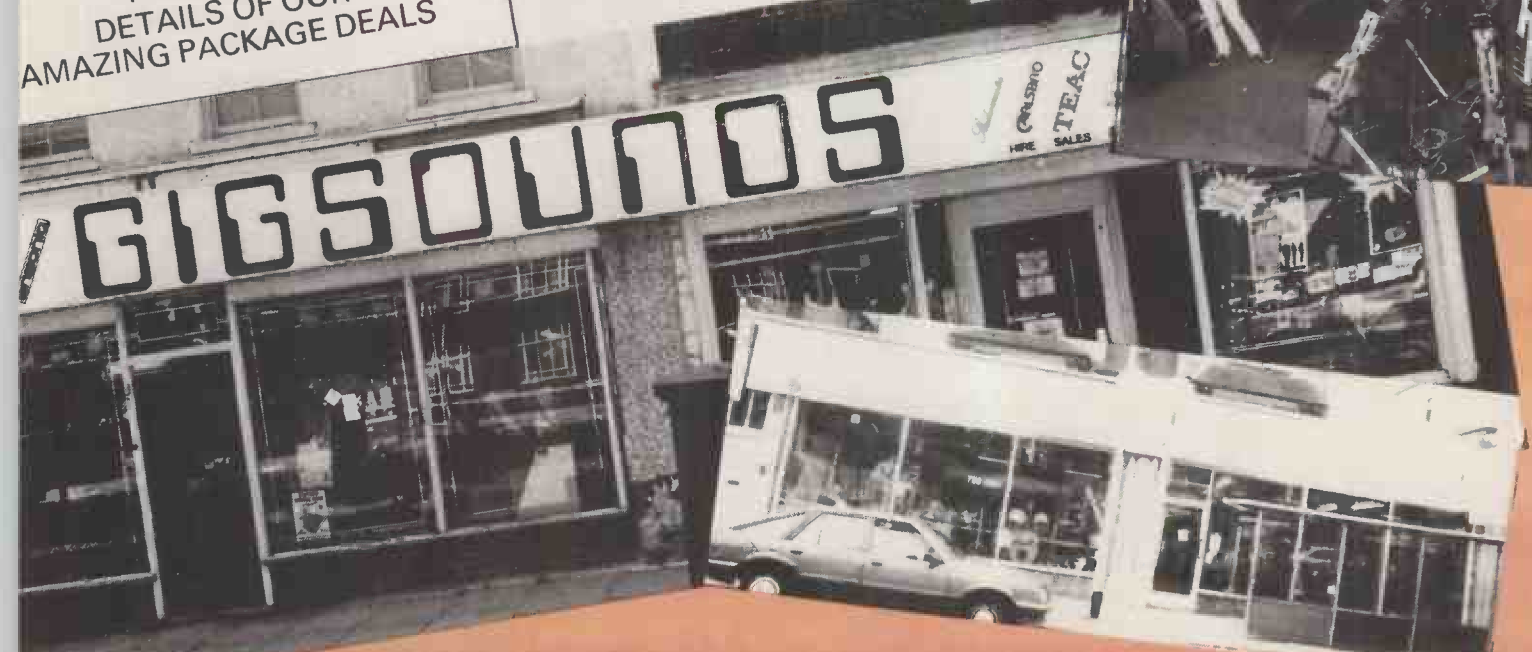

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humanised and grooved, it sounds exactly the same. It all has one face."

Karoli: "Music is made by humans – that is in the definition, I think."

What about combining human and machine feel? That can be very interesting.

Czukay: "That is still something very important."

Karoli: "You can have a rhythm machine and a good singer, like yesterday we listened to Neneh Cherry. A good singer can give soul to a rhythm machine."

Czukay: "I remember a cover version of 'You Go To My Head' by a Belgian singer, where all the accompaniment was machines and even the voice was behaving like a machine, but it had such coldness and ice beauty that it was very very good. So even with all the attacks I do against this, I will immediately recognise something that is good from it; it's just that so many things produced from that approach are not good."

Holger Czukay: "We are always thinking that Can is a band and has to remain a band."

CZUKAY'S APPROACH TO RECORDING emphasises the setting of a mood in the studio out of which the music can develop.

Czukay: "For example, when I work with David (Sylvian) it is to set up from the beginning such an atmosphere. For *Plight and Premonition* I put a match in the keyboard, and had one sound playing continuously in a corner of the studio very softly. Something else we do is have a radio playing in between stations, having just some sort of atmosphere. So the whole studio is put 'under perfume'. David is immediately, like a Can member, able to react and give out something which you don't need to work very much on, it is almost the final result. As a producer I like this very much, to help someone to feel so good that they are able to produce something they wouldn't have thought they'd be able to do. Always be positive towards someone, help them, don't tell them they are making mistakes; the negative can be edited away later. Producers are very good when they just make you feel uninhibited."

But this concept of the producer as catalyst for the creativity of others is not one which holds great sway these days. With the power of today's technology at his disposal, the producer has become creator, even dictator, and musicians as individuals are less important.

"I understand this very well", says Czukay. "These people are some sort of orchestral conductors. Karajans!"

Karoli: "That approach has always existed. It is the opposite way of working to Can. It's just like writing out a piece of music and getting musicians to play it, except that the musicians don't even have to know what you like; you can walk off with the tapes afterwards and treat them."

Although (perhaps because) the Can musicians are skilled players, music for them has never been about demonstrations of virtuosity. In fact, Karoli maintains that it's more difficult to be a virtuoso and make good music. Can's lengthy and informal recording sessions in their own studio often found each of the musicians playing instruments other than their own.

"You should be able to make music on whatever is to hand", elaborates the guitarist. "That was a thing about Can music, that any sound makes music, it's only a question of who is behind it. Very important also, to become a musician, if you play guitar you shouldn't listen only to guitar players, and with every other instrument the same. You should listen to musicians. A singer can learn an enormous lot from Miles Davis, for example; that means they're not following another singer, and so they're automatically creating something new."

So what, in the view of Czukay and Karoli, makes a good musician?

Czukay: "I ask you. Is it talent? Is it good hearing? Is it good voice? Fast fingers? Clever brain?"

Karoli: "It is that you hear music in everything around you. That makes a good musician, I think."

Czukay: "It's sort of an inner associative ability to listen to something and get something out of it."

Czukay stresses that listening is central to making good music, and the ability to listen is something which separates the men from the machines: "The listening is always done by the musicians. That's the difference between a band and another kind of constellation where the listening is one-sided. Listening is for me a female aspect, it's the most important aspect in music. It's not so much how you play, how you give out, as how you are able to receive and bring something out as an answer. If all the members of the band are in this situation of listening then you have a really good band."

Karoli: "For most non-Can musicians it would be called jamming. But jamming is not what happened with Can. It was some other thing which grew, it was more of a concept, really."

Czukay again: "A jam, like improvisation with jazz musicians, that means to play along a red line. If you jam, you play and you have all your hooks. But with Can it was play as little as possible and listen as much as possible, and get surprised and react to that, like in a football game: you have to watch the ball and know when to come in."

"What is required from an improvisor is different today", says Karoli. "When Monk and those people improvised, you could hear they were creating something new so they played very few notes. It sounds almost awkward, but it also sounds very powerful. Nowadays people who improvise on that basis play too many notes, because they have practised that style and found they can play it all four times as fast. It's not so much improvising any more, because improvising means doing something unexpected, and nowadays people know too much what they want to play. They should take instruments that they can't play, so they have to look again, they're forced to really play with few means. Instead they have too many means, too many possibilities. It was one of the ideas of the Can concept that the more limitations you have the luckier you are."

FOR A CAN CONCERT AT LONDON'S NEW Victoria Theatre in December '76, Czukay moved from his usual role of playing bass to using tapes, a ▶

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All specifications and prices subject to change without notice shortwave radio and a telephone. He was moving in an increasingly experimental direction which was to alienate him from the rest of the band and led to his departure from the group in May of the following year. As he recalls, his intention in those days was "to become a disc jockey of Can", not only integrating radio broadcasts from all over the world into the band's music but broadcasting their concerts live using a shortwave transmitter. Nowadays, it comes as no surprise to him that DJs have moved from playing music to creating it.

> Holger Czukay: "We planned that our music would survive as long as we lived."

"When I started using shortwave radio it had only one function. It was something from outside of myself that was somehow unpreconceivable. When you get some information from outside, which is what a DJ has, you can handle it in such a way that you become a creative person. That is what I knew 20 years ago, and it is what has happened 20 years later.

"Using shortwave radio is a strong mood thing, like the uniqueness of a sunset, a special atmosphere which you got once and can never get back again. You have to be grateful for that, and you have to respect it and discipline yourself in the way of devotion. Yes, you should listen and work with the radio in terms of devotion. If you have reached a point where you don't know what to do, then the radio puts you in a position to listen and to react on something, and possibly to turn down many of the decisions you have made before. The art of minimalism is always important. Most of the arguments we have when recording as Can are over what parts we should take out."

Can's emphasis on listening, their openness to the sounds around them and Czukay's use of shortwave radio have more than a hint of the tactics of chance and indeterminism first espoused by John Cage. Cage himself was the first composer to experiment with radio, in his 1951 piece *Imaginary Landscape no. 4* for 12 radio receivers.

"Stockhausen always said that Cage showed him what he had *not* to do in his life", comments Czukay. "Somehow with Can it's the same, we just interpreted Cage in our own special way."

And what influence did Czukay feel that Stockhausen had on him?

"He gave me the feeling for responsibility for each little thing that you do in the music. I met him again after Can, and he said I was the only student of his who did something really different afterwards and that he liked that. Of course, his way of inventing is incredible. Everyone else tried to imitate him all the time because he was such a strong person. He is the last classical genius, in the old sense of being a composer."

Czukay is dismissive of today's "serious" music, however: "Most of it is administrative music, just administration on paper."

Can's ears were also attuned to music from other cultures around the world. They even recorded a number of pieces which they wryly labelled Ethnological Forgery Series, and Schmidt has said that all of Can's music was an EFS.

Czukay: "We were always impressed by music which was somehow naturally grown instead of thought out."

"But we just loved it", continues Karoli, "we didn't study it and play it. Today in France, where I live, there are African music bands which consist entirely of French musicians who have studied African rhythms and play them like Africans would play them. We never did that. It was more somebody had heard something and used that element, but the others hadn't heard it and would use totally different things. Whatever sound came out would make the music that was being played. Can has always only adjusted to the sounds they heard; that was the secret, to play only with what you hear."

Czukay: "Sometimes just by chance it came up through association that the result sounded like gagaku music from Japan, say. Through these associations we came up with the Ethnological Forgery Series: don't say that it's gagaku, it's just a forgery."

Karoli: "You need a strong inner vision to make music when you are exposed to all these influences. Otherwise you get 'OK, let's make African music now', and you practise exactly what the Africans do until you can do it too. That's not interesting; it doesn't work. For a long time already we have been citizens of the world, musically, because we can hear every music of the world. Even if you have heard something once only, it has still influenced you whether you want it to or not. Once you hear a Chinese opera you have it in your musical setup, and you can't do without it any more, it's there. Now if somebody tells me I'm not German enough in my music, what am I supposed to do, play the 'Horstwesselleider'? That's musical apartheid, to say such things, it's bullshit. Really, it's racism. Why not become multi-coloured in your mind even if you're not multi-coloured in your skin?"

Currently, Karoli is working on his second solo album, which includes contributions from Czukay and Leibezeit. Meanwhile, Czukay has a tape of a live performance by himself, Karoli and Leibezeit which he intends to take around the record companies, and is planning another solo album which will make use of the more than a hundred answering-machine messages and associated replies he has accumulated.

Finally, do they feel that the ratio of good to bad music has changed in the 21 years since Can started making music?

Karoli: "Only the dimension has changed. Where you had one before, you have one hundred now. Let's hope that a certain freedom approach stays. If all music one day is dictated by the big music company which is ruling the world, then it will be time for a revolution!"

And no doubt sounding the clarion call to arms will be the musicians of Can. ■

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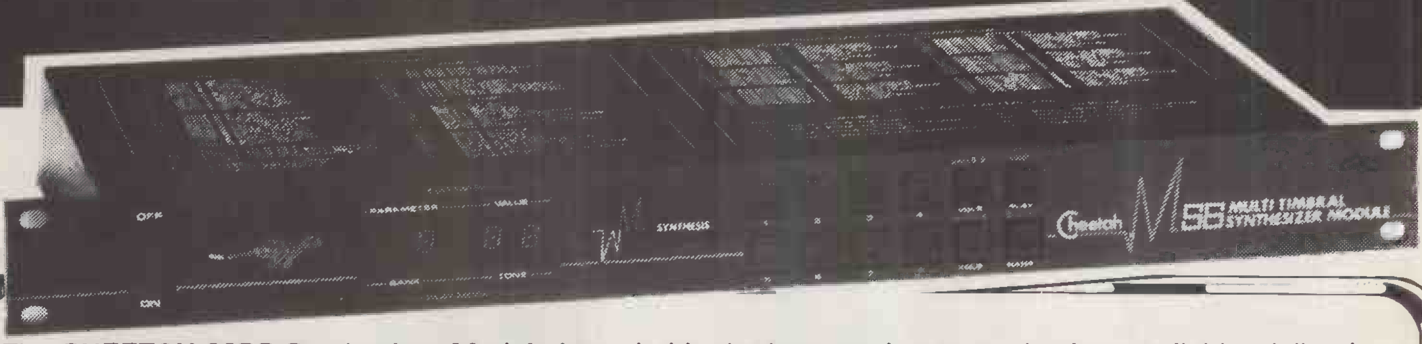

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NO. OF SOUNDS	416	64	1/64/128	32	64	120	1000
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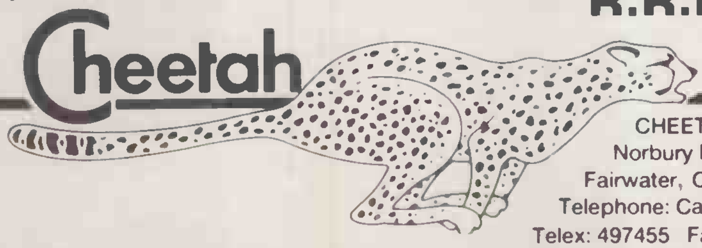

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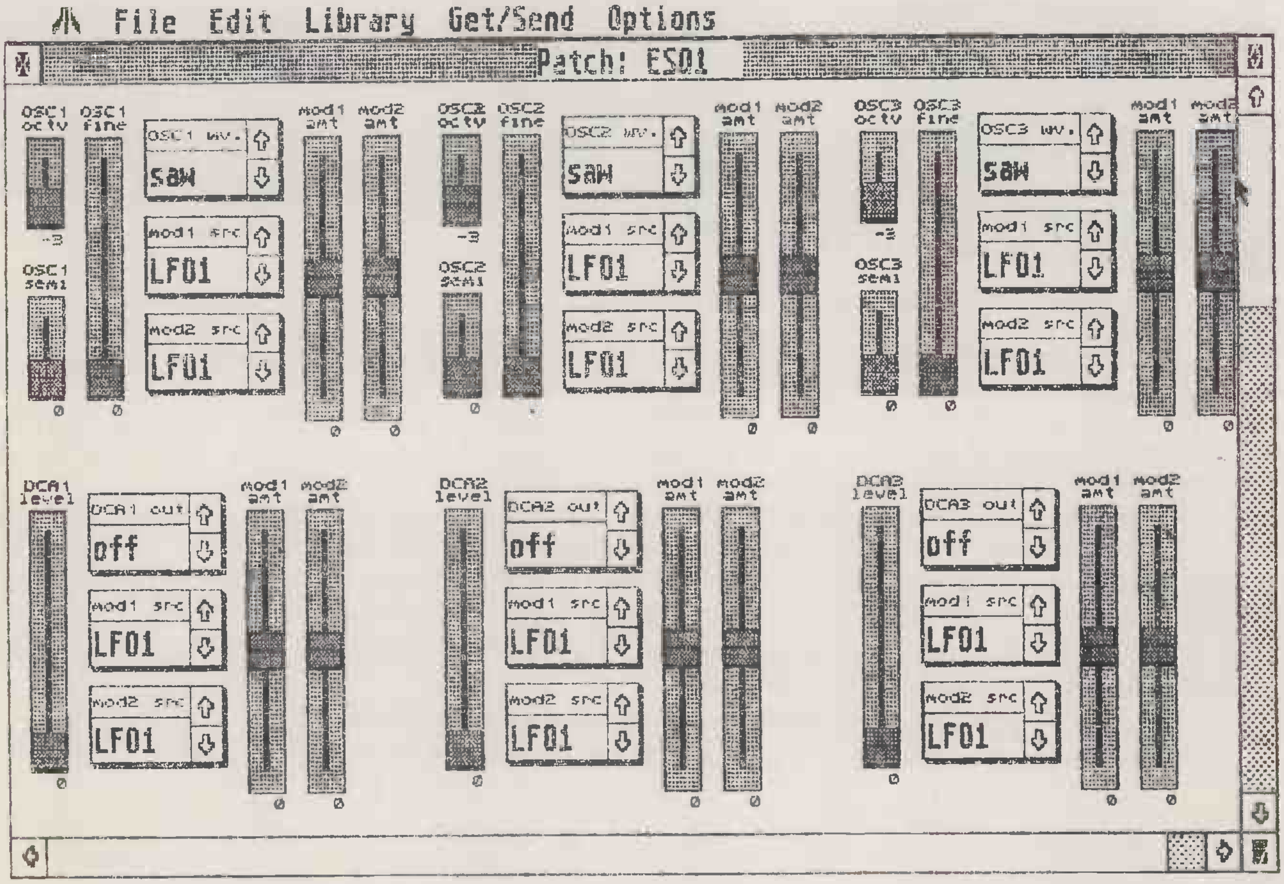
X-OR



ESQ1 Patch Editor window

It seemed like a good idea at the time – synth editing software – but how long will it be before you wish one editor would work with all your synths, samplers and processors? Review by Ian Waugh.

IT'S A PAIN, isn't it, editing voices on digital synths and organising them into sound libraries? Software editing programs help enormously, but what if you have two, three or more different synths? It's hardly an uncommon occurrence in this age of budget-priced expanders.

To continue editing in the manner to which you are accustomed, you face the prospect of having to buy separate editors for each machine – not a financially attractive thought. And then there's the problem of accessing the sounds of different synths simultaneously. You really want all your equipment to form part of a single integrated system, not dangling off the edge of it as separate entities.

Achieving this isn't easy but current software development trends tend towards the production of one program which can cope with a variety of synthesisers. Several editors can handle a range of Yamaha four-operator FM synths, C-Lab's Explorer 32 (reviewed MT, October '89) can handle all Roland's D-series synths and Hollis Research's MidiMan (reviewed MT, August '89) can handle virtually any synth (or MIDI-equipped machine) although it has some operational limitations.

New on the scene is Dr T's X-OR which the blurb modestly describes as "the editor to end all editors". Is hype dead or has Dr T's indeed produced the ultimate editor? Let's find out.

VOICE OF THE MACHINE

X-OR (REVIEW VERSION v1.0) – Xclusive ORchestrator – will run with a colour or hi-res monitor. It autoboots with a mouse accelerator program which increases the mouse's sensitivity. I like this a lot.

X-OR was written by Caged Artist Robert Melvin and, having used several Dr T's programs, I was expecting the usual numeric display and alpha-numeric list of functions, not to mention a deluge of pseudo-scientific mumbo jumbo masquerading as technical terminology (the manual was written by the same Jim Johnson who enthralled us with the Invisible Arithmetic Icons of Fingers – see review, October '88).

We begin, however, on reasonably solid ground with a description of how the program handles so many different and varied kinds of synth – it uses Profiles, individual files containing all the data necessary to communicate with a particular type of synth. The program currently supports about two dozen instruments using 32 Profiles and more will be added to the list in due course.

Next we're introduced to Machines, Instruments and Modules. A Machine refers to a single instrument such as a DX7 or Kawai K1. But X-OR doesn't deal with Machines *per se*, it deals with Instruments, which are divisions of the Machine's programmable facilities. Some Machines, such as the TX81Z, may be broken down into two or more Instruments such as the Program Change Table, the Microtuning Editor and so on. A simpler Machine such as the DX7 may have all its facilities incorporated in one Instrument.

Each Instrument, in turn, is broken down into Modules: a number of separately-addressable data areas such as the parameters used for creating a sound or the Microtune table. Again, most Instruments will only have one Module but multitimbral Instruments, er Machines, er synths, may have several Modules. For example, the Profile for the D110, which can play eight parts at once (not including the drum section), uses eight Modules.

PATCHES

AN X-OR PATCH is a single data type such as a sound (voice, program, preset or whatever), a tuning table and so on. An X-OR Performance contains the active Patches for each Module.

Patches can be organised into Banks, like the sounds in any traditional voice editor. But as a Patch is not restricted to sounds, you can create Banks of other parameters, too. You can cross-index Patches by name, date or by a number of other qualities determined by keywords.

Clear? Well almost, I hope. As it's Dr T's, I'm sure you had a feeling something like this was coming. The sad thing is, although it describes the program's *modus operandi* quite succinctly, it doesn't do so in plain English. Other than provide a nail onto which the boffin designers can hang the bones of the program, it does little to draw the user into the program. And it's right at the beginning of the manual. Oh well. . .

But there is good news. X-OR is one of the new generation of Dr T's programs to use GEM windows and drop-down menus. This is sure to attract new converts, and while old Dr T's stalwarts may be muttering under their breath, it does make the program immeasurably more immediately accessible.

SETTING UP

BEFORE YOU START using X-OR in earnest, you must create a suitable system setup and work disk (the main disk is copy-protected and is used as a key). The manual explains in detail how to go about this using a hard disk and a floppy disk system. It suggests you use a separate disk (for storing data) for each of your Machines, and although this is not essential, it's at times like this that you realise the benefits of a hard disk – or at least two floppy drives.

You create X-OR's Setup file using the Setup program. This lists all the instruments in your system and includes information such as MIDI channel number, unit number, storage path for the data and so on.

As only one synth can be connected to the ST's MIDI In and Out sockets at any one time, flicking from synth to synth normally requires repatching. If, however, you have a MIDI Switcher, X-OR can use it to access your synths automatically: you simply give it the relevant program number in the Setup file.

You can create a Bootup Reminder text file which will pop up every time you boot the program to remind you of things which need doing; perhaps enabling SysEx on a particular synth.

And so you boot the program using your newly-created Setup disk. Halfway through you are prompted to insert the key (program) disk, but the review copy would have none of it when accessed in this way, although it worked fine when it alone was used to boot the program. This points to either a devastating bug (but easily corrected, I'm sure) or a doctored review copy. Pressing deadlines made it necessary, therefore, to conduct the review using the demo Performance Setup on the program disk. Luckily I had a TX81Z and CZ1000 to hand but it was disappointing not to be able to try the MultiVerb Profile.

You should only need to use the Setup procedure once, or if you alter or add to your setup.

> **"Searching the Library makes traditional voice editors with their numerous files of individual banks of voices seem very cumbersome indeed."**

PERFORMANCES

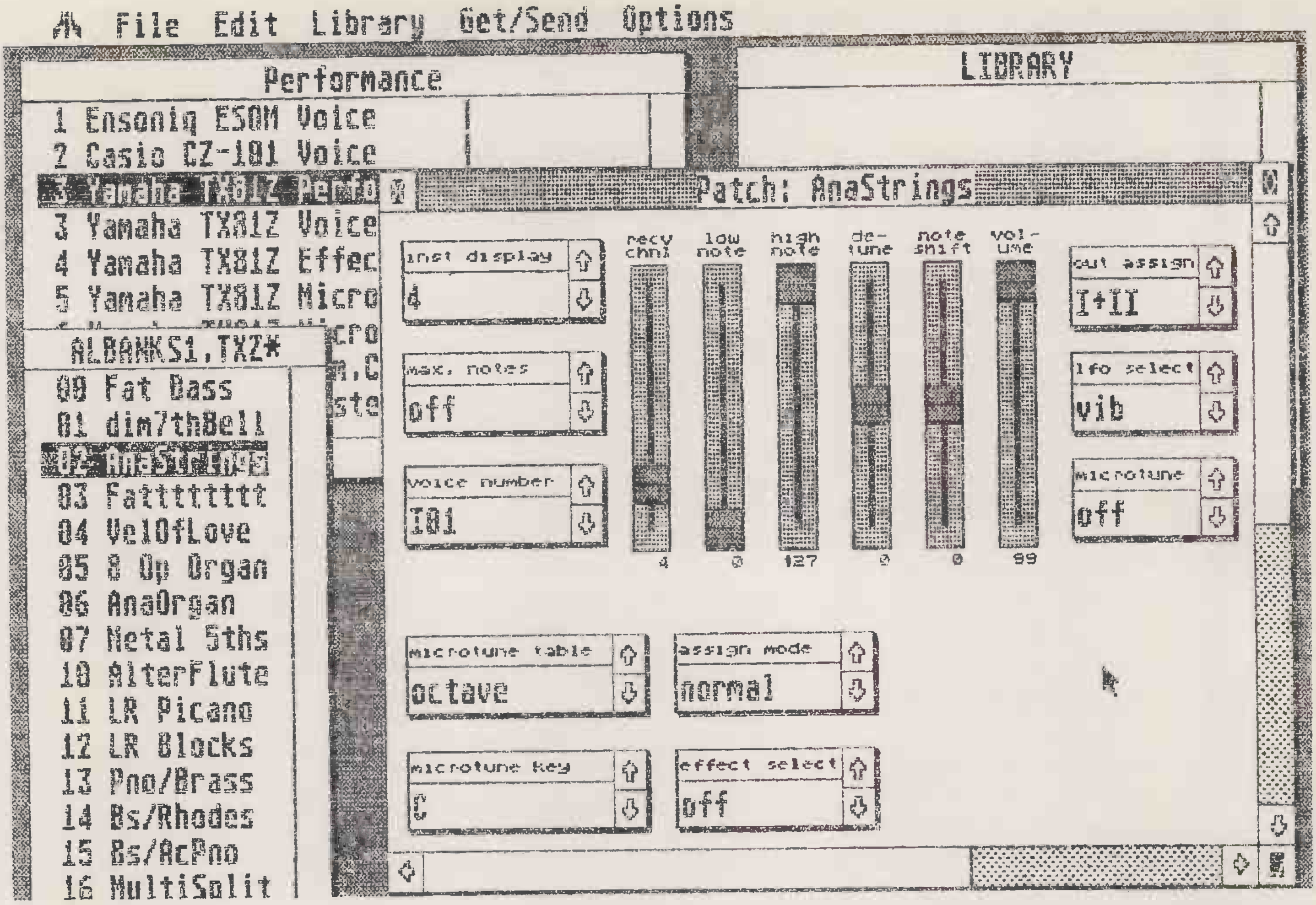
ON BOOTING, ONLY one window is open – the Performance Window – which lists the Modules you inserted in your Setup file. This window cannot be closed. Each line holds the name of a Module and the current Patch for that Module.

