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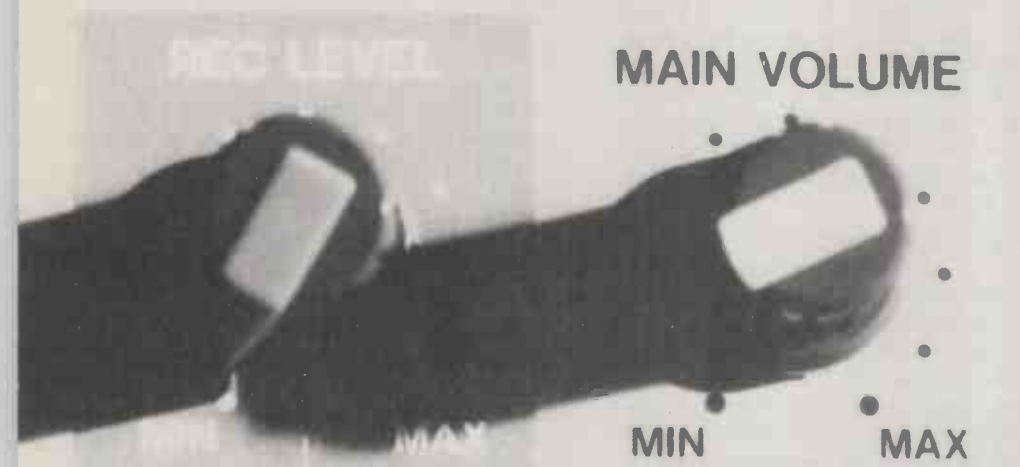

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At the heart of the problem is the venerable sequencer. As the hardware sequencer has evolved into the computer-based software sequencer, and as the software sequencer has become a more powerful tool, so its potential to misguide the unsuspecting musician has grown. From being a useful writing and performing tool the sequencer has conspired with multitimbral synthesisers to become an irresistible invitation to work more and more parts into a song.

The story probably begins with the popularisation of the humble drum machine. Accused of sounding "too mechanical" and presenting an unnatural alternative to the playing technique of a real, live, human drummer, the drum machine's real crime was to allow the programmer to keep both hands free while it did all the work. Liberated from the physical distractions of playing, too many programmers busied themselves inventing extra percussion parts to sit on top of an already overcrowded drum pattern.

What the drum machine had begun, the sequencer continued. With an appetite already whetted by a drum box overflowing with triplet paradiddles and flams, the programmer eagerly applied the same philosophy to the pitched elements of his or her music. No sooner was the basic melody line safely recorded than doubled melodies, harmony lines and melodic counterpoints freely followed. The fine old art of including rests and breaks in a piece of music was becoming lost.

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And so to the moral of the story. Music technology has brought about many new methods of working and broadened musical horizons. But adopting technology as an alternative to "conventional" methods of working with music does not exempt you from making the considerations that have been made by composers for centuries. Space is not the final musical frontier, but it's giving some musicians a damned hard time at the moment.■ Tg

MUSIC TECHNOLOGY *is published by Music Technology (Publications) Ltd, a subsidiary of Music Maker Publications (Holdings) plc, Alexander House, Forehill, Ely, Cambs CB7 4AF. Tel: (0353) 665577 (all departments). FAX: (0353) 662489 (PAN: Musicmaker)*

MUSIC TECHNOLOGY (US) *is published by Music Maker Publications Inc, 22024 Lassen Street, Suite 118, Chatsworth, CA 91311. Tel: (818) 407-0744. (PAN: Musictech)*

Typesetting by *Camset Phototypesetting, Ely.* **Colour reprographics by** *CLE, St Ives.* **Printing by** *Worcestershire Web Offset, Droitwich, Worcs.* **Distributed by** *AGB Impress Ltd. London. Tel: 01-253 3135.*

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NEWSDESK

SOFT SYSTEM

Computer Music Systems have been appointed the new distributors for the Sound Quest range of graphic editing software. Current intruments supported are too numerous to mention by name, but we'll mention some anyway - Korg's MI, Yamaha's DX range, TX81Z and 802, Oberheim's Matrix 6/1000, Kawai's KI, Roland's D50 . . . If you've got an Atari you're out of luck, as the Sound Quest editors are available exclusively for the IBM PC, the Amiga and the Yamaha CI. All versions of the Sound Quest editors use a graphic interface, allowing the display of envelopes, and editing using "grab and move" techniques.

The change to Computer Music Systems as distributors has also resulted in a drop in prices - which now start at £79.95 including VAT.

On a different tack, CMS are also distributing a range of "educational" software for the Atari ST and the IBM PC which teach the fundamentals of music notation and theory. The software uses MIDI for both playback and student input, and various titles cover aural tests, speed reading and harmony. Different skill levels are also available, and prices start at £29.95. For more info, contact Computer Music Systems at 6, Manor Road, Teddington, Middlesex TWII 8BG. Tel: 01-977 4546. ■ *Dp*

BACK TO SCHOOL

From Keele university in Staffordshire comes news of a new Diploma course in Digital Music Technology. The course is funded by a grant from the European Social fund, and is open to applicants under 25 who are currently unemployed. Four bursaries of £2,340 are available to successful applicants.

The course will introduce students to the fundamental principles of musical systems, digital sound sampling, digital signal processing, and programming in C, including the GEM graphics environment.

To qualify for the course, you should have at least an equivalent to a BTech diploma and must also have either: (a) familiarity with a high-level language or a major computer utility (word processor, database, etc), or (b) musical experience as a performer and/or composer, or (c) have carried out significant work in a recording studio environment or with musical software and/or synthesisers.

In exceptional cases, applicants with A-levels will be considered if they have the relevant experience.

For further information, contact the Department of Music, University of Keele, Keele, Staffordshire ST5 5BG. Tel: (0782) 621111. ■*Dp*

END OF AN ERA

With Shure's introduction of the Beta 57 and Beta 58 microphones, the end of a musical era is at hand. For their predecessors, the SM57 and SM58, must be the most abused microphones ever to appear on a rock 'n' roll stage.

The Beta 57 and 58 are direct replacements for the SM57 and 58 respectively; they retain the essential features, both visual and technical, of their parents, and improve on other features. As if to prove the point, they recieved appropriately rough treatment from Roger Daltrey and John Otway at their recent launch at Ronnie Scott's.

John Otway:
"Me, break Shure mics?"

Shure's new mics made their TV debut at the Brit awards, where they both looked and sounded better than Sam Fox and Mick Fleetwood.

The Beta 57 and 58 will retail at £183.89 each. ■ *Tg*

WEEKEND COTTAGE

Thatched Cottage Audio, in conjunction with David Etheridge, is offering a series of weekend arranging courses for musicians and studio arrangers at Right Track studios near Hereford. The course will be covering basic aspects of orchestration and arrangement, using both analogue and digital synths, as well as samplers ranging from entry-level to professional standard.

In more detail, the course covers basics of arrangement and the need for orchestration; instrumental characteristics; the string section; woodwind and brass; vocal arrangements and synthesis; guitar sounds and voicing; drum machines and realistic programming for songs; groove and feel; stereo placement of instruments in the mix and use of effects; basic harmony and counterpoint, melodic invention and voicing. There will be examples from record and video and a recommended reading list to help you after the course.

Price for the weekend is £100, which includes bed and breakfast accommodation, or £80 excluding accommodation. Classes are limited to groups of four, and further details and booking accommodation are available on (0432) 72442.

STIRLING STUFF

Distributors Syco Systems have been acquired by the Stirling Audio group, and have relocated to new premises alongside the Stirling offices in North West London.

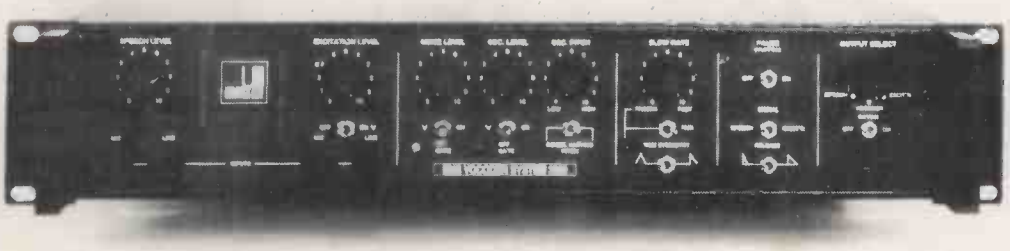
The two companies will remain completely autonomous, and Syco are planning to expand the range of products they distribute, which presently includes equipment from Akai, Apple Macintosh, E-mu, Kurzweil and Waveframe.

Syco Systems can now be contacted at Kimberley Road, London NW6 7SF. Tel: 01-625 6070. ■ *Dp*

BACK IN VOGUE

Contrary to many peoples' impressions, vocoders don't just make you sound like 'Mr Blue Sky' - they create a wide variety of under-explored effects for both vocals and instruments, and seem to have undergone something of a revival recently. EMS, one of the longer-standing manufacturers of vocoders, have recently improved their Vocoder 2000, with remodelled spectral response for a warmer sound, twin LED bargraph display, and optional output gating.

The comprehensive Vocoder 2000 has 16 analysing and 16 synthesising filters, a frequency range of 20Hz-18kHz, and white noise and pulse oscillator as internal excitation sources. The Vocoder 2000 costs £999 plus VAT, and is available from The Synthesiser Company, 9, Hatton Street, London NW8. For more info, call EMS on (0726) 883265. ■*Dp*



STUDIO BEATER

John "Stick" McKenzie is proud to announce the opening of his Rawbeat studio in Manchester at the start of April.

Rawbeat is unusual in that it is a specialist rhythm-orientated studio. In fact, it houses no less than 33 drum machines, which John intends should be used for the composition and recording of the unique new style of percussion music he calls "hip beat". It has taken John close to seven years to amass a staggering collection of drum machines. This includes: 2 MIDI retrofitted Roland TR808s, a 909, 707 and 727, CR78; Yamaha RX5, RXII and RX21L; three Kawai R50's; MPC Drum Computer; Korg Minipops, DDD5; Simmons SDS5; a Linndrum; Alesis HR16; E-mu SP12 and Drumulator; Oberheim DMX; Sequential TOM and Drumtraks and an MXR Drum computer. The system is controlled by five Octapad IIs chained together and sequenced with the Akai MPC60 – which has recently been upgraded to take advantage of four MIDI Outs (64 independent MIDI channels). John tells us he's currently considering adding a Roland R8 Human Rhythm Composer and Alesis HR16B to the system. Any takers? John can be contacted on 061-246 8091. ■*St*

EMOTIONAL RESCUE

If you're mystified about a particular instrument you own, or have problems with any part of your MIDI setup, MIDIHELP might well be able to put you on the right track.

This new service offers one-to-one tuition for specific pieces of equipment or MIDI setups, at £12 a session, and weekend workshops of 12 hours on all aspects of MIDI, sequencing, sampling and recording. The workshops will be for groups of 3 maximum, will cost £85 per person and will be booked at Eastside Studio in North London, a fully-equipped 16-track facility.

Eastside's Chameleon Services are also offering HD disks for the Akai S950 at £12.50 each. The low cost is due to the use of custom-notched non-branded Sony disks – individually tested before being sent out – and the library consists of 500 disks, many sampled at 48kHz. Each disk holds the equivalent of two S900 disks – and as they are priced at £7.50 each, there is a saving to be had for S950 owners. The S700/X7000 is still catered for at £2 plus the cost of a quick disk.

For more info, contact Vic Lennard on 01-368 3667. ■ D*p*

ON THE RAMPACK

Spectrum computer owners might like to know about Rampack, the independent user group supporting the Ram Music Machine interface. The group has a new organiser and is aiming to expand to cover other interfaces for the Spectrum, such as the XRI and Cheetah. All aspects of MIDI programming, sampling, music and MIDI in general will be covered in the newsletter of the group.

The club offers encouragement and advice, as well as hardware and software projects, and a subscription costs £6 for four issues, plus an SAE to help administration.

For more info, contact Sean Sanderson at Chesters, Chesters Lane, High Bentham, Via Lancaster LA2 7AN, or call on (05242) 62258. ■D*p*

NO MEAGRE AMIGA

Now your Amiga and Steinberg Pro24 can be friends. The industry-standard Pro24 sequencer has at last been ported over to the Amiga, and will be priced at £250 including VAT.

Further information can be obtained from David Crombie at Evenlode Soundworks, The Studio, Church Street, Stonesfield, Oxford OX7 2PS. Tel: (099 389) 8484. ■ D*p*

PHIL & ST JAMES

If you read the interview with Phil Thornton in the October '88 issue of MT and thought "there's a bloke I could go and see in concert" this is your chance. On May 11th he will be performing at St James' in Piccadilly, tickets for which are now available. His album *Forever Dream*, which was scheduled for release in November, has finally emerged, several months later. For more information on its availability in a record shop near you, ring Ocean Disque on (0424) 445535. ■ D*b*

AKAI HIT THE ROAD

The Akai Roadshow begins the first phase of its nationwide tour on April 18th at Brum's Holiday Inn. Experienced session musicians Phil Todd (on Akai EWI) and Steve Ferrera (on drums) will be joining Akai's Jerry Chapman on keyboards, to combine entertainment with an introduction to the Akai range of instruments.

Tickets to the Akai roadshows will be free, and available either from Akai dealers or directly from Akai. The roadshow itinerary is as follows:
April 18th – Birmingham Holiday Inn; April 19th – Liverpool Adelphi Hotel; April 20th – Bristol Hilton Hotel; April 21st – Croydon Holiday Inn; April 24th – Manchester Piccadilly; April 25th –Glasgow Grosvenor Hotel; April 27th – Southampton Polygon Hotel; April 28th – Watford Hilton National. All the shows start at 7pm. ■D*p*

SOUNDS FROM THE CITY

Metrasound Studiosamples are now available for all popular sampling systems. The Studiosamples II collection contains 32 disks filled with a wide selection of samples, including acoustic samples (marimba, voices, full strings, brass, classic guitar, etc), Drums and Percussion, Special Effects, Electronic sampling (PPG, Fairlight, D50, MI, basses) and Performance. Prices range from £14.95 to £24.95, and Stereosamples for the Yamaha TX16W are also available at £32.95.

Also from Metrasound is a new Lexicon LXPI editor for the Atari ST. The editor comes on a copy-protected disk with 128 new reverb patches, and all parameters of the LXPI can be edited on only one screen page. The editor retails at £69.95.

More from *Metrasound Marketing UK. 46a Marlborough Road. London N22 4NN. Tel: 01-881 6060.* ■ D*p*

POOL RESOURCES

London's Audio FX, previously known in their Pro-audio Hire capacity, are moving into third party samples with the release of their AFX Poolside Drums for the S1000.

The comprehensive set of drum and percussion samples were recorded, interestingly, in the spacious surroundings of a large indoor swimming complex, to take advantage of the naturally bright moving ambience. The set consists of two "killer" kick drums, four snares and a large collection of 16-bit hi-hats, cymbals, tom toms, Rototoms and Octobans, as well as claps, sticks, rimshots, cowbell, tambourine and whip (whip?). All this, plus the mysteriously named Pool Percussion.

The sample set will be available initially in two versions for the S1000 – the velocity-sensitive 8Meg Master Studio Set and the 2Meg Gated Set. Other samplers will be added as demand dictates.

More info from distributors Computer Music Systems at 6, Manor Road, Teddington, Middlesex TW11 8BE. Tel: 01-977 4546. ■ D*p*

TECHNICAL ECSTASY

Trak-Pak, a service designed to free songwriters from the hassle of selecting suitable home recording equipment, has just been launched by Jezz Woodroffe and Mike Stockdale. It is intended to cut through the technical jungle and offer a total, tailored package, including advice, demonstration, tuition, installation and full back-up service. Interested parties will be invited to Trak-Pak's demonstration studio, located in the heart of the Surrey countryside. If they opt for a package they'll get the recording studio they need with no unnecessary frills or expense.

Jezz Woodroffe has recorded and performed with Black Sabbath and Robert Plant at Madison Square Gardens on six separate occasions. Recently his studio was burgled, leaving him with nothing but peripherals and a large insurance claim. Soon after it was burgled again, and the concept of Trak-Pak was born.