When you select a new Module, any open windows from the previous Module are closed and windows for the new Module appear. Reselecting the previous Module reinstates its windows, and data from closed windows is retained.

The only elements that can be changed in a Performance are the Patches. If a Bank or Library window is open, clicking on a Patch will make it part of the Performance.

If you select Get Performance, X-OR will run through the list of Modules and ask each for its current Patch (this needn't be just voice data, remember). If you have a MIDI Switcher, the process will be completely automatic, otherwise you're prompted to make the necessary connections.

You can send Performances using the Send Performance option, and Performances are also sent automatically when you load a Performance from disk. This is fine if the only editing you do is with X-OR, but if you've done any manual editing or been using another editor (DX Heaven forbid) it's quite possible to overwrite data in your synth. You can switch this facility off from the Instrument Setup menu if it's not too late. That'll teach you to read the manual before trying to use the program! ➤



Patch Editor window editing a TX81Z Performance

BANKS

A BANK IS a collection of Patches that can be sent to a single Instrument as a group. The size of a Bank depends upon the capacity of the individual instrument. For example, a bank of sounds on a TX81Z contains 32 sounds, on a CZ101 it's only 16 and on an ESQ1 it's 40.

You can get a Bank of associated Patches from the synth by clicking on Get Bank in the Get/Send menu. Oddly, the Bank functions in the TX81Z Voice and Performance Profiles run 0-37 *excluding* 18, 19, 28 and 29. The Performances should run 1-24 and the Voices should run 1-32. Dodgy profile?

Editing within a Bank and from Patch to Bank is simply a matter of clicking and dragging. Toggle options in the Edit menu allow you to Copy, Swap and Move Patches. It's very easy to rearrange the Patches in a Bank and send them to the synth.

Banks can be saved and loaded both singly and *en masse* to and from disk, and they can be sent and got to and from a synth. This enables you to send "banks" (sorry) of information to your system at the click of a mouse.

LIBRARIES

LIBRARIES ARE SIMILAR to Banks in that they contain collections of Patches for a single Instrument but differ from them in three ways: (1) they can contain a large number of Patches, limited only by disk storage space; (2) Patches within a Library can contain extra information to allow you to search for specific data and (3) each Library only works with a single type of Module within an Instrument, whereas some Banks can store data from more than one type of Module. As Libraries are created and edited, data is saved to disk and this must be accessible to the program during Library editing. When you put a Patch into a Library the date and time is added (is your ST's clock battery-backed?) and you have the option to include up to eight keywords along with a short commentary. Keywords can be added, selected from an eight-category list which includes Category (sound/instrument type), Instruments, Percussion, Qualities, Materials, Techniques, Audio/MIDI and Sound FX.

This is probably the most interesting and useful feature of the Library, and possibly of X-OR itself. By assigning keywords to Patches (again, a Patch need not necessarily be a sound) you can search for specific Patch attributes at a later date.

Searches can be set up to include alternative options. For example, you may look for a sound which is "brass" *and* "muted" *or* "slow attack". Having found a group of suitable qualities, you can turn the list into a Bank.

If you want more search categories than those supplied, you can create your own using a word processor. It has some wise words to say about going overboard on subjective comments.

As a single Library can, theoretically, hold all the sounds for a single synth in one file, it makes searching for that perfect sound very easy. It makes ➤

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➢ traditional voice editors with their numerous files of individual banks of voices seem very cumbersome indeed. It would have been useful if a Library's search facilities could be made to stretch over all the Machines in a Performance but I won't whinge.

The only problem you may discover is the access time on some operations if you are using floppies.

PATCH EDITING

X-OR'S PATCH EDITORS vary – obviously – from synth to synth and thus from Profile to Profile. In fact, the style of the editors are set within the Profile. A Patch Editor may contain sliders, envelope graphs and text boxes, depending upon the Patch it is editing.

"Editing is very graphic and you can hear what you're doing – or what you've done – by pressing the right mouse button."

A text box will show a single function such as vibrato assignment or patch number. You can scroll through the available options by clicking on up/down arrows or you can call up a complete list in a GEM-type window display by clicking on the text itself. Envelope graphs allow you to pick up and drag the movable points of the envelope although they are not drawn to scale.

Editing is very graphic and you can hear what you're doing – or what you've done – by pressing the right mouse button which will play a note.

A special function called transplanting allows you to copy sections from one Patch to another. This can be used to duplicate envelopes, partials and so on. The Blend/Mingle function is used to create a new Bank of Patches by combining different aspects of two existing Patches. Some options create new parameters from the average of the corresponding values; others produce a gradual alteration as you move through the Banks.

There is also, of course, a randomisation function which lets you apply a percentage change to selected parameters of a Patch. Blend/Mingle and Randomisation functions allow you to set a mask so only selected parameters are effected.

E-OR & MPE

THE SYSTEM PARAMETERS window will be familiar to anyone who has used other Dr T's editors and contains settings for the MIDI Switcher channel (if you have one), Merge Mode, Mouse channel, Mouse Play mode (notes or glissandos) and so on. These can be saved as defaults.

An optional program (E-OR Profile) is available (or will be soon) to allow you to create your own Profiles if you fancy getting down among the bits and bytes of MIDI and system exclusive messages. The manual admits it was not designed for the "casual user" and the price has not yet been determined.

X-OR can be used from within Dr T's MPE (Multi Program Environment) and here it really comes into its own as the two programs become fully integrated. For example, you can play a track while searching for a sound so you can hear how it sounds in context.

VERDICT

X-OR IS CERTAINLY a powerful program. The logic of it becomes clear after a little use, although I sometimes wonder if the musician in me and the programmer in Dr T's and Robert Melvin (and the manual writer in Jim Johnson in this case) are divided by a common language. Or perhaps, as music programming continues to develop, I just expect to be able to do more with a program for less effort and with less reliance on the manual.

On the negative side I must report that I managed to crash the program when trying to get an ESQ1 Bank window and a TX81Z Bank window on screen at the same time (which, of course, you can't do) although I wasn't able to repeat the crash.

I did, however, find the new Dr T's features (GEM and so on) far friendlier. The way the windows interlink and reflect selections and changes in other windows is a sort of mathematical poetry and the Library features are superb. The ability to edit *any* piece of MIDI-compatible equipment – availability of Profiles permitting – makes X-OR even more useful.

But for all its facilities, X-OR still comes down more on the side of the computer-user than the musician. But that's the way it's always been with Dr T's programs – that's not necessarily a criticism, just an observation. Many people are quite happy playing with the numbers, others prefer a more visual, intuitive, graphic approach. Just be aware that you may have to burn a few candles before things click into place.

If you're already using a Dr T's sequencer with MPE I think you'll find X-OR hard to resist. If you do a lot of patch creation and organisation across several synths you could find it very useful. If you have a lot of sounds, and dread the thought of searching through them all for that perfect sound for a particular application, it could save you a lot of effort.

The final consideration is the cost. At this price it really needs to be the last and only editor you will ever use. Whether it is or not is your decision.

X-OR points the way to patch and library organisation of the future – mass voice storage and comprehensive search facilities (features already implemented on C-Lab's Explorer 32) will soon become the norm. Even if you don't think X-OR is for you, it's well worth getting a demo, if only to see what editors of the future will be like – you may very well be swayed. ■

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competition results

THE BEST PART of entering a competition is winning it – or so I'm told. You see, the competitions we run here at Music Technology are invariably for some piece of music-related gear that you'd normally lust over in MT reviews or music shop windows before exchanging your hard-earned cash for. Exactly the sort of thing I'd love to be given by a benevolent and influential music magazine. My problem is that, as editor of the magazine, I'm not even allowed to enter...

Anyway, running regular competitions necessarily means you have a steady succession of what the media always seem to call "lucky winners" passing through. Once chosen, we like to get together with them and the generous suppliers of the prizes in question for a meal, a drink and a chat about the music business in general. These always turn out to be enjoyable affairs (if you haven't entered an MT competition recently, you really should – you're missing out on such a good time). And as if that isn't enough, we try to get these people's faces into the pages of the magazine once in a while.

So here are the latest selection of ingenious, talented or possibly just plain lucky winners of recent competitions.

PHOTOGRAPHY: ADAM JONES

Alas not Smith & Jones, but Caulfield & McNamara discussing dogs and mad Englishmen

First of all, for our *The Professionals* competition, we had a copy of Steinberg's Pro24 sequencing software to give away. All you had to do was answer three simple questions about the company and their software. For anyone left wondering if theirs were the right answers, Steinberg's first Commodore 64 sequencer was Pro16, Pro24 has 24 discrete tracks and the source of Steinberg Research's name is the man behind the software: Karl Steinberg.

One man who knows he got the questions right is Charles De Rees, who took time out from looking after his company's computers to collect his prize. Well done, Charles.

Another piece of software followed Pro24 out of the MT office door, that was Intelligent Music's M algorithmic composer. To be judged winner of the *M Power* competition all you had to do was find the phrase "Making Movies" hidden somewhere in the magazine. In spite of various peoples' convictions that the only place the phrase appeared was on the competition page (it was the April issue, after all), the words could also be found on the keys of the computer in the illustration on the article "Further Secrets of Computer Composition". Check it out. David Broad's Cambridge recording studio was quiet enough for him to track it down and claim his copy of M. Well done David, and good luck with the recording venture.

Moving on to the *Dogs In Control* competition for an Akai MX76 MIDI keyboard controller, we'd asked you to put a caption to a photograph of a hound called Wesley as he played his master's organ (the two-manual variety). Entries covered all the obvious puns – the Musical Instrument Dog Interface, Bach, bites and bytes – which made it easy to weed them out. Actually choosing a winner was quite difficult, so we enlisted the help of Akai's Dave Caulfield, who's renowned for his sense of humour, to help us out. Between us we agreed on David McNamara's caption of "Turn up the woofers, Pete, Kylie's sounding a bit ruff". David was duly summoned to the MT offices to enjoy a leisurely lunch with the men from Akai (sorry Toni) and the MT staff, and receive his prize.

Here for the rest of you, are a handful of office favourites:

"I ain't nothin' but a hound dog – Elvis Wesley."
David Hayes
Romney Marsh

"This one's called "A Whiter Shade of Pal'."
Mark Burgess
King's Norton

"I'm afraid Stock, Aitken & Waterman aren't here at the moment, let me just finish off Sinitta's new album and I'll be right with you."
Dannie Sanderson
Wednesfield

"Rottweiler savages organ – exclusive."
Alex Eardley
Aylesbury


PHOTOGRAPHY: JAMES CUMPSTY

David Broad and Editor Goodyer watch as MCM's Mike Partridge tells of his days selling encyclopaedias

"No, I do not drink Carling Black Label."
WS Cowie
Co Durham

Dogs in Control also elicited the following letter from the readership:

Dear MT,
We, the undersigned, would like to express our disgust at your recent competition featuring a dog playing the organ. We hope that you will note that we are highly respected artists who have never needed to stoop to animal exploitation to further our careers.

Yours sincerely,
Phil Collie, Thomas Dobermann, Bruce Springersteen, Spaniel Lanois, "Jason" Dogovan, The Beagles and St Bernard Manning.

It obviously takes all sorts, but a big "sorry" to all you animal lovers out there. (Just wait until you see the competition that requires you to determine the electrical conductivity of a domestic goldfish.)

We must thank all the people that continue to make MT's competitions possible – in this case Dave Crombie from Evenlode Soundworks, Mike Partridge from MCM and Dave Caulfield from Akai UK.

PHOTOGRAPHY: ADAM JONES

Evenlode's Dave Crombie promises Charles De Rees a whiter wash with Pro24

THE MUSIC REVIVAL

PHOTOGRAPHY: JAMES CUMPSTY

AS RECORDING STANDARDS RISE AND CDS BECOME CHEAPER AND MORE POPULAR, OLDER RECORDINGS ARE DECAYING. IF THEY ARE NOT TO BE LOST FOREVER, SOME METHOD OF MUSIC RESTORATION MUST BE FOUND. TEXT BY GORDON REID.

MANY OF THE finest musical performances ever heard pre-date the development of modern high-quality recording techniques. Although the reproduction quality of hi-fi systems has improved out of all recognition over the last 20 years, it has been impossible, until now, to go back to the masters of these classic recordings and improve the fidelity of the source material.

In addition, the quality and longevity of recorded media has improved dramatically in the last few years. Early recordings are consequently marred by frustrating levels of background noise due to the low quality and unavoidable deterioration of older media. This additional noise, which obscures much of the fine detail present in the original performance, affects all commercial releases of the recording, whether produced on 78 or CD.

HISTORY

FOUR YEARS AGO the British Library National Sound Archive decided to begin the transfer of their enormous collection of recordings to newer, more stable media.

Music stored on records and tapes deteriorates even if stored in ideal conditions. When a shellac record decays, the whole surface of the disk can break up and you're eventually left with nothing at all to play. Even in the early stages of decay, funguses eat into the surface causing significant surface noise and hiss. Tapes don't fare much better; the films become brittle, the oxides decay and, if badly stored, edges become damaged. And that's before you consider the action of moisture, and the flexing of the materials caused by changes in temperature and pressure. Clearly, you can only store disks or tapes for a limited time before they become useless - and for early 78s in particular, that time is fast approaching.

The advent of digital recording techniques (optical disks as well as CDs and DAT) meant that, for the first time, media were available that (in theory) were not going to deteriorate with time. The Archive therefore decided to investigate transcribing their collection onto this new media, and also to use the opportunity to "clean up" the material.

They purchased a Neve desk with sophisticated digital filtering facilities, and a "scratch reduce" facility - but this was unable to perform more than the most superficial cleaning up of material. The future lay elsewhere, so the NSA approached the signal processing laboratory at the University of Cambridge. The University convinced them that a computer-based solution was required although, in 1986, there were a number of technological problems still to be overcome.

Since all material would be processed by computer it would have to be converted to a digital format, processed, and finally played back as audio. The initial development of CEDAR (Computer Enhanced Digital Audio Restoration) was carried out using 12-bit A/D and D/A processors developed in Cambridge, but it wasn't until the advent of DAT that cheap 16-bit conversion and storage became available. The digitised material had to be loaded onto the hard disk of a computer, and an economical system was developed to take DAT (or A/D converter) output and transfer this, via a special processor, onto the hard disk of a PC.

Finally, CEDAR was going to require phenomenal computing power – beyond the capabilities of even mini- and mainframe computers. This scale of computer installation would have made CEDAR unviable – who would pay the processing charges for a system running on a £1,000,000 computer? Early, and rather limited versions of CEDAR ran on 25Mhz 80386 PCs with 80387 co-processors. This configuration took a little over ten hours to process one side of a three-minute 78. It wasn't until February 1989 that a suitable microcomputer-based processor capable of handling over 50 million calculations per second became available. This enabled CEDAR to process a track in under one hour – still slow, but fast enough.

Combining these developments, CEDAR Audio were able to open for business. Initial processing speeds of 13:1 times real-time were soon reduced to 5:1 for some operations and CEDAR is now capable of processing both mono and stereo material, with a maximum track length of two hours. A two-hour track requires 1,800,000,000,000 individual calculations to process. That's over 250 million calculations per second of material.

PROCESSING

CEDAR RESTORATION IS now performed by a subsidiary company based in Cambridge and imaginatively called Cambridge Sound Restoration. The most startling thing about their production office is the lack of heavyweight computing power. The only machines in evidence are Compaq and Dell PCs, plus a Macintosh network for company administration. The real computing power is hidden safely away inside the PCs. In addition to the computers are the banks of audio equipment – Sony DTC1000ES DAT recorders, reference quality amplifiers, and the inevitable Quad Electrostatic and Rogers monitors.

The specification of CEDAR is that it should be able to remove unwanted noise and hiss from a recording, but not interfere with the signal content in any way. Therefore it's not possible to use conventional filtering techniques, which will always act equally on signal and noise. Somehow CEDAR has to be able to differentiate between the two.

CEDAR Audio have grouped all the different manifestations of noise into four broad categories; first a recording is scanned for large disruptions such as gouges or even breakages in a record; secondly, the signal content is analysed to identify extended surface noise; next the clicks and scratches characteristic of record wear are located; and finally, the hiss (white or "coloured" noise) content of the recording is analysed. The first three of these categories are made up of individual events (fondly known as Snap, Crackle and Pop), but hiss is a continuous signal contained within the overall signal.

Consequently, CEDAR is constructed from four independent signal processing building blocks, and these are aimed at each of the specific classes of audio degradation. Within the four main processes are further sub-processes, which become progressively more specific to the elimination of a given type of degradation. This enables the CEDAR operator to apply a "sharp tool" to the degradation, rather than hitting the audio material with the proverbial sledgehammer.

THUMPS

THE LARGE THUMPS caused by deep gouges in a disc, the peeling away of fragile shellac surfaces, the seam of an early cylinder, or a break in a record, sound like large but discrete scratches. However, if they are treated by simple scratch removal techniques an annoying "pinging" sound remains. This is caused by the consequences of the thump (such as resonance in the record deck cartridge and arm) remaining after the initial event has been removed. Without the context of the thump these resonances are extremely distracting, and it may sound better to leave the recording unrestored. Consequently, both degradations must be removed simultaneously. Even with this system, a poorly performed restoration will still leave a low-frequency "shadow", and early Cambridge Sound Restoration work reflects this. Current versions of CEDAR can remove thumps in most musical material and, even in ideal listening conditions, the operation is undetectable. And since no editing takes place, the precise timing of the music or sound-track is always preserved.

SCRATCHES & NOISE

THERE HAVE BEEN many attempts in the past to remove clicks and scratches, from old recordings. Both mechanical (reading the "cleaner" side of a groove) and electronic (using delay lines and impulsive limiters) methods have been employed, and these usually succeed in removing some of the unpleasant effects of scratches.

"MUSIC STORED ON RECORDS AND TAPES EVENTUALLY DETERIORATES EVEN IF STORED IN IDEAL CONDITIONS - FOR EARLY 78S THAT TIME IS FAST APPROACHING."

Unlike thumps, scratches are discrete events in a signal waveform. It would be relatively easy to remove all clicks from material if no genuine signal ever imitated a scratch. Unfortunately, there are many transient waveforms that, when viewed on a computer screen, look similar to scratches, but are nevertheless important constituents of the music.

To separate signal from noise, CEDAR scans the whole musical passage and then constructs a model of the signal – what events are contained, and what reasonable boundary conditions can be chosen for the ranges of these events. (Examples of boundaries are maximum and minimum dynamic range, rise times and frequency responses). The actual signal can then be compared with the model and a decision made regarding unusual events. If an event is determined to be anomalous, it is then straightforward to eliminate it.

However, some scratches last for appreciable times (up to 150ms) so there must be a mechanism to remove the scratch without causing a total break in the signal or resulting in time compression.

There are a number of ways to maintain a continuous signal after a chunk has been removed. These can be grouped into three broad categories; splicing, re-synthesis, and interpolation.

Splicing, as its name suggests, involves cutting and pasting a section of signal into the gap caused by the ➤

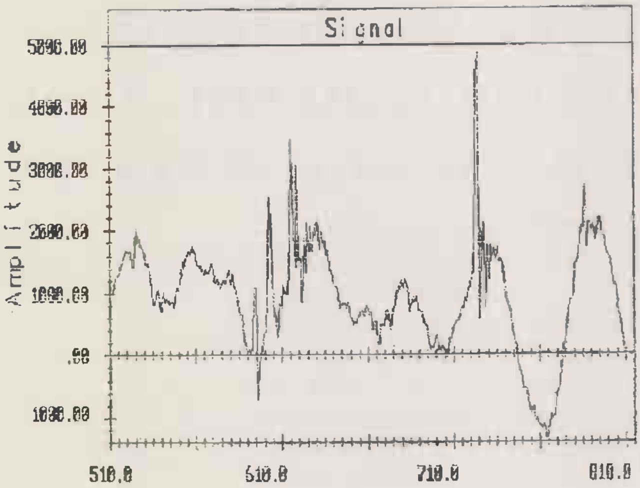
scratch removal. The inserted section can be chosen from a number of sources and, if smoothed, will give a (mostly) glitch-free signal. However, there will often be be a loss of high frequencies (due to the smoothing) and, in any case, the method is ethically unsatisfactory.

Re-synthesis is a better, but more complicated method than splicing, and requires the construction of an artificial signal ("carved" from white noise) to fill the gap. This is real Honours Degree maths stuff, so we'll move on to... Interpolation. This involves looking at either side of a gap in a signal and asking what signal "events" must have happened in the time for one to have become the other.

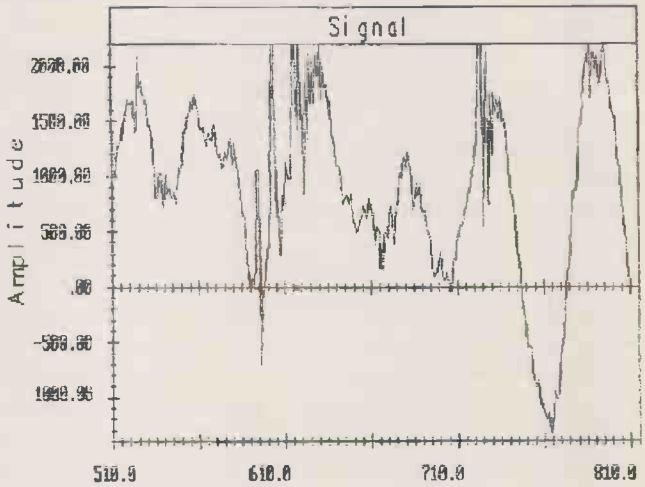
Simple in principle, interpolation is fiendishly difficult to implement because a musical signal doesn't follow simple mathematical rules. (Not with an 104-piece orchestra, natural reverb, EQ and studio enhancement it doesn't.)

CEDAR's approach to scratch removal is based on using each of these methods, or a combination of them, where most appropriate. To help their developers, they have devised a program which takes a known signal and removes a section from it digitally. The scratch removal process is run over this material, and the validity of the result can be tested against the original signal. The knowledge gained is then used to update the software. Clever stuff.

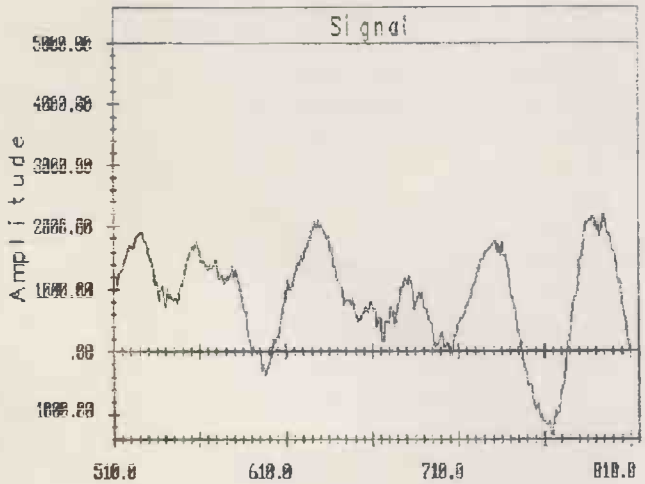
CEDAR has to deal with some very old and badly-degraded material. The maximum number of scratches yet encountered is over 2,200 in one second of music. The random nature of the clicks (in time, intensity and duration) creates a sound like bacon



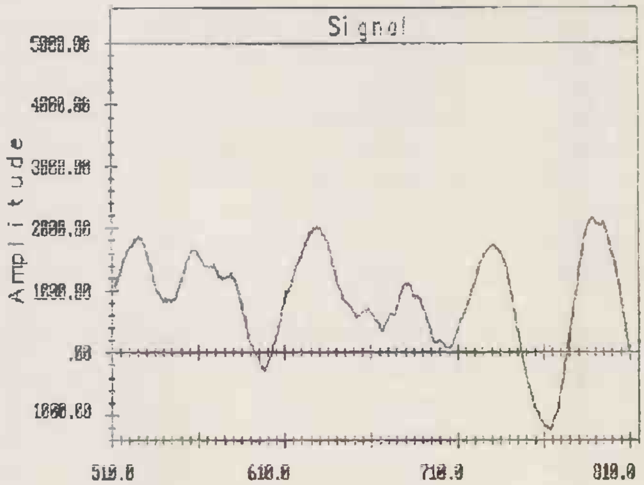
Original audio signal



Detail of original signal



De-scratched signal



De-hissed - fully-processed - signal

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frying. (The term "bacon" has become a quality control description – along with globular, glassy, frangy, and threatening.) As the number of scratches and their amplitudes increase, the bacon eventually dominates the output. In theory, there will eventually be very little signal left – other than the noise of the scratches. But even 2000 discrete clicks in a second of material can still leave up to 96% of the signal information intact, and CEDAR can handle this level of degradation very effectively.

BROADBAND NOISE

THE CHALLENGES PRESENTED by hiss removal are some of the most important areas of current signal processing research. Unlike modern recordings, which can be made with very low noise, an aged recording cannot shed its hiss through conventional techniques. It's no good applying Dolby SR or dbx if the recorded material contains its own noise. CEDAR has to attack the noise at source. After all, if a relatively noise-free digital master can be made from the CEDAR restoration, subsequent copies of the material will only suffer from the noise associated with the modern playing medium – not from hiss recorded in 1940.

Noise is caused by the presence of random amounts of random frequencies in addition to the information contained within the musical signal. If high frequencies predominate, you'll hear hiss, if low frequencies dominate, you'll hear rumble. Unfortunately for the restorer, the noise is part of the continuous audio signal and cannot be differentiated in the way that scratches and clicks can. If a hissy signal is viewed on screen, the noise components are indistinguishable from the sound content.

The major problem for any restoration system, irrespective of the processing method employed, is therefore always the same: how to remove the noise without eating into the music. Compression will always occur if the signal is down-graded in any way, and yet it's a physical property of sound that whenever a signal subtraction occurs it is impossible to remove 100% of the noise, but leave 100% of the desired sound behind. Consequently, all previous attempts at noise removal have failed to limit the signal reduction to just the unwanted noise and thus suffer from serious amplitude and frequency compression.

One of the innovations of CEDAR is a unique method for determining the amplitude of noise frequencies at any time throughout a recording. Given that CEDAR can accurately track the changing noise characteristics, it can then adapt its reductive processes accordingly. Degradation such as surface noise (which can be inaudible one moment, and intolerable the next) can be tracked and the noise reduction dynamically tailored as appropriate. Since it's impossible to avoid removing some of the original signal during the noise removal procedure, the trick is to maximise noise reduction and minimise damage to the signal. Unfortunately, the actual mechanics of the subtractive processes are covered by worldwide patents and CEDAR are giving away no information regarding them.

CEDAR do, however, admit that the final result of processing can only be judged by listening. They've found that some clients require severe noise reduction, even if this leads to 3-4dB of compression, whilst others prefer to sacrifice noise reduction to ensure that there's no modification of the signal. Consequently, much time is spent matching the restoration parameters to given requirements.

Tracks may sometimes not be fully restorable because the quality of the input material is extremely poor. On these occasions you'd be offered partial restoration, and supplied with a number of differently processed samples. It's then up to you to decide whether any of the compromises are acceptable.

APPLICATIONS

THE RANGE OF applications for a system such as CEDAR is impressive. It has now been applied to individual tracks and excerpts, complete CD mastering, international archive material, unpublished demo and practice tapes, and even samples for use in studios. But another area that's being rapidly revolutionised by digital technology is that of film and video. We're now seeing computer-generated graphics, both in new work and re-processed film – remember Fritz Lang's black & white classic *Metropolis* in pastels with Giorgio Moroder soundtrack? In a wider context, many old films are deteriorating rapidly and will be transferred to newer media to be preserved for future audiences. The optical transfer can be easily accomplished using modern video techniques, but up to now the sound has been on a "warts-n-all" basis. CEDAR can increase the value of newer prints by removing optical soundtrack problems and noise introduced by earlier copying processes. CSR presented a paper which was well received at this year's BKSTS (British Kinematic, Screen and Television Society) Show at Olympia, and a glance at the schedule in their main office shows work in progress for the National Film Archive, Thames TV and Channel 4. It can only be a short step to the first full-length, CEDAR-processed feature film.

The bureau in Cambridge is available for anyone to use – private collector, archivist, or record, TV, film or video company. Material is usually supplied on DAT but Cambridge Sound Restoration, via the National Sound Archive, currently offer one of the most accurate transcription services in the UK. The NSA can handle most forms of sound medium including 78s, cylinders, LPs, 45s, cassettes, spool tape, ➤

➤ CDs, DAT and PCM formats.

Where possible, CSR prefer to work with a dry recording, free of EQ and other enhancements. If the processed material is scheduled for re-release these treatments can be applied after restoration to much greater effect. When people submit their material, they should ensure that Cambridge Sound Restoration receive the whole recording – including all lead-in noise and disc or tape run-out. This enables CEDAR to make the best use of all the information regarding the original recording conditions.

CEDAR's engineers feel that it's also important to discuss customers' specialist requirements. They can then tailor their restorations to the customers' exact specifications and they welcome customers' input at all stages of restoration. There are as many perceptions of "the right sound" as there are listeners and just to make everything as difficult as possible, UK record companies tend to aim for relative restoration (how much better is it than it was before processing) whilst foreign customers tend to impose an absolute measure of quality ("it's a fantastic improvement and you've obviously worked very hard, but it's still too noisy so we're not going to pay you...").

THE RESULT

THE ACID TEST: how good is a CEDAR restoration? The answer has to be sometimes good, but sometimes fantastic. Cambridge Sound Restoration produce a demonstration DAT which highlights each of the restoration processes. To hear a broken, scratchy and hissy 78 transformed into a clear, bright recording is astounding. Other demonstrations on the DAT include noise removal on a damaged optical soundtrack, full restoration of a number of other 78s, and hiss removal on a selection of '40s and '50s masters. Each restoration is preceded by the original track and it's clear that there's no cheating going on. In fact, each demonstration is taken from work sent in by customers and many have been released, or are scheduled for release, on CD.

Faint modulation effects are audible on some restorations, and are more annoying on some than others. These are side effects of the hiss reduction processes and never occur on scratch or thump removal. Constant updating of the system is reducing the incidence of this all the time, and the record companies are clearly happy with the trade-off of high levels of noise for occasional "glassiness".

Although CEDAR has many further abilities based on sophisticated digital audio filtering and other manipulations, CSR make a point about not making judgements about how a recording should have sounded. The philosophy of CEDAR audio processing is to restore musical material to its original recorded quality. No attempt is made to compensate for effects such as wow and flutter which may be a consequence of the state of development of recording equipment available at the time of performance, or to add modern enhancements such as equalisation and artificial ambience. What CSR return to their clients is as accurate a re-creation of how the material actually sounded on the day it was recorded as it is currently possible to produce.

CEDAR Audio are currently developing additional processes to remove certain types of distortion as well as compensate for the frequency limitations of early gramophone recording systems. Early tests on the algorithms have been quite successful, but they say that it will be some time before these services will be available to customers.

Garbage In, Garbage Out is a common phrase in computing circles and it applies to audio restoration as much as to any other field of processing. Many recordings are transcribed poorly, record decks are poorly set up, tape machines have dirty heads, azimuth errors, poor speed stability... And these are the ones in professional studios. CEDAR certainly cannot make a bad recording good, but a good recording buried in noise can be improved to a degree that would have been unthinkable only a few years ago.

Current restoration charges are around £150 for a single track, and upwards of £1400 for a CD master. Compared to £100 per hour for the use of a mastering studio these costs are very reasonable, and within the reach of more affluent private customers, if not those of you convinced there's a No. 1 single in that old demo – if only you could hear it...

For the future, the possibility of a domestic CEDAR system is already being discussed. CEDAR Audio admit that the falling price of technology makes all things possible. However, the price of a single CEDAR processing system is currently about £13,000.

Although prices have dropped considerably over the last five years (you only have to look as far as the advances in digital reverb units) it'll be quite a time before £13,000 technology costs £130. In addition, this equipment doesn't process in real time, and CEDAR estimate that real-time hardware will cost well over £20,000 (to say nothing of the development costs). Until the computer industry can produce the technology that's required, and produce it cheaply enough to bring the price down by a factor of 100, we're not likely to see it built in on domestic equipment. Nevertheless, CEDAR Audio are optimistic that such a development is not too far away. They believe that real-time digital processing will become available in the next few years – firstly to record companies and production studios, then to the pro and semi-pro markets, and finally to the average punter. If such a system is going to be developed, CEDAR will certainly be at the forefront of the field. Unfortunately, too often has a world-beating device been a British development, only for the USA and Japan to overtake us after a few years. It's to be hoped that CEDAR Audio can stay the course. They are certainly a long way ahead of the field.■

"TO SEPARATE SIGNAL FROM NOISE, CEDAR FIRST SCANS THE WHOLE MUSICAL PASSAGE AND THEN CONSTRUCTS A MODEL OF WHAT EVENTS ARE CONTAINED WITHIN THE SIGNAL."

Since this article was written, CEDAR have achieved real-time processing with their noise reduction system. Simply play the damaged material into the system and, instantaneously, the restored sound plays through the speakers. The benefits of this are obvious, and bring the CEDAR "black box" much nearer. This innovation, amongst others, has earned Cambridge Sound Restoration a finalist's place at this year's British Computer Society Awards.

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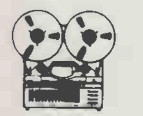

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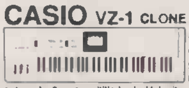

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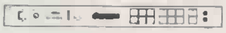

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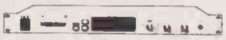

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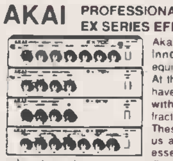

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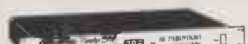

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MULTIVERB II

PHOTOGRAPHY: ADAM JONES

As the choice of multi-effects processors grows, the older units face the choice of becoming outdated or undergoing a facelift. Enter the Multiverb II – smiling. Review by Ian Waugh.

THE FIRST TWO things you'll probably notice about ART's Multiverb II are the colour and the lack of an on/off switch. The mauve (purple?) legend, characteristic of ART rackmount units, is more reminiscent of Sooty's paintbox than a piece of serious hi-tech equipment. And there's no on/off switch because the people at ART reckon most musicians switch on rack units with a power strip or direct from the mains. They've been peeking. Thoughtfully, the unit has been designed to be switched on in this way with no ill effects.

So, having plugged in – literally – let's get the technical stuff out of the way first.

The Multiverb II houses a 20-bit processor, and while the number of bits isn't the be-all and end-all of quality control, the more bits you have the better the quality should be.

There are left and right audio input sockets with an impedance of 1MOhm and left and right and audio output sockets with a source impedance of 1kOhm. The unit can be used in a variety of situations – in-line between a keyboard or guitar and an amp or hooked into the send and return sockets of a mixer.

The input level is adjusted with a front panel slider which clicks into a central position. Green, yellow and red LEDs indicate -24, -12, -6 and 0dB levels. Input sources can range from -20 to +16dbV and the slider can compensate for most signals although mics with an input sensitivity of less than -40dB will require a pre-amplifier.

There's an Output slider to control the output level and a Mix slider to control the balance between the dry and effected signal.

It's important to get the signal levels right otherwise noise and distortion may result. I found it quite easy to adjust the levels to suit a number of input sources and applications and I eventually hooked the unit into the send and return sockets of my mixer for final trials.

A little noise is perhaps inevitable when dealing with chorusing, flanging and "heavy" reverbs and although the unit does produce some noise (as evidenced by pressing the Bypass button) I was able to reduce it to quite acceptable levels by judicious use of the sliders and the mixer's controls. I'd have no hesitation in using it for recording.

INS AND OUTS

A QUICK ONCE over the Multiverb II's *modus operandi* and then we'll get down to the effects.

To let you see what it's up to the Multiverb II has not one display but two. A seven-segment LED informs you of the Operation Mode, Preset Number and Memory Location. The top line of the LCD shows the preset name and the lower line shows the effects it contains. Both displays indicate other information, too, during editing. The LCD is backlit and you can adjust the viewing angle – especially useful if the unit is a little higher than eye-level.

All the buttons on the panel – with the exception of the Preset Up and Down buttons and the Bypass button – have dual functions. The functions are colour-coded – purple for preset selection and grey for editing.

You can step through the presets using the Up and Down buttons or you can punch in the preset number using the keypad. You can move through the presets more quickly by holding down one of the selector buttons and pressing the other.

As new presets are selected they immediately effect the signal, but by using the Recall facility you can call up a preset "ready for action" and switch it in at exactly the required moment.

And here's something else. As there are 200 memory locations, you have to enter a three digit number on the keypad to select one, correct? No, not necessarily. For three-digit presets you do but to select preset 24, say, you can press 0-2-4 *or* you can just press 2-4. If you don't press a third button pretty quickly the unit assumes you wanted a two-digit preset and that's what you get. User-friendly, I call it.

The Bypass button toggles the bypass function on and off. When it's on you get a two second indication to that effect, and the letters "by" appear in the LCD next to the current preset name.

BUTTON-HOLED

THE MOST IMPORTANT button on the Multiverb II is the Keypad/Edit mode button. In Keypad mode you select the presets; to perform an edit you must select Edit mode – seems reasonable.

The basic procedure for creating multi-effects setups and editing them is pretty straightforward. Add Effect and Delete Effect buttons are used to step through and select the effects required and Recall/Enter is used to confirm your decision. Up and Down Select buttons are used to step through the effects' parameters (reverb types and so on) and the Up and Down Value buttons alter the parameters' variables (such as decay time). Title Edit is used to name the preset (up to 16 characters) and Store is used to store the settings in one of the 200 memory locations. The MIDI/Utility button gives you access to those things of a hexadecimal nature (only kidding).

You can hear the effect of the effect (if you see what I mean) while you're constructing it and it doesn't overwrite another preset until you tell it to do so. The first 100 memory locations contain factory presets and are locked so you can't overwrite them accidentally. Once overwritten, however, the factory presets can still be recalled.

THE 19 FX

OK, DOWN TO business. There are 19 categories of effect algorithm each with a varying number of parameters. Up to four effects can be selected at once, although some categories cannot be combined (the unit doesn't give you the opportunity to select mutually exclusive effects). As effects are what the Multiverb II is all about, let's look at them one by one.

Equaliser: this is a low pass filter and is always placed at the front of the processing chain. Thirteen roll-off points are available ranging from 665Hz to 15kHz.

Flanger: this can run parallel to (pre) a reverb or delay effect, or it can be placed last (post) in the chain. Its width, speed and regeneration can be varied to produce a wide range of flanges. The subtle ones work best. Crank up any of the parameters and the result becomes a bit grainy. Two of the factory presets use flanging to produce Leslie speaker effects.

Chorus: like the Flanger, this can be placed "pre" or "post" the reverb or delay effects. You have control over width and speed and the base delay time can be varied (0-66ms) which helps give the effect more depth. Chorus and Flanging are mutually exclusive.

Pitch Transposer: this is one of the Multiverb II's most interesting effects. It can shift pitch plus or minus an octave in semitone and six-cent steps. Its most obvious use is to produce vocal and instrument harmonies but it can also transform and augment sounds. It can be used particularly effectively with strings and pads and it does a good job of turning a reasonably tuneful piano into a honky tonk.

Stacking Pitch Transpose with a Mono Delay (Stereo Delay is not allowed) and adding regeneration will transpose each repeat by the transpose amount. Be subtle and use a tone – or be obvious and use an octave.

Another interesting feature is the Base Key parameter. This is used to set the transpose amount from an external MIDI keyboard. For example, setting it to 60 (MIDI note number for middle C) and playing the D above will select a two-semitone shift. E selects a four-semitone shift and so on. Pretty crazy if you're playing the same keyboard which is doing the controlling.

One of the Appendices explains a little about harmonics and their relationship to major and minor scales but I would like to have seen even more hints and suggestions here.

Harmonising functions make great demands on the processor and the only effects you can have with this ➤

"The Pitch Transposer is one of the most interesting effects – its obvious use is to produce vocal and instrument harmonies but it can also transform and augment sounds."

are EQ and mono delay. The only other thing to be aware of is a slight harmonic ring which becomes apparent with certain sounds and some settings, particularly when regeneration is engaged.

Panner: this pans a sound across the stereo image. Modulation determines the stereo depth, and speed determines the, er, speed.

Mono Digital Delay Short and Long: Short runs from 0-5ms, Long runs from 0-240ms in 5ms increments. Both are placed second in the chain. Use Short for slapback effects or for adding pre-delay to reverb settings.

"The Base Key parameter is used to set the transpose amount from an external MIDI keyboard – the results are pretty crazy if you're playing the keyboard which is doing the controlling."

Reverb 1, 2 and 3: each reverb has four types – Hall, Room, Plate and Vocal. While Reverb 1 can only access Hall 1, Reverb 2 can access Hall 1 and 2, and Reverb 3 can access Hall 1, 2 and 3 and so on.

Parameters include decay (up to 25 seconds – a real wash), high frequency damping to simulate the absorption properties of different environments, position (front or rear) and level. Reverb 3 also has a diffusion control (this fills in the sound between echoes) which helps smooth out the reverb. This is the most complex and dense effect. Use it when constructing your Ultimate Reverb preset.

Gated Reverb 1, 2 and 3: like the reverb algorithms, the higher the number the more complex the effect although the manual is honest enough to suggest that they are a little sparse when used on their own and suggests they are excellent "fillers" for use in a four-effect stack.

Parameters include type (slope, flat and reverse), decay (up to 0.4ms), diffusion and level. A useful diagram illustrates the difference between normal and gated reverb.

Tapped Digital Delay Short and Long: these are a sort of combination of gated reverb and delay. There are three types – flat, reverse and sloped – which can be in stereo or mono and you can select from one to seven taps.

You also select one of three levels of an effect similar to diffusion which is referred to as Even, Shortened and Lengthened. Basically, Even spaces the taps out at regular intervals throughout the processing. Shortened means that as the taps approach the end of the delay the taps are closer together. In Lengthened mode they are further apart. There's a diagram in the manual to explain this. It could be my perverted way of looking at things but it seems to me that Shortened and Lengthened are the wrong way around. Never mind.

Regenerated Digital Delay Short and Long: these are placed in parallel with a reverb algorithm if used (although they are not available with Reverb 3) and can be used to add a small amount of depth to the sound. Parameters are simply delay, regeneration and level. You can add a hard edge to a reverb effect by using a long delay and a smattering of regeneration.

Stereo Digital Delay Short and Long: parameters include left and right delay times (0-360ms per side for Short, 0-500ms for Long), regeneration, high frequency damping and level. As you can set different delay times for the two channels you can produce some pretty spiffy effects. Throw in the Panner (or Chorus or Flanger) for increased spatial awareness.

So what can the boys at ART do with these algorithms? Well, the presets are excellent. I won't be rash enough to suggest that there's one to suit your every need, but you can probably find one which is close and edit it.

PERFORMANCE MIDI

ON THE FRONT of the unit you'll see the words Performance MIDI. Multiverb II is one of the latest in a line of effects processors to allow control of effects parameters via MIDI. Up to eight parameters can be adjusted simultaneously for each preset. Each controlled parameter requires two items of information – the controller to be used and the Scaling value.

The controller can be any of the MIDI controllers, the Pitchbend Wheel, Channel Pressure, Poly Aftertouch, Note On and Note Off Velocity or Note On and Note Off Key numbers. These last two are particularly interesting.

Control by note velocity is fairly self-explanatory but here's a couple of ideas for applications. Linking it to delay time in a reverb effect could give quiet notes a long decay making them sound further away and loud notes a shorter decay making them sound more up-front. Or vice versa. Link it to regeneration in the Flanger for velocity-controlled flanging, or to delay time in a Delay.

Note Key numbers relate to the MIDI note numbers – playing higher or lower has a similar control effect to moving a pitchbend wheel, for example. Link this to Panning to make low notes move slowly and high ones tear around the stereo image. Or to Reverb to give high or low notes shorter or longer decay times – as is your wont.

The Scaling value controls the degree by which the parameter is changed: the higher the Scaling value, the more sensitive the parameter becomes. For example, low values mean that large changes in the controller are required in order to change the parameter's value. High numbers make the parameter more responsive.

Scale values can be negative, too, which lets you invert a controller's effect on effects. As the same controller can be used to control more than one parameter this also allows you to create crossover effects. For example, link Chorus and Delay to note velocity and you could produce chorus by playing softly and echoes by playing louder. You could even link loud and soft to left and right delay times, although if you mess around with the numbers too much you can get serious glitching.

Performance MIDI setups look a little tricky to program at first but one example in the manual steps you through the creation of a 4-PM preset while another shows how to add it to an existing preset. A little experimentation soon breeds familiarity. Ten of the factory presets include PM and if a preset uses PM a number in the bottom right of the display shows how many parameters are under MIDI control.

Finally, we come to the MIDI/Utility button. This allows you to change the MIDI receive channel and select Omni mode. The Multiverb also contains a MIDI Program Table which lets you make any of the 127 program change messages select any of the presets. This allows you to configure the Multiverb to your equipment rather than being forced to work the other way around.

If 200 memories aren't enough, you can save them with a MIDI dump command. This can save the MIDI Program Table settings and it can handle the presets individually or *en bloc*.

MIDI Merger turns the MIDI Out socket into a MIDI Thru. If the Multiverb is commanded to send a MIDI message of its own (this could only really be a dump command) it will merge them. A socket at the back allows a footpedal to be used to increment the presets or activate Bypass mode.

The manual is quite well written with several programming examples, some tutorial sections, and illustrations where necessary. It hasn't been proof-read and it was printed on a dot-matrix printer and although it is legible, why on earth didn't they use double-strike mode? No big deal perhaps but here's a message to software and hardware producers everywhere – listen up, you guys, *manuals are important*.

VERDICT

NIGGLES ARE OF a decidedly minor nature. Perhaps the EQ section could be more comprehensive (but then I personally prefer to do my EQing at the mixing desk). Psychoacousticians may yearn for more control over their reverb creations – density, first reflection time – and I suppose a delay longer than 500ms could have its uses. Pitch Transpose may not prove usable for all the applications you'd like (brave of ART to include it at all) and programming does, of necessity, require a certain amount of button pushing. But this is basically a budget unit, remember, and at the price it would be churlish indeed to moan.

I like this unit. It sounds good, it's relatively easy to use, it has a number of novel features and it can produce a wide range of excellent effects. Its dynamic response to signals is excellent without peaking or troughing and the sound quality is on the warm side of digital without being obtrusive or obvious.

Now I'm looking for a friendly welder to fix the review model into my rack. What's more – I'm beginning to love the colour. ■

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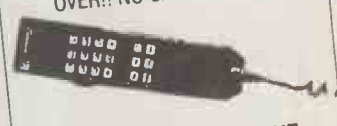

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THE STATE OF TECHNOLOGY

The North of England has a fine history of electronic innovation in music – bands like Cabaret Voltaire, Heaven 17, New Order. Now add to that list 808 State. Interview by Simon Trask.

IF ANY GROUP REPRESENTS ALL THAT IS good about technology-based music at the moment, it's Manchester-based 808 State. Experimental, yet far from esoteric, inventive in a way that eludes most other groups, their progression from last Autumn's acid-influenced debut album *NewBuild* through a subsequent single, 'Let Yourself Go'/'Deepville', to their second album *Quadrastate*, with its massively popular opening track 'Pacific State', has seen both their musical stature and their popularity rise dramatically. Radio 1 airplay for 'Pacific State' and a major record deal with WEA are only the beginning of a very bright future for a group who refuse to compromise on their musical integrity.

808 State were made for the cover of MT, and so it is that I travel to Manchester to meet up with the four members of the group: Martin Price, Graham Massey, Andrew Barker and Darren Partington. It's almost a year to the day since I first heard a couple of tracks from *Newbuild* on the radio and just *had* to have that album. It's also the weekend before MT's press week and the deadline has passed. Whoever said a journalist's life was easy?

In the event, the interview takes place with Price and Massey at Square One Studios in Bury, a few miles outside Manchester, where Massey is mixing a track for indie group James and discovering the delights of the AMS Audiofile into the bargain. It seems there's a chronic shortage of studios in Manchester. Perhaps not surprisingly, then, one of Price's ambitions is to open up a 24-track studio in the city.

As it is, the group work in Spirit Studios, a poky 16-track studio in the heart of Manchester where Massey once took a record engineering course. *Newbuild* and *Quadrastate* were both recorded there, and the group continue to use it as their base. The recording studio is 808 State's natural habitat. As Price explains: "You have to build your craft up within the studio."

And the group's name? Well, the 808 bit is obvious. What about the State? Price again: "808 State is our world that we exist in – an 808 state of mind."

PHOTOGRAPHY: PETER WALSH

808 STATE WAS BORN IN THE SUMMER OF '88 AS a trio consisting of Price, Massey and Gerald Simpson (otherwise known as A Guy Called Gerald of 'Voodoo Ray' fame), initially producing 45-minute backing tracks recorded straight onto two-track for the Hacienda. The music for what became their first album followed on naturally from this time, with some of the tracks being recorded early in the morning at Spirit after gigs – it's no accident that one of the tracks is sub-titled '4am mix'. With no multitrack tape to hand, they recorded straight to two-track reel-to-reel using old BBC tape which already had masses of edits on it.