For further information, call Jezz or Mike on (093 287) 4768. ■D*b*

HAR MAN IN WOOD GREEN

Harman Studio Systems are moving into shiny new premises in London's Wood Green.

The new facility will allow permanent demonstration space for the equipment Harman handle. The new Wood Green facility will be the only place to see certain gear, as HSS have exclusive distribution of Urei, Focusrite, Bruel and Kjaer, Fostex professional, NED Direct-to-Disk and EAR. The emphasis at the HSS studio will be on the affordable "producers studio", and a purpose-built demo room will allow hands-on experience to customers.

The HSS Studio is situated at Unit 3, Bittern Place, Coburg Road, Wood Green, London. Tel: 01-881 3778. ■ D*p*

WIDDLY WIDDLY GOES NORTH

Music Technology's sister magazine, Guitarist, is staging The Northern guitarist show in Manchester on the 13th and 14th of May. The show is the Northern follow-up to the successful London Guitarist Show which took place in Kensington last year.

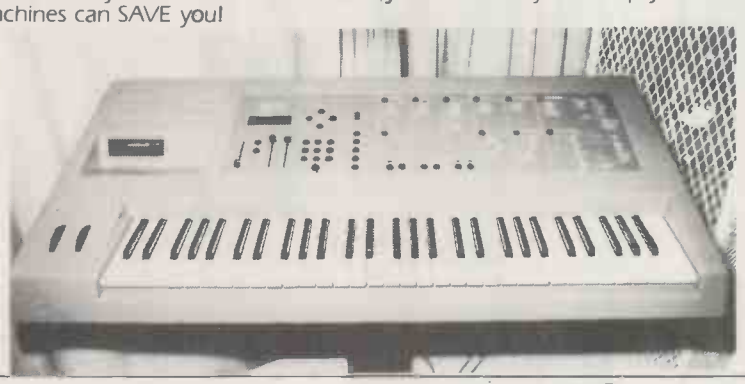
The show will take place at the UMIST campus in Manchester's city centre, and top musicians will be demonstrating every hour in the mini concert theatre.

Your chance to check out widdly-widdly guitarists first-hand. ■D*p*

E111 ARRIVES IN THE NORTH!

Yes sirree, I am delighted to announce that DOUGIE'S MUSIC has been appointed official E-111 dealer for the North. This classy professional sampler/sequencer is the most powerful post-production unit on the market . . . and its now not prohibitively expensive! Phone to arrange appointment (if necessary).

STUDIOS! PRODUCERS! COMPOSERS! If you wish to hear an E-111 we can (at a nominal cost) arrange to come to your studio to let you be amazed at the clarity and versatility and help you realise how much TIME (and therefore MONEY) such a machines can SAVE you!



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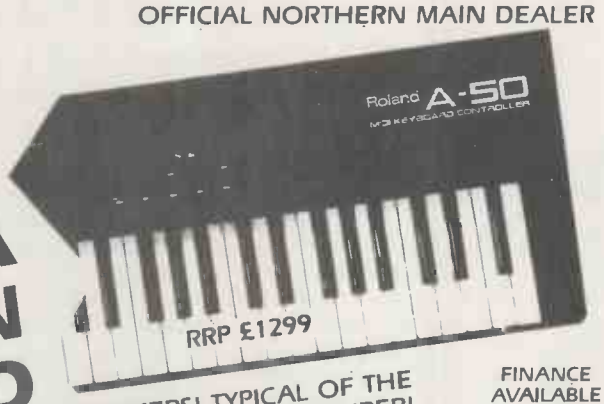

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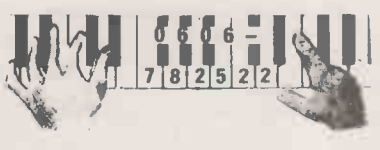

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COMMUNIQUÉ

Write to: Communiqué, Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF, including full address and a day-time phone number. A free year's subscription if yours is the Letter of the Month.

Dear MT

Another Green World

I am an English painter (the artist type, not the whitewash type) and although I don't know much about oscillators, synthesisers and samplers, I do read your magazine (my husband being a musician) while sitting in the bathroom. My interest was aroused by an article about the band Gentlemen Without Weapons that appeared last November.

Although I've never actually heard the group, from the description they sound like perfect candidates to help promote the Global Co-operation United Nations Project for Peace. This project is designed to stimulate people in all walks of life to think more positively and challenge them to change the world we live in.

I live in Italy and I am therefore in contact with the Italian section, but the headquarters of the organisation are contactable at: Global Co-operation for a Better World, 28 Baker Street, London WIM 4DF (Tel: 01-487 4634).

My husband, Roberto Lanieri (whose LP Anadyomene *you recently reviewed) has written a song together with Paul Gazebo for the promotion of the project in Italy. I myself wrote the lyrics – in Italian of course, but I'm working on the English version.*

The UN Peace Project, which has just been initiated following the "million minutes for peace" in 1985, desperately needs more coverage, and they are looking to British rock and pop musicians to take an initiative. Already Peter Gabriel has become a patron. Perhaps I should add that the project is non fund-raising and therefore on a volunteer basis.

■ Ms Georgina MacEwen
Soriano nel Cimono
Italy

Dear MT

On the Wrong Track

In your recent review of Steinberg Twelve (Feb '89) your reviewer referred to the Steinberg £50 credit offer available to Twelve users wishing to upgrade to Pro24 as a "policy already in use with the Hybrid Arts range of sequencers".

We feel that this comparison is somewhat inaccurate; the Hybrid Arts upgrade system allows you to upgrade from EZ-Track Plus through EditTrack, SyncTrack and SMPTETrack. Our policy has always been to credit the entire user cost (less VAT) of a Hybrid Arts sequencer plus a £12.50 upgrade fee against the next level sequencer. This fee covers access to Hotline and to Adapt, the bi-monthly users' mag, as well as our "Freewave" MIDImover program which converts files to the MIDI File format.

In any event (joke?) Hybrid Arts' integrated approach to designing software for the Atari ST which, along with a true upgrade path, ensures that our user base has continued access to all aspects of music composition, MIDI data management and sheet music printing.

■ Bernard Jones
Hybrid Arts (UK) Ltd

Thank you for pointing that one out, Bernard – there is obviously a difference between the two policies. To be fair to Vic Lennard (who wrote the review), this was not part of his original review but was edited in. ■ *Tg*

Dear MT

The Music Machine 1

letter of the month

With reference to Ian Waugh's piece "The Secrets of Computer Composition" – "can a computer write music?" we are asked. I'd have thought the answer was obvious. Computers not only can, but have written many pieces of music. And I'm sure we'll hear more and more music that has been composed by computers in the future. The question is not one of whether or not a computer can compose music, but how complex that composition can be made to be. And the answer to that is simple too – as complex as the human being writing the composition language is capable of making it.

■ Al E Abbot
Ipswich

Dear MT

Chip off the Old Block

I was really inspired by the article on Hubert Bognermayr in the February edition of MT, finding I could really relate to his thoughts. It is nice to hear about a composer who has moved away from fixed notes, timbre and rhythm (in other words, traditional modern Western music). I feel this guy has definitely got the future of electronic music summed up, the computer being in the forefront, operating in "real time".

I find it amazing how music has progressed within the last couple of decades – from tape recorder, filters, reverb, sine wave oscillators and white noise generators to digital synthesisers and now to computers that are affordable to the general public. I wonder if Max Matthews, when experimenting with computer synthesis in America in the '60s, realised what potential this tool had?

I hope Bognermayr sustains his interest in electro-acoustic music, and in particular musique concrète, rathe than being influenced by the Austrian authorities and succumbing to rehashed Mozart concertos (boring). Is this really the job for such an innovator?

I wish such a person was interested in setting up a school in England. Where are such people? The Austrian government may be behind the times with electronic music establishments, but where are they in this country? We hear plenty of things happening at IRCAM in Paris, isn't it time England started preparing for the future of electronic music?

I myself have experienced a classical musical training and briefly encountered electronic music at Colchester Institute in

my final year – encountering numerous technical problems. Surely it's about time more training studios were opened in this country. I feel I am one of many musicians who would like to have a go in this field but don't have the technical training with today's ever-advancing technology. Who knows what results may be achieved?
■ Angela Wheaton
Reading

If you saw last month's edition of MT (of course you did) you'll already know about the Soundscape course on music and technology that is taking place at the University of East Anglia in August/September. Anyone seeking further information should contact Mrs J Thorp on (0603) 592802.

The Gateway Studio series of courses covers a variety of aspects of disciplines including recording, live engineering, sampling, MIDI and composition, and is also worth checking out. The man to talk to this time is Dave Ward on 01-549 0014.

London's City University run three courses that might be of interest to you – an MA in Electroacoustic Music and a Diploma and MSc in Music Information Technology. To qualify for the MA you'll need to be a music graduate "who can demonstrate considerable skill in composition but with an interest in acquiring, or deepening their ability to work with, the techniques of electroacoustic music". It can be taken as a one year full-time or two year part-time course.

The Diploma in MIT demands "a degree or recognised professional qualification" but no formal qualifications in computing, while the MSc in MIT is an extension of the Diploma. Further information can be obtained from the Music Department, City University, Northampton Square, London ECIV 0HB (01-253 4399).

Goldsmiths' College in South East London also run a variety of training courses – see Newsdesk MT May '88 for more details. More recently (last month, in fact), Newsdesk included an item on the Salford College of Technology's Department of Performing Arts and Media Studies, which is involved in the teaching of recording and electroacoustic music techniques.

There are too many other courses being run up and down the country to mention here – but your question really should be "which course?" not "where are the courses?". ■ *Tg/St*

Dear MT

For Services Rendered

I am writing to thank you for the MKS7 manual that you got for me.
■ Trevor Hollingworth
Burton-on-Trent

Nae trouble, Laddie. ■ *Dp*

Dear MT

The Music Machine 2

Can I take this opportunity to reply to Al Abbot's letter concerning computer composition of music. How can any rational human being suggest that a machine is capable of replacing a human artist?

Composing a piece of music is not simply a matter of deriving a few "rules" with which the western concepts of melody, harmony and rhythm, can be observed, it's an emotional process in which a human being's feelings are of primary importance. No machine – regardless of how powerful it may be or how ingeniously it has been programmed –can ever emulate, let alone replace, a human being's feelings and hence his or her ability to compose music.

If Mr Abbot's letter is typical of the result of printing articles on matters such as this I insist you refrain from ever doing so again.
■ Kevin Wood
Manchester

Dear MT

Tearjerker

I am uncertain what David Bradwell's interview with Lizzie Tear was doing in February's MT, all the more so in a magazine that normally crams in high quality articles on all aspects of music technology and the (usually intelligent) people who make it happen. Clearly Ms Tear is not one of them. The nearest she got to talking about a piece of equipment was that the TR808 was her favourite drum machine "because you can get a real good bass drum quality". Instead she seemed happy to broadcast her aspirations of "earning a lot of money at some point, and I don't care how long it takes . . . Then I'll start buying properties all over the world and nice expensive cars". And perhaps a Fairlight which, at £60,000, is a "piss in the ocean, mate".

This is probably not what most readers pay £1.50 for but even so, MT must be congratulated for exposing an "artist" whose sole objectives are money and adoration rather than to contribute (like most artists) to the quality of peoples' musical experience. It's a terrible shame that many talented musicians stand less chance of attaining some chart status because of the pretty-faced puppets whose strings are pulled by the muscle of the big labels.
■ Marco Shirodkar
Elstree
Herts

Dear MT

The Music Machine 3

What can I say? Kevin Wood's comments on computer composition (MT, April '89) leave me speechless. The man is obviously a philistine barely worthy of my attempts to enlighten him to the subtleties and pleasures of music.

It's like this, Kevin (may I call you Kevin?), there are many ways in which you can approach the composition of music and the use of computers – in assisting with a composition or handling a composition in its entirety – is well within the "rules". If a piece of music gives you pleasure, does it really matter how it was conceived? Would you even know?

Until you can distinguish between, say, Brian Eno's "chance" methods of compositition and the results of a computer employing similar random elements in composing a piece of music, I'd respectfully suggest you're talking through your Y-fronts.
■ Al E Abbot
Ipswich

Dear MT

The Music Machine 4

I cannot over-emphasise how offended I was to read Mr Abbot's reply to my letters concerning computer composition of music. How you, as a responsible publication, can give space to a man who insists on calling me by my christian name and suggesting that I'm "talking through my Y-fronts" I do not know. You will be hearing from my solicitor in due course.
■ K Wood (Mr)
Manchester

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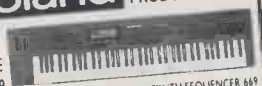

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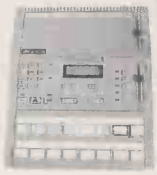

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360 Systems

Audio Matrix 16

The beauty of a standard protocol like MIDI is the fact that crafty people can use it for purposes other than those for which it was originally intended. Remember when MIDI was about Note On messages, and stuck notes reminded us painfully that it was also supposed to be about Note Off? It wasn't very long ago. Soon afterwards, however, came MIDI-controlled lighting systems and hand-held triggers for percussionists, wind players, guitarists – you name it. All that time we had to remind ourselves that MIDI wasn't dealing with sound, that no audio signals ever entered the MIDI picture. Well, think again, because now we have a MIDI-controlled audio patchbay, with enough memory to store 100 routings of up to 16 audio inputs to 16 outputs.

Let's clarify one thing: this is a patchbay, not a mixer. No signal "summing" is going on; no two input signals end up coming out of the same output as a mixed signal. All audio connections are on ¼" unbalanced jacks mounted on the rear of the 2U-high rack-mountable unit. Channels 15 and 16 are duplicated on the front panel, cutting out the rear connections when activated by an inserted plug. MIDI In and Out and a fixed mains lead complete the rear.

The left of the front panel is taken up by 16 small white squares where you can scribble notes about the 16 connections – very low-tech and analogue, but certainly handy. The right-hand side is divided into three large two-character LED readouts, each with its own pair of increment/decrement tabs. A list of six operating modes is accompanied by a Mode Select tab and three more tabs take care of Bypass, Enter and Store functions.

Patch Select is the normal operating mode. This employs the mode tab and the up/down tabs on the unit, or a patch change can be sent to the Audio Matrix over MIDI. A Patch is put together in an edit buffer in Audio Path mode, and only when the result has been found to be satisfactory does it need to be memorised as a Patch number from 1-99. Patch 100 is a bypass patch that's meant to be the basic configuration of your setup. Incoming MIDI program numbers 101-128 select Patch Chains, where each Chain can be set up as a sequence of up to 32 Patches, in any order. The Chain footswitch may be used to select these pre-sequenced Patches in an endless loop. Upon power-up, the operating system checks the footswitch and assumes the opposite of the current switch status as the activating status. According to Murphy's law, you'll always have a "normally open" switch when you want a "normally closed" switch, or vice-versa. Here it doesn't matter.

A Patch consists of 16 audio paths, one for each input. An input can be routed to one or more outputs without worry about load increase or other changes to the signal. So when you call up a new Patch number you're performing an elegant version of an ugly task, that of pulling out and plugging in bucket loads of audio leads. But that's not all (other manufacturers take note, please): the Audio Matrix 16 can transmit up to eight memorised MIDI program changes with each audio Patch, all mapped to the right MIDI channels. What more do you want? How about the ability to transmit and recognise System Exclusive data dumps of the current RAM contents for future use? If your sequencer allows recording and playback of SysEx data as track data, you can send the Audio Matrix a new RAM's worth in a matter of seconds.

This versatility invites more inventive configurations than I can list in this space (but of course, I'll try): multiple alternative effect sends in the middle of a sequence, audio muting of synths or tracks not currently used, and assigning one sound to more tracks and busses than the desk allows are all possibilities that come to mind. The audio specs are impressive – signal to noise of 102db – and bore themselves out in practical use. I couldn't fault it at all sonically in the time I had to play with the unit. The manual is explicit right down to the very last MIDI byte.