When the group recorded *Newbuild* they weren't trying to "fit into" the acid scene. Now that major success beckons, Price still doesn't see them as a "fitting in" kind of group. As he puts it: "808 State aren't going to be peacefully marketed into a bracket. I don't think we need to change, and I'm very wary about anybody trying to change us. Also, I don't want to take the thousand-quid-a-day remix route and let that interfere with our development and the way we work. 808 State is number one in importance."

Price started a record stall just under four years ago after selling all his gear to raise the necessary money. Some eight months later he moved into shop premises, and Eastern Bloc, the most upfront dance music shop in Manchester, was born. Price had realised that a shop was needed to help create a scene for new dance music, and sure enough it became a centre for budding musicians, with kids bringing in tapes of their music. Massey was working in a cafe across the road from the shop; and he and Price got talking about technology and discovered that they spoke the same language. Simpson used to come into Eastern Bloc, and before long the three of them were putting on live hip hop jams with other hip hop crews under the name of the Hit Squad, using Simpson's TR808, TB303 and SH101. Barker and Partington, collectively known as the Spinmasters, were also involved in the Hit Squad. Other crews gradually dropped out, till eventually there was just 808 State and the Spinmasters, who by this time had turned to house music. In time, Simpson left the group to pursue his own career, leaving the present four-piece line-up.

PRICE AND MASSEY, AT 34 AND 29 YEARS OLD respectively are the elder statesmen of the group (if you'll pardon the pun); both have a wealth of experience in experimental music. Also a veteran of the Northern soul scene, jazz-funk all-dayers and the early '80s electro scene in Manchester, Price got involved in experimental electronic music in the late '70s when he met a guy called Leonard, a mad professor type with a Thomas Dolby haircut.

"This guy had the first 303 I'd ever seen", he recalls, "and he was messing around in a calculator with a pin that was connected up to a lead that was going into an amp. He was getting all these amazing sounds out of it through reverb. When I asked him what he was doing, he said he was trying to get some calculator feedback going. He didn't even know the names for what he was doing, he was just doing them. I got caught up in that magic and I've never been able to escape since."

The two of them started working together, using a Boss ➤

➤Dr Rhythm, a Roland TB303 and TR606, tape loops and a lot of guitar effects pedals. A typical track combined a funk rhythm on a Dr Rhythm with tape loops of music recorded from Depeche Mode and Kraftwerk records and noise generated from an amplifier put through a series of pedals back into another amp.

"I've got a huge catalogue of tapes going back to that time", he reveals, "and there's three particular tracks that I'd do again, using the same sort of techniques. I think that time was an excellent grounding for me, because I'm never going to turn into one of these glorious gear-orientated people. It's always going to be chucking pots in the sink and recording them, so there's always going to be that experimental edge to what we do. I'm so glad that sampling's happened, because now I'm heading back to what I was doing before; it's just easier to do, nowadays."

"It's always going to be chucking pots in the sink and recording them, so there's always going to be that experimental edge to what we do."

Massey has played in bands ever since he left school. Outside of 808 State he is part of Biting Tongues, a band which has been going for some ten years and is now down to a duo. Both like and unlike 808 State, the music combines a strong electro-based dance beat with experimental music collages which make interesting use of sampling as well as using acoustic instruments. It's well worth investigating in its own right. Massey recalls that the group were using cut-up tape techniques and tape loops back in the '70s, and were prone to doing such things as making up a backing tape of pure noise and running it throughout a track. His musical influences came from from early '70s Miles Davis electric records like *Bitches Brew*, *Live Evil* and *On The Corner*, German experimental rock group Faust, Fripp and Eno's tape-loop experiments and the electronic sounds of '70s Stevie Wonder albums like *Talking Book* and *Inner Visions*.

Barker and Partington (at 21 and 20 the young half of the group) began their DJ'ing activities eight years ago, inspired by the electro/breakdancing scene in Manchester. Today all of the group have a liking for Detroit techno music, which of course has its roots in electro among other things.

"*Quadrastate* is our version of techno", Price says. "May, Saunderson, Atkins, they're my heroes. Detroit is the place that I want to go to. I can still remember the first time I heard Model 500's 'No UFOs' played at a club – I knocked a table over in my hurry to get to the DJ and find out what the record was."

Price provides the first clue as to what makes 808 State tick.

"Andy and Darren turn around and call us weirdos and tell us to shut up. They've got a new attitude to the music, and they're a lot of our discipline. They won't have a lot of weirdness, and they stop us from being indulgent."

"Also, they're working as DJs two or three nights every week", Massey adds. "Having that DJ input into what we do is excellent. They can tell us 'that bit goes on too long, you'll lose your dancefloor'. They know where the changes should be, and if you can run the track into a certain other kind of track. It's almost like you're building tracks to fit onto a track that's happening at the moment. We can finish a track and get it played in a club the same night, get a reaction off it and change it."

As well as their valuable DJ input, Barker and Partington contribute musically to the group. All the members have their own musical ideas, and it seems that when 808 State get together in the studio their approach to recording is neither studiously professional nor coolly calculated, as Massey reveals:

"If anyone saw us they'd be astonished. It's just a horrendous amount of shouting for 12 hours at a time – completely exhausting. The music's born out of conflict."

"It's mayhem, but we all know we love each other, and it's done in the nicest possible way", Price adds, in case anyone thinks 808 State are soon to be in a non-existent state. "We're all fighting to get our own bits in but we're all working for the same thing, too, and at the end of the day it works. The 808 State magic comes from the battle."

And who, I wonder, is responsible for the unusual endings, like the drastic speeding up and slowing down of the drum machine at the end of 'Firecracker', or the false ending of 'State to State' (the last two tracks on *Quadrastate*).

"That's 'im – weird-ending Massey!" Price says, pointing to the guilty party. "He tends to try and do it on everything, though. It's him freaking out at the end of a track, 'cos he can be terribly studious all the way through the track while we're freaking out behind him trying to do all sorts of mad things. He wants as much weirdness at the end as he can get. It's his way of getting back at us for all the annoyance we've caused him through the track; we end up cutting most of it off tape when we're editing, though. It's just mad Massey at the controls. But we all try to do our own version of endings, just to try and annoy each other. It's a bit of fun. We have a great time in the studio, really."

The group have a very practical attitude towards the gear at their disposal, summed up by Price:

"It's always been our attitude that whatever you're stuck with, that's what you use."

"It's just a matter of what you can get your hands on", Massey confirms. On *Newbuild* the group used almost exclusively Roland gear, with a TR808, TR909, TB303, four SH101s and a Juno 106 which sports a broken key and a note which sticks on every patch except patch 41. *Quadrastate* sees the introduction of Roland's latest flagship drum machine, the R8, which the group use in combination with their 909. The ailing Juno 106 is joined by another Roland synth, the D50, which is used liberally on the album as well as, logically enough, on the D50 mix of the single 'Let Yourself Go' (where the washing machine-ish bassline comes from an edited version of the D50's 'Bass Marimba' preset). To say that Roland gear has quite an appeal to the group would be a grave understatement. They even gave out a thanks to Roland UK on the sleeve of *Newbuild*.

"Roland has got a sort of romanticism for me", ➤

➤Price explains. "It was the first stuff I worked with, it was easy to use, and the Roland sync was good. Their drum machines were always easy to use, which is more than I can say for Yamaha's."

Sampling is handled by a Casio FZ1 – purely because it happened to be available in the studio. On the whole the group have an abstract approach to sampling (the spiralling strings sample on 'Let Yourself Go' being the most notable exception – it's lifted from an old Love Unlimited Orchestra track, 'Love Story', because Price and Massey both have a fondness for the Orchestra). A technique they use a lot is to start out with a sample purely for atmosphere, build up a track around it and then take it out – a process which Price refers to as "silhouetting".

"Another technique we use quite often is sampling a chord into the FZ1 and playing it back from single notes", Massey adds. "We got that off Derrick May. There's something about a whole chord being shifted like that which is very techno."

It's this technique which was used to produce the parallel major seventh chords of 'Pacific State', with a chord on the D50 sampled into the FZ1. Sequencing is handled mainly by a 1040ST running Hybrid Arts' SMPTEtrack, which Massey describes as "A real sledgehammer to crack an acorn for what we're doing."

The group prefer to commit successive parts to the multitrack rather than build up a a number of sequencer tracks – so SMPTEtrack functions as a means of getting each part together as they go along. Many 808 State tracks use two basslines (another musical technique the group have in common with Derrick May), but it seems this can be more a consequence of their way of recording than a deliberate action.

"We do record two, sometimes three, basslines for many tracks", Massey explains. "A lot of them aren't intended to be there at the same time, but sometimes they accidentally end up that way."

"We like a lot of things to run straight through a track so we can punch them in and out manually on the mixdown", adds Price. "The basslines might be sequenced differently as well, like one'll be off the computer, one'll be off the little sequencer in the 101, and one'll be off the drum machine. They'll all have different feels, and that goes towards getting the feel of the whole track."

"A typical track combined a funk rhythm on a Dr Rhythm with tape loops of music recorded from Depeche Mode and Kraftwerk records and noise from an amplifier."

AS THE CLICHÉD SAYING GOES, NECESSITY is the mother of invention, and having such an array of non-MIDI and MIDI gear means a certain amount of ingenuity is required when it comes to syncing everything up – especially if you don't have any little black boxes around to mediate between the two systems. One syncing system the group have employed in the past runs as follows. The TR909's code is recorded to the multitrack and then used to sync an MC202 to tape. The 202's two DIN sync outputs run a TB303 and the 909, with MIDI output from the 909 running the computer which in turn can sequence the other MIDI instruments.

These days they mostly use SMPTEtrack synced to multitrack via the sequencer's plug-in SMPTE unit, running non-MIDI gear via the old faithful Korg KMS30 sync box. But it's not only SMPTEtrack which gets used for sequencing. One technique they've adopted is to use the 909's onboard pattern-based sequencing to trigger bass and piano lines.

"There's a tightness with the 909, especially with swing on it, which you don't get off the sequencer", Massey explains. But that isn't the group's only reason for using the 909 in this way. It also allows them to experiment with randomly selecting patterns to trigger samples – the hypnotic rhythm of the FZ1 flute sample on 'State Ritual' from *Quadrastate* was arrived at in this way.

A pattern-based step-time approach is something which appeals to the group, and recently they used Bit by Bit's MIDIdrummer software on the remix of 'Pacific State'. Not that they want to tie themselves down to any one way of working or to any one feel.

"Generally we quantise, but we know when to put feel in", Massey explains. "There's only a certain amount of things that need feel, like the hi-hat. Now we can use the R8 to add the feel."

The R8 gets used in combination with the TR909 in the 808 State scheme of things. For Price, Roland's new drum machine has brought about a re-evaluation of his attitude to rhythm, as he explains:

"I like rhythm tracks that are perfectly in time, with just a little bit of feel, but there's this track, Mr and Mrs Dale's 'It's You', which is R8 and it's all over the place, the pattern is so swung, but somehow it works." Massey has been quick to find another advantage in using the the R8: "Back to that thing of triggering samplers and synths from randomly-chosen drum patterns, the R8's great for that because it's got such a high resolution. I've been using that technique quite a lot. When we got the 909 we'd put swing on everything; now it's all R8 groove. Also, we've done a track where we've taken nuance to extremes on cymbals.

"Unfortunately the sounds on the R8 are a bit hollow, a bit transparent, which is why we always use it in combination with the 909. We use the R8 congas an awful lot because we haven't got a Latin machine, but I wish we had a TR727 because there's something plasticky about its sounds which is just right. The R8 is too nice, so I end up tuning the congas by some weird amount."

"A lot of equipment's gone really nice", Price adds. "Nice sounds, nice effects..."

One instrument which could hardly be described as nice is an old Pearl Syncussion unit which the group sometimes use.

"You can get some 808 analogue-type sounds out of it", offers Massey by way of explanation.

For Price, the Syncussion is an old friend: "I used to use Syncussion units a hell of a lot on my really early stuff, triggering them straight off the audio outs of a drum machine. You can get some really nasty sounds out of them, like the old disco 'pow-pow' sounds." ➤

➤ Like the tacky sound at the beginning of 'Disco State' off *Quadrastate*?

"Yeah", replies Massey with a grin. "That's a corny track, and we just had fun with it. People either hate it or they love it. We made it for the people in the curry shop around the corner, 'cos every time we went in there they were playing a tape of Boney M!"

When it comes to signal processors, the group haven't exactly gone overboard on the digital variety. A couple of MIDIverb IIs handle most of their reverb requirements, while a Yamaha REV7 is used for short pre-delays. A Yamaha SPX90, which Price and Massey characterise as "tinny", is confined to providing weird panning effects, while delays come from a Korg DDL. In fact, the group are just as likely to turn to a variety of old guitar pedals for their effects.

"Brian Eno never played keyboards, all he was doing was messing with joysticks and white noise – being a non-musician I could identify with all that."

"We bring in guitar footpedals a lot because a lot of them are better than the rack-mount digital effects", Massey explains. "You can't get a decent phase sound out of an SPX90, for instance. We've got an old Roland flanger that we use a lot, and on a track that we're working on at the moment we've put a Fender Rhodes sample on the FZ1 through an old MXR phaser to dirty the sound up a bit."

The group plan to spend some of the money they're getting from their deal with WEA on new equipment. Price is quick to clarify their priorities, however.

"I don't think we're going to become gear-bores. It's the music that's dead important, and having a good time along with it, and basically experimenting. I want to make records that are accessible, but I want to make different records. I think our background in experimental music gives us a head start in that, and I want to use a lot of these weird techniques that I've learnt over the years. Somebody reviewed one of our records and said that it had Jacques Cousteau on bass 2000 leagues under the sea, and I thought that was brilliant."

AT ONE TIME THE GROUP BOUGHT ALL their gear from a second-hand shop in Manchester going by the the dubious name of Johnny Roadhouse, which Massey claims is central to a lot of musicians in the city. Getting the money together wasn't always easy, though.

Price: "Graham and Gerald used to come into Eastern Bloc and say they've got this and that at Johnny Roadhouse, and I'd be madly trying to sell a few more records so we could get the money together to buy the gear. We put down no end of deposits.

"There's always kids in Eastern Bloc saying 'they've got a 202 in Johhny Roadhouse!'. It makes you realise there must be a lot of people chasing this gear. There's lots of second-hand shops I know in the North-west where you can find things like a Micromoog for £150."

On the subject of old gear, it turns out that Massey is a big Fender Rhodes fan. Roland's new all-digital Rhodes electric piano hasn't gone unnoticed, either.

"I was playing one in A1 Music in Manchester the other day", he reveals. "The feel of it is wonderful; I'd love to get hold of one. We've tried getting a Rhodes sound out of the D50, but you can't do it. We use things like Rhodes samples off records; there's a lot of that on the Biting Tongues and 808 State records. I've got the Rhodes sample on the FZ1, but it's never quite as good. You have to feed it through an amp and then record the result to get that distortion, or, like I was saying earlier, put it through an old MXR phaser. The Rhodes sound is for me one of the most important sounds ever."

All this talk of old gear sets Price on a trip down memory lane, too: "I remember getting my first synth, a Korg monosynth. I used to sellotape one key down and just mess around with the filters and stuff like that. I'd heard a few Brian Eno records, some of the B-sides of Roxy Music singles, and I wondered how he got his sounds. By chance they were playing at this technical college near me, and I went to see them. I managed to sit right behind him, and he never played keyboards, all he was doing was messing with joysticks and white noise. With me being a non-musician, I could identify with all that."

"Biting Tongues used to have an EMS VCS3, and we never used to use the keyboard", says Massey. "But back to the Rhodes coming out with MIDI, it's happening all the time now, with things like the MIDImoog and the Obierack. People are finally waking up to what people want. I think it's got a lot to do with your mag; I love all those articles about old instruments like the Mellotron."

"*Music Technology* is like the bible to us. It's really made our week doing this interview", Price adds generously but sincerely. (Excuse me while I blush on behalf of staff and contributors.)

The last word, however, goes to Massey: "There are a lot of the electronic equivalents of boring guitar bands about. People who would once have been making boring guitar music, they've got their MIDI setups and now they're making boring synthesiser music. There's always good and bad; it's just down to imagination. People's personalities still get into electronic music."

And I can think of no better example of this than 808 State. ■

MK80

PHOTOGRAPHY: JAMES CUMPSTY

Keyboard instruments don't come more classic than the Fender Rhodes electric piano. Now Roland have resurrected the Rhodes name – but have they also managed to resurrect the Rhodes sound? Review by Simon Trask.

EACH GENERATION HAS its own catalysts for musical creativity. In the '80s we can look to the polyphonic synthesiser, the sampler and the drum machine. But for a whole generation of keyboard players in the late-'60s and early '70s one instrument was crucial: the Fender Rhodes electric piano.

The Rhodes was made available in several versions: the Stage 73 and the Stage 88 (the numbers in each case referring to the number of notes on the keyboard) and the Suitcase versions which had their own amplification built in. It relied on a system akin to the electric guitar, requiring the electrical amplification of physical vibrations mediated via the disturbance of a magnetic field. Consequently the Stage versions had no on/off switch (a strange concept today) as they required no electricity themselves. There were various practical considerations in the Rhodes' success: even though it was far from being lightweight it was still more portable than an acoustic piano, its audio output meant that it was easy to amplify (no miking involved) at a time when amplification had become the norm in music, and the fact that it was polyphonic and dynamic put it leagues ahead of the early synthesisers, which were of course monophonic and non-dynamic (if anything, this very contrast meant that the Rhodes could and did happily co-exist with the early Moog and ARP systems).

And then there was that pure and yet well-rounded Rhodes sound. The decay envelope of the Rhodes sound was longer than that of an acoustic piano, its bass end was purer, its upper range was much stronger (helping it to cut through in an amplified setting – an advantage it had over its only real competitor, he Wurlitzer EP200), and its sound broke up in a unique way when played hard.

The result was that it occupied a special timbral and linear space in music, a factor which made it crucial to the development of Miles Davis's electric music in the late-'60s and early-'70s, when he had Joe Zawinul, Herbie Hancock, Chick Corea and Keith Jarret all playing Rhodes. Listen also to the early Weather Report albums, to Hancock's early-'70s electric albums, to Mike Ratledge's playing in Soft Machine, to the three Rhodes tracks on Stevie Wonder's 1972 album *Talking Book* and you'll understand the significance of the Rhodes if you don't know it already. In the Rhodes lexicon of love I'd also place Max Middleton's sparing but telling use of the Rhodes in the Jeff Beck group, and Lonnie Liston Smith's string of mellow jazz-funk albums in the latter half of the '70s. Then of course there are classic songs like 10cc's 'I'm Not In Love', Ace's 'How Long' and Minnie Riperton's 'Lovin' You'. The original Rhodes' only onboard effect was tremolo, but it became common practice to put its signal through external effects, which usually meant guitar pedals (still a valid technique for today's digital keyboard instruments, despite the advent of rack-mounting digital multi-effects). Chorus, phaser, wah-wah, ring modulator and echoplex were all pressed into service, contributing to the Rhodes' chameleon-like ability to adapt to different musical settings and moods. It could be spacy, mellow, angry...

But the Rhodes was destined to be replaced by the synthesiser. The rise of the polyphonic synth, the advent of MIDI and consequent emphasis on syncing and sequencing all played their part. But it was the famous 'Rhodes' electric piano preset on Yamaha's DX7 digital synth, combined with the facts that the DX7 could produce a wider range of sounds than the Rhodes, was (comparatively) light and portable, had a lighter keyboard action and was MIDI-compatible, which really closed the (talking) book on the Rhodes. Of course, the DX Rhodes sound was really the start of an '80s electric piano sound rather than a true recreation of the original Rhodes. Yamaha's synth became as ubiquitous as the Fender Rhodes had once been, though its reign has been nowhere near as long, perhaps most obviously because physical development timespan no longer governs instrument development. For many years the Rhodes had no competition. The monophonic synthesiser had to develop into the polyphonic synthesiser and reach a point where it could not only compete with the Rhodes on sound quality but also provide a reasonable degree of polyphony. Look at it this way: there is the sound and there is the physical form of the instrument which produces the sound, and traditionally the two have been intimately related. With the advent of analogue synths this relationship began to break down, but the physical components and the physical configuration of those components still determined to some extent the size and shape of an instrument. As electronic instruments have moved into the digital realm, the physical relationship between sound and originating medium has totally disappeared. Now, there is no physical reason for an instrument to sound any particular way. The constraints (if that's the right word) are far more arcane than that: processing power, signal conversion circuitry and human understanding both of sound and of how to produce sound digitally.

At the same time, digital technology now has the power and sophistication to measure and analyse existing sounds in great detail and to model them in software. Roland are one company who have put plenty of R&D effort into analysing and reproducing the sound of an acoustic piano digitally. Their RD series of electronic pianos uses a highly sophisticated sound modelling system known as Structured Adaptive synthesis. So it seems a logical step to apply this technology to another classic keyboard instrument, the Fender Rhodes electric piano, and this is exactly what Roland have done. The company's new all-digital Rhodes electric piano uses Adjustable Structured Adaptive synthesis to model the original Rhodes sound together with several other sounds, but the technology isn't all they've employed to get the end result right. They've also engaged the advisory services, and in particular the very keen ear, of the Rhodes piano's inventor, Harold Rhodes, thus maintaining a continuity with the past.

Following in the tradition established by the original Rhodes, Roland have brought out two versions of their new electric piano: the 88-note MK80 and the 64-note MK60 (whose range is "expandable" by means of an Octave Shift switch). The MK60 has the same source sounds and the same polyphony as the MK80, but in other respects is a scaled-down version, forgoing the 80's programmability and phaser effect, simplifying the 80's three-band EQ to bass and treble, its chorus to on/off, and providing a simpler MIDI implementation. If anything, the MK60's minimisation of front-panel controls brings it closer than the MK80 to the original Rhodes, and this greater simplicity of approach may appeal to some musicians.

"Roland have managed to capture the essence of the original Rhodes sound, that special mixture of clarity and fullness, right across the range."

SOUNDS & OPERATION

THERE ARE EIGHT basic sounds on the MK80: four electric pianos (Classic, Special, Blend and Contemporary), two acoustic pianos (Concert and Electric grands), Clavi and Vibraphone. This is really the same formula employed by just about every ➤

digital piano over the past few years, except that here the emphasis is placed on the electric rather than the acoustic pianos.

Seven Variations of each of these sounds can be programmed and stored onboard, giving you equal access to a total of 63 sounds (each of which can be given its own 12-character name). Although the MK80 has no RAM-card storage, you can bulk-dump its memory via MIDI SysEx to a suitable storage device.

If you read MT's British Music Fair report (MT, September '89) then you'll know that I was impressed by the new Rhodes on initial encounter. Now, after having got to grips with the MK80 over a longer period of time, I can say that I'm just as impressed, if not more so. The all-important sound is Classic. It's here that Roland have managed to capture the essence of the original Rhodes sound, that special mixture of clarity and fullness, right across the range. Start playing this sound and all the memories come flooding back. Sensibly Roland haven't only gone for the classic Rhodes, but have included a Contemporary sound which is what it says: a bright, metallic '80s electric piano sound – which is as good in its own way as the old Rhodes sound is in its. The two other electric piano sounds, Special and Blend, sit somewhere in between Rhodes and Contemporary in character. In fact, if you move across the four electric piano sounds you'll find that they get progressively brighter and "tinkly".

Equally it's a good idea to include acoustic pianos. The MK80 has two of them, both supposedly acoustic grands, but Piano 1 sounds more like an upright to me, and Piano 2 is definitely an electric grand. There's nothing wrong in that, but in truth I found them adequate but on the disappointing side, with a rather messy bottom end and a thin top end, and an overall lack of body. Basically, they just don't do for the acoustic piano what Classic, Special, Blend and Contemporary do for the electric piano.

The Clavi isn't exactly a clavinet (which is probably why Roland have left off the "net"), and certainly doesn't do for the classic Hohner D6 what 'Classic' does for the Rhodes, but once you start tinkering around with the sound and effects parameters (see below) you can get some nicely funky sounds from it.

Finally there's the vibraphone. I'm not sure why manufacturers so often insist on including vibes on their digital pianos, but I suppose it can be useful in a jazzy context. Anyway, it's a vibrant and well-rounded sound which sparkles nicely when you add a touch of tremolo.

The MK80's piano-style keyboard has an 88-note span and is attack velocity-sensitive. Playing it calls for a firm touch, but the travel is moderate and the action thankfully falls short of ponderous. Roland have given the MK80 a substantial casing, including a generous top panel which could readily accommodate all the old muso paraphernalia of sheets of music, pints of beer and an ashtray – an improvement over the original Rhodes' convex surface that always threatened to deposit your pint/joint/synth in your lap as soon as you started playing. It could, however, just as well find a second keyboard or perhaps a combination of expander, drum machine and sequencer placed on it.

At just over 76lbs the MK80 is no lightweight, but it's still a big improvement on the original instrument. The MK60 weighs in at a more readily carryable 59lbs (in fact, the weight consideration was important in Roland's decision to go for a 64-note as opposed to a 76-note keyboard).

The original Rhodes was of course fully polyphonic, as it worked along the same principle as the electric guitar with each string having its own pickup. This is one area where digital technology (currently) falls down in comparison. Polyphony on the MK80 is limited to 16 voices (only ten in the case of Contemporary and Clavi), though it could be said that 16 is a reasonable limit – unless you're into two-fisted block chords and/or liberal applications of the sustain pedal. Quite why Contemporary and Clavi should be singled out for less polyphony isn't clear (are they really more difficult to create?), but it's slightly ironic when you consider that Contemporary is supposed to represent the '80s electric piano sound, which first found its expression on the 16-voice DX7. I should point out that the MK80 can only produce one sound at a time, and there's no overlapping of sounds when you select a new patch while notes are held down. The MK80 waits until all notes and the sustain pedal are released before calling up the new sound – actually quite a musically helpful feature.

Whereas on some of their instruments Roland have gone for a minimum of buttons and a maximum of button-pushing, on the MK80 they've adopted a more balanced approach. A greater number of buttons and sliders bring the Rhodes' functions closer to the surface operationally, while a certain amount of dual functionality together with multiple LCD pages (the central backlit LCD window is a modest 2x16 characters) help to ensure there isn't a confusing sprawl of buttons. Four assignable sliders play a key role in creating the sort of immediacy of sound editing which musicians long for on digital instruments.

To the left of the keyboard you'll find the familiar Roland bender/mod lever, while the rear panel provides MIDI In, Out and Thru sockets, L/Mono and R stereo out jacks, and headphone out jack together with control/expression and damper pedal jack inputs. A dual pedal unit and a sturdy tubular fold-out stand are both provided with the MK80.

Essentially the MK80's eight preset sounds can be modified by adjusting four parameters which have been given such refreshingly non-technical names and readily useful functions as Punch, Tightness, Body and Brightness (all on a scale of 0-32). Punch defines the strength, or hardness, of the sound's attack (except for the Contemporary or Vibraphone sounds, where a hard attack is deemed to be part of their character), and is not so much to do with attack rate as with how much of a bright percussive "chink" there is in the attack. Tightness allows you to adjust the amplitude decay of a sound, while Body creates a more full-bodied sound by increasing the amplitude of the fundamental and the lower harmonics, and Brightness creates a brighter sound by increasing the amplitude of the upper harmonics.

EFFECTS & TUNING

THE ABOVE SOUND parameters are only part of the story. In the current fashion, Roland have included onboard digital effects processing, but instead of

chucking in everything but the kitchen sync they've stuck to tremolo, phaser, chorus and EQ (tremolo being the only effect that was available on the original Rhodes – not digitally, of course). You can adjust the rate and depth of the tremolo effect, the phaser rate, depth and feedback, and the chorus mode, rate and depth. There are two chorus modes (stereo and Left), and two LFOs which offer a combination of triangle and sine waves for the chorus effect, each LFO having separately adjustable rate and depth (the ratio is 80:20 in favour of the triangle wave at maximum depth). The EQ is three-band with a parametric mid-range. You can set bass, mid and treble levels (+/-100) together with a mid frequency in the range 200-4000Hz and mid bandwidth (the frequency range over which the mid EQ will be applied) on a scale of 1-8.

As mentioned earlier, musicians used to think nothing of putting the original Rhodes through all manner of external effects. As with the electric guitar it was a means of creating a wide variety of sounds from a monotimbral instrument. Now that we have synthesisers which can generate a wide variety of sounds through programming, effects have been perceived as a means of covering up for inherent weaknesses in a synthesis system. Well, for people who think like that, let me say that the MK80's sounds (and especially the electric pianos) work well on their own without effects. But you can use the effects (in conjunction with the sound parameters) to greatly widen the palette of sounds at your disposal, and in the process (re)create many of the classic sounds associated with the original Rhodes. So whether you like a rich, warm, shimmering, floating electric piano sound which caresses your soul or an aggressive, biting, percussive and all-round nasty sound to frighten the neighbours with, you can get it with a spot of editing. You can also push the effects to extremes to create weird sounds which don't bear any immediate resemblance to their origins. Still, it's tempting to ask what happened to the digital wah-wah.

Parameter values for each of these effects can be programmed per Variation on the MK80, as can tremolo, phaser and chorus on/off settings. Additionally, dedicated front-panel buttons for tremolo, phaser and chorus on/off allow you to switch each effect in and out at will, while the four front-panel slider controllers can be used to adjust effect parameter values in real-time. How do 15 parameters fit on four sliders? Through preset assignability. Pressing one of the Trem/Phsr, Chorus or EQ buttons assigns the relevant effect(s) to the sliders; the actual parameters in each case are labelled beneath the sliders for ready reference. In this way the only effect parameters not available on the sliders are phaser feedback, chorus mode and mid EQ bandwidth.

This sort of immediacy and spontaneity is what the new Rhodes is all about, and conceptually it helps to make the effects an integral and an interactive part of the sounds. Of course, it would be nice if you could decide for yourself which parameters were assigned to the sliders, and if you could edit the sound parameters in the same way. Well, Roland obviously agree, because they've included a User function which allows you to do both of these things. A different User configuration of four parameters, drawing on the sound and effect parameters (including phaser feedback and mid EQ bandwidth) and auto bend depth and time, can be programmed for each Variation. Whenever you press the dedicated front-panel User button, the currently-programmed User configuration of parameters is automatically assigned to the four sliders in place of the preset effect-parameter assignments.

You can also assign a parameter to the control or expression pedal, again per Variation, with a choice of punch, body, brightness, EQ mid frequency, mod depth, auto bend on/off, tremolo on/off, phaser on/off or chorus on/off.

The MK80 allows you to choose one of eight velocity response curves per Variation, two of which are inverse curves, so the harder you hit the keys, the softer the sound. You can also specify the note range over which the Rhodes responds by defining upper and lower note-limits for each Variation (pressing the Int Range button below the LCD window allows you to switch in the full 88-note range at any time). But how can features like note ranges and inverse velocity curves be useful? Stay tuned.

Which brings us nicely (or maybe not) to the subject of tuning. Nowadays an increasing number of synths and samplers allow you to specify your own tunings in the digital realm, safe in the knowledge that once you've created a tuning it can't possibly slip. Manual tuning adjustments could be made to the original Rhodes, and many of the top musicians of the day had the company tune their Rhodes pianos to a "stretched tuning" – Miles Davis was the first to request it. This is traditionally how acoustic pianos are tuned; as the name implies, bass notes are progressively flattened in pitch and treble notes sharpened, the resultant harmonic beating when combinations of notes are played being more interesting to the ear. Trouble was, creating the tuning on the Rhodes could take anything up to 20 minutes, plus of course it was subject to natural slippage and therefore wasn't engraved in stone (or silicon chip). In contrast, at the press of a button on the new all-digital Rhodes MK80 you can choose one of three preset stretched tunings, selectable per Variation. This applies to all eight source sounds, including, logically enough, the two acoustic pianos. In fact, the tuning curves are deeper for the acoustic pianos (though still subtle in effect), and a stretched tuning is always present on them – on the other sounds, you can effectively switch out stretched tuning by selecting tuning number one.

Other parameters programmable per Variation are bender depth (0-12 semitones), modulation rate and depth, and several parameters governing autobend (attack pitchbend): on/off, depth (+/-1 octave maximum), time (maximum four seconds), key follow and velocity responsiveness.

RHODES TO MIDI

ROLAND HAVE OF, course, brought the new Rhodes into the MIDI age. The familiar complement of MIDI In, Out and Thru sockets are to be found on the rear panel, while MIDI transmit functions programmable per Variation are channel (1-16), patch number (1-128), velocity curve and note-transmit zone. Being

able to program a different channel per Variation means that you can layer different MIDI instruments with different onboard sounds, while the patch-number function allows a new external sound to be called up each time a new Variation is selected. But you don't have to tie channel and patch changes in with Variation changes; by holding down the Tx Ch or Prog Chg buttons and pressing the appropriate number buttons you can change channel or send a patch-change at any time.

Roland have quite sensibly allowed you to select separate velocity curves for internal and external sounds, drawing on the same eight predefined curves (as two of these are inverse curves, you can set up velocity crossfades between internal and external sounds, with either taking the, er, soft option).

Similarly you can specify separate internal and MIDI note zones, which means you can have an upper/lower split or a split/layer texture of internal and MIDI'd sounds, with the external texture, of course, being decided by the slaved instrument(s). However, I would've liked to see a bit more flexibility in the MIDI zoning, with, say, two MIDI zones which could transmit on separate MIDI channels. If the Rhodes' four front-panel sliders (which can be programmed to transmit MIDI controller data such as MIDI volume) could transmit on different MIDI channels, then you could also balance the volume levels of two different MIDI'd sounds (say, bass and strings) and whatever sound you've selected on the Rhodes. As it is, they can't and you can't, and nor can you readily preset internal/MIDI volume balance from the Rhodes, as there's no provision for storing a MIDI volume value per Variation.

Now, Roland can wave their banner of performer-friendliness to justify whatever omissions they've made, but friendliness isn't only a matter of simplicity of approach, it's also about providing features which can be of practical benefit to the performer. The Rhodes also has a number of global MIDI parameters. On the transmission front you can specify patch change, control change and sustain pedal on/off (in the latter case, you could sustain the Rhodes sound but not a MIDI'd sound), while for MIDI reception you can specify patch change, SysEx, pitchbend, control change and All Notes Off on/off. Additionally you can select a MIDI receive channel (1-16) or omni receive, transpose internal and MIDI notes over a wide +/- range in semitone steps, set MIDI Local on or off (if off, you can play MIDI'd sounds while the Rhodes itself is silent), select decimal or Rhodes button patch-number display format, and activate a MIDI SysEx bulk-dump of the MK80's data to an external storage device.

The MIDI Out button positioned below the LCD window allows you to go to the other extreme and switch out MIDI note transmission altogether (it's a pity you can't control Local on/off as spontaneously as this). As with channel-changing, the MK80 avoids the danger of stuck notes by only activating and deactivating these functions once all notes and the sustain pedal have been released.

Finally, each of the four front-panel sliders and the supplied control pedal or optional expression pedal can be assigned to transmit MIDI controller data in addition to or instead of their onboard functions; as touched on earlier, you could, for instance, dynamically control the volume level of a slaved MIDI instrument in this way.

VERDICT

FIRST UP, THE MK80 provides the best original Rhodes sound this side of the original Rhodes. Roland have got the sound, the envelope and the volume balance across the keyboard right. Sit down and play the MK80 (and it really is an instrument which is meant to be *played*) and you know you're dealing with a classic. The sound and effect parameters allow you to alter the basic sound in much the same way as musicians used to do with effects pedals. Including a contemporary electric piano sound too was a very sensible move on Roland's part; now that modern ears are accustomed to the modern sound, will the old sound actually find favour again? I hope so. I could have wished for better offerings on the acoustic piano front, while a Hohner D6 clavinet sound (another '70s classic) wouldn't have gone amiss. But it's really the electric pianos which are the stars of this particular show.

As to which of the two versions, MK60 and MK80, will sell best, I'll be most interested to see. I'd be inclined to to go for the MK80 with its greater sound possibilities, its programmability and overall greater sophistication. But then the 60's more compact, lighter form and emphasis on simplicity might find favour in a lot of quarters.

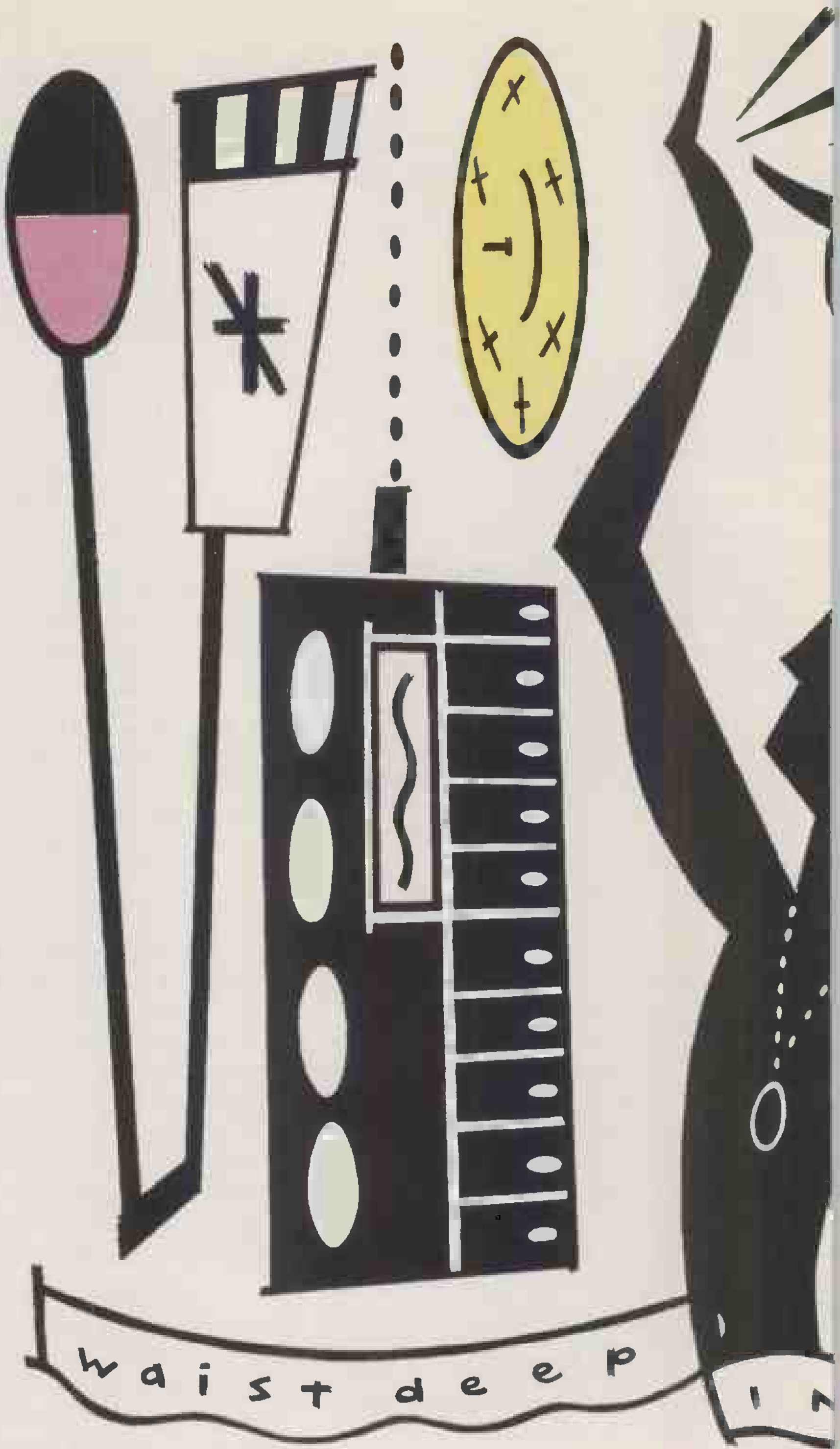
Clearly Roland's priority has been to adhere to the operational simplicity and directness of the original Rhodes as much as possible, while taking advantage of the possibilities offered by digital technology. As a result they've formulated a performer-friendly philosophy: ready access to performance functions (more buttons, less button-pushing), a limited set of parameters with functions which fulfill musically useful requirements rather than conform to the dictates of a synthesis system, and a readiness to offset simplicity against sophistication.

In fact, the company's purchase of the rights to the Rhodes marque is part of a broader strategy involving the setting up of a Rhodes marketing division. The Rhodes name will be on not only the MK60 and the MK80 but also further instruments, all of which will conform to the underlying Rhodes philosophy of performer-friendliness. The first of these will be the Model 660 synth, which should be available around the end of this year. According to Roland the 660 will use ReSynthesised PCM sound generation as introduced on the U20 earlier in the year, but presumably presented in a very different way from the U20 so as to conform to the Rhodes philosophy. Personally I'd like to see Rhodes pursue the ASA route which has made the MK pianos such a success – there are many other old instruments just waiting to be modelled in the same way. But for now, full marks go to Roland for bringing the classic Rhodes electric piano back from the dead with such obvious care and attention to detail. It's official: reincarnation exists. ■

Prices MK80, £1799; MK60, £1299; both prices include VAT.

More from Roland (UK) Ltd, West Cross Centre, Brentford, Midddlesex TW8 9EZ. Tel: 01-568 1247.

ON THE BEAT



PART 4

THIS MONTH'S EPISODE OF OUR RHYTHMIC SOAP OPERA CONCENTRATES ON FURTHER DEVELOPMENTS OF BASIC GROOVES.

Text by Nigel Lord.

IN PREPARATION FOR this month's rhythmic infusion, I recently spent a happy couple of hours with an Atari drawing package and a hyperactive mouse putting together a few standard beat box grids onto which could be written the patterns for each of the examples. Of course, I am prepared to concede that using dot matrix printouts isn't exactly state of the art in terms of graphic reproduction, but as a means of cutting down the opportunities for mistakes to creep in, the advantages of reprinting the grids as originally written more than outweighs this. And as the patterns grow in sophistication, the likelihood of mistakes occurring becomes a very real problem indeed.

This month, we're again going to be looking at the embellishing of basic grooves, but with the introduction of a third dynamic level and some fairly complex rhythmic figures, we should hopefully be starting to broaden the appeal of this series to include those with an existing knowledge of beat box programming techniques. The three dynamic levels – low, medium and high – are indicated by open, dotted and solid diamonds (rhomboids for the tech-heads amongst us), though these will probably be reproduced as varying shades of grey. Now I know there's a danger here of leaving behind those readers equipped with only the most basic machines (particularly

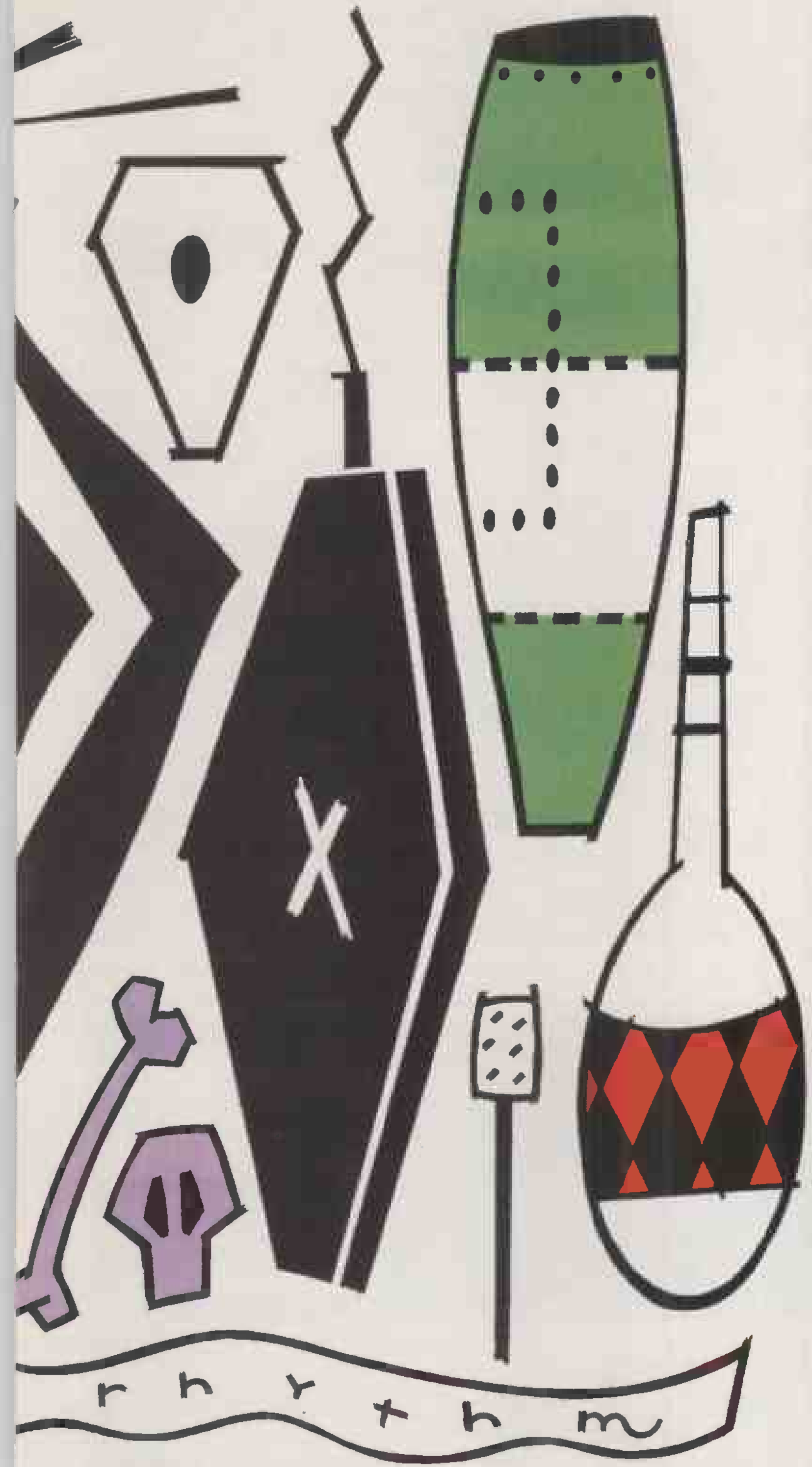


ILLUSTRATION: CLIVE GOODYER

those in which dynamics cannot be adjusted for individual instruments), but with certain modifications, there should still be plenty of ideas contained within these examples, which will prove useful on more modest equipment.

As in the last couple of articles, we're again going to be using standard single-bar pop/rock patterns as the basis for each example, but we'll be developing these into something more interesting rhythmically, as well as highlighting techniques which may be applied to many 8-,16- & 32-beat patterns.

In its basic form, this month's opening pattern is another of those rhythms to be avoided if at all possible. Though well-structured, it is ultimately quite dull with little or no rhythmic interest (see Pattern 1). The transformation into Pattern 2 produces a much more energetic groove with plenty going on, but still with enough space in which to slot a complementary bassline. It needs to run at a fairly brisk tempo, but should find applications in styles from funk to house with little modification. As with a couple of last month's examples, the crash cymbal at the beginning of Bar 1 is entirely optional, but should always be kept well down in the mix.

Though grossly overused, the basic pattern for the next example has, nevertheless, a quite versatile and powerful feel which may be freely applied to a variety of different song styles. (See Pattern 3)

As is apparent in Pattern 4, however, a little extra programming time and effort can produce much more dramatic results. With its hi-hat line to give it interest and the double bass drum notes to give it power, the pattern, though still conforming to the feel of its rhythmic base, has much more to offer.

Given the complexity of the hi-hat line, you'll need to keep a watchful eye on the tempo – too fast, and it will start to sound unnatural – and as with all complex lines, the dynamics are crucial if the right effect is to be achieved. You'll also need to be careful where the pattern is used – one of the side effects of giving any rhythm more character is a lessening of its range of applications. Having said that, this one could always be used as a fill between other, less distinctive patterns. Incidentally, the rimshot (or side stick) line has been put in brackets to indicate its use as optional. Though it certainly adds a further dimension to the pattern, it does tend to make it even more specialised and therefore less wide ranging in its appeal. Try it and see what you think.

Yet another variation on the standard pop/rock combination, the 16 hi-hat beats to the bar in Pattern 5 help cover the gaps in this fairly sparse bass/snare combination...

The metamorphosis into Pattern 6 produces a much more distinctive groove with a pronounced snare line and neat tom-tom motif at the end of Bar 2. It's not quite so versatile tempo-wise as some of the other examples this month, and seems to work best at around 140bpm. Also, though not particularly dependent on the use of dynamics, the accented snare note at the end of Bar 2 is critical and could even have a rimshot or side stick beat programmed along with it for added effect.

Despite having the same pattern base as the last example, Pattern 7 is a rather more powerful rhythm characterised by rolling tom-tom figures which give its full blooded-feel. Despite this, it still has a broad range of uses provided the accompanying bassline is given sympathetic treatment. A couple of programming notes: if you have a choice of tom-toms, or if tuning is possible on your machine, keep the pitch fairly low for best effect, and don't forget to drop the level of the grace note (or flam) towards the end of the bass drum line in Bar 2.