So, is it worth £598 to increase the virtual number of inputs and routings of your system? Think about it – a good mixer costs more, and even an expanded system forces you to plug and unplug cables. This box will perform tricks for you that you haven't even begun to think about. ■

Lorenz Rychner

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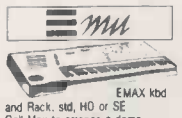

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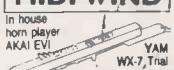

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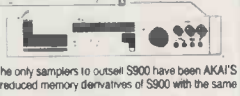

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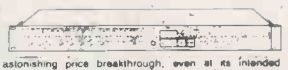

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Microdeal Replay

FANCY TAKING YOUR first step into the world of sampling but short of the readies that would otherwise secure a Fairlight, Emulator or S1000? If you already own an Atari ST, Cornish company Microdeal offer a relatively cheap alternative you might like to take advantage of. Their Replay sound-sampling package uses the computer's memory to store samples, and costs a relatively modest £80.

The package consists of Replay sampling software, Drumbeat rhythm-sequencing software, and real-time Effects processing software (for adding such effects as echo and distortion) together with a plug-in sampling cartridge. These programs can't be held in memory at the same time, however – so you can't sequence as you sample as you process.

The Replay cartridge, which plugs into the ST's cartridge port, has an audio input for sampling and an audio output for replaying samples (although the system offers the ST monitor's inbuilt speaker as an alternative). Replay can hold up to ten samples in the ST's memory, but can only play back monophonically – although you can rapidly switch from one sample to another.

Replay uses eight-bit resolution with anti-aliasing filters on both the input and the output stages, a 48dB S/N ratio, and 5, 7.5, 10, 15, 20, 30, 40 and 50kHz sample rates. As with any sampling system, you offset sample quality against sample time. So the higher the sample rate, the higher the sound quality – but the shorter the available sample time becomes. Replay will sample into as much memory as you have available, so if you own a Mega4 ST, you've got roughly 40 seconds' worth at the highest rate.

The Replay software samples via the cartridge input into an area of memory which you define using two block markers. When you're satisfied with the result, you can store the sample into one of ten Presets (and save it to disk). The currently-selected sample can be looped at any time simply by selecting the Loop function, and replayed by selecting the Replay button.

The block markers also identify a sample area for such features as sample copy, insert, delete and overlay. Using copy and insert you can splice samples together, cut-up style, and then adjust the markers to label the result as one sample if you want. Other features include sample reversal and sample fade-in/out, sample magnification and a real-time spectrum analyser (which tells you the frequency content of any input sound – not very useful day to day, but certainly of educational value).

Your ten Preset samples can be played from a MIDI keyboard or the ST's own keyboard. There are two options: either assign a sample to each MIDI note, or select any one of the ten samples at a time and play it back at different pitches over an eight-octave range. The advantage of MIDI control is that you can sequence your samples from an external MIDI sequencer – though obviously if you ordinarily use a sequencing package which runs on the ST, you've got problems here.

Incidentally, computer programmers should note that Microdeal provide technical information which will allow Replay samples to be incorporated into other software – interesting for games programmers, I'd have thought.

Drumbeat software allows you to program rhythm patterns using samples created with Replay – in other words, it creates a sampling drum machine. Up to 16 samples can be used within a pattern, but the software can only play two at any given moment: that's one up on Replay itself. In order to be able to do this, sample resolution has been reduced to seven bits. You should also bear in mind that samples must be recorded at 10 or 20kHz to be usable in Drumbeat, and can have a maximum length of 1.64 seconds (10kHz) or 0.82 seconds (20kHz) – neither of which is really long enough for, say, cymbal sounds.

You can assemble your own custom drum kits of samples off disk, and then save the resulting combination back to disk as a Kit. Microdeal provide you with a default sampled drum kit which includes bass and snare drums, open and closed hi-hat, cowbell and bongos. They also have disks of sampled sounds ideal for use within Drumbeat, which at £9.95 each (plus a quid for p&p) are real value for money. Disk 1 contains 44 sounds, including a good range of Latin percussion and such delights as cuckoo, dogyap, saxophones and record scratches.

The program presents you with a grid onto which you record your patterns in step-time or real-time (the tempo for record and playback is programmable). You can record up to 99 patterns, and then chain them together to form a song consisting of up to 70 steps. At each step, a pattern can be repeated up to 99 times.

Possible improvements? Not many. I'd like to see Drumbeat responding to MIDI sync information but overall, Microdeal have to be congratulated on providing a cheap introduction to sampling which is also flexible enough to have more than just novelty value.

If you're looking for a cheap sampled alternative to an acoustic piano so that you can play Chopin *études* all day long, forget it. Microdeal's package is best suited to sampling percussive sounds, speech, sound effects and recorded music. As such, it opens a window on the most creative (as opposed to recreative) aspects of sampling.

There are even ways of getting around the software's voice limitation – by using a Portastudio, or even a stereo reel-to-reel with sound-on-sound facilities (such as the venerable Akai 4000DS) to build up parts one after another on tape. Be resourceful and inventive, and who knows what you might achieve? ■ *Simon Trask*

Price *£79.95 plus £1 p&p.*
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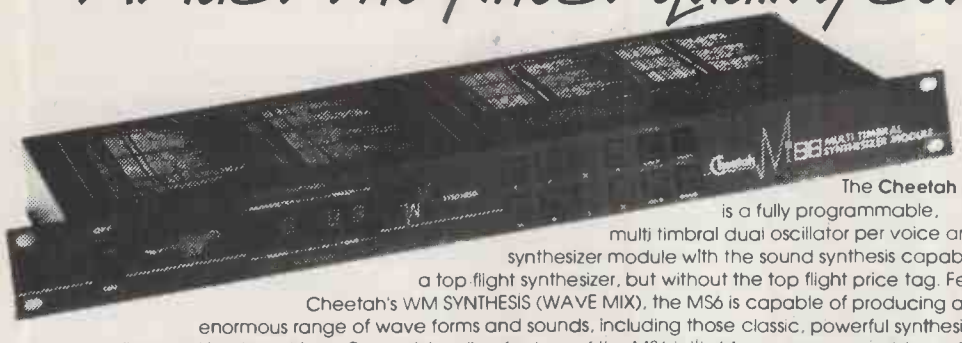

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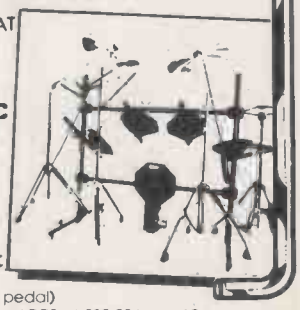

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OBERHEIM SYSTEMIZER
MIDI Performance Effect

Interested in MIDI control but not in a MIDI controller keyboard? Oberheim's Systemizer strikes a blow for MIDI democracy by bringing sophisticated performance control facilities to any MIDI setup. Review by Simon Trask.

NOWADAYS, BUDGET MULTITIMBRAL instruments are becoming commonplace, and polyphony is at last beginning to increase in line with sonic capability (witness Roland's U110 and E-mu's Proteus). That's good news if you prefer to sequence all your music and only commit it to tape at mixdown. It's also good news if you want to play more than one sound at a time on the keyboard – perhaps a bass sound in the lowest two octaves, layered piano, vibes and strings in the next two octaves and a sax sound in the top octave. In this example, let's say also that you want to use sustain pedal on the layered sounds but not on the bass and sax sounds, you want to fade the strings in and out using a volume pedal, and you want to use velocity-switching to bring in bass slaps and sax squawks. After a while you want to switch from sax to flute and from double bass to fretless bass, and subsequently drop out the layered sounds in order to play a flute solo in the top three octaves of the keyboard – at the same time calling up a different patch on your digital delay unit for the flute.

Now, you've got a couple of multitimbral expanders and a couple of MIDI'd effects processors at your disposal, but your main keyboard only transmits on a single MIDI channel. What can you do? The most obvious option is to run out and purchase a dedicated controller keyboard, but what if you're perfectly happy with your existing keyboard in every other respect, and don't wish to use up any more money or any more space than is necessary. Cue the Systemizer, one of Oberheim's new range of compact Perf/x MIDI Performance Effects. Specifically, Systemizer will provide you with the zoning and layering facilities but not the financial headache of a sophisticated controller keyboard, slotting neatly in between your main keyboard and slave instruments.

Organising the System

SYSTEMIZER ALLOWS YOU to store up to 32 Setups in its battery-backed internal memory. For each Setup you can define a maximum of three keyboard zones plus a Special Patch (SP) zone. Each zone can be assigned up to four Instruments, each of which can transmit on its own MIDI channel (1-16), while each of the keyboard zones can either be assigned its own MIDI receive channel (1-16) or be defaulted to the global Basic Channel (1-16 or Omni). I should mention a bug in the software which occurs if you select a Setup in which the zone input channel(s) are different from the Basic Channel: quite simply, Systemizer won't respond on these channels. Subsequently altering the Basic Channel (to any channel number) clears up the problem, but it's not what you want to contend with. If you only need one input channel, and the same one all the time, then you won't experience any problem, as you simply align the input and Basic channel (you'll perhaps want to do this anyway, as patch changes on the Basic Channel select Systemizer's Setups). One way around the problem if you are using more than one input channel (Oberheim's own Matrix 6 transmits on two channels when in its split mode) is to set the Basic Channel to Omni, though this means Systemizer will treat all incoming patch changes as Setup changes.

OK, that's that out of the way. I should mention that Systemizer only gave me one other problem in the time I was using it, and that occurred under a more specialised circumstance. In fact, Systemizer proved to be very reliable. Now read on.

With MIDI Echo switched on, Systemizer passes through all data received at its MIDI input. However, a feature called Controller Enables allows you to selectively stop incoming pitch-bend, channel pressure, poly pressure, continuous controllers (0-63) and discrete controllers (64-127) from being passed on to the Instruments. For instance, say you're layering strings and piano as Instruments one and two in zone two, and you want to sustain the strings but not the piano; all you have to do is disable discrete controllers for Instrument two and you've got what you want. Similarly, if you wanted to fade one sound in and out behind the other using a volume pedal, you would disable continuous controllers for the relevant Instrument. Incidentally, references to Instruments in this review mean Instruments *within* zones.

The keyboard zones are defined by setting an upper note limit per zone, with the lower limit being defined by the upper limit of the preceding zone (in the case of zone one, this defaults to MIDI note zero). It's a straightforward approach which has one significant advantage: you can alter the zones very easily. As on its companion Cyclone (reviewed MT, March '89), Systemizer allows you to select any predefined parameter value using one of its footswitch inputs. By setting a different split-point value for zone two, say, you could temporarily spread zone three across a wider range of the keyboard for a solo. A plus point here is that if you hold down or use sustain pedal on notes in a zone and then shift a new zone "over" them, they still play through their allotted envelopes.

Oberheim have also provided what is in some ways a more flexible option. If you select a floating as opposed to a fixed split-point for a zone, Systemizer attempts to figure out from your playing which zone you want to be in. In practice, it's only successful under certain limited circumstances – inevitably, really, because from a machine's necessarily limited point of view there are simply too many ambiguities for it to be able to make the correct choice all the time. Basically, the floating split-point is useful if you want to stray briefly from one zone into another, as long as you're not also playing notes near the split-point in the other zone, and as long as you don't leave too much of a time gap between notes; keep it simple and Systemizer will stay with you. On the other hand, by deliberately confusing Systemizer you can generate some interesting results with the right combination of sounds.

Overlapping of zones is possible: by setting the Split Release parameter to on, zone one can fully overlap zone two, and/or zone two can fully overlap zone three – allowing you to layer a maximum of eight Instruments. Alternatively, you can create Instrument-specific "overlaps" by setting Instruments in different zones to the same MIDI channel(s).

Each Instrument of each zone per Setup can be assigned its own patch number and volume level, which are transmitted when the Setup is selected (alternatively, you can disable patch transmit per Instrument if you *don't* want a new sound to be selected). The SP zone mentioned earlier is dedicated to sending patch changes; like the other zones, it can transmit on up to four MIDI channels, which means that each time you select a Setup you can send patch changes on all 16 MIDI channels. One obvious use for the SP zone would be to synchronise effect changes with changes in Setup (in the example given earlier, calling up a different digital delay patch for the flute solo).

Along with patch and volume, Systemizer allows you to

Photography *Adam Jones*

send several other MIDI messages for each Instrument whenever a Setup is selected. These are bank select (0-127), fine tune (−50/+49 cents), bend range (0-127), local control on/off, Omni mode on/off and poly/mono (together with the base channel in the case of mono). The SP zone is a special case, in that in addition to patch changes it's only able to transmit bank select commands, which seems a bit of a shame.

A dedicated bank select MIDI controller (31) has been added to the MIDI spec by the MMA and JMSC specifically to cope with patch selection beyond 128 patches, but it's far from widely implemented yet; Oberheim are obviously bearing in mind their own Matrix 1000 here. Similarly, you shouldn't take it for granted that, just because Oberheim have made these initial messages available, they will all be implemented as a matter of course on your MIDI instruments.

Another Instrument-specific feature is transposition (0-99 semitones, with 50 as no transpose). This provides an easy means of adjusting the register of a sound, as well as allowing you to create, for instance, octave effects. Beyond this, Systemizer's ability to "layer" up to four notes means that you can use transposition to create a chord which can be played from single notes on the keyboard (effectively the "chord play" function you occasionally come across on synths).

Playing the Instruments

THERE ARE BASICALLY three ways to play the Instruments within each zone: layered, switched or crossfaded. Layered is the most straightforward: Systemizer takes the incoming notes for each zone and retransmits them on up to four MIDI channels. You can use any number and combination of Instruments per zone, selectively removing Instruments by not assigning them to a MIDI channel.

Switching between Instruments in a zone can be achieved with velocity or a globally-selected MIDI controller (0-95). Active Instruments can be selectively excluded from switching, so that, for instance, you could switch between two Instruments while a third is always present. Controller-based switching only switches between Instrument one and the highest-enabled Instrument, on the basis of whether or not the controller value is less than 64, while velocity-based switching moves through all the enabled Instruments. You can't define the velocity switch positions yourself, but the ability to choose a velocity curve (0-64) for each zone gives you some flexibility in tailoring the "touch responsiveness" of your MIDI setup.

Systemizer provides four options for crossfading between Instruments in a zone: position, velocity, channel aftertouch and controller; as with switching, active Instruments can be selectively removed from crossfading. Positional crossfading is between Instruments *across* the keyboard (the actual result depending on the range of the zone and how many Instruments are enabled). The other forms of crossfading are of course "into" the keyboard, with the crossfade "windows" being determined by Systemizer; as with switching, the only response control you have is via the velocity response curve you select for each zone. You can also set the degree of aftertouch responsiveness per zone (0-64 - zero equals no response), though Instrument-specific settings would have been preferable. As with switching, controller-based crossfading is achieved using a globally-selected MIDI controller (0-95).

The manual states that an instrument must respond to MIDI volume control in order to be crossfaded, which might lead you to to suppose that Systemizer duplicates the notes on the relevant two MIDI channels in the crossfade zone and generates volume fade-ins and fade-outs to create a crossfade effect. Well, the first part is true, but in fact Systemizer uses velocity rather than volume. Depending on which type of crossfade you've selected, this ▶

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► is done on the basis of received note, velocity, aftertouch or controller values.

The problem with this otherwise clever approach (apart from the fact that it won't work with those early MIDI synths which don't respond to velocity) is that Systemizer controls the velocity values being sent to your slave instruments. As an example, let's say you're crossfading between Instruments one and two. When you play with minimum velocity, Systemizer actually sends maximum velocity to Instrument one, minimum to Instrument two; this situation is progressively reversed as you play with increasing velocity (the pair of transmitted velocity values always add up to 127, the maximum velocity value).

This is where MIDI volume comes in. By adjusting the overall volume level of each Instrument you can get some semblance of a dynamic response. However, it's a fiddly process, and the end result is still a compromise; all in all, velocity-switching is a more successful feature.

If you decide that you want to try something more adventurous than switching or crossfading between Instruments, you can turn to the Group Type function. There are three options: Rotate, Rotate/Reassign and Alternate (the manual mistakenly lists four, as it seems that these three cover all bases). In order for them to work, you must first assign the Instruments to one of two Groups.