With an insistent, driving feel to it, Pattern 8 represents a slight departure from the other base patterns this month, ➤

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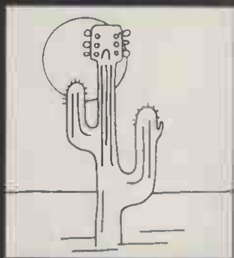

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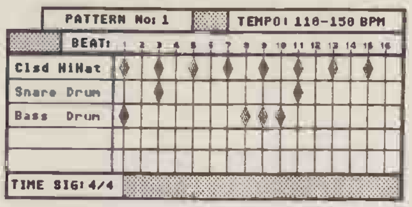

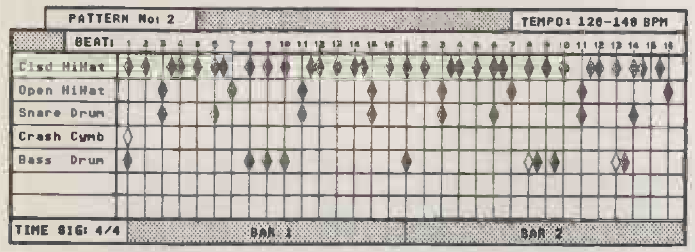

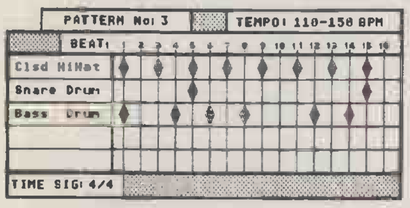

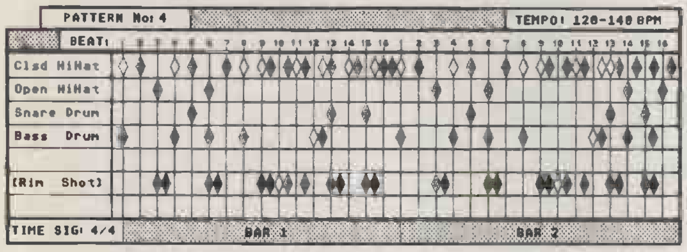

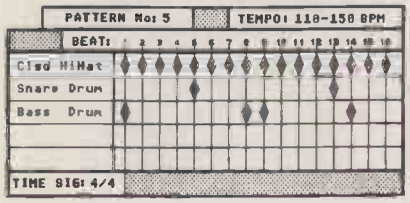

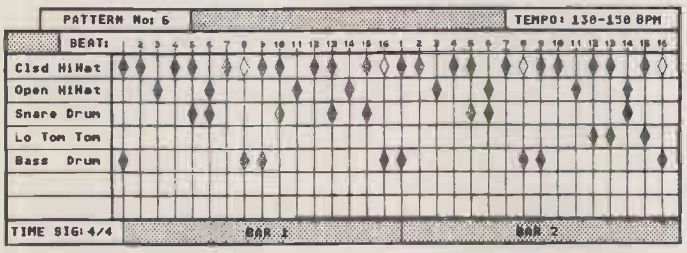

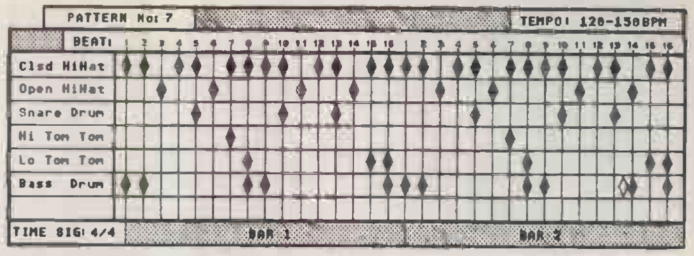

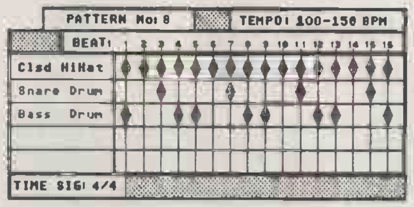

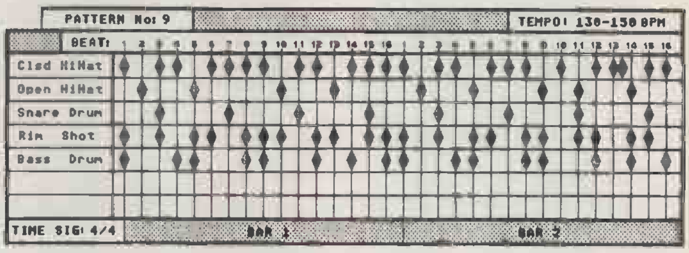

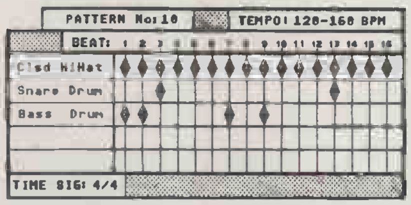

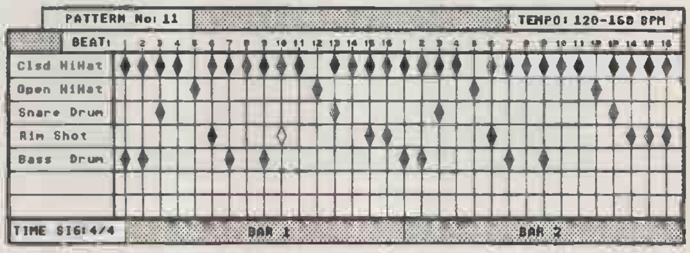

➤ but even so is still some way from being memorable.

The addition of a rimshot (side stick) line and the syncopation of the hi-hat soon puts this right, however, and once again we have a highly distinctive rhythm. (See Pattern 9.)

I wouldn't care to slot this pattern into any particular category – the rimshot does give it a slightly Latin tinge – but the relentless bass/snare combination prevent it from becoming locked into that particular genre. In the absence of a rimshot or side stick voice on your machine, you could try substituting a cabasa or even a handclap, but the latter does tend to sound a bit intrusive (and certainly rather dated) and will need to be kept well down in the mix.

Finally this month, we come to a simple but effective rhythm based on Pattern 10. A personal favourite of mine, this one relies almost exclusively for its effectiveness on the accented rimshot on beat 6 of each bar. Don't let its simplicity deceive you; with the right bassline this rhythm can be most compelling. I've used the rimshot as the obvious percussion instrument, but if you have a more hollow-sounding voice available, such as a wood block, then by all means try that – particularly for the trio of notes at the end of Bar 2. (See Pattern 11.)

And that just about winds things up for this month, and (hopefully) for the standard rock and pop rhythmic base.

I'll stress this month, as I have in previous articles, that the examples included, though perfectly usable in their own right, are intended as a spur to (your) further experimentation. At the very least, you could try alternating a pattern with its rhythmic base and simply adding or deleting notes to gauge their effect on the overall structure of the pattern. Whatever it is, try to do something to personalise the rhythm to the music for which it is to act as the foundation.

Next month, things are set to become a bit more involved, so if you've been thinking of trading in your Acme Rhythmpops on something a little more sophisticated this might be a good time to do it. ■

competition

V I D E O L A !

A COUPLE OF months ago (September, to be precise) we introduced you to a new concept in music video. The introduction took place on OutTakes where we looked at several examples of a new music and video art, videola. So far, subscribers to the art include video innovators Godley and Creme (who effectively founded the medium), Bomb the Bass man Tim Simenon, Polish director Zbig Rybczynski and exponents of the Fairlight CVI (Computer Video Instrument), Stakker. The idea behind the movement is to free video from having to be a three-minute promotional device for a single and to allow the music to interact more fully with its visual counterpart. The styles of the artists – and therefore the videolas – is deliberately varied: Godley and Creme's monochromatic images closely reflect the nature of the sounds that constitute the music, Simenon's electro beats accompany some racy skateboard action (directed by former world skateboarding champion Stacy Peralta), Rybczynski's slowly mutating images and (sampled) orchestral score work together to create a unique and disturbing atmosphere, and Stakker's visual terrorism is built around a stark techno soundtrack.

By now you'll have realised that we're giving away copies of these videolas as this month's competition prize. This is your chance to get a preview of what could well turn out to be the next stage in the evolution of the music video. First prize, then, will be a copy of Godley and Creme's *Mondo Video*, Tim Simenon and Stacy Peralta's *Attack*, Zbig Rybczynski's *The Fourth Dimension* and Stakker's *Eurotechno*. There will also be four runner-up prizes of a choice of one of the above videos. And what serious media competition would be complete without a tee-shirt? Not this one, so each winning entry will also receive a (natty) videola tee-shirt.

And so to the questions. As the competition is all about video, it seemed appropriate that the questions should test your knowlege of its technical side. So here goes...

1. What is the British video system called?

a. NTSC
b. SMPTE
c. PAL/SECAM

2. At what speed do the frames change on the British video system?

a. 24 frames per second
b. 25 frames per second
c. 30 frames per second
d. 30 frames per second, drop frame

3. The term LTC describes one type of video synchronisation code. Is it:

a. Linear Time Code
b. London Transport Code
c. Latitudinal Time Code
d. Longitudinal Time Code

ANSWERS SHOULD BE sent on a postcard only please, to *"Videola"*, Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF, to arrive no later than second post, **Monday 18th December.** Please include your name, address and a daytime telephone number on which you can be contacted with your entry, and state which of the four videos you would like to receive if you are one of the runners-up.

Multiple entries to MT competitions are currently being used to build a papier maché model of Bob Moog and are, consequently, welcome. It should be noted, however, that they will not be included when the competition is judged.

Thanks to Jac at The Video Label for arranging this month's competition.

VINYL TAKES

Jesus Jones
Liquidizer
Food Records LP

Perhaps Jesus Jones represent the next logical step for the art of sampling to take. Perhaps the search for the most obscure record to produce the most hip sample is simply leading people who ought to know better around in circles. Perhaps the way forward is to take all we've learned from the likes of M/A/R/R/S, Todd Terry, S' Xpress and De La Soul and take it where Jimi Hendrix might have taken it. Perhaps...

Naming all the above as influences – along with others such as The Byrds, Prince, Public Enemy, Black Sabbath and Sonic Youth – it would seem that this is exactly what Jesus Jones are trying to achieve. The results to date are a series of healthily raucous singles (including the almost successful 'Info Freako'), and now a long player entitled *Liquidizer*. For Jesus Jones, samples have taken their rightful place alongside the frantic drums and screaming guitars that have traditionally moved popular music forward. The result is a chaotic melée of indie-pop and found sounds. And underneath are the old values of The Song and The Statement Of Self-expression. If you like your music polite and introspective, put Jesus Jones in the Out tray.

But if you're curious to see what can be done with a sample of a chainsaw and a sample of the Sex Pistols, then 'Bring It On Down' will give you one of the possible answers. Still the strongest cut for my money on *Liquidizer* is 'Info Freako' but that's not to say that Jesus Jones haven't furthered their cause since recording it. Throughout the 12 tracks here, different fusions of guitars, drums and samples are explored. What the drums give the samples is a place in the real world; what the samples give the drums is somewhere new to go.

The whole counterpoint of the old, the new and what JJ believe is the next are the basis of *Liquidizer*. The trouble with throwing out the rule book is that you immediately have to start writing another one if you're going to get anything done. The rule book according to Jesus Jones makes sound reading, and the music that results from it makes interesting listening. It's only one possible progression for pop music to make and it's one that could keep both the pop purists and the technophiles happy in principle, but to succeed it will need people to support it. The cash for the records may be more likely to come from the pockets of angry youth than advocates of the next technical revolution, but I can't help feel that it'll be helping to reconcile the two. ***Tg***

Kate Bush
The Sensual World
EMI LP

"As the people here grow colder, I turn to my computer, and spend my evenings with it, like a friend". As ever it's been a long time coming, but it's here again – that almost unique event, the release of a Kate Bush album. It's been four years since the release of Bush's last album (discounting the compilation, *The Whole Story*), *The Hounds of Love*. Four years during which popular music has changed out of all recognition. So what has become of Ms Bush?

While previous of her LPs have had the punters scratching their heads, wondering where hers was, *The Sensual World* is not a drastic departure from *The Hounds of Love*. 'Love and Anger' and 'The Fog' bring *The Hounds*' 'Running Up That Hill' to mind, but nowhere are there parallels to *The Dreaming*'s 'Sat In Your Lap' or its title track. Had it been an album of commercial music, *The Sensual World* would have been left behind by pop's younger blood. But where almost all commercial pop can be dissected using a handful of elementary rules, Bush's music allows the critic no such luxury. Instead, each album continues to unfold long after the copy dates have passed. By setting herself apart from the mainstream of pop, Bush ensures that her work will not date as a direct consequence of changing trends. And so it is with *The Sensual World* – an album of sensitive songs that will take their time revealing themselves to the attentive listener.

One of the themes that *The Sensual World* inherits from *The Hounds of Love* is that of the use of folk instruments such as uillean pipes, violins, mandolins and Celtic harps alongside technology like the Fairlight. The album carries credits for "the Irish sessions" conducted at Dublin's Windmill Lane studios, which confirms her previous interest in Irish instruments in particular. The seamless meeting of electronics and acoustics demonstrates Bush's ability to select sounds for their individual merits. There are no distinctions between which instrument plays which role, just jobs to be done by the sounds at Bush's command.

The Sensual World carries another diverse collection in the form of its musicians. Pink Floyd's Dave Gilmour has played a part in Bush's career since *The Kick Inside*, but here he is joined by Mick Karn, John Giblin and Eberhard Weber on basses, Nigel Kennedy on violin and viola and Charlie Morgan on drums. If that's not diverse enough, Michael Nyman provided the string arrangement for 'Reaching Out'. Again there is no disharmony in the combination of musicians, just the need to create music.

But when dear Kate says "each album gets harder to make", you've got to ask yourself if this could be the last one. And you've got to hope that it's not... ***Tg***

LIVE TAKES

Inner City
Town & Country Club
London

In the '80s, dance has become very much associated with technology and with the recording studio, to the point where most of it is purely studio-conceived. The end result has a different sound, a different feel, even a different level of complexity to other kinds of music which have remained first and foremost group- and live-orientated. Nowadays most people hear contemporary dance music via records played in clubs rather than bands playing in the more traditional live venues. Yet it hasn't always been like this. Some of the best dance music ever was played by one of the best live bands ever: James Brown and the JBs.

Detroit techno music is a technology- and studio-based music if ever there was one, so Inner City's recent UK gigs with a live band consisting of two keyboard players, a drummer (on electronic kit) and a percussionist/bassist (again, playing electronic percussion) were an opportunity to see just how well the music could transfer to this very different format.

'Inner City Theme' made as strong an opener for the live set as it does on record, boding well for the rest of the set. The band went on to play most of the songs off their album, plus a cover of an old Stephanie Mills song which could be the next Inner City single. Paris Grey, bouncing and grinning with girlish enthusiasm, commanded the front of the stage expertly and sang well, while Kevin Saunderson was more restrained, confining himself to playing a strap-on Yamaha remote keyboard (or at least, he *seemed* to be playing it).

The fact that the music was live (the drummer wasn't even playing to a click track) meant that the band could stretch out the music, even throw in a keyboard solo here and there, and generally be more dramatic than the recorded versions of the tracks. Of course this is no novelty, even with club audiences, who are used to remixes. At one point Saunderson and Grey left the stage while the musicians (an energetic and talented bunch) did their own thing, which for the most part seemed to involve rocking out in a not particularly dance-orientated way. Was this really the Inner City that everyone had come to see?

The answer is that it was and it wasn't. The all-important keyboard hooks from the recorded songs transferred well to the live keyboards, and the drums and percussion handled their rhythmic chores well, but the overall sound lacked the machine-tooled precision and peculiar stark beauty which characterises the techno feel and sound, and overall the band imparted too much of a rock feel to the music. The powerful electronic kit sounds didn't always work out, as on 'Power of Passion', the dreamy techno ballad from the album which is based around a slowed-down techno rhythm. Here it came across clumsily, as the booming bass and snare dragged the song down like a lead weight.

Inner City played not one, but two nights at the Town and Country. Maybe these gigs were the first outing for the band, because the second night was noticeably tighter than the first, but overall the band still need a greater discipline and need to put more thought into the arrangements. However, Saunderson and Grey could have just done a PA (Personal Appearance), coming out performing to a backing tape, so full marks to them for putting on a real live show. No marks whatsoever go to the disco dancers who lavished their attentions on Grey through most of the set, though. Like something out of a Gaz 'n' Shaz Mecca night out, they would've been much more at home gyrating around the likes of Sonia or the Reynolds Girls. Around Grey they were just an embarrassment.

In contrast to Inner City, the support act of Rhythim is Rhythim (Derrick May and Carl Craig) adopted the synth duo approach, surrounding themselves with synths, samplers and drum machines. Their set each night was based around May's classic and still massively popular 'Strings of Life'. On the second night they began with the original version before moving into an '89 version with a much more rigid, sequenced feel – which to these ears doesn't work as well. However, problems during the first night's set somehow meant that the music ended up having a looser, funkier, more experimental character, a sort of systems techno, which I actually preferred. But then I'm that kind of guy...

Crucially, by retaining the drum machines, Rhythim is Rhythim retained the techno feel which Inner City had lost. I found the abstract and intricate RIR sound far more absorbing than Inner City's more overt, direct approach. I know which group I'd rather go to see again. **St**

DEMO TAKES

I really dunno about you out there in readerland, but I'm a sucker for a foreign accent – so much so that I can usually get off on my own when I go abroad. So how could I possibly resist playing a tape whose covering letter contains phrases like "create in 1983 as a musical project, it now seems to have irrevocably mutate into a band"? I couldn't, so the first demo this month comes from (French-speaking) Canada and a band called **Possible-icône**. It took Luc, Pete, Julie and François a year to produce *Living With Each Other*, and probably as long again for the postal services to get it here.

So what do we got? Well, we got rhythms – lots of them – overlaid with delicate synth tones and snippets of vocal sample, we've also got sampled cellos, curious rattlings from unidentifiable sources, the mating call of whales and we've even got a couple of vocals. It's probably easiest to understand what the band are up to by quoting a few more of their words: "Sequences were laided on tape then samplings of different origins were added at strategic moments. Then small synth parts were played to complete the tracks. Finally, vocals were punch in." Quite.

The results are most interesting where samples of speech replace the monotonous (almost literally) vocals. With them you're tempted to assess the pieces as songs, which is ➤

Possible-icône

➤ not their strength. Without the vocals you're simply listening to pieces of music free to appreciate their development and the way the sounds have been crafted to work together.

Details on equipment are scarce, but Possible-icône pride themselves in a Casio VL1 and profess a disrespectful attitude to an instrument's pedigree. It seems to be simply a matter of what it will do for them... they do point out, however, that they don't own a "real" sampler. Yet somehow they've managed to get a lot of mileage out of samples. At an educated guess, the samples have been spun in off tape and video recorders and a digital delay has been used to create the infamous sample stutter where (sparsely and tastefully) used. There's a lesson here for anyone claiming a sampler is essential to their music making – a little ingenuity and patience will take you a long way.

Closer to home (actually dotted around Britain) you can find some of the worst quantised drum programs of 1989. They're the work of Keith Harrison, one quarter of **Pretentious IV**. The dastardly deed was done with a TR707 and Klone snare on a track called 'Amusement'. I think I'd have called it 'Embarrasment'. Let's not let Keith carry the can on his own though, as Heidi Hollowbread proves how close you can get to Kate Bush and stay out of tune. The other collaborators are JJ Kirkman and KB Palmer, on assorted synthesisers.

Fortunately, 'Amusement' is the lowest moment of this four-song demo. 'The Weakness Within', 'English Summer' and 'Broken Bodies' are executed with more accuracy, if not better sounds and ideas. The demo overall is thin both in sounds and hooks. Although the instrument list makes promising reading (Roland D50, JX3P, Akai S900, Yamaha DX11), the sounds used are unimaginative and gutless – why use the D50 piano when you could have used a decent sample? And why let the same drum program roll on and on without effectively doing anything more than keep time (except in the case of 'Amusement')? Too much gear, too little thought.

Back to the songs – or in the case of 'English Summer', someone else's songs. Ever heard of Propaganda, guys? And, sadly, these few stolen lines of melody are the best the demo has to offer. The remainder of the songwriting is predictable and uninspiring.

There are still lessons to be learned here, though. Given that the songs aren't chart toppers, why has such a poor example been chosen to open the tape? Strongest song first. Why has such a poorly executed song as 'Amusement' been included on the tape at all? If you're short of material and haven't the time (or inclination) to build it up, leave them wanting more. Whet their appetites and let them come to you for more material. At least it'll let you know that you're in demand – a valuable confidence booster for any aspiring band. And finally, when it comes to orchestrating, don't use sounds that are sure to have been heard a hundred times before. Don't be satisfied with somebody else's programming, no matter how good, customise it to make it your own.

Apparently, Heidi has an IQ of 152. Makes you wonder why she's involved in such a dodgy project.

Getting it a little nearer right are a band from somewhere in London called **One Deadly Summer**. Five straightforward pop tunes make up this cheerful demo, written and performed by Jacqueline and David on a Pro One, Casio FZ1 and CZ synths, Alesis HR16 drum machine and a little guitar and percussion. The songs were committed to tape on the band's own 8-track, and a pretty good job they've made of it. But a tidy recording does not a good demo (necessarily) make. So what of the music?

The songs are concisely written – nothing over four minutes long, arrangements sparse but adequate, hooks up-front... The opening track, 'Perfect Situation', finds David on the mic, demonstrating a capable if undistinctive voice. The track is somewhat on the trite side for my liking, but carries a good sense of atmosphere in the verses. On 'Heaven' Jacqueline takes over the mic and delivers another good vocal over a track carried by a Motown drum pattern – incidentally, a pattern that the HR16 carries with some conviction. To prove they're playing the A&R man by his own rules, track three, 'I Believe', shows off the downtempo side of One Deadly Summer. Spacey reversed samples introduce what turns out to be a short, sorry tale crooned by David. This is probably the lowest point of the demo as either the home studio environment or the duo's production abilities don't really allow the song to breathe. If nothing else, it shows where pro studios still have recording sewn up – it may be easy to put a fairly eventful recording together with a modest selection of gear, but silence and atmosphere still cost. That said, One Deadly Summer do themselves proud for a youngish (22 & 21) partnership not apparently trying to out-dance Stock, Aitken & Waterman or out-sample Black Box.

Did you know that Charles Gomila spent the mid to late-'70s studying the theory of classical/avant-garde music and wrote some works influenced by minimalism? Neither did I until his demo fell into my lap (the postman always delivers there). Under the nom-de-plectrum of **Isis**, Charlie has put together a tape of "free form funk". In this exclusive area of music he endeavours to extemporise jazz themes over samples of drums and slapped bass. It should work in theory, but whilst he was learning about the harmonic structure of the classics and the freedom of the avant-garde, he neglected to study the interaction that normally occurs between members of a rhythm section. The result is that 'Magpie Machaca' sounds as if it has different bass and drum parts under it. Over this conflict of rhythms, Charles improvises happily – adding to the mayhem. And this general description applies to most of the material here.

You can criticise Charlie boy on two levels here. You can regard the pieces as the kind of shambolic mess that could be rectified by some severe quantising and thinning out. Or you can treat the music as being fundamentally more sophisticated and deserving of more patient analysis. If you take the first point of view, you come to the conclusion that the man has no sense of time or arrangement. If you take the second you can't help but feel that something important isn't coming across. If this is true, I don't know what it is. And as I can't abide people who don't listen to what each other are playing, I'm afraid I turned the tape off before it had finished.

Now for a little relaxation. Where's my copy of Marillion's new album, *Season's End*... **Skum**

back issues

Missed an issue of Music Technology? Perhaps one containing an interview with one of your heroes, a review of an old piece of gear you're thinking of buying or a technique you believe will help you make music...

If there's anything you missed first time around, it may still be available as a back issue (or photocopy, if the issue is sold out). Don't miss out, simply drop us a line – or call the MT back issues department – and we'll let you have the best information money can buy.

Here is a list of the contents of the last three years' issues to help you find anything you're looking for. Of course, you might just be filling a gap in an otherwise complete collection. Now there's dedication...

JANUARY 1987 — Sold Out

APPRAISAL: Sequential Studio 440; Tantek MIDIverter MIDI/CV interface; Cheetah Spectrum sampler; Commodore 64 FM Editor; RAM Music Machine (Spectrum); Roland RD300 piano; Akai X7000 sampler; Bosendorfer Recorder; E-mu Emax sampler; Simmons SDE expander; Music 5000 (BBC B music expander).

MUSIC: Heaven 17; Steps Ahead; Seigen Ono.

STUDIO: Korg DRV1000 reverb; Tascam Porta Two multitracker; John Porter; Mixdown Lowdown (tricks for the mix).

TECHNOLOGY: AES Report; Mono Mode (MIDI mono mode, Pt6); Steim Studio.

FEBRUARY 1987

APPRAISAL: Casio AZ1 MIDI keyboard controller; Cheetah MK5 MIDI keyboard controller; Oberheim DPX1 sampler reader; Stepp DG1 guitar synth; Jam Factory (Mac); Sequential Studio 440; Korg SG1 piano.

MUSIC: Frank Zappa; Robert Irving III (Miles Davis); Mick Karn; Peter Hammill & Paul Ridout.

STUDIO: Yamaha DMP7 mixer; Space... (digital reverb explained).

TECHNOLOGY: Roland MC500 Microcomposer; Roland MC4 (retrospective); ICMC Report; Sight Reading (book reviews); Mono Mode (Pt 7); Instant Pictures (Mandala MIDI video instrument).

MARCH 1987

APPRAISAL: DX-MAX (DX7 upgrade); Digidesign SoftSynth (Mac); The Barry Box (BBC B sampler); Yamaha DX711D/FD synths; Roland MKB200 MIDI keyboard controller; Simmons SPM8:2 mixer; Intelligent Music "M" (Mac); Dr T's KCS (Atari ST).

MUSIC: Adrian Belew; Nik Kershaw.

STUDIO: Bandwidth Bandwagon (frequency response specs explained); Barcus-Berry Sonic Maximizer psychoacoustic enhancer.

TECHNOLOGY: NAMM Report; Frankfurt Report; TechTalk: Steven Randall; Modes of Confusion (MIDI's various operating modes).

APRIL 1987 — Sold Out

APPRAISAL: QED Pickup; Kawai K5 synth; Yamaha TX81Z FM expander; Yamaha RX5 drum machine; Roland GM70 guitar synth; Oberheim Prommer.

MUSIC: Mantronix; Holger Czukay; State of Play.

STUDIO: Hugh Padgham; Korg DRV2000 reverb; The Wool Hall (Tears For Fears studio); ART DR1 reverb.

TECHNOLOGY: Istanbul Music Expo; We Can't Go On... (drum machine programming, Pt 1); Eighth Wonder (Roland Jupiter 8 retrospect); Dumping Grounds (MIDI Sample Dump Standard).

MAY 1987 — Sold Out

APPRAISAL: Hybrid Arts EZ-Track (Atari ST); Philip Rees 5X5 MIDI switcher; Rice Drum (BBC B); Steinberg Cosmo (CBM64); Casio SK2100 synth; Korg SQ8 sequencer; Roland D50 synth; Kawai R100 drum machine.

MUSIC: Hollywood Beyond; Man Jumping; Larry Fast (Peter Gabriel); Present Yourself (stage confidence).

STUDIO: Steve Lipson.

TECHNOLOGY: The New Macintosh; Sampling in Stereo; We Can't Go On (Pt 2); TechTalk: Kim Ryrie (Fairlight).

JUNE 1987 — Sold Out

APPRAISAL: Korg DS8 synth; 360 Systems MIDIMerge+; Kawai R50 drum machine; Roland D50 L/A synth; Hybrid Arts MIDITrack (Atari ST); Dr T's Copyist Atari ST); Casio FZ1 sampler; Peavey ED300 electronic percussion amp.

MUSIC: Bill Bruford; Startled Insects.

STUDIO: Stock, Aitken & Waterman; Roland DEP3 multi-fx processor.

TECHNOLOGY: We Can't Go On (Pt 3); Quick, Quick, Slow (MIDI delays); Dumping Grounds (MIDI Sample Dump Standard); TechTalk: Kim Ryrie (Pt 2).

JULY 1987 — Sold Out

APPRAISAL: Music 4000 Keyboard; Yamaha TX81Z expander; The Regeneration Game (Prophet 2002, Oberheim DPX1 & Roland S50 re-tested); Sonus Software (CBM64); Passport Master Tracks (Mac); Korg DS8 synth; Simmons MTX9 expander.

MUSIC: Laurie Anderson; David Torn; Geoff Downes.

STUDIO: Paul Dakeyne; MIDI Time Code.

TECHNOLOGY: We Can't Go On (Pt4); Decisions, Decisions (trading your DX7 for a DX7II).

AUGUST 1987

APPRAISAL: IMS Dyaxis; Kawai K5 synth; Iconix sequencer (Atari ST).

MUSIC: Living In A Box; Ryuichi Sakamoto; Andrew Poppy.

STUDIO: Nomad SMC synchroniser.

TECHNOLOGY: Sounds Natural (recreating the sounds of acoustic instruments Pt 1); MIDI Basics (Pt 1); We Can't Go On (Pt 5); NAMM Report; A Deeper Wave (wavetable synthesis); TechTalk: Emmett Chapman.

SEPTEMBER 1987 — Sold Out

APPRAISAL: Sequential Prophet 3000 sampler; Yamaha TX802 FM expander; Akai Wind Controllers; Zyklus MIDI Performance System; Alesis HR16 drum machine; Alesis MMT8 sequencer; Akai S900 updates; GMR E! Board (v2.0); Kawai R50 drum machine; Intelligent Music Upbeat (Mac).

MUSIC: Wally Badarou; Steve Roach; Neil Carter (Gary Moore).

STUDIO: APRS Report; Strongroom Studio.

TECHNOLOGY: Sounds Natural (Pt 2); MIDI Basics (Pt 2); BMF Report; We Can't Go On... (Pt 6).

OCTOBER 1987 — Sold Out

APPRAISAL: Kawai M8000 MIDI keyboard controller; Yamaha QX3 sequencer; RSF SD140 drum machine; Hybrid Arts ADAP; Digigram MC5 scorewriting system; Roland MT32 L/A expander.

MUSIC: Yello; Black Britain.

STUDIO: Daniel Lanois; JL Cooper MidiMation; Yamaha REX50 multi-fx processor; Ibanez SDR1000+ reverb.

TECHNOLOGY: We Can't Go On... (Pt 7); Sounds Natural (Pt 3); MIDI Basics (Pt 3).

NOVEMBER 1987 — Sold Out

APPRAISAL: Roland S220 sampler; Roland MPD4; Digidesign SoftSynth (Atari ST); Roland VP70 voice processor; Korg C5000 piano; Roland TR626 drum machine; Casio HZ600 synth; Sonus MasterPiece (Atari ST).

MUSIC: M/A/R/R/S; Keith LeBlanc (Tack Head); Roy Hay.

STUDIO: Fostex X30 multitracker.

TECHNOLOGY: Made In Japan (the Japanese music industry, Pt 1); Every Little Bit (sound quality of sampling); MIDI Basics (Pt 4).

DECEMBER 1987 — Sold Out

APPRAISAL: Orla DSE34 expander; Peavey MIDI Foot Controller; Casio MG500/MG510 MIDI guitar; Yamaha TX802 FM expander; C-Lab Creator (Atari ST); Roland PM16 electronic drums.

MUSIC: Cabaret Voltaire; Jon Hassell; Graeme Miller.

STUDIO: JL Cooper PPS1 synchroniser; Simon Darlow.

TECHNOLOGY: AES Report; Made In Japan (Pt 2); The Art of Looping (sample looping, Pt 1); The Power of Wind (wind synthesis): Yamaha WX7 and Akai EWI); MIDI Basics (Pt 5).

JANUARY 1988 — Sold Out

APPRAISAL: Steinberg Time-Lock synchroniser; XRI XR300 synchroniser; Microdeal Super Conductor (Atari ST); Apple Hypercard (Mac); Korg DSM1 sampler; E-mu SP1200 sampler; Digidesign Q-Sheet (Mac); Simmons Silicon Mallet.

MUSIC: The Christians; Yes; Mark Stewart.

STUDIO: Tascam Porta 05 multitracker.

TECHNOLOGY: Picture Scoring (music for video); Made in Japan (Pt 3); The Odd One (ARP Odyssey retrospective); The Art of Looping (Pt 2).

FEBRUARY 1988 — Sold Out

APPRAISAL: Compu-Mates R100 DrumDroid (Atari ST); Alesis MMT8 sequencer; 360 Systems Pro MIDI Bass, Bit By Bit MIDIDrummer (Atari ST); Ensoniq SQ80 synth; Yamaha RX7 drum machine; Korg DRM1 drum expander.

MUSIC: Climie Fisher; Don Airey; Brian Eno.

STUDIO: Orinoco Studio.

TECHNOLOGY: Sydney Music Conservatorium; Why Just Intonation?; The Art of Looping (Pt 3); Massive Memory (hard disk data storage).

MARCH 1988

APPRAISAL: Kawai K1/K1M synth; Technos Acxel Resynthesiser; Korg 707 synth; Drumware S900 Soundfiler (Atari ST); Zyklus MIDI Performance System; Alesis HR16 drum machine; Elka MK88/MK55 MIDI keyboard controllers; Intelligent Music M (Atari ST).

MUSIC: The Beatmasters; Talking Heads.

STUDIO: Akai EX90R reverb; Stephen Hague.

TECHNOLOGY: Resampling; Multi Mode (MIDI mono mode for Ensoniq ESQ1 & SQ80); Local Area Networks (MIDI networking); NAMM Show Report.

APRIL 1988 — Sold Out

APPRAISAL: Korg M1 and S1 (previews); Paradigm Omni-

Banker (Atari ST); Hybrid Arts EZ-Score Plus (Atari ST); Akai EWI2000 & EWV2000; Akai MPC60; Simmons SDX; Hybrid Arts GenPatch (Atari ST).
MUSIC: Art Of Noise; Jellybean Benitez; Really Big Men.
STUDIO: 2nd Sense Studio; Johnny Hates Jazz.
TECHNOLOGY: All About Additive (additive synthesis Pt 1); ARP 2600 (retrospective); Alternative Strings (making string samples); Frankfurt Show Report; Public Domain Software.

MAY 1988

APPRAISAL: Cheetah MD8 drum machine; GMR E! Board DX7 upgrade; Voyetra Sequencer Plus III (IBM PC); Blank Alchemy (Mac); Axxess MIDI Mapper; Dr T's MRS (Atari ST); Yamaha TX16W sampler; Groove Jupiter 8 & Juno6/60 MIDI updates.
MUSIC: Aswad; Steve Nieve; Peter Erskine.
STUDIO: Tascam MTS30 synchroniser; Ian Levine.
TECHNOLOGY: A Vocal Chord (sampling the human voice Pt 1); Multitasking; All About Additive (Pt 2).

JUNE 1988 Sold Out

APPRAISAL: Yamaha WX7 MIDI controller; Yamaha MIDI Grand; Roland S550 sampler; E-mu Emax SE HD sampler; Kawai K1 synth; Saro Musigraph (Atari ST); Master Tracks Junior (Atari ST).
MUSIC: Thomas Dolby; Three Wize Men; Simon Limbrick.
STUDIO: Twister; Andy Richards.
TECHNOLOGY: A Vocal Chord (Pt 2); MIDI in the Mix; Shaping The Wave (synth programming).

JULY 1988

APPRAISAL: Clavia Ddrum 2; Drumware GenWave/12 (Atari ST); Korg M1 workstation; Steinberg Pro24 III (Atari ST); SDA Promidi Studio System (IBM PC); Dr T's & Soundbits 4-Operator FM editors.
MUSIC: Scritti Politti, Blue Mercedes; David Torn.
STUDIO: The Sound Workshop; Secrets of Timbre (mixing sounds).
TECHNOLOGY: Bass, How Low Can You Go? (sampling the electric bass); Lure of the Jingle (jingle writing).

AUGUST 1988

APPRAISAL: Yamaha G10 guitar synth; Ensoniq EPS sampler (preview); E-mu Emulator III sampler; Oberheim Matrix 1000 expander; Roland S330 sampler; Steinberg's The Ear (Atari ST); Kurzweil HX1000/SX1000 expanders; Dr T's MPE (Atari ST).
MUSIC: Jean Michel Jarre; Ellis, Beggs and Howard; Act.
STUDIO: APRS Report; Digitally Yours… (digital sound).
TECHNOLOGY: DIY Single (recording your own single); Exclusive Information (explaining SysEx); Vocal Coding (vocoders).

SEPTEMBER 1988

APPRAISAL: Digital Music Corp MX8 MIDI processor; Casio VZ1 synth; Roland D110 L/A expander; Casio PG380 guitar synth; Roland Octapad II; Simmons Portakit; Digidesign Turbosynth (Mac).
MUSIC: Kevin Saunderson; Michael Shrieve; Claire Hamill.
STUDIO: Norman Cook; Rich Bitch Studio.
TECHNOLOGY: BMF Report; Copycat Crimes (sampling and the law); Fun in the Waves (additive synthesis Pt 1)).

OCTOBER 1988

APPRAISAL: Akai S1000 sampler; Cision MCV20 MIDI/CV interface; Digigram MIDImic; Casio DG100 Digital Horn; Ensoniq EPS sampler; Roland D20 synth; Dr T's Fingers (Atari ST).
MUSIC: Bomb The Bass; Big Audio Dynamite; Phil Thornton.
STUDIO: JL Cooper Mix Mate; PWL's Phil Harding and Ian Curnow; Roland E660 EQ.
TECHNOLOGY: Virus! (computer viruses); Prophet 5 (retrospective); More Fun in the Waves (additive synthesis Pt 2); Art of Glass (samples from glass).

NOVEMBER 1988

APPRAISAL: Cheetah MS6 expander; Yamaha YS200 synth; Kawai Q80 sequencer; MIDIsoft Studio (Atari ST); Softwind Synthophone; Digigram Studio 24 and Big Band (Atari ST).
MUSIC: Coldcut; Alan Ayckbourn; Gentlemen Without Weapons.
STUDIO: SRC/AT synchroniser.
TECHNOLOGY: Music TV (writing TV soundtracks); Korg Mono/Poly (retrospective); We Are The Management (music biz' management); Map Rap (MIDI mapping).

DECEMBER 1988

APPRAISAL: Dynacord CLS222 Leslie speaker simulator; Coda Music Finale (Mac); Akai S1000 sampler; Yamaha C1 computer; Power Tools Korg M1 Editor (Atari ST); Yamaha G10 guitar synth; Hybrid Arts EZ-Track Plus (Atari ST).
MUSIC: Juan Atkins; Information Society; Baby Ford.
STUDIO: Lexicon LXP1 reverb.
TECHNOLOGY: Record Profits; Oberheim SEM (retrospective); On the Boards (bulletin boards); Psycho Killer (the Psycho Mobile).

JANUARY 1989

APPRAISAL: Roland U110 expander; Intelligent Music Mididraw (Atari ST); Akai S950 sampler; Dr T's D110 Editor (Atari ST); Dr T's Tunesmith (Atari ST).
MUSIC: Yello; Renegade Soundwave; Steve Reich.
STUDIO: Battery Studios; Tascam 238 8-track multitrack cassette.
TECHNOLOGY: Interactive Music (new forms of recorded music: CDV/CDI); Mister Memory (Memorymoog retrospective); MIDI Files.

FEBRUARY 1989

APPRAISAL: Soundbits 3D editor (Atari ST); Steinberg Twelve (Atari ST); C-Lab Creator/Notator (Atari ST); Roland R8 drum machine; Dr T's SampleMaker (Atari ST).
MUSIC: S' Express; Hubert Bognermayr; Lizzie Tear.
STUDIO: DACS MIDI Patchbay; Symetrix 511A gate; Toa MR8T 8-track multitrack cassette.
TECHNOLOGY: Bass Race (Roland TB303 retrospective); AES Report; Bring The Noise (microphone survey).

MARCH 1989

APPRAISAL: Roland Super-MRC Software; Songwright IV (IBM PC); Oberheim Cyclone arpeggiator; Hollis Trackman (Atari ST); Turtle Beach SampleVision (Atari ST); Dr T's, Soundbits, Drumware & Steinberg Kawai K1 Visual Editors (Atari ST).
MUSIC: Marshall Jefferson; Shriekback; Frazier Chorus.
STUDIO: Roland R880 reverb; Fostex R8 8-track; Roland RE3 Space Echo.
TECHNOLOGY: The Human Touch (programming "feel" in drum patterns); Frankfurt Show Report; The Secrets of Computer Composition (algorithmic compsition, Pt 1); NAMM Show Report.

APRIL 1989

APPRAISAL: Microdeal Replay sampler (Atari ST); Oberheim Systemizer; Hybrid Arts EditTrack (Atari ST); Philip Rees & Groove MIDI Merge Boxes; MIDI Mouse D50/550 Capture! (Atari ST); Hybrid Arts Ludwig (Atari ST); Steinberg Synthworks (Atari ST); Akai XE8 drum expander; Intelligent Music Real Time (Atari ST).
MUSIC: New Order; Colin Wilson; Stig Miolsson.
STUDIO: 360 Systems Audio Matrix 16; Alesis Quadraverb reverb.
TECHNOLOGY: Mellotron (retrospective); MIDI In Control; Further Secrets of Computer Composition (algorithmic composition, Pt 2).

MAY 1989

APPRAISAL: Ensoniq EPS-M (preview); Roland W30 workstation; Studio Electronics MIDImoog synth; AB Software Midistudio (Atari ST); Yamaha V50 synth; Elka CR99 MIDI disk recorder; Roland CD5 CD ROM; Akai MX76 MIDI keyboard controller.
MUSIC: DJ Mark the 45 King; Pascal Gabriel; Fun Force.
STUDIO: Akai AR900 reverb; PWL's Pete Hammond; Digitech DSP128 Plus reverb.
TECHNOLOGY: The Small Print (MIDI Implementation charts, Pt 1); Real Time MIDI; Moog Source (retrospective).

JUNE 1989

APPRAISAL: Yamaha TQ5 expander; Roland A50 & A80 MIDI keyboard controllers; Opcode Vision (Mac); Bit By Bit MIDIDrummer (Atari ST). Ensoniq VFX synth (preview); Technart TUK200 pitch-to-MIDI system; Yamaha RX8 drum machine; Aphex Feel Factory humaniser.
MUSIC: Soul II Soul; Cutmaster Swift; Front 242.
STUDIO: dbx SNR1 noise reduction.
TECHNOLOGY: Time Exposure (synchronisation codes); The Small Print (Pt 2); Synclavier update (Pt 1); Korg MS20 (retrospective).

JULY 1989

APPRAISAL: Dr T's MRS (Atari ST/Amiga); Roland R5 drum machine; Musicsoft MIDIman MIDI tape recorder; Roland D5 synth; CDP MIDIgrid (Atari ST); Roland W30 workstation; Yamaha DD5 MIDI drum controller; HB Engraver scorewriter (Mac); Ensoniq VFX synth.
MUSIC: Beatmasters; Mark Mothersbaugh (Devo); Animal Logic (Stewart Copeland/Stanley Clarke).
STUDIO: Korg A3 reverb; DigiTech IPS33 pitch shifter.
TECHNOLOGY: Exclusive Performance (applications of SysEx); Synclavier update (Pt 2); DAT's Life (explanation of Digital Audio Tape)

AUGUST 1989

APPRAISAL: Roland U20 synth; Roland GR50 guitar synth; Steinberg Cubase (Atari ST, Pt 1); Anatek Pocket FX; Hollis MIDIman (Atari ST); Musicsoft Syncman.
MUSIC: Living Colour (Vernon Reid); KRS One; Ray Lema.
STUDIO: XRI XR400 MIDI patchbay.
TECHNOLOGY: On The Beat (drum machine programming series, Pt 1); Music By Design (algorithmic composition applications Pt 1); Synclavier update (Pt 3); Microtonal Musings (microtonal tuning).

SEPTEMBER 1989

APPRAISAL: Korg M3R/RE1 synth & programmer; Cheetah Master Series 7P MIDI keyboard controller; C-Lab Explorer 1000 (Atari ST); Steinberg Cubase (Atari ST, Pt 2); Steinberg MusiCal (Atari ST).
MUSIC: Simon Harris; A Certain Ratio; Arthur Baker.
STUDIO: Yamaha FX500 multi-fx processor.
TECHNOLOGY: On The Beat (Pt 2); Music By Design (Pt 2); BMF Report.

OCTOBER 1989

APPRAISAL: Casio VZ8m expander; TDM Virtuoso (Atari ST); Kawai K1-II synth; Roland Pad5 MIDI drum controller; Pandora D110 Editor (Atari ST); Music-X (Amiga); EMR Studio 24+ (Archimedes); C-Lab Explorer 32 (Atari ST).
MUSIC: Les Adams; The Blue Nile; Ed Williams.
STUDIO: JL Cooper FaderMaster.
TECHNOLOGY: Media Link (the MIDI Local Area Network); On The Beat (Pt 3); Using MIDI Controllers.

Back issues of the above, where available, can be obtained at a cost of £2.00 per issue, or £1.00 per photocopied article, from Music Technology Back Issues Dept, Alexander House, Forehill, Ely, Cambs CB7 4AF. Cheques should be made payable to Music Technology (Publications) Ltd. Please note that photocopied articles are available only when the issue in question is sold out.

patchwork

Music Technology's monthly look at library patches and samples, and readers' own patches. If you're still waiting to see *your* particular synth featured in these pages, then why not submit some sounds of your own?

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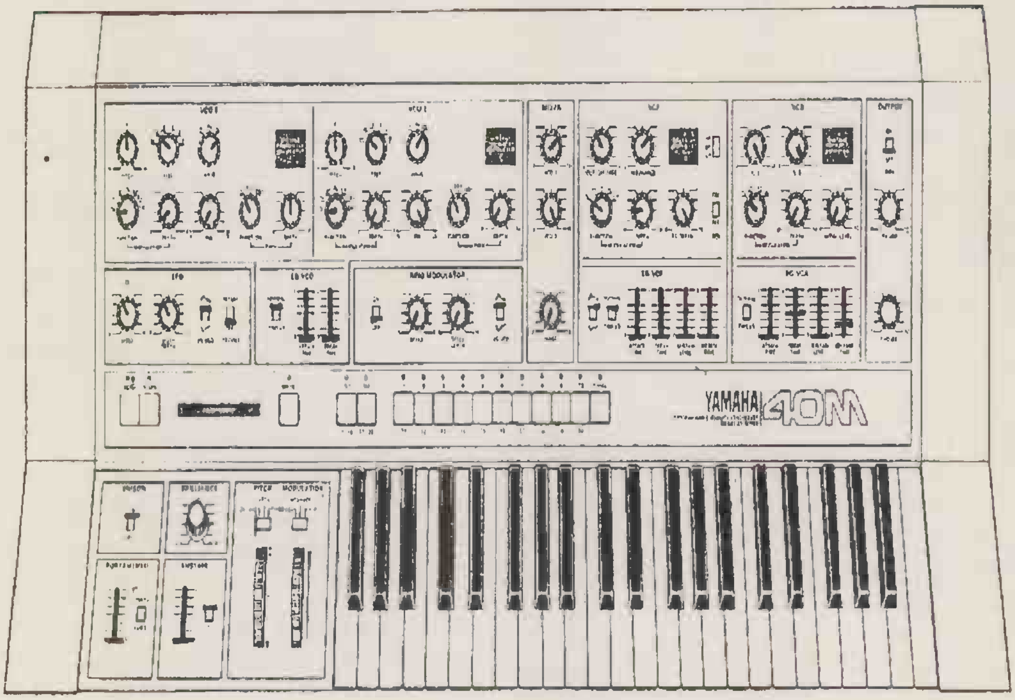
The address to send sounds to: Patchwork, MUSIC TECHNOLOGY, Alexander House, Forehill, Ely, Cambs CB7 4AF.



YAMAHA CS40M BOUNCE BASS

Terry Kellings, London

An authentic bouncing bass from one of Yamaha's oft-overlooked CS-series synths, this patch utilises the power of both of the 40M's oscillators; warm, rounded and full as a bass sound, a full clockwise turn of the brilliance knob transforms it into a useful lead sound with more of a cutting edge.

YAMAHA DX7S ANGEL GLASS

Tim Waters, Leamington Spa

Staying with Yamaha, but coming much more up to date, this patch from Tim (aka Patchwork regular TP Waters, I suspect) is a breathtakingly glossy and transparent bell, delicate for lead lines, warmer and more atmospheric when used for chords. Tim suggests that if the sound rings on too long for your liking, operator 4's EG rate could be changed from 14 to around 28.

DX7s

Voice name :
Date :

ALGORITHM	
Algorithm	10
Feedback	0
Osc key sync	on
Transpose	D1
LFO	
Wave	TRI
Speed	22
Delay	0
Mode	Single
Pmod sens	1
PM depth	46
AM depth	0
Key sync	OFF
Pitch EG	
Range	8 OCT
Velocity	OFF
Scaling	0
R1	99
R2	99
R3	99
R4	99
L1	50
L2	50
L3	50
L4	50

OSCILLATOR OP	1	2	3	4	5	6
Mode	HZ	R	R	R	R	R
Coarse-Fine	1.000	7.00	1.63	7.15	61.69	35.28
Detune	-7	+7	0	0	0	+4
EG OP	**1**	**2**	**3**	**4**	**5**	**6**
Rate Scaling	2	2	5	3	2	2
R1	85	71	44	94	94	94
R2	70	25	28	28	70	70
R3	24	16	30	18	24	24
R4	28	25	17	14	28	28
L1	27	90	45	52	27	27
L2	98	46	42	73	98	98
L3	80	92	00	00	80	80
L4	00	00	00	00	00	00
Output Level OP	**1**	**2**	**3**	**4**	**5**	**6**
Scaling mode	n	n	n	n	n	n
Output level	67	88	51	68	79	78
Break point	63	63	63	63	A1	63
L-curve	-L	-L	-L	-L	-L	+E
R-curve	-L	-L	-L	-L	-L	E
L-depth	0	0	0	0	0	16
R-depth	0	0	0	0	0	37
Sensitivity OP	**1**	**2**	**3**	**4**	**5**	**6**
Key velocity	0	2	5	5	2	6
A mod sens	0	0	0	0	0	0

Key mode	
Key mode	POLY
Unison detune	
Pitch bend	
PB mode	n
Range	7
Step	0
Portamento	
Mode	Retain
Time	49
Step	0
Random pitch	0
Modulation wheel	
PM depth	99
AM depth	0
EG-bias	0
Breath control	
PM depth	
AM depth	
EG-bias	
P-bias	
After touch	
PM depth	0
AM depth	0
EG-bias	0
P-bias	0

Foot control 1	
FC1→CS1	
PM depth	
AM depth	
EG-bias	
Volume	
Foot control 2	
PM depth	
AM depth	
EG-bias	
Volume	
MIDI IN control	
PM depth	
AM depth	
EG-bias	
Volume	

Performance name

Voice No	
PS	
CS1	
CS2	
Total Volume	
EG Forced damp	
Micro tuning	
Key shift	

Philip Rees

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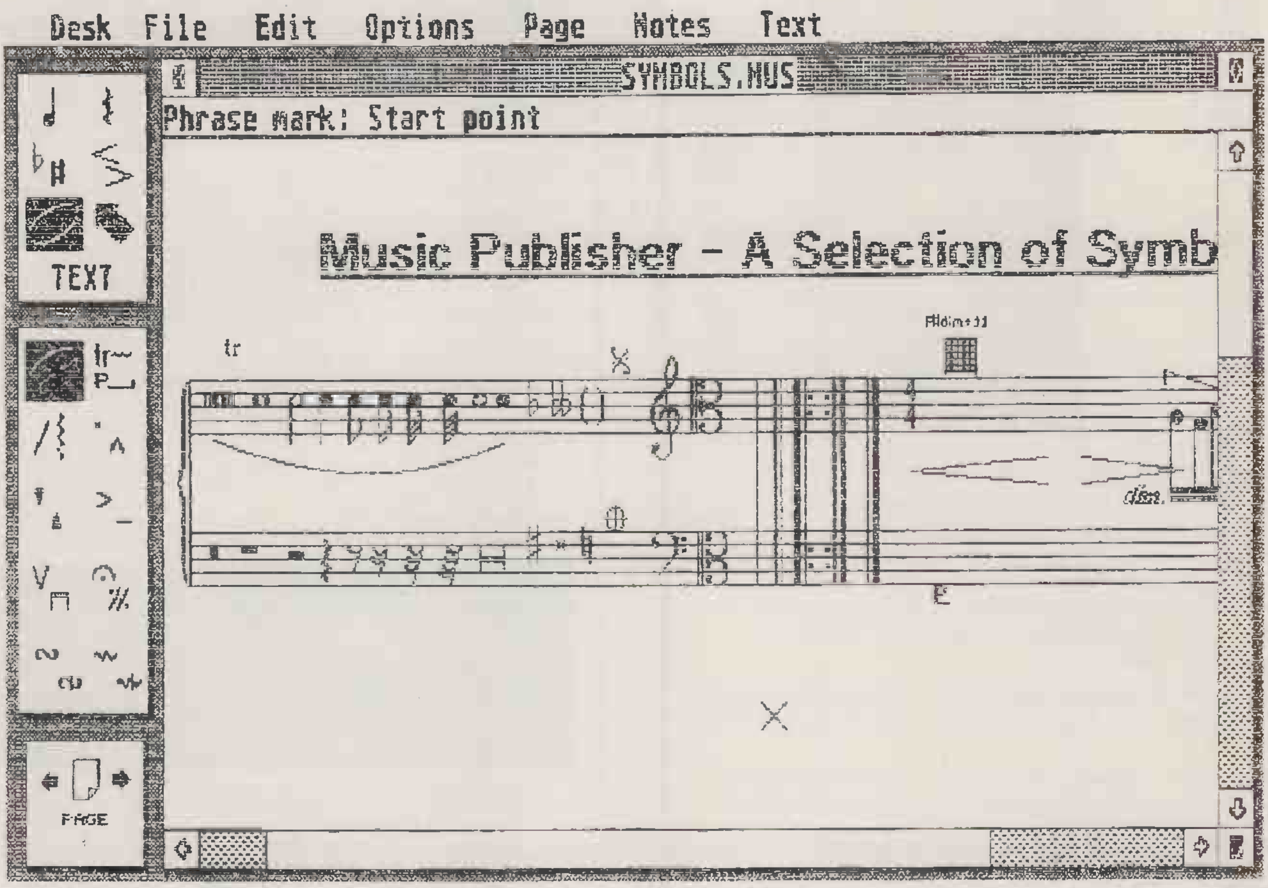


Many sequencing programs offer music scoring facilities, but there's more to sheet music than notes and bar lines – as Music Publisher sets out to prove. Review by Ian Waugh.