Rotate, as its name suggests, rotates its voice-assignment around the Instruments within each Group. Not only this, but it uses a voice-limit, which you can program globally for each MIDI channel under MIDI Channel Limits, to determine how many voices it should play before moving on to the next Instrument. The most straightforward results are achieved by setting a voice limit of one for each Instrument's MIDI channel, but you can create interesting melodic/rhythmic effects by assigning different voice limits to each Instrument's MIDI channel.

Alternate is the same as Rotate except that it operates as if the voice limit for each MIDI channel was set to one. Rotate/Reassign is essentially Rotate with repeated notes being assigned to the same Instrument, though if you *return* to a note it will be played on whatever Instrument is next in the rotation; again, you can experiment with different voice-limits for each Instrument. Bear in mind, though, that the voice-limit settings apply in *all* Setups – and it's all too likely that, say, the two-note polyphony you want on MIDI channel two in Setup 17 won't be enough for Setup 11, where you want eight-note polyphony for a chordal piano part.

Voicing the System

THOUGH YOUR MAIN keyboard may only transmit polyphonically, Systemizer has four zone-assignable options which essentially "mimic" various types of voice allocation. These are: Unison, Monophonic, Normal Polyphonic and Polyphonic+Rob.

Using Normal Polyphonic you can play notes up to the voice limit set in Channel Limits, but further notes won't be played until you free some voices by releasing existing notes. In contrast, Poly+Rob automatically robs the oldest voice when you exceed the assigned voice-limit.

As its name suggests, Unison is an attempt to create the effect of stacked oscillators that you find on older synths, though without the possibility of detuning the "oscillators". It does this by sending multiple "copies" of a note over MIDI for each note that you play on the keyboard, up to the assigned voice-limit. Oberheim have even made their Unison monophonic last-note priority, although strictly speaking there's no need to do so.

In practice, Systemizer's version of Unison can't be exactly the same as an onboard Unison effect, and its

effectiveness depends on how your synths respond to playing multiple notes of the same pitch with attacks being generated in rapid succession. You may find that attempting to play rapid runs results in some notes being "choked".

The Monophonic option "mimics" last-note-priority multitriggering. Unfortunately, because of the way MIDI works it's not possible for Systemizer to create a single-triggering effect; consequently you can't mimic a legato playing style as used by, say, a sax player. Still, Monophonic is effective for rapid trills if you're playing a sax solo from a keyboard instrument, ensuring that you avoid note overlaps.

The problem with Monophonic is that if you try to play a third note with two already held down, Systemizer won't trigger it – so if you're playing a rapid run you'll need to pick your fingers up pretty sharpish.

Alternatively you can use Poly+Rob with a voice limit of one. In this case Systemizer always follows your playing, but you lose the retriggering effect *and*, unfortunately, if you even fractionally slur three notes in fast playing you regularly get a note left hanging until you play it again (though if you're perverse, you'll no doubt want to play with this as a feature). It's also worth pointing out that you can run into the same voice-limit problems as you can with the Group Types. The Assign Types offer mixed blessings, then, but they're worth having, all the same.

Switching the System

SYSTEMIZER HAS FOUR footswitch inputs on its rear panel and is also able to respond to four selectable MIDI controllers (0-127). You can assign each of these to call up any Systemizer parameter complete with pre-programmed value. Such possibilities as altering the split-point of a zone, transposing an Instrument up an octave, bringing in a layered Instrument, changing the channel assignment of an Instrument or temporarily switching to another patch greatly enhance Systemizer's flexibility. In fact, there's so much potential locked into this aspect of Systemizer that it's a crying shame the pedal assignments are global rather than Setup-specific.

Different switch operations are suited to different functions, which is why Oberheim have allowed you to select single switch, double switch, increment, decrement, one-shot edit, latched edit or hold edit operation for each switch. Using the example of altering the split-point of a zone, you might want to use hold edit (the split-point reverts to its original value when you release the footswitch) or latched edit (you have to press the footswitch again to revert the value).

As on Cyclone, each Setup can be given a Chain number which defines the Setup to be played next. By assigning one of the footswitches or MIDI controllers to Chain, you can step through the Setups, beginning with any Setup you want. Alternatively you can select Setups from the front panel or via MIDI patch changes.

Storing the System

STORING AND COPYING Setups in the internal memory is such a straightforward and accessible process that you end up hardly thinking twice about it. Systemizer copies the current Setup, Zone or Instrument depending on what level you're at when you initiate the copying process; you need to take care that you're copying what you intend to copy, but it's a very useful feature. You also have the option to Clear a Setup to one of three default states, namely layer, split or three-way split.

For external storage you have two options, namely RAM card and MIDI SysEx. The card option allows you to save and load Systemizer's internal memory as a single block; however, this doesn't double the Setup capacity, as the card contents have to be loaded into internal memory before they can be used. The manual makes reference to a "receptacle" which has to be fitted internally before you can use any cards, but at the time of writing I couldn't find out what this might or might not entail financially.

While card storage is obviously useful for live work, in the studio it is SysEx transfer which turns out to be your flexible friend. Individual Setups, all global data, all Setups plus global data, or individual edits can all be transferred via the SysEx route. As well as providing a quick means of transferring data from one Systemizer to another, SysEx transfer allows for storage of your Setups to a generic SysEx librarian such as Hybrid Arts' GenPatch, and opens up the possibility of dedicated Systemizer editor/librarian software becoming available (whether anyone will feel it's worth making such software commercially available is another matter).

Verdict

SYSTEMIZER'S SOMEWHAT UNEXCITING appearance may lead you to suppose it's a modest and rather boring MIDI device. In truth it's neither of these things. If you're looking to introduce sophisticated control facilities into your MIDI setup, but your main keyboard only transmits on one MIDI channel and you'd rather not fork out for a dedicated MIDI controller keyboard, you must check out Systemizer.

In fact, Systemizer's facilities are the equal of many a controller keyboard – even superior to some. But I've already discussed these in the review, so what about what Systemizer *can't* do? Well, of course it can't add velocity and aftertouch to a non-dynamic keyboard, or turn a four-octave keyboard into a seven-octave keyboard (though by transposing Instruments up or down an octave or more you can effectively extend the pitch limits of your keyboard). Nor does it have any facilities for remote sequencer control, or provide you with an array of assignable MIDI switch and pedal controllers, as some dedicated controller keyboards do.

Although in layout and operation Systemizer is very similar to Cyclone, it's an altogether friendlier device, and consequently more enjoyable to use. Oberheim have managed to find a healthy balance of flexibility, spontaneity, understandability and ease of use which has eluded them on Cyclone. What's more, the learning process is greatly aided by a ready-reference card which you can pull out from the belly of the beast.

Systemizer is above all a practical device, and is well suited to live performance. For sequencing, you'll need a sequencer which can record on multiple MIDI channels, and you should bear in mind that layering and crossfading can introduce a fair amount of data "overhead" (layering four Instruments means that you'll be recording the source MIDI data four times over, which can be quite an overhead if that data includes continuous controller data such as volume and modulation). It's also worth mentioning that, as Systemizer's approach to creating keyboard textures is channel-intensive, a sequencer which allows you to address more than 16 MIDI channels via independent MIDI Outs is a definite advantage.

I can foresee Systemizer becoming a valued addition to many a MIDI setup, with or without a sequencer, not only for its practical benefits but also for its creative possibilities. And, in the end, creativity is what matters. ■

Prices *Systemizer £225 including VAT; RAM card, £TBA.*
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Sampling Sixties style

Photography *Dave Crombie*

Novatron 400SM

If the sampler and the controversy that surrounds it seems like a peculiarly '80s phenomenon, think again – it all began back in the '60s with the Mellotron.

Text by Dave Crombie.

TODAY IT'S "SAMPLING City". Samplers offer higher and higher sample rates, and longer and longer sample times than ever before. They boast sophisticated features like time stretching and compression, and internal hard disks. But how did it all start? Who actually had the idea of taking a recording of an instrument, then building an instrument that played back that recording rather than creating a sound in its own right? Right now you're probably expecting me to say "the guys that made the Mellotron", but in fact they weren't. There was someone and something before the Mellotron . . .

As we all know, a sampler stores sounds in digital format in computer memory (RAM), and in simplistic terms this data is reconstituted whenever the sampler receives MIDI Note On data, or in the case of a keyboard sampler, whenever someone hits a key. Before digital there was analogue, and of course the storage medium for analogue sounds was tape. So the early samplers were basically glorious, beautiful, mechanical monstrosities, which were in essence tape recorders connected to a keyboard.

The History

BUT LET'S GO back to the Second World War. There were three brothers, Frank, Norman and Leslie Bradley, who had just taken over their father's engineering business in Aston, Birmingham. The company had been manufacturing semi-professional tape recorders and amplifiers, but with the advent of the war, they were commissioned by the War Office to make specialised tools for Castle Bromwich Aero – builders of Hurricane aircraft.

The war ended and the Bradleys changed the name of their company to Bradmatic (not perhaps the most snappy of names by today's standards, but it was in keeping with those times). With no military contracts to keep them going, the Bradleys set about getting whatever work they could. This included the manufacture of all manner of things – timing mechanisms, amplifiers, even amusement machines – but their main product still lay within the audio sphere. It was the manufacture of tape heads.

In 1962 the Bradleys were approached by an American in London to supply a set of 70 matched tape replay heads. This was a somewhat unusual order, as they couldn't see the point in so many matched heads. Curiosity prevailed and the Bradleys decided to deliver the order personally to see what was happening. As it turned out, the tape heads were to be used in a musical instrument – named after its inventor, it was the Chamberlain.

The Chamberlain used basic ideas developed by Laurens Hammond for his successful Hammond organs, whereby a motor drove a shaft onto which were set a number of bevelled disks (tonewheels), which were set against a magnetic pickup and used to generate musical pitches. However, the Chamberlain didn't use tonewheels; instead it used tape –one piece of tape under each key, and as the key was pressed the tape was drawn, by the revolving shaft, over a tape head – more on the workings later.

The instrument bowled the Bradleys over. "Why?", you may ask. Well, as the old adage goes, "I suppose you had to be there". Consider what there was in the instrument industry at that time: Fender

Rhodes pianos (just), Vox Jaguar organs, Hammond Organs, and a few more esoteric instruments such as the Ondes Martenot, the Theremin and the Clavioline. This instrument, Heath Robinson though it was, was in essence as important a breakthrough as the synthesiser was to become some six to eight years later.

You could put anything you wanted on each piece of tape, and remember, there was one piece of tape for each key, so it was like having a 35-voice sampler – something we don't have today.

It was, however, obvious to the Bradleys that Chamberlain didn't have the wherewithal to get the instrument into production, so a deal was struck whereby the Bradleys took up the challenge to turn Chamberlain's original ideas into a working professional instrument.

In September 1962 an advert appeared in the music press asking for financial backers for the project. Amongst the respondents were two extremely well-known entertainers of the time – Eric Robinson, the band leader, and TV magician, personality and famous bald person David Nixon (are all TV magicians bald?). The money was subsequently conjured up, and the company changed its name to Streetly Electronics, moved to a new factory, and in early 1964 the first Mellotron Mk I (renamed after four of the assembly staff, Melvin, Lottie, Ronald and Mark), was launched. Many improvements had been made over the original Chamberlain design, but the Mk I was still inherently unreliable, and really did fail to deliver the goods.

In the spring of 1965 the Mk II became available and this was a considerable improvement over its predecessor, not only in specification but performance. (You might have guessed I was lying about the name above). The Mk II was a dual manual machine with two 35-note keyboards, housed in a rather formidable piece of furniture that Mike Tyson himself would have had trouble shifting. In short, the Mellotron Mk II was a monster – not the kind of instrument to sling in the back of a Vauxhall Cavalier and shoot off to the local club with. It was principally designed for studio or home use; it was definitely not for touring.

The Bradleys had designed the Mellotron along the lines of a home organ rather than a professional "rock" instrument. The two keyboards were split up as follows: the bottom half of the left keyboard was assigned rhythmic duties whilst the upper half of the left keyboard was used for accompaniment. Melody lines were handled by the right-hand keyboard.

The mechanics of the tapes was really utterly fantastic – each key had its own individual piece of tape, so when the key was pressed, around ten seconds worth of tape was drawn over the tape head. But that's nothing. Each tape was ⅜" wide and featured three parallel tracks (A, B and C), so by moving the heads *en masse*, you could select three different sounds. Consequently, on each ten-second piece of tape there were three audio tracks. To make things even more complicated, six lengths of tape were accurately spliced together so that under each key there was capacity for 18 samples. The bandwidth of each sample was low, say 8kHz, but if you equate that to today's sampler technology, the information stored for one ten-second sample would be around 160kB for three tracks per key – 480kb, for 70 separate sources 33.6Mb, and for six sets of tapes 201Mb.

So, the Mellotron was a "sampler" but probably not in the strictest sense of the word. Perhaps "sample replay machine" would be a better description.

The Software

THE ACTUAL SOURCE material was "assembled" with the help of backer Eric Robinson, The Eric Robinson Organisation arranged the recording sessions (sampling sessions) for the various instruments incorporated in the Mellotron. Many of the country's leading musicians were sampled, including the likes of comedian and trombone player George Chisholm.

Some of the recordings that found their way into the Mellotron seem to have been a strange foretaste of what was to happen with digital samplers in the late '80s. The Mellotron Mk II rhythm section tapes consisted of whole phrases – each of, say, four bars, and each note would be transposed accordingly, but the phrase might be slightly different, to give you extra flexibility. And it would often be the case that the bottom-most note of the rhythm section would be a coda, written in the same style but used to round off the piece. For example, one coda might run like the end of a Kenny Ball jazz piece with a chorus of "Yeah" punctuating the final beat. Other rhythm tapes bore the titles 'Waltz', 'Afro-cuban', 'Dixieland', 'Jazz Foxtrot' and 'Fast Jazz Bass'.

The accompaniment section had tapes with the names 'Cello and Violin – Moving chords', 'Trombone', Celeste', 'Marimba' and 'Swinging Flutes'.

Of course, there were also more familiar samples, the most commonly heard being the flutes and the strings, but there were also more esoteric ones like 'French Accordion' or 'Mandolin'. Before the Mellotron, the only way to get an actual string sound was to hire in a string player – there were no string machines at that time.

The Rise

IT WAS THE Mellotron that cut a path of acceptability for the synthesiser when it arrived some years later. As ever, the big problem area was the Musicians' Union. Using pre-recorded tapes of instruments was like a red rag to the MU bull. They saw technology replacing their members – why use a string quartet with four lots of fees when a Mellotron cut recording costs by 75%? The battle lines were drawn.

Nevertheless the Mellotron started to become more widely used. The Beatles each had one, and the Mellotron flutes were immortalised on 'Strawberry Fields Forever'. Most of the top bands in the late '60s used a Mellotron at one time or another, quite simply because, as with ►

most classic instruments, the sound became extremely fashionable for the time.

One person who can lay claim to doing more to promote the Mellotron than anyone else must have been Mike Pinder, of the Moody Blues. He actually worked for Streetly Electronics and managed to come to a mutually beneficial agreement with the Bradleys. The Moody Blues, a Birmingham band, were at that time unknown, and it's generally believed that the Mellotron helped the band acquire their identity. In return, the publicity the instrument received worked wonders for its sales.

The year of 1968 saw the birth of the Model 300 Mellotron, a single manual instrument with 52 keys, but it wasn't until 1970 and the Model 400 that the instrument really came of age. But more trouble lay ahead.

Mellotronics, the newly-formed division of the Eric Robinson Organisation, who marketed the instrument, decided to give the world rights to Dallas Music, who promptly went bust owing Mellotronics a mint. Mellotronics in turn went bust, owing the Bradleys at Streetly Electronics another mint. What this all meant was that the liquidator of Mellotronics sold off all the assets of the company. Unfortunately, due to a mix-up, the name "Mellotron" was sold to an American company. Although the manufacturers of the instrument were still in business, they had lost the rights to their own name. In reply, the Streetly posse came up with the name Novatron.

The first Novatron was the 400SM (which is almost the same as the Mellotron Model 400). This was the most successful version, more so than the two-manual Mk 5. The Model 400/400SM was a single manual instrument with just one set of tapes built in. But by means of a clever design, tapes could quickly be changed over. The release of two screws facilitated the removal of a complete tape rack – somewhat larger than a typical ROM card – nevertheless, at around £195, tape racks weren't too expensive.

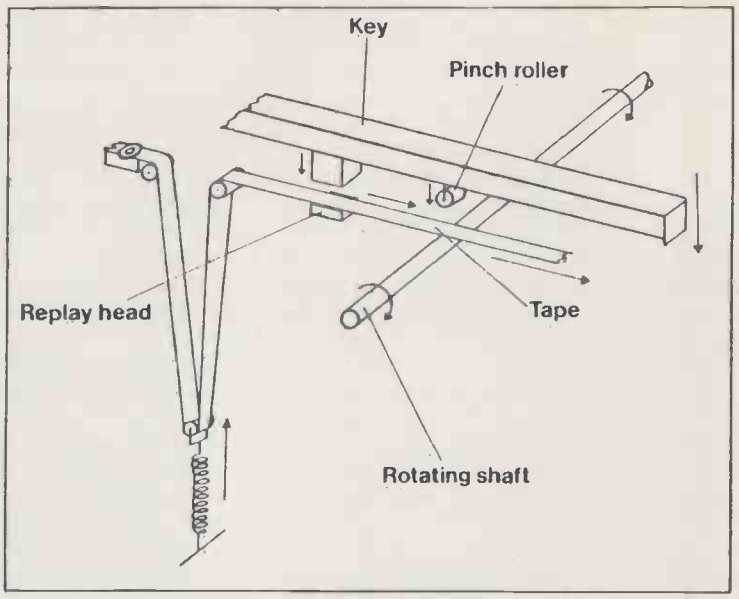

Figure I: Tape mechanism

Again, ⅜" tape was used, with three parallel audio tracks. Typically, the original tapes would feature strings, brass and flutes, however, the library of tapes was becoming considerable, and of course for a substantial fee you could have your own tapes made up with your own samples. The bagpipes on McCartney's Mull of Kintyre were specially recorded so he could use them to recreate the Pipers at live concerts, and Steve Hackett of Genesis had recordings of his own voice made for early concerts.

Figure I illustrates the basic workings of the instrument: as the key is depressed, the tape is squeezed between a pinch roller and a rotating shaft (this shaft being common to all keys). The tape is then drawn over the tape replay head. When the key is released the tape automatically rewinds and resets.

Problems? There were two main ones. Firstly you could only play a note for around seven seconds, that's how long the tape was; after that the note just died. And you couldn't play the same note over and over again at speed because the tape wouldn't have time to reset. The second problem was that if you played a fistful of notes, the motor wasn't strong enough to maintain the correct tape speed and the pitch of all the notes fell.

The control panel was pretty straightforward, with two knobs, one for volume, the other for selecting which track you wanted. Incidentally, it was possible to set the head to play in between tracks so you could mix two sounds together.

The Mellotron really was a breakthrough as important as the synthesiser, though this wasn't recognised as such in the commercial world. The sound of the Mellotron became associated with several bands –not only the Moody Blues, but also the likes of King Crimson, Pink Floyd, and Genesis. Other users included Rick Wakeman, Led Zeppelin, ELO, Yes – even Oscar Peterson had one.

The Mellotron was the first instrument that could give a live band an orchestral backing. Consider what a shock it must have been for an audience of the time to hear a full-blown choir emanating from a single keyboard on stage. Although problems with the MU continued, the Mellotron found its way onto television (usually piloted by Mike Pinder with the Moodies) and in the end even the BBC bought a Mk 5, which was loaded up with sound effects. This made "spotting" effects much easier for the studio managers.

Novatron Mk 5

The Fall

EVERYTHING GOES IN cycles and it wasn't long before the organ industry were producing low-cost string machines that started to become more economical for many players to use. Then came the polyphonic synthesisers and the writing was on the wall for the Mellotron/Novatron. Mellotronics in the US still exist, and they are currently handling music software, but they also have in hand a new digital Mellotron. Perhaps it would be better if the name was left to rest in peace along with all those pioneering memories of the '60s and '70s. Pass me my walking stick, someone . . . ■

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While many musicians were building up sample libraries from scrapyards or record collections, one Australian sampling addict had teamed up with a potter. Interview by Sandra McLean.

Colin Wilson and Rowley Drysdale

THE MUSICAL POTENTIAL of a clay pot is not something a lot of people would recognise or even bother to investigate. But Australian composer Colin Wilson is a man with an ear for something different and the know-how to turn any sound into music – no matter what the source.

Having listened to Wilson's project of "pot music", entitled *Baraka*, and visited his modest recording studio in the suburban backstreets of his hometown of Brisbane, I feel it must also be said he has a tenacious streak when it comes to creating new sounds in music.

***Baraka* is a collection of compositions in which every sound is derived from clay pots. Wilson coaxed the sounds from the pots by the processes of tapping, tickling and blowing. The sounds he produced were then sampled and manipulated with an Akai S612 sampler, sequenced with a Roland MSQ700 digital keyboard recorder and processed through a Korg SDD1000 digital delay, Roland SRV2000 digital reverb and Aphex Type C Aural Exciter before being recorded on a Fostex B16**

The end result is a collage of sounds that it's difficult to describe. It seems wrong to simply call it "pot music", it's much more than that, inspiring wonder at how such music could be produced from a source as commonplace as a pot. The variety of sounds is staggering, embracing sounds you'd readily assume to have come from analogue synthesisers as well as more exotic samples.

Recorded on tongue-in-cheek label Broke Records, *Baraka* is comprised of four tracks: 'Baraka', 'Totems', 'In Bibi Time' and 'Totems 2'. The title track is a layered piece of light and heavy percussion sounds over a background drone. This is pierced by a weird high flute sound which travels untouched through the music. Further in, the track becomes even more multi-levelled with the addition of other sounds such as

Breaking the mould

Photography *Peter Wilson*

chimes and a robotic synth-like chorus. The combination is positively mystic and more than a few people would slot *Baraka* into that growing category of ambient or new age music.

It's difficult to comprehend that all these sounds come from pots. Even more so with the second track, 'Totems'. This track is a humorous, bubbly ditty that scoots along at a manic pace. The upbeat poppiness of 'Totems' is a contrast to 'In Bibi Time', which features a funky "keyboard" sound backed by upbeat percussion. Once again Wilson's favourite flute sound hovers through the track. 'Totems 2' also has this flute sound that is a persistent contrast to the other two elements – a "tinny" percussion which is gradually overtaken by an aggressive piece of keyboard "potting".

Nothing in these tracks hints at the origin of the sounds they contain. In retrospect, Wilson admits even he was surprised by the range of sounds he could get from the pots. There have also been moments when his tapes have provoked disbelief among his peers. This especially occurs when they hear one section that started as a simple percussion sound, which after sampling became reminiscent of an analogue synth.

"In two of the pieces they are used as drones and bass sounds, and in another they take a more melodic role", Wilson comments. "In my personal life they have become a point of contention. I spent a lot of time arguing with people about their authenticity, I mean as to whether they were really produced from these pots. I actually brought some of them into the studio, played them the basic sample and then manipulated it in front of them.

"Anyone who has used the S612 will be aware that the editing facilities are pretty primitive", he says of his sampler. "There are no visuals at all, just two slider controls and a lot of trial and error. Anyhow, essentially, I just took the percussion sound with the right kind of attack and looped the very first part of the sound. I don't know exactly how much; it is impossible to tell with this machine."

The pots Wilson used as the original "instruments" were made by Rowley Drysdale, a journalist turned potter, who lives in the hinterland of Queensland's Sunshine Coast. It was Drysdale who first pointed out the musical potential of his pots.

"I was at his place one day and he said to me 'Listen to this'", recalls Wilson. "There was a pot sitting in his front room and the wind was blowing through the window over this pot. It was setting up this beautiful resonance. One of the ways Rowley checks the quality of his pots is by their resonance."

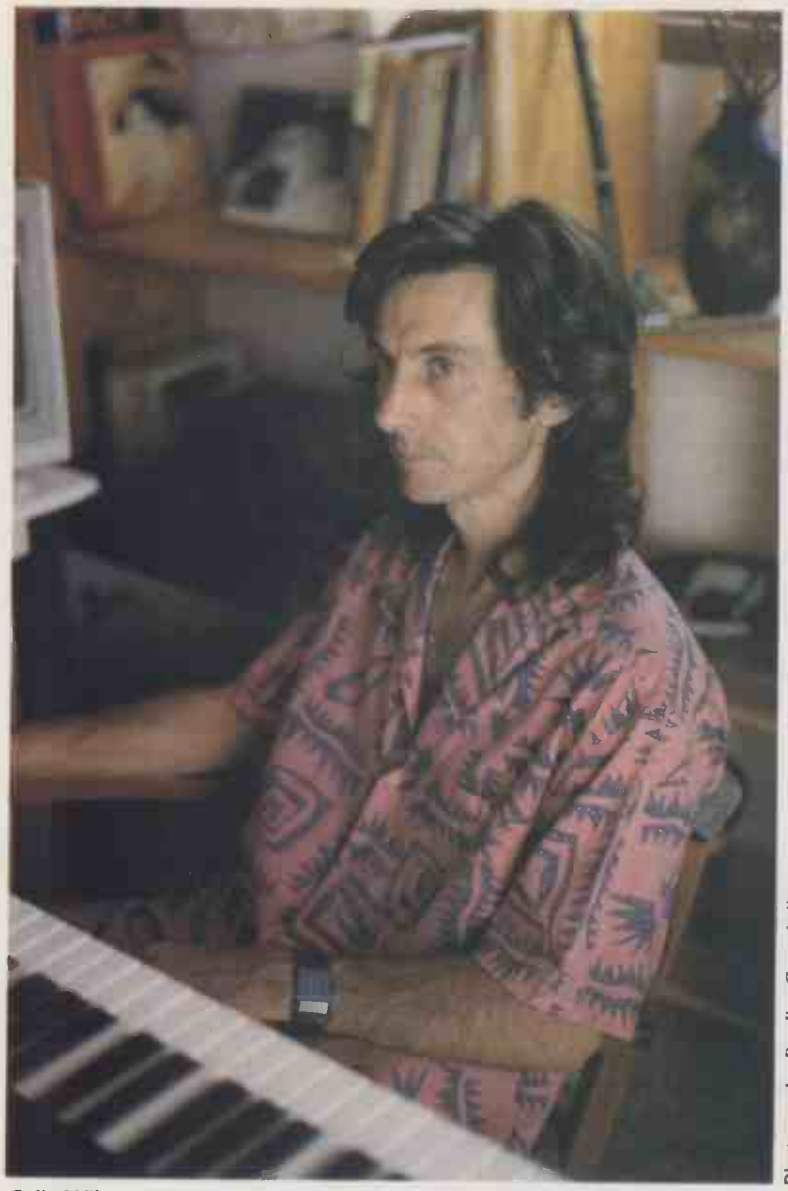
Wilson and Drysdale talked about the possibilities of doing an exhibition together, Drysdale displaying his work to the sound of music created by Wilson from pots. The exhibition eventually included a third person, an artist called Dave Bromley.

The mixed media exhibition was christened *Canvas and Clay Cheek to Cheek*, and was well-received by art critics in Brisbane. Wilson says the challenge of taking essentially unmusical sounds and using them as sources for a piece of music was the major attraction of the *Baraka* project.

Baraka was a name suggested by Drysdale: "It's a Moroccan word", he explains. "It means something between karma and fate, in that certain people accrue Baraka. This means they accrue the ability to attract interesting things to themselves. I like to relate it to my pots in that the elements are given their chance to have their say in things."

"I've come to an understanding with the S612: I don't ask it to do things I know it can't do, in return it does everything it possibly can do for me."

APART FROM THEIR mutual interest in pots, Wilson also shared Drysdale's approach to to his work, especially with regard to the *Baraka* project. Basically, it's a question of merging the creative process which is often a matter of intuition, with ►



Photography *Bradley Campbell*

Colin Wilson

► the purely practical needs of engineering to produce a sound. There was also the desire to let the pots, as Drysdale would put it, have their own say.

Wilson: "I guess my approach to music differs; when I'm working on my own projects like *Baraka* I work with a lot more freedom than I could on most things. I would rarely write anything down for something like this. In fact, I have very few conscious preconceptions of the actual music.

"I spend a lot of time establishing the emotional qualities and dynamics that I want to get across. I know how the whole thing is going to feel – I know how I'm going to feel when I finally hear the completed piece. I know what the textures will feel like. But as for the notes themselves, and the lines – well, I work fairly intuitively when I get to there. I suppose when you're using unconventional sounds you have to give the sounds themselves some room to suggest the types of lines they would like to sit in.

"When working on something like an exhibition of paintings and pots which is mostly visual, the part I found most difficult was finding the point where they could all join up. I thought because the tactile elements of Rowley's pots were so strong, and just using them for the sounds gave me such an earthy base to work from, I would try to make the music as tactile as possible. I kept the melodic structures light and tried to let the textures and colours weave in and out of a repetitive rhythmic bed. That approach seemed to work very well for both the pots and Dave's paintings."

Wilson used three vase-type pots with small openings at the top to make the percussive sounds. Each pot had a different resonance and he discovered when he used a cupped hand over the opening he could control the type of inflection on the sound.

"For instance", says Wilson, "immediately after impact if I raised my fingers on one side I got an upward inflection. Conversely, if I hit one side of the mouth first and then closed my fingers over the rest, I could produce a downward inflection.

"Sampling these was very straightforward – simple one-shot, one-second samples with a bit of boost, about 5.6K. For all the sampling, I used a Sony C48 through the desk and then took a direct out to the S612."

Wilson's favourites are the flute-like sounds. Light and airy, they were made from a tiny vase with a short neck. Wilson blew across the lip on the neck of the vase as if he was playing the flute.

"It was pretty difficult to get a good clean sound out of it and, in fact, the sample I used has a lot of wind noise on it. I tried to filter it out, but I didn't like what it did to the sound so I decided to live with the noise. Again, it's a one-second sample, with a straightforward loop and a slow modulation on the decay."

The procedure of making *Baraka* was quite simple – the difficulty lay in finding the right basic sound and then finding the right loop point. As well as stretching the use of the equipment in his studio, Wilson adopted an unorthodox approach to his work to create original sounds. For example, some of the loops which he finally decided to use would normally be regarded as "bad" loops. It was this that enabled him to create the synthesiser sounds which were to become such a point of contention among his friends.

THE TRACKS THAT make up *Baraka* were recorded over several weeks. Wilson worked with one sound at a time, creating more sounds as he needed them.

"I started with one of the percussive sounds and played its part of that particular rhythmic pattern into the MSQ700", he explains. "I maybe used three or four different sounds on tape to make one percussion part, but as the S612 will only handle one sound at a time, you have to split the part up and record them separately. In the two longer pieces, some of the parts were looped. But I used different lengths, say three, four and six minute loops on three of the different elements that went together to make up that percussion part. That way the first part has been played four times, the second three, and the third two when you get to 12 minutes into the tape, and then they all meet up again. The parts are developed in such a way as to be musically and dynamically coherent even though each time they repeat they are playing with different parts of the other two loops.

"I used quantisation on the MSQ700 for some parts and not for others, depending on the track. With some parts, I committed reverb or delays to tape because I didn't have much outboard gear, particularly very short reverbs on some percussion or long reverbs and delays on the flute-type sounds playing slow melodic lines. I don't work much with the MSQ700 before I go to tape. As soon as I've got one part on tape I run that and the MSQ in sync while I play the next

part into the sequencer."

"I used the S612 for one very important reason", Wilson continues. "It is the only sampler I own. Over the years we've come to an understanding: I don't ask it to do things that I know it can't do, and in return it does everything that it possibly can do for me. And the MSQ, well the editing on it is practically non-existent. It is a very limited machine, but it does have a sort of character that I haven't seen in other sequencers. I think that some of its limitations are the very thing that make it so likeable."

Experimenting with the sound of music was a natural step for Wilson, who started his musical career at the age of seven. Then he was a cornet player in his school band in the Queensland town of Ilfracombe.