PRODUCING A SCOREWRITING program isn't easy. If it was, everyone would be doing it.

It's not *too* difficult to convert real-time input via a MIDI instrument into notes on a stave (*too* being a relative term). C-Lab's Notator, Steinberg's Cubase, Comus' ProScore and EMR's Studio 24 Plus Version 2 to name but four programs, all do it in varying degrees of depth and detail.

But what these programs can't do is translate the nuances of performance into notation – details such as dynamics, articulation and phrasing. Sure, volume is there in the MIDI data but it is not turned automatically into *pp* and *ff* dynamic markings on the stave. The computer still has difficulty distinguishing between a staccato crotchet and a quaver followed by a quaver rest and I've yet to see a MIDI-based program which can insert phrase marks, grace notes and correctly interpret tempo and time signature changes and fermatas (you'll be lucky) from a performance.

I'm not being awkward. Music notation is much more than just notes on a stave – although we all know that most rock and pop material relies as much upon feel and the fact that rock musicians know what they're doing (don't they?) as on the dots.

If you just want the notes, then explore the types of program mentioned above. But if you want more, until the intelligence of such programs develops a little more you'll have to write a score by hand, with a music typewriter or with a dedicated scorewriting program – such as Take Control's Music Publisher (review version 1.00c).

INSTALLATION

THE MUSIC PUBLISHER package consists of four disks and a 66-page manual in a ring binder. One disk is the Program Disk, the others hold printer configurations for 9-pin/Epson FXs, 24-pin printers and the SLM804 laser printer. It should also operate with any GDOS printer driver, and a Postscript driver including font is currently being developed.

The system requires a hi-res monitor and a minimum of 1Meg of RAM. You'll also need a double-sided floppy disk drive.

The first step is to configure the disks to your system. They aren't copy-protected but they are marked with a serial number – 11/10 for this, TC – and can be installed on a hard disk. The program will run on a single-floppy system, but two drives or a hard disk is recommended, as we shall see.

I've got to say that the one-page Installation Guide could be a little more informative. The final loading procedure I ended up with (for a single drive system) involved switching on the ST with the Printer Disk in the drive, inserting the Program Disk and double clicking on the Music program, re-inserting the Printer Disk and then re-inserting the Program Disk. If you want to use desk accessories, these must be installed on the Printer Disk. This sequence of events is not specifically mentioned in the Guide and I can't help but believe that a simpler start-up routine is possible. Anyway, once the program is in you're away.

Music Publisher uses a page-oriented layout – you simply fill a page with notes, add a new page and carry on. You can define your own page size and the number of staves it contains, but there are sensible defaults such as A5, A4, A3 and B5 with 12 staves per page. You can even choose portrait or landscape layout and select staves of one, three or four lines. You can add bar lines, brackets, name the staves and save the layout as a template. Two templates are provided to get you off to an easy start.

IN CONTROL

NOTES, MUSIC SYMBOLS and editing options are selected using a Control Box and a Tool Box which are present on the left of the screen. The type of symbol or action required is selected in the Control Box and the available options then appear in the Tool Box.

There are seven Control options: Notes; Rests; Symbols such as accidentals, clefs and bar lines; Dynamic markings including hairpins; Articulation markings including phrase marks, staccato marks and ornaments; Editing which includes beaming, moving and erasing objects, copying and so on; and Text insertion.

So let's begin. We'll be clever and construct our own set of staves. Nothing fancy to start with, just two piano staves.

First you must define a System. This is the number of staves which are grouped together. In our case we'll define just two Systems – staves 1 and 2 and staves 3 and 4. You can bracket them together with the Define Block option – a choice of square or curved brackets.

Next, click on Symbols in the Control Box and then on the clefs in the Tool Box. Several items in the Tool Box show two symbols: you switch between them by clicking the right button. The name of the currently-selected symbol or option appears at the top of the stave window. You then position the cursor – "X" in shape – on the stave and click. You don't have to be too accurate with clefs as an option under the Options menu – where else – automatically places them to the left of the stave. Nice.

If you want a key signature, this must be entered a sharp or flat at a time. It's up to you to line up and space them correctly. An auto key signature function would have been handy.

Next, click on the time signature/bar line in the Tool Box, make sure time signature is current (right click if it isn't), position the cursor – accurately this time – and click. A dialogue box pops up offering Common and Alla Breve symbols and Other time signatures – it will accept any values from 0/0 to 99/99.

Then you put the music in.

NOTE ENTRY

ALL NOTES AND most symbols are positioned using the "X" cursor. Changing from a note to a rest or selecting a bar line or accidental requires a click in the Control Box and one in the Tool Box. It's no big deal but a couple of clicks could be saved if, say, bar lines and accidentals were in the same Tool Box as the notes. The large Turn Page icon beneath the Tool Box could be made smaller or relegated to a menu.

To help enter notes above or below the stave you can switch on the Show Ledger Lines option which draws three dotted lines above and below the stave. Perhaps it would have been a tad more helpful if the lines appeared automatically when moving the cursor into a ledger line area, or why not show the note name as you move the cursor up and down the stave?

There are standard-size notes and small notes (ideal for grace notes, appoggiatura and acciaccatura), diamond and cross-head notes and crossed note stems to indicate tremolando. You can define your own chord symbols. Rests can be made to snap into the centre of the stave. There are accents and staccato marks aplenty, and a goodly complement of mordents and turns. Phrase marks and ties are entered by clicking on the start, end, and middle points – easy.

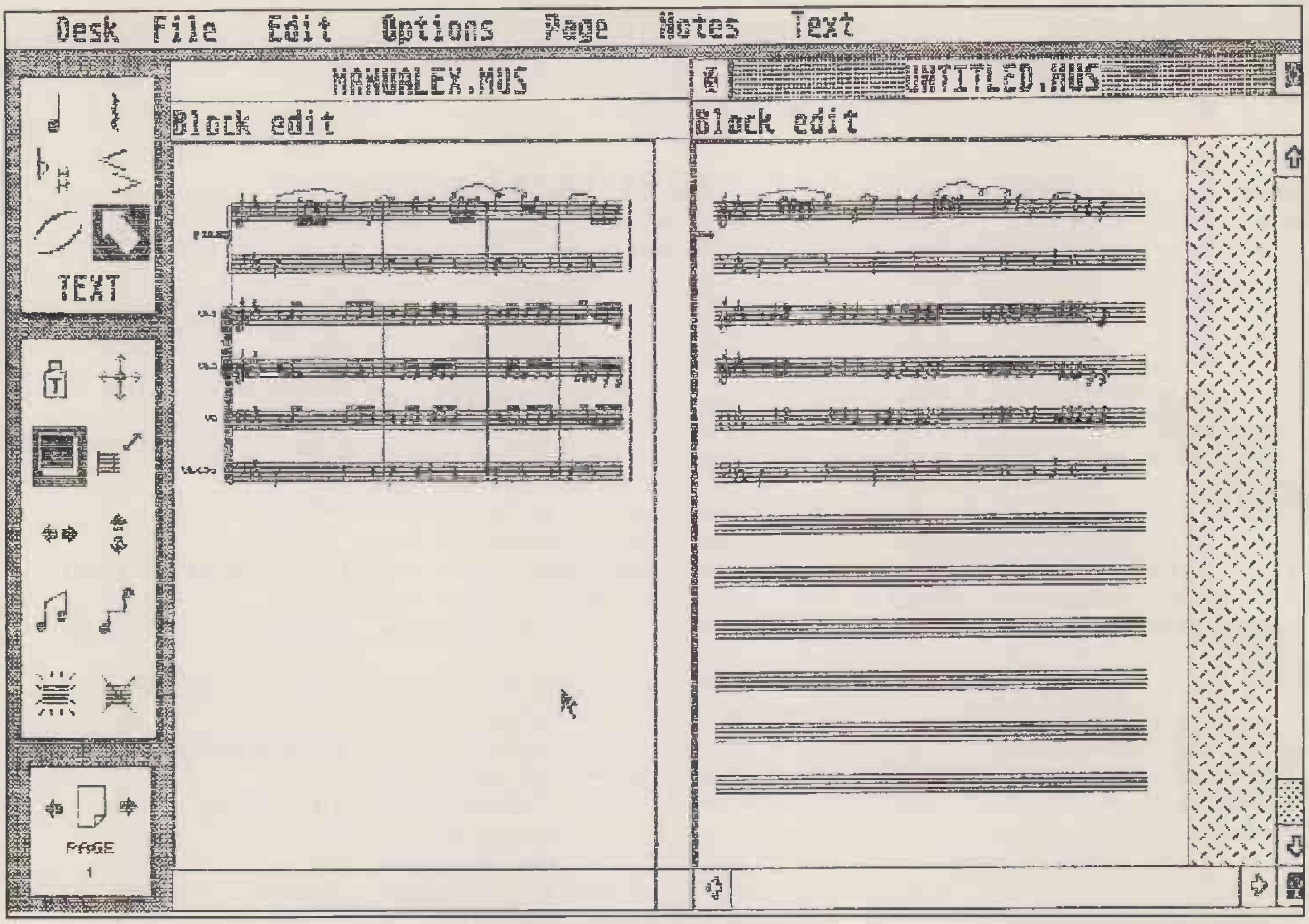
The system is ultimately flexible as you can stick anything just about anywhere. Complex double note groupings (see the JS Bach example – Screen 2) can be entered with relative ease.

The only trouble with giving a human complete control is that they can't always handle the responsibility. Tight lining up jobs require split-pixel precision. Positioning would have been a little easier if you were given the actual symbol to move around.

One of the main problems facing scorewriters is note and bar spacing – an ideal job for the computer, I would have thought. When entering notes it could space them out automatically or step the cursor on according to their duration. Lining up notes and spacing bars is something I don't really want to do by hand when using a computer. Unfortunately the review version of Music Publisher doesn't help in this way, although it will draw lines down the page to help align notes vertically.

To help get the spacing right you can insert and remove space both horizontally <u>and</u> vertically at any point on the page. To assist in this, you can view the page actual size, double size, $^2/_3$ or $^1/_3$ size. But you're still relying on your eye for the layout of the final product and I reckon another useful option would have been auto spacing to spread bars evenly across the stave. However, Take Control assure me that the next version (1.00e), which should be available by the time this review is in print will contain a snap-to-grid ➤

"What many programs can't do is translate the nuances of performance into notation – details such as dynamics, articulation and phrasing."



Editing two scores.

> "To help enter notes above or below the stave you can switch on the Show Ledger Lines option which draws three dotted lines above and below the stave."

system which, while it is not an automatic spacing function, will make placement and spacing of notes easier.

While we're on the subject, what about an auto bar checker to make sure the notes in the bars add up to the correct duration - and if it can check durations, what about an auto bar insert facility? Just a thought.

TEXT

TEXT ENTRY IS extremely flexible. Text can be placed anywhere on the page and justified left, right or centre. Four fonts are supplied (with provision for four more) in a wide range of sizes, and bold, light, italic, underline and outline effects are available. When entering words beneath music, pressing the TAB key will step you on automatically to the next note. This is excellent.

EDITING

EDIT IN THE Control Box offers a number of tidying-up and manipulatory functions.

Block Edit allows you to click a window around a section of music which you can then Erase or perform Copy and Paste operations on. However, the program hung in Block Edit mode a couple of times. The first time it refused to Paste and the second time it left me with a flat hand and nothing to move.

Music can be copied from one stave to another. The original pitch of the notes can be preserved or you can transpose them by Clef. For example, you can move them from Treble to Bass clef and offset them by one or two octaves. I wonder if a transpose by semitone option would be useful here to permit easy scoring in thirds or fourths - or whatever - and to allow for transposing instruments. An Undo button would come in handy, too, for those times when you erase something when you didn't have oughta.

There is also a symbol Erase function which requires you to click on a precise spot on the symbol you want to erase. On notes this is easy, but on large symbols the spot isn't always obvious and it's often less frustrating to revert to Block Edit.

There's also a Move Object function which is useful

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> “One of the main problems facing scorewriters is note and bar spacing – an ideal job for the computer, I would have thought.”

if a note lands on the wrong line or space.

Beaming is selected from the Edit Box, too, and Music Publisher makes this a simple operation by beaming the notes automatically. You just click a window around them and it will beam those with their stems up or those with their stems down. You can also beam notes which are split over two staves – neat.

The program finds a line of best fit which is what you'd want nine times out of ten. Just occasionally, however, you may prefer a beam to be drawn horizontally rather than sloping, perhaps for no other reason than to remove the stepped effect (should you not have a laser printer). A horizontal or sloping toggle, therefore, would be useful, although you can fudge a horizontal line by entering a dummy note at one end of the group, the same pitch as the note at the other end, beaming the group, then removing the dummy.

There's no stem-flip function – in mad bursts of note entry I often enter notes with their stems the wrong way around. An option to remove beams may be useful (although you can do this to individual groups with erase).

THE EXTRACTION OF PARTS

IF YOU'RE WRITING a score you will also need individual parts for the musicians. These can be extracted from the conductor's score and copied into a separate file.

Music Publisher lets you work on up to four manuscripts at once. These appear in GEM windows and can be repositioned and resized like any other GEM window – in fact you can make a window fill the entire screen but you'd not then have access to the Control or Tool Boxes.

By placing two windows side by side you can copy parts from a conductor score to a part score (see Screen 5). This is a nice idea but it only copies notes, not their beaming, bar lines or articulation marks. Some sort of auto part extraction would be helpful.

Another useful function, perhaps, would be the ability to make a stave smaller such as you find on piano accompaniment parts for solo instruments sonatas – violin, flute and so on.

PRINTING

AS YOU'VE ALREADY selected the printer type, the print options are simply the range of pages, the number of copies and the margin offsets. If you've a single drive system, however, you have to insert the Printer Disk and then the Program Disk again after printing. If I inserted the wrong disk I ended up back at the desktop – a problem that I'm told was due to incorrect program installation. Take Control say they will supply disks configured to your system should you encounter a similar problem.

About half the time the program sent me back to the desktop anyway and then bombed out so I had to go through the whole boot procedure again.

The print quality is excellent (as you can see), even using a 9-pin dot matrix printer, but I did come across a few bugs. One piece I entered contained chords made up of three minims (half notes). Two were easily entered as normal notes but as the third was on the other side of the stem it was entered just as a note head – what the program calls a "Hollow Blob". It looked OK on the screen but it printed as a solid blob (see Screens 1 and 4).

Also, the thin line which is part of the "double" End Bar line and Repeat Bar lines didn't print and the second half of a line of text which was entered in two sections overlapped the start of the second section (see Screen 1 and the second part of Screen 4).

MANUAL DEXTERITY

THE MANUAL IS quite well written and well illustrated and includes a tutorial section – the program really is very easy to use. However, the rings in the binder are just a bit too small and the edges of the pages have a tendency to get caught under them. Also, there are no pockets in the binder in which to keep the disks. Niggles, I know, and perhaps inconsequential, but it's all part of the package and I reckon it should be right.

Finally, the manual asks you to return your User Registration form in order to be informed of future releases and improvements which will be provided at preferential rates. This sounds like the "optional" upgrade fee system at work although no specific amount is mentioned. I tend to frown on this, especially when the original software costs almost as most as the computer it runs on. If I was buying this program I'd at least expect the bugs to be fixed for free.

VERDICT

MUSIC PUBLISHER HAS lots of excellent facilities and for a program which can produce complex output it's easy to use. But I feel there are several areas in which it could, indeed should, be of even greater help to the user. In particular, the process of note and bar placement and spacing. I'd like the computer to make a few decisions here instead of sitting there waiting for me to make the wrong one or watching while I squint at the screen trying to line symbols up to the nearest pixel – although, as mentioned earlier, some improvements have been made in this area. The whole point of having a computer in the first place is to make life easier, isn't it?

As there is no playback via MIDI and considering the cost of the program, Music Publisher must be aimed squarely at the professional composer and copyist.

If you do a lot of copying, and are already adept at lining up and spacing notes and bars, then the wide range of page sizes and layouts will appeal and the quality of the output is indeed superb. However, it's still a program you should try before you buy. ■

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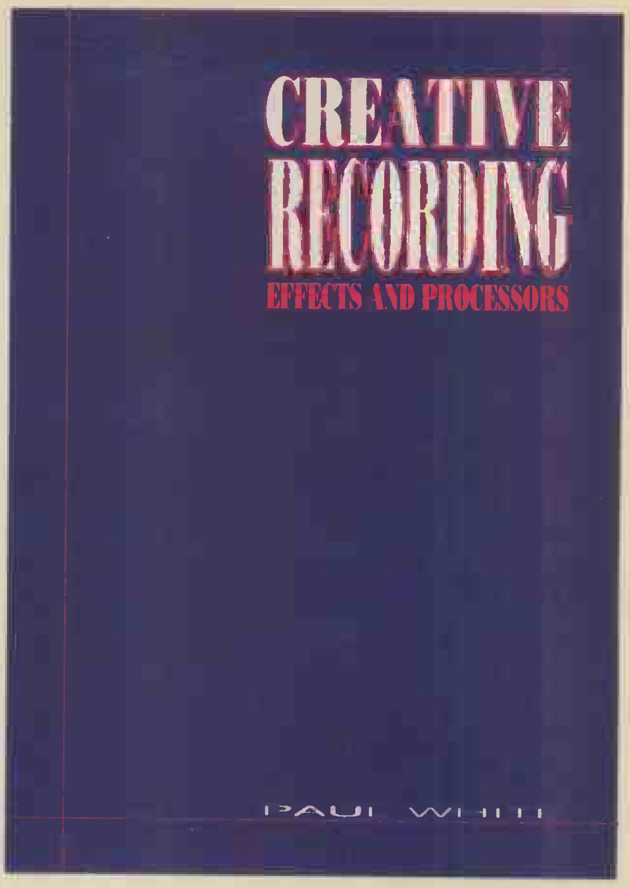

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CUBASE ATARI ST sequencer software, unused, £400. Ashley, Tel: Northampton (0604) 34946, eves.

CX5M large keyboard, voicing, composer, DMS cartridges, BIT1 program, £120. Tel: Sunderland 091-565 8073.

STEINBERG PRO24, not pirate copy!!! £190 ono. Consider swapping for 2-operator analogue sampler. Paul, Tel: Sheffield (0742) 879758. Yes – it is a joke!

XR1 MICON interface, step time sequencer, multitracker, Casio Editor, £40. Tel: Cardiff (0222) 756932.

YAMAHA CX5, SFG05 unit, voicing, composer cartridges, extra voices and progs, £200. Mik, Tel: 01-326 0090.

YAMAHA CX5, with MIDI recording, DX7 editing software, (no keyboard), £85. Tel: Brighton 304030.

RECORDING

CLEAROUT, Tascam 144, new heads, used 30 hrs, manual, £195 ono; MIDIverb, £95; Itam 10:4, silent, £95. Tel: 031-346 7325, eves.

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FOSTEX E16, £3250; Studiomaster Series II, 16:16:2, £2500; Fostex M20, £525; XR300, £200; vgc. Tel: 01-800 2970.

MIXERS: Tascam 106, 6:4, £175; Studiomaster Series One, 6:2:1, £125. Both excellent cond. Richard, Tel: (0422) 206830.

MIXING DESK, 16:4 Echo, F/B, limiters, £250; Revox A77, £160. Offers. Tel: 01-365 0105.

MTR 12:8:2 mixer, excellent cond, home use only, £399. Tel: (0743) 240226.

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SECK 6:2 mixer built into flightcase, immac, £350. Tony, Tel: (0706) 78141.

STUDIOMASTER Series 2, 16:8:2, gorgeous desk, hardly used but just serviced, boxed, perfect, £2000. Pete, Tel: (0525) 382990, after 6pm.

TANNOY Lancaster speakers, £400. Tel: 01-530 3808 or 01-598 8514.

TANNOY Stratford speakers (pair), studio use only, immac, boxed, £95. Tel: (0353) 721523.

TANRAK, 11 modules, £375; wanted: Prophets 3:2, interesting analogue synths, preferably post MIDI. Pete, Tel: 01-367 1720.

TANTEK modular multi-FX: two stereo compressors, two stereo gates, delay, exciter, EQ etc, £175. Tel: Darlington (0325) 466826.

TASCAM 38, 8-track, M50 desk, £1300. Steven, Tel: (0442) 51430.

TASCAM 246, boxed, as new, 6 inputs, immac, £550 ono. Dave, Tel: (0249) 713396, after 5pm.

TASCAM 388 multitracker, £1450; Yamaha RX5, drum machine, £350 ono. Derek, Tel: (0324) 665149.

YAMAHA KM802 stereo mixer, 3 aux ends, EQ and panning, almost new, £220. Tel: (0787) 62208.

YAMAHA REV7, with remote, £450; mouse for CX5, £30. Both vgc and boxed. Tel: Newport (0633) 273542.

AMPS

MONITOR SYSTEM, NAD Series 20, 2030 amplifier, Goodmans 3-way speakers on stands, £150. Tel: Telford 251753.

STUDIOMASTER 8:2 powered desk, 3 by 80W, Mosfets, graphic etc, immac, serious mixer with serious amps. Offers. Tel: (0525) 382990, after 6pm.

YAMAHA KS531, combo 100W, excellent cond, £270. Neil, Tel: 021-443 1922, after 5pm.

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FEMALE vocalist/musician wanted for avant-garde "band". Definitely commercially unsuccessful! Write: Lucien, 56 Thurlestone Road, SE London, SE27 0PD.

FREELANCE ENGINEER Required. Must be completely familiar with Pro24, S900, MIDI and general 16-track recording. A healthy appetite for all things technical is a must. Please write with details and experience to: Matthew Stuart, 126 Christchurch Road, London SW2 3DF.

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KEYBOARDIST seeks work in a studio, willing to learn. Craig, Tel: (0472) 79264.

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ROLAND GM70 and GK1 guitar, MIDI converter, £400; Westone Concord II bass, £80. Tel: (0753) 49872.

ROLAND PG10 programmer for D10, D20 and D110 synths, as new, £175 ono. Chris, Tel: (0753) 685665.

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AKAI X7000 disks urgently needed, ESP, Human, Waterdrop, Orch hit, your price paid. Steve, Tel: (0295) 262872.

ANALOGUE SYNTHS and Hammond with Leslie wanted, cash waiting. Tel: 01-485 4184.

ANY "MKM Productions" patchbooks for Casio CZ101. Dave, Tel: (0438) 317146.

ATARI 1040/520ST FM and Pro software. Tel: Newcastle 091-261

7829.

BACKING TAPES of the 50's and 60's. Tel: Peterlee, Co Durham 5866388.

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CHEAP KEYBOARD, MIDI, preferably velocity-sensitive. Write: Andrew Ostler, Clare College, Cambridge. CB2 1TL.

CZ5000 owners wanted to swap synth voices. Pete or Adam. Tel: 051-709 5436.

FAULTY Oberheim OBXa, OB8, DSX, DMX. Vocoders, Memory - moog, EMS and Electro-Harmonix products. Tel: 021-420 3295, eves.

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I ACTUALLY WANT a Korg EX8000!! Don't ask me why! Richard, Tel: 01-937 3004.

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