As a teenager he swapped his cornet for a drum kit, and after writing a successful stage musical, he joined a rock 'n' roll band. His time with Railroad Gin – a popular band in Australia during the 1970's – meant long stints of touring and playing in sleazy venues he would rather forget. Wilson now plays guitar in a blues band.

"Guitar is my rock 'n' roll-have fun instrument", he says. "I am not a great guitarist but I love playing."

When Wilson tired of life on the rock road, he decided to make a living writing advertising jingles. He started to learn the engineering side of recording music and he was finally forced into production responsibilities when his partner left, leaving Wilson to produce an album.

In 1987, Wilson stopped working as a jingle producer, changed the name of his studio from "Wilson Music" to "Hole in the Wall" and started to compose and work on his own projects. Much of his knowledge of sound engineering is self-taught or garnered from magazines such as the one you're now reading. He found these magazines informative but frustrating due to the fact that much of the state-of-the-art equipment they reviewed was out of his financial reach.

But in 1988 Wilson had the chance to work with this equipment after he and a friend, Gerard Dozzi, were commissioned to write an opera for World Expo 88 in Brisbane. The original demos were done in Wilson's studio. The finals were done in Los Angeles with producer/engineer Daniel Lazerus, who has worked with some of America's leading recording artists, including Steely Dan.

In LA, they used the mighty Synclavier and worked in various studios including Enterprise and Master Control. The opera, *New Horizon*, was an ambitious project which was performed at World Expo which took place in Australia in October last year.

Since then Wilson has moved out of his suburban studio. He is now building a new studio and continuing to compose in the isolated surroundings of Queensland's Sunshine Coast hinterland. *Baraka* is currently being considered by a record company for British release, and he and Drysdale are considering mounting another exhibition, this time using live pot music, played by five percussionists and two keyboardists. All in all, things are looking particularly good for Colin Wilson at the moment.

"I guess one of the things I am good at is being able to hear a sound in its raw form and think 'I can use that", is his parting comment. I'd say he's good at a fair few other things besides. ■

"I spent a lot of time arguing with people about the authenticity of the sounds – whether they were really produced from these pots."

ALESIS
QUADRAVERB
Digital Multi-effects Processor

The heat is on to produce a cost-effective, programmable multi-effects processor – Alesis' history of winning budget designs makes the QuadraVerb one to watch. Review by Ian Waugh.

ALESIS HAVE BEEN making quite a name for themselves over the past few years. The Alesis Micro series of FX units have found a tidy niche in the home recording market and the HR16 drum machine and the MMT8 sequencer are doing very nicely, thank you.

When the Midiverb was released on an unsuspecting public in early '86 it offered MIDI-selectable digital stereo reverb at a budget price. In '87 the Midiverb II won several industry awards and it is still being snapped up by professionals and amateurs alike.

What next? Midiverb III? Well, if it weren't for the risk of being accused of flogging a name to death, that could well have been the title at the top of this review. QuadraVerb, however, tells us a little more about the unit and marks Alesis' entry into the MIDI-controllable simultaneous multi-effects processor market – even if you can't say it without pausing for breath.

What's a multi-effects processor, you may ask. It's a unit which can produce a variety of different effects: one minute it could be a reverb unit, the next it could be creating delays. There are already several units on the market which do this. And a *simultaneous* effects processor, if you haven't already guessed, can produce several different effects at the same time.

The idea isn't totally new. We already have ART's Multiverb (soon to father the Multiverb II) and Digitech's DSP 128P, both slightly more expensive than the QuadraVerb. Korg and Yamaha are about to launch new simultaneous multi-effects processors but they won't give you much change from a grand.

A year ago, if you wanted to apply equalisation, delay, pitch change and reverb to a signal you'd have required a lot of individual outboard units and a healthy wallet. QuadraVerb has all four of these effects – plus a bit more.

Inside and Out

ON THE OUTSIDE the QuadraVerb has two knobs to control input and output signals, four LEDs to indicate input level, a by-now-standard 16X2 LCD display, two buttons to access pages during editing, two buttons to alter values and 12 buttons to select the effects and various edit functions. These 12 buttons have central LEDs so you're never in any doubt about what you're doing.

The buttons are solid plastic and the harder you press them the faster the display scrolls. This works well for most parameters (as long as the unit is securely mounted) but altering some of the EQ settings is a real chore. For example, the Hi EQ Frequency setting in the three-band parametric (more on EQ shortly) can range from 2000-18,000Hz. That can give you a pretty sore pinky. You can go directly to any program number by holding the Prog button and pressing the other buttons (they're numbered). A similar punch-in facility would have been useful for other parameters – especially the EQ.

Inside, the QuadraVerb has a quoted frequency response of 16Hz-20Khz and a dynamic range of 85dB. It contains a custom-designed VLSI chip with 16-bit resolution and 24-bit processing. What all this means is the effects are pretty smooth and the background noise is fairly low.

On the back are left and right audio input jacks. They're high impedance and ideally suited for use with instruments and line level signals. Although microphones can be connected directly you may get better results routing them through a mixer.

The unit is powered by an external power supply which plugs into the back. Other sockets include MIDI In and MIDI Thru, a bypass jack to bypass the effects and a program jack to let you step through a range of programs.

Whereas the Midiverbs deal in preset programs, QuadraVerb is fully programmable and you can alter virtually all the effects' parameters. The order in which the signal passes though QuadraVerb's four effects is largely determined by the Configuration. We'll get down to Configurations in a moment but first let's look at the basic effects. Sorry, basic is definitely the wrong word – the effects are comprehensive in the extreme as you will see. We'll begin with reverb.

Reverb

THERE ARE FIVE Reverb types: Plate, Room, Chamber, Hall and Reverse. If you thought that creating your own reverb was simply a matter of twiddling a few knobs then think again. Alesis have really done some homework and endowed the QuadraVerb with 13 reverb parameters.

Pre-Delay delays the onset of the actual reverb, Decay determines how long the reverb takes to die away (an easy one), Diffusion controls the spaces between the reflections which make up the reverb, Density determines how quickly the reverb appears after the First Reflection and Low and High Frequency Decay help set the tonal quality and the damping effect of the environment. Between them, these should allow you to simulate just about any kind of natural environment – and artificial ones. Psychoacousticians start salivating now.

There are also four parameters which are used to create Gated Reverb – Gate On/Off, Gate Hold, Gate Release and Release level. You can gate all Reverb types except Reverse.

To make for even further flexibility (and complexity and confusion if you're not giving the QuadraVerb 100% of your attention), there are two inputs to the reverb section. Don't confuse these with external inputs; they determine from which positions in the chain the reverb takes its signals.

Input one can choose from Pre-EQ, Post-EQ, Pitch Output or Delay Mix. The first three are fairly obvious. Delay Mix, however, provides a signal which is a composite of the outputs from the Pitch and EQ sections *as determined by the Delay input selection*. You've really got to take that on trust until you get to the Delay section.

Input two can choose ether Pitch or Delay (no strings this time) as its source. Reverb Input Mix lets you balance

Photography *Adam Jones*

the two inputs or select only one as the reverb source. Well, it's nothing if not comprehensive.

The quality of the reverb is superb. It's very difficult to attribute a character to it as you can make it bright, harsh, dull or whatever by altering the vast number of parameters. In comparison with some other effects units, however, I'd call it "warm".

Delay

THERE ARE THREE types of Delay: Ping-Pong, which bounces the signal from one side of the stereo field to the other; Stereo, which consists of two separate delays which can be individually varied; and Mono. The maximum stereo delay times are 400ms and 750ms depending upon the Configuration. The mono delay is twice as long – 800ms and 1500ms.

A feedback parameter determines the number of repeats. Even on maximum the delays are crystal clear and show no sign of signal degradation. As with reverb (and, again, depending upon the Configuration) there is a choice of inputs from various positions in the signal chain.

Pitch

THERE ARE SIX types of Pitch Change effect: Mono and Stereo Chorus, Mono and Stereo Flange, Phase Shifter and Detune. Those Pitch Change effects which are produced with an LFO (Low Frequency Oscillator) let you choose a triangle or square wave. There are speed, depth and feedback controls, too. Input to the Pitch section can be Pre- or Post-EQ.

Detune has a range of around plus or minus half a semitone. An octave range would have been useful for playing harmonies or just thickening sounds by adding a sub-octave but considering all the other goodies it would be churlish to gripe.

Equalisation

THERE ARE THREE types of EQ: three-band and five-band parametric and 11-band graphic. The type available is dependent upon the selected Configuration (coming up soon, honest).

Parametric EQ lets you "dial" the frequency which you want to alter. Mixers, for example, tend to have rotary parametric EQ controls labelled Treble, Mid and Bass.

Graphic equalisers offer a preset range of frequencies which can be cut or boost. On a hardware unit the control settings form a graph of the frequency spectrum, hence its name. On the QuadraVerb the LCD shows a frequency graph which you alter with the Value buttons. This is a neat idea although the display is only capable of showing a seven-step resolution and you have to press the value button twice to move the display one step. Cut and boost on all EQ sections is +/– 14dB.

The degree of control offered by the EQ section is nothing short of amazing; it's better than some dedicated EQ units. Someone once said you can't have too many equalisers in your studio and that's probably true.

Configurations

OK, NOW WE'LL look at Configurations. These are really the heart of the QuadraVerb's operation. Five Configurations determine the order in which the effects are placed in the audio chain. The signal generally passes through the effects in series, although input can sometimes be selected from an effect earlier in the chain or from a mix of two outputs – as you'll recall from our look at the reverb section.

The first Configuration is known as QuadMode and allows all four effects to be used simultaneously in this order: Three-band EQ>Pitch>Delay>Reverb. This is the most sophisticated of the Configurations and the number of possible arrangements of effects must be legion.

The second Configuration makes special use of pitch and EQ to produce a Leslie effect: Leslie>DI>Reverb. It simulates the famous Leslie speaker sound without which no Hammond organ is complete. It gives you control over the stereo separation and the motor speed (off, slow or fast). You can also cut or boost the level of the upper horns.

It's quite difficult to simulate a Leslie electronically (as organ manufacturers know), but the QuadraVerb does the job incredibly well. In fact, this was one of my favourite effects. By adding just a splash of reverb it turned a flat and uninteresting DX organ into a sound I'm sure Jimmy Smith would have been happy to play. When you alter the speed you can hear the rotors speed up or slow down – not unprecedented but in my book, absolutely brilliant.

The third mode has this arrangement: 11-band Graphic ▶

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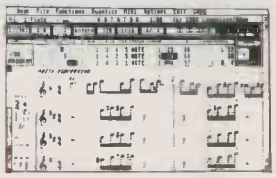

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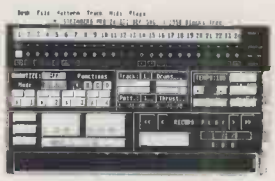

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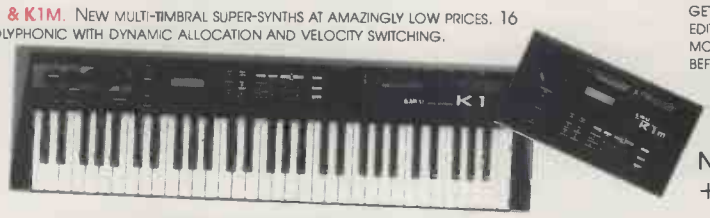

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IN TOUCH WITH TIME

►EQ>Delay. The bands range from 16Hz-16KHz.

The fourth Configuration is Five-band EQ>Pitch>Delay. No reverb on this one which is rather a shame – it's amazing how quickly you miss it when it's not there. The manual suggests it's a good setting for guitarists – or indeed anyone who needs extra EQ facilities.

The final Configuration is Three-band EQ>Reverb. Use this if reverb is the primary effect you require. Although not shown on the Configuration display, stereo chorus is also available via the Pitch control. The Reverb types here are different to the others (they have the suffix 2 instead of 1) and have a slightly different tone.

Alesis are keen to point out that there is no deterioration in the signal no matter how the effects are arranged – and my ears would be hard pressed to disagree. However, if you crank the unit up you can hear whispers of noise as you flick through the settings. Heavy reverb, flanging and some pitch effects are the worst culprits, but if you're sensible about levels there is little that would cause any problems.

MIDI Control

THAT'S A FAIRLY impressive list of functions but hang about, 'cause there's more. The QuadraVerb lets you alter effects parameters in real time via MIDI. This is something of a rarity in effects units, but it's likely to become increasingly popular (and it's one reason for the quick release of ART's MultiVerb II).

The QuadraVerb lets you control up to eight parameters simultaneously using from one to eight MIDI controllers. These include pitch-bend and modulation wheels, aftertouch, a note on command (but you can't specify which note), note velocity or any one of the 128 MIDI controllers.

A total of 50 parameters can be controlled in this way, although their availability is determined by the Configuration. Most of the reverb, delay and EQ parameters are controllable and you can alter the Leslie parameters, too, which means you can set up a controller to switch between chorale and tremolo speaker effects (yep, I really do like this one).

Got a digital synth? Assign the EQ to a pitch-bend wheel for instant filter sweeps. Or assign velocity to EQ to make a sound brighter or more dull depending upon how hard you play. You have to be careful here, however, as quick severe alterations can cause a few clicks.

If you're really into creative processing, how about setting up a few control tracks on your sequencer to modulate these parameters?

And talking of MIDI, the QuadraVerb can be set to Omni mode or it can transmit and receive on any MIDI channel. With Program Change On, it responds to patch change information by selecting the corresponding program number. For example, sending patch change 10 will select program 10. In Table mode, incoming patch numbers can be assigned to any program number. The MIDI functions are global and are not stored with individual programs.

You can toggle the MIDI Thru socket between Out and Thru functions and you can dump any or all of the programs via a System Exclusive MIDI data dump – very handy indeed if your sequencer supports this.

The QuadraVerb has 100 program memories and 90 are filled with factory settings. You can overwrite all of these with programs of your own but you can recall the factory settings at any time as they are also stored in ROM. 100 memories may seem generous but the range of effects available made me wish for 100 more.

One of the first things I noticed about the QuadraVerb – apart from its sleek lines and its handsome, debonair, man-about-town exterior – was its lack of a Mix control to adjust the balance between the direct and treated signal levels. Instead, a separate mix is produced for each program using the Mix Edit function. This lets you mix together not only the direct and treated signals but it also lets you program the output levels of the individual effects.

"Whereas Alesis' Midiverbs deal in preset programs, QuadraVerb is fully programmable and you can alter virtually all the effects' parameters."

It's far more versatile than any simple wet/dry control could be, although I still reckon an external control would be useful.

The Bypass button (and Bypass Jack) bypasses the QuadraVerb's effects and channels the Direct Signal Level to the outputs. If the Direct Signal Level is set to zero in the mix (as it is in the Leslie programs) you won't hear anything. I can see the logic behind this but I think I'd rather be able to hear what the complete original signal sounds like. Still, it's no big deal.

The manual is reasonably helpful and full of diagrams of the LCD, although its style is rather stilted. It explains the reverb parameters and EQ sections very well although a short tutorial section would not go amiss.

Verdict

WHILE THE QUADRAVERB is not difficult to program – once you've assimilated the manual – it does bring a certain amount of multiple-button pushing to the effects processor. I wonder if it would be possible to write an editing program for it.

Although it's not too difficult to work out what most of the preset programs are about (use your ears), a description of their construction and some applications would have been really useful. And what about a reference card like that supplied with the Midiverb II? It could contain a list of the factory presets with a space next to them in which to write any new programs of your own.

"Mix Edit lets you mix together not only the direct and treated signals but also lets you program the output levels of the individual effects."

The QuadraVerb is just crying out for an applications book, too. Yamaha produce one for the REX50 and two for the SPX90 – and they're free! Not all musicians are well-versed in the gentle art of psychoacoustics and such a book, I'm sure, would prove invaluable and greatly enhance the usefulness of the unit.

Any niggles about the QuadraVerb are of a decidedly minor nature. Make no mistake: this is a goody.

At a RRP only £20 more than the price at which the Midiverb II originally hit the streets, the QuadraVerb continues Alesis' "more sounds for your pounds" policy (if that's not their policy it ought to be). It's an excellent piece of equipment, well worth the readies and it will prove irresistible to home recording enthusiasts and studios alike. Now, where's my cheque book? ■

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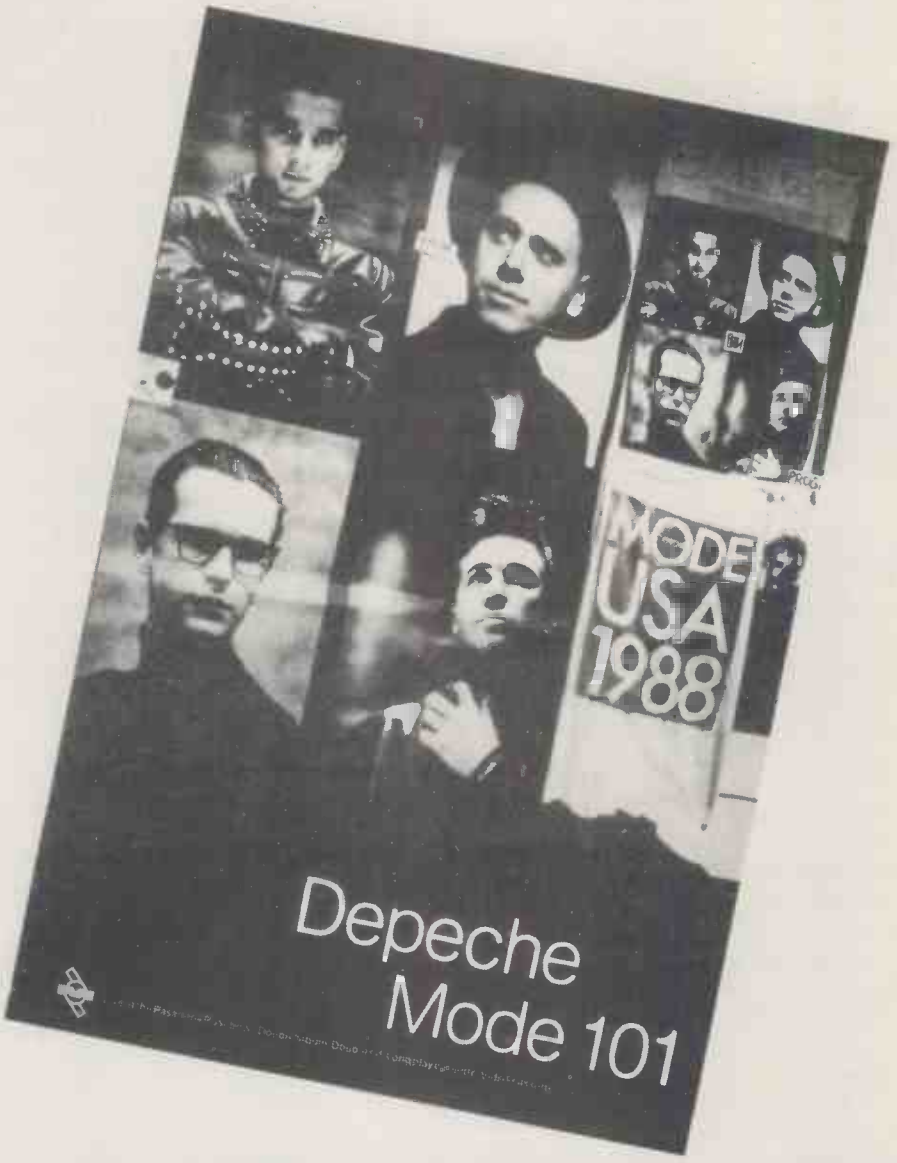
Depeche Mode
101
Mute LP



On record Depeche Mode have made the transition from sugary synth band to sample gloom merchants par excellence - with an industrial funk flirtation thrown in somewhere in between. On stage they now play different songs but still provide a damn good night out. They've never been afraid to use tapes and sequencers live, and if anybody would like to argue that this robs a performance of spontaneity and human warmth, I'd point them in the direction of Depeche to illustrate the flaws in their argument.

Depeche Mode have been at the forefront of the revolution in musical technology for some nine years now. In that time they've released the odd live recording (such as the 'Blasphemous Rumours'/'Somebody' EP) but these have never captured the spirit of the band in concert. *101* is the first time they've released a whole album of live music, and it does a far more impressive job. The packaging is nothing short of beautiful, with a booklet of Anton Corbijn photographs that set the mood for the four sides of vinyl within.

The songs that make up the "set" on *101* are mainly the more recent singles and album tracks with the odd chestnut thrown in. 'Just Can't Get Enough' is the only Vince Clarke song present (no 'Photographic' unfortunately), and 'Pleasure Little Treasure' is the only track not to be found on any studio album. Without exception the recording quality is excellent. None of the songs sound identical to their studio counterparts, and many have been restructured - the new section in the middle of 'Never Let Me Down Again' is a case in point, adding much to the original version.

The band have a phenomenal amount of live experience under their collective belt and their maturity on stage is one of this album's most obvious ingredients. Although you ultimately feel cut off by being unable to see the party first hand, there's still a strong feeling that you're holding an invitation.

It would seem that Mute Records have decided it's time to give Depeche Mode the Big Push that will elevate them into the league occupied by stadium rockers like U2. *101* should ensure there will be longer queues for tickets next time Depeche Mode come to town, but on the strength of this piece of vinyl, it'll be well worth the wait. ■ *Db*

Tangerine Dream
Optical Race
Private Music CD

After nine Edgar Froese solo LPs, 25 TD LPs and over a dozen soundtracks, it would be reasonable to expect a new Tangerine Dream album to sound stale, and add nothing to the cause of instrumental electronic music. On the contrary, *Optical Race* represents the beginning of a new era for the Dreamers. It is the first album since the departure of Chris Franke, and the first recorded for Private Music, the label set up by former TD member Peter Baumann. On it, Froese is joined by Paul Haslinger and newest member Ralph Wadephul - an injection of youthful enthusiasm that would seem to have added an upbeat, rhythmical drive to the music.

From the outset *Optical Race* has a much more modern and commercial sound than many of the Dream's previous works. Gone are the 16-note sequencer lines and old analogue synth textures. For Froese, new equipment has brought a new approach:

"If you think about the old analogue equipment" he says, "where you had an eight or 16-step sequencer, the creative process was obviously limited. But now today, with software sequencers, we are not limited at all; now it's like writing sheet music. With the best sequencer software you have to be absolutely sure what you want to do. You have to compose in a very old fashioned way. We're no longer working with 16-step sequences, we're writing music bar by bar, like people had to 200 years ago."

TD's rhythms are more prominent now, bringing with them a much greater emphasis on drum sounds. Most of the rhythms come from samplers such as the Akai S900 or Roland S550, and all are programmed on the band's much loved Steinberg Pro24 sequencer.

"It would be a misunderstanding to wish that we were good drummers and put real drums on our music", Haslinger explains, "but with our rhythmical understanding we

have developed our own ways of performing drums. We may use a keyboard instead of a drum kit, but we still have a physical approach. The drums weren't programmed in the conventional sense, as far as we're concerned they were played."

But there are still obvious TD trademarks to be found. The opening track, 'Marrakesh', lasts over eight minutes and contains numerous tempo changes, yet lacks any real structure. 'Atlas Eyes' is much more refreshing, with its punchy bass riffs, sequenced choirs and heavily reverbed percussion. There is no real tension and little dynamic variation, but the album as a whole works because it manages to be soothing, relaxing and uplifting all at the same time.

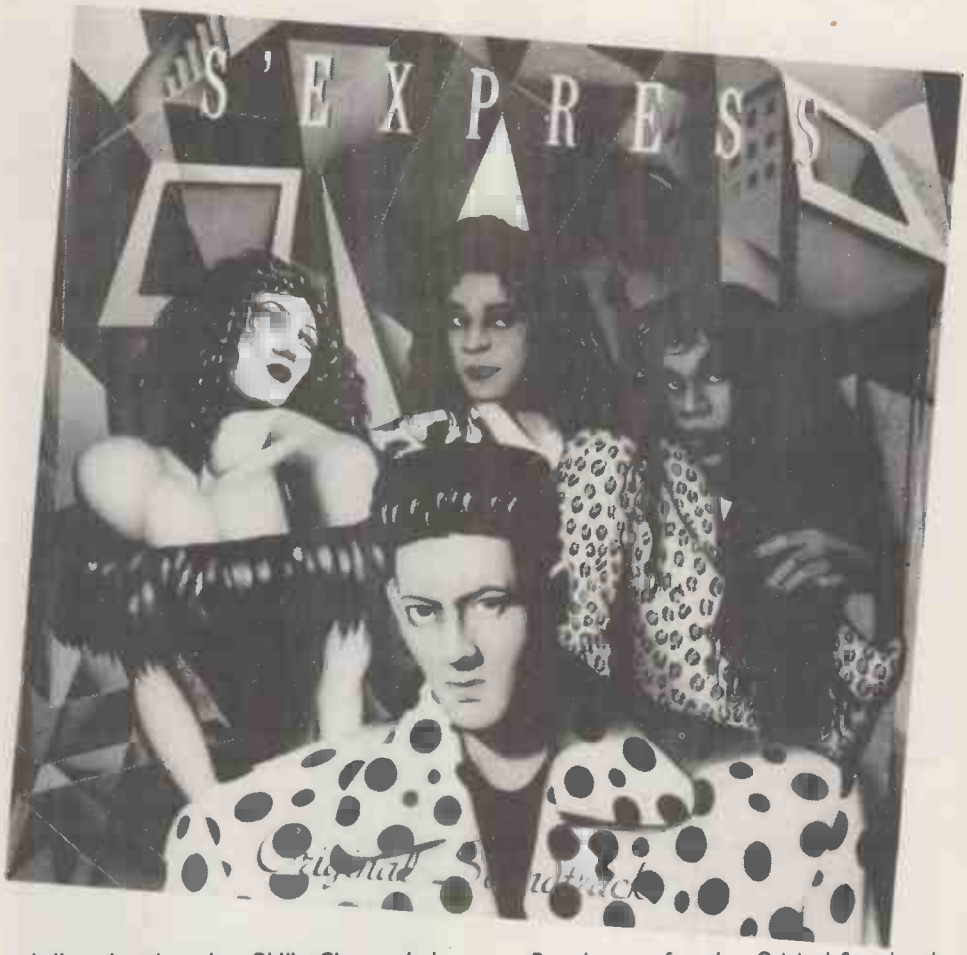
The dilemma the band currently face is one of record company scheduling. While this album has just been released in the UK, it was released last summer in America, and since it was recorded a year ago, The Dream have worked even harder on the pursuit of new directions. For Froese the priority seems to be dissociating himself with new age.

"In the future we will be adding a lot more guitar; definitely trying out a lot of things that will hopefully no longer identify us with that category of music. When we started out we realised we could not make original rock 'n' roll like the Americans or British because we had a different background. But from our heart we have always been rock musicians, and we're just trying to bring that in a bit more."

Ultimately *Optical Race* is a mix of old and new - sufficiently traditional to keep the old fans happy, and at the same time fresh enough to appeal to a new CD generation. If that sounds like you, you'll probably also be interested to know that the band are doing a tour of European capitals between 15th May and 15th June this year. Be there, or be somewhere else.

■ D*b*

S' Express
Original Soundtrack
Rhythm King LP



S'Express are renowned for their acidic dancefloor classics 'Theme from S' Express' and 'Superfly Guy' but in recent weeks they have been receiving much publicity over Philip Glass' involvement with 'Hey Music Lover'. Here, however, they have to prove themselves over two sides of 33⅓rpm vinyl.

To give you a feel for *Original Soundtrack*, it opens, more or less, with 'Theme from S' Express' and 'Superfly Guy', separated by 'L' Age du Gateau' and 'Can You Feel Me'. 'L' Age du Gateau' is a strange mixture of acid rhythms, sub-Kraftwerk analogue synth riffs and sampled vocal snatches. 'Can You Feel Me' has its heart in '70s disco, but adds a hip hop rhythm track and soulful vocals from E. Mix to create the kind of distinctive hook-laden song that lodges firmly in your brain on first hearing.

One of the album's highlights is 'Pimps, Pushers and Prostitutes' which can be found hiding over on side two. Call me a philistine, but it reminds me of Divine's 'Jungle Jezebel' - and there's no harm in that. One of Merlin's most moving raps to date does justice to one of S' Express' most moving songs - its title and subject matter could cause problems with radio stations if it ever sees single release, but maybe because of this, 'Pimps, Pushers and Prostitutes' is one of the album's most thought-provoking tracks.

Side two closes with Coma II (A.M/O.K), dedicated to homeboy Philip Glass and the ozone layer. With its helicopters and doomy chord sequences it would be equally at home as the soundtrack to a(nother) film about Vietnam. It's such a sharp contrast to 'Superfly Guy' that it's hard to believe the two came from the same band, let alone appear on the same album.

But the very fact that *Original Soundtrack* can be so diverse and still work is a credit to Mark Moore and his associates. The fact that S'Express have comfortably made the transition from singles act to album act is another. And the fact that it's ozone-friendly makes the whole package very wholesome indeed. ■ D*b*

live T·A·K·E·S

Kitaro
London Dominion

Kitaro was in London as part of his European tour, taking in 15 major cities in 24 days. Hailed as Japan's answer to Jean Michel Jarre, his music is designed to express human warmth and "a reflection of an acutely attuned consciousness". Despite this, he manages to entertain, maybe not on the scale of his French counterpart, but certainly in warmer, drier conditions.

Kitaro's sound is a celebration of one particular style of synthesis. Choirs, bells and flutes abound, tastefully mixed into a single, meditative whole. There's no real consideration of bass or rhythm, the emphasis instead falling on melody and the clarity of the perfectly prepared sounds.

On stage Kitaro is backed by a band of six musicians. Two keyboard players occupy either side of the front of the stage, a drummer and percussionist are set up at either side of the back, and a guitarist and violinist occupy the space in the middle. Kitaro himself occupies centre stage, flanked on three sides by a sizeable array of old and ▶

► new keyboards.

Throughout the concert dry ice drifted across the stage mimicking the slow evolution of the music. For one piece two huge candles give the Dominion a warm, homely glow, and an element of the "human warmth" we were promised earlier while an impressive lighting display made up for a missing laser show. One minute a solo keyboard arpeggio would lull the audience into a calm sense of security, the next a huge crescendo would wake sleeping members of the audience, as the whole band joined forces to display their thoroughly rehearsed, and apparently unsequenced, musical dexterity.

Electronic instrumental music is a genre many people attempt because they think it's easy, but few make exciting records and even less know how to entertain. Despite several prolonged "flutes over sustained chords" sections, Kitaro successfully entertained a full house for over two hours, earning a standing ovation in the process.

More interesting than most of his counterparts then, Kitaro has just released a compilation of highlights of the last ten years of his career. He has a knack of re-releasing the same tracks while keeping his fans happy. But how can you judge the man in concert? Certainly not on the strength of the band's dubious haircuts, definitely not on the pre-gig hype. If you were there you will have enjoyed it, and you can't say fairer than that. ■ *Db*

demoT·A·K·E·S

It seems rare these days to come across a group which sounds like its members couldn't possibly exist without one other, that the whole really does add up to more than the sum of the parts. **QAX** are one of the few such bands I've encountered in these pages, an exception which proves that rules are only there to be broken, if not indeed thoroughly pissed all over.

The three bods concerned are Steve Harrington (sax and synth), Nic(ola) Smith (vox and drum programming) and Jackie Smith (synths, sequencing and I put it to you, Miss Marple, possibly Nic's sister in addition). Their tape is one of the freshest and most immediate I've heard for many a moon – an inspired collision of mutant disco and powerhouse rock, combining shades of Grace Jones, the Cookie Crew, Kim Wilde and – why I do declare! – Nancy Sinatra.

From the boogie nights of 'Beat One-O-Five' to the white soul daze of 'Stone Lies' each of the four tracks comes across well, primarily because all the components integrate so seamlessly. Nic's warm and gutsy vox humana is perfectly complemented by some wickedly sharp drum box programming (Yamaha RX5 and RX11) and zappy arrangements which have curves in all the right places.

At the helm is the Yamaha QX5 and QX3 steering a combination of DX7, DX21 and TX81Z, plus Korg Mono/Poly and Poly 800. There are lots of nice fuzzy brass and distorted guitar pad sounds to kick the tracks along, while interesting undercurrents are provided by shorter riffs played with more "nobbly" sounds.

A&R men take note. If you like your bands loud, raw and well funky, then catch this threesome before the sticky mire of Wolverhampton claims them forevever.

Meanwhile, over in Nottingham you'll find our second synthetic menage-a-trois of the month, **Catwalk**. I must say, neither the name nor the cassette artwork inspired much confidence with my internal predudice-ometer immediately flashing up "Student/Indie Scratch Guitar Pop With a Tendency to Put Far Too Many Incongruous Words Like Banana Into Each Line".

But i woz rong. 'Cos from the opening refrains of 'Rollercoaster' –all mellow congas and *Merry Christmas, Mr Laurence* synth atmospherics – to the joyous anthem of 'Take My Breath Away', this lot prove to have their fingers well and truly on the pulse of that crazy little thing called Instantly Memorable Pop. This is spirit stirring stuff indeed, with more than a nod in the direction of Erasure, but without the silly costumes or Vince's look of fierce indifference.

Time then to reveal the culprits – brothers Adrian and Andrew Beeston on synths and programming, plus top of the vox, Ian Campbell – who, aside from being able to turn out a nicely crafted chewn between them, make much intelligent use of the gear. This comprises Roland D20 and Korg DW6000 plus Ibanez guitar for the sounds, Yamaha QX21 for the sequences and Boss RV10 reverb for the FX.

The Porta One production jobbie benefits particularly from the presence of a Korg KMS30 synchroniser which cuts down on bouncing and leaves the D20's drum sounds still crisp and

powerful enough to drive the tracks along. It also gives Campbell room to experiment with different takes and mixes of vocals and harmonies, before the full stereo backing track is added to the tape as well. This is a far better ordering of priorities than the more usual approach which seems to involve spending hours on the backing track then quickly shoving in the vocals in a single take right at the end just before everyone rushes off to catch last orders.

If you prefer walking the cat instead, I'm reliably informed this band are available on vinyl, having appeared on a compilation album, *Rock For You: Volume 2* released by independents TVR (Cat No VT0014 LP). Telephone TVR on (0635) 44314, mention this review and who knows, they might try and sell you one.

Apart from an inexplicable urge to whip off his shirt every time anyone with a camera comes within shooting distance, **Monsieur Defossés** is another act who's all right by me, Jacques. (Yes, that's *his* first name, too). His impressive portfolio of demo tapes, complete with impeccably DTP'd literature and decidedly OTT snaps, is a model example of how to convince even the most hardened music cynic (sorry . . . critic) that at least *you* take yourself seriously.

Defossés trades under the grand and forbidding title of **Le Groupe Digiphonie Inc** and if he didn't happen to live in Montreal, I'd condemn it as yet another example of all this Thatcherite enterprise nonsense getting out of hand. The outfit consists essentially of Mr Defossés' good self, a Roland D50 and Octapad, two Emax HD racks, a Stepp DGX digital guitar, an Apple Mac Plus running MIDIpaint software, and last but not least a friendly backing singer by the name of Lise Côté (though no further manufacturers' details are supplied).

The four pieces reveal brother Jacques to be an aspiring melodic rocker, albeit of the AOR '80s rather than progressive '70s persuasion. Of all the styles in all the world, this is one of the most difficult to get right, with a very slippery path trodden between good honest musical melodrama and ridiculously overblown pomp cliché.

On the whole, Desfossés manages to keep us on the right side of camp, mainly because his marvellously expressive vocal delivery succeeds in rendering utterly plausible the lyrical nonsense which this type of music seems to inspire. *My baptism was of fire/And of my early years transpires/A blazing loneliness that nothing could lessen/But the void has its lessons.* Quite.

The big, all-engulfing vocal themes (raging fires, molten metal, end of the world, sour fruit et al) are ably set to big, all engulfing musical ones, with the accent on big, all engulfing sounds – echoed, gated drums (custom samples) chugging D50 strings and a guitar that sounds like Nigel Mansell having trouble round a Monte Carlo bend.

All jolly competent, but for the most part you can't help feeling it's a mite predictable. Of the four tracks, the quieter, more introspective 'Let the Boys Play' is the most distinctive with its gentle theme played on sakuhachi and piano over sparse toms and other ethereal percussion.

But then, with a chest like that, who needs fear criticism? ■ *Nicholas Rowland*

Send your demo-tape, along with some biography/equipment details and a recent photo if you have one, to: DemoTakes, Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF. Contact addresses or numbers will be printed on request.

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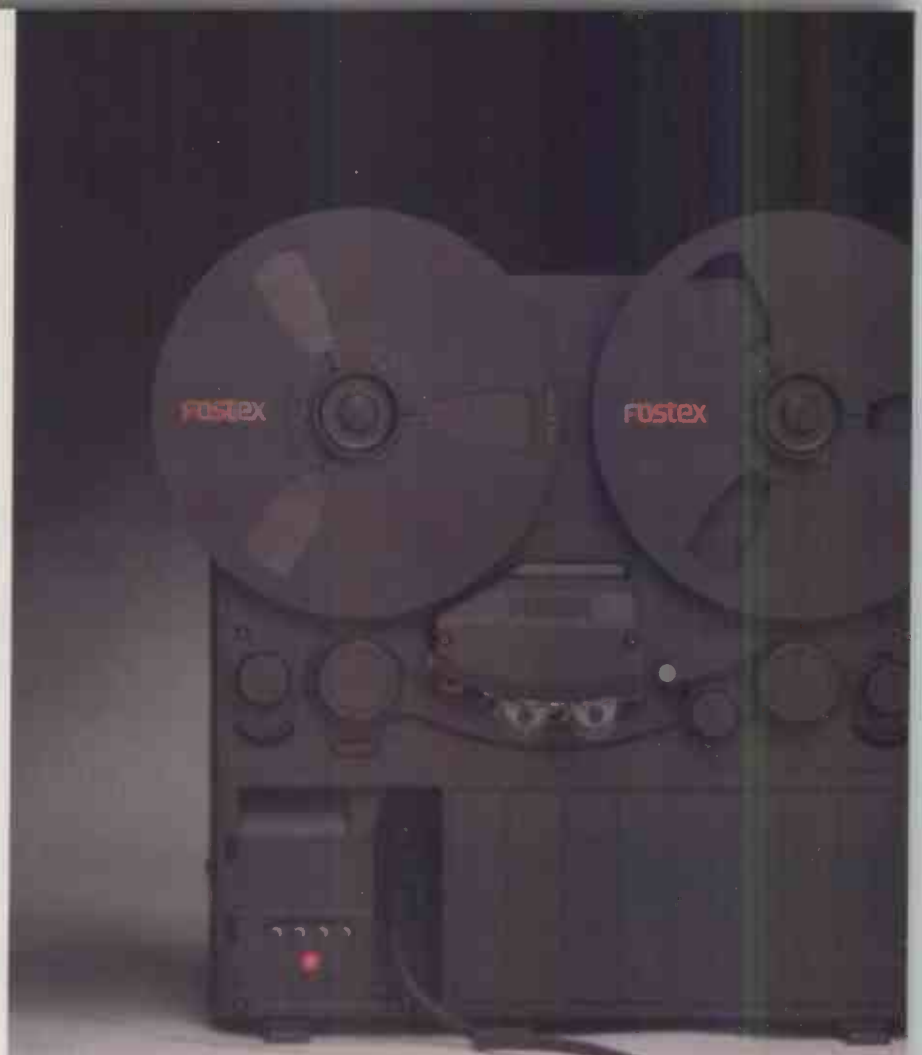


FOSTEX

MIDI in control

Illustration *Clive Goodyer*

From its humble origins as a means of allowing synthesisers and sequencers to "talk" to each other, MIDI has become a studio control system that will also control audio signals.

Text by Vic Lennard.

IMAGINE YOUR MULTITRACK recorder, be it a humble Portastudio or a Fostex E16, as an integral part of your MIDI system. Fade-ins, fade-outs and general audio levels are under the control of your MIDI sequencer. Only the vocals and acoustic instruments are actually recorded onto tape. An attractive scenario? Well, the technology is with us now as more and more software writers are taking advantage of the real-time control facilities the equipment manufacturers are offering them. We're not only talking synthesisers here, but MIDI signal processors too.

Sequencer

AT THE LOWEST level, a MIDI sequencer will record the timing, pitch and length of notes by breaking them down into Note On commands, which occur when a key is depressed, followed by a note off command, on its release. Each of these constitute a MIDI event which takes less than 1 millisecond to send. In technical terms the information sent by the keyboard takes the form "9n NN VV" for a note on and "9n NN 00" for a note off, where "9" shows that the event is a Note On, "n" represents the MIDI channel, "NN" is the key number of the note (its pitch) and "VV" represents the velocity. These three bytes are sent in hexadecimal (base 16). Fortunately you rarely need to get involved in the mathematical side of MIDI (especially if your sequencer happens to be computer-based and has a visual editor).

Apart from the black and white bits, most MIDI keyboards have various performance enhancers which are actually numbered MIDI controllers – such as the modulation wheel (MIDI controller 1),

volume slider (controller 7), sustain pedal (controller 64) and pitchbend wheel (which is in a category of its own). Other MIDI controllers include channel pressure (or aftertouch), which certain keyboards can send, and less common examples like balance (between two sounds) and pan (across a stereo spectrum). Depending on the sequencer, most of these can be recorded along with the note information or by themselves, which means that controller information can be generated after the notes have been recorded and set to the same MIDI channel as the notes – why worry about getting that awkward pitchbend right while playing when it can be dealt with separately later? Although it appears that this method of working will take up a lot of sequencer tracks, they can be mixed together once the recording has been satisfactorily concluded.

"The advantages of recording with a sequencer are obvious – no need to commit yourself to specific sounds and treatments on multitrack tape, or even to a song arrangement."

Many computer-based sequencers allow you to insert controller values in an event editor – a list comprising all of the data that has been received at the MIDI In port. This can be extremely tedious (especially in the case of pitchbend, whose values range from –8191 to +8191 for the full wheel movement – imagine inserting those one at a time) but if an approximate performance could be recorded and then visually edited to taste, the result would be both acceptable and quick. Hybrid Arts' MIDITrack ST series of sequencers allow you to draw controller curves and dynamic enevelopes by using the mouse, for straight lines, or freehand – although this has to be carried out while the sequencer is static. C-Lab's Creator/Notator package for the Atari ST takes a totally different point of view by having a real-time MIDI Generator page with 16 sliders, one for each MIDI channel, which can actively alter any of the controllers as the sequencer is playing, and records these movements to boot, giving instant results which can then be repeated. Steinberg's up-and-coming Cubit program appears to have a similar approach to Hybrid Arts with graphic editing of controllers, and even Iconix, long since defunct, had a basic facility of this sort.

Who Needs Multitrack?

RELIABLE SYNCHRONISATION devices for locking a tape machine to a sequencer by using a timecode on one track are now quite commonplace. Two different varieties exist. The first is tape sync, which uses a start signal and clocks from that point to drive the sequencer in time with that tape, but has the disadvantage that the tape has to be rewound to the beginning of the song each time to pick up the start command. The second is SMPTE timecode, which incorporates timing accurate to either 1/25th or 1/30th (depending on the system) of a second within the code recorded onto tape. This is then either injected straight into the computer program via one of the ports (subject to the manufacturer's hardware), or is converted into MIDI Song Position Pointers and clocks to keep an account of how many 96th notes have passed since the beginning of the song – hence permitting synchronisation from wherever the tape is started.

In this way a sequencer can be run in time with a multitrack on mixdown as an alternative recording approach to laying everything down onto tape. The advantages are obvious – no need to commit yourself to finalised sounds and treatments on multitrack tape, or even to a song arrangement. But there are drawbacks too – you'll need a sizeable mixing desk to cater for a couple of multitimbral expanders, a drum machine or two with individual audio outs and a couple of signal processors – and each instrument can only be doing one job at any time in the mix; if you need two DX7 sounds, you'll need two DX7s.

But what of a signal recorded on tape?

MIDI Control of Audio

APART FROM PROCESSING MIDI data by time-shifting (quantising) or pitch transposing, sequencers can control the

level of output of a synth by altering the velocity or volume. The signal processing equivalent of this is a noise gate which works by shutting off any signal below a threshold level (derived from either the internal signal or an external trigger), but opens once this is exceeded, using a predetermined attack time to reach its fully open state. This is followed by "Hold" and then "Release" (sometimes called Decay) phases. And in keeping with old analogue terminology this profile is called the "envelope" of the sound. Alternatively a gate can work in reverse, open unless the threshold is exceeded. This process is termed "ducking" and is regularly used in radio broadcasting to allow a DJ to talk through a piece of music. But what if these two ideas could be incorporated into a single unit with the triggering provided by MIDI – a MIDI-controlled noise gate?

There are such units in existence, the most comprehensive of which is the Drawmer M500. This unit is actually far more than a noise gate, but let's concentrate on its functions in this context. A specific MIDI note, or range of notes, can be used to trigger each of the two channels, which will then follow the envelope you have set. Keeping the envelope in the Hold phase and using MIDI timing data, the gate can be opened from a start command and then triggered periodically after a certain number of MIDI clocks. Then life starts to get rather interesting . . .

The M500 can record a piece of music up to 20 seconds long and extract its dynamic envelope by using an algorithm for "reading" the input gain (scanned 256 times during the recording in 0.5 dB steps), and shaping an envelope from the resulting data – and it can keep 16 of these in memory at any one time. This means that a brass stab, for instance, can be precisely reproduced from a block chord without having to worry about getting the feel right. And there's more. The output volume of the unit can be controlled using MIDI controller No. 7, allowing a sequencer to change the output level of the M500 at precisely the right moment; a preset fade of up to 99 minutes can be initiated by setting any controller between 65 and 95 to "on" – just enough time to hide the tape hiss and the vocalist saying "Is that it then?".

Two other aspects of the M500 are worthy of note: Firstly, a MIDI velocity value can be calculated from the input gain of a signal – a snare drum for example – and placed with a note value to create a MIDI Note On event which can trigger a MIDI sound source – in this case it would be either a drum machine or a sampler. Secondly, any buttons pressed on the front panel (yep, no knobs) can be recorded by the sequencer and reproduced at mixdown, and as the M500 is a multiple processor with gating, compression, panning and so on, effects can be gauged before mixdown without the pressure that the final mix invariably causes.

Another MIDI-controlled noise gate worth a mention is Studiomaster's IDPI. This lacks many of the more sophisticated routines of the Drawmer unit but does have one very interesting facility – given the correct MIDI channel, Note On or aftertouch data will initiate the attack phase while the corresponding note off will cause the hold/release cycle to come into operation. A similar operation can also be initiated by using the pitchbend wheel with the attack being imposed when the wheel is in any position other than the centre, and the hold/release phases taking effect when the wheel is re-centred. By judicious setting of the envelope, fade-outs can be programmed. In this case, the release cycle may take a maximum time of 50 seconds. The IDPI is also a multi-processing unit incorporating MIDI control in its compressor.

For our final example of MIDI-controlled gates we'll take the Brooke Siren Systems (BSS) DPR 502. This shares the technique of note on/off for triggering the attack and hold/release phases with the IDPI, but has another MIDI function; a Note On event can be generated after the attack time with the MIDI channel and note numbers being adjustable, and the velocity set at either 64 or via a conversion from the input gain. The length of the note is dictated by the hold time and the Note Off is then generated.

So much for the theory.

In Use

THE DRAWMER GATE has the one function that the other examples lack – namely that of controlling the gain of the unit by MIDI volume. Here's how that function could be used in a practical manner. Using the two audio channels separately and connected to two of the group outputs on the mixing desk, the sequencer can record controller No. 7 from a keyboard – normally assigned to the volume slider – while a musician is playing. Take the example of a guitarist playing with a different feel from one section to another and whose general level is quite variable. The usual method of dealing with this situation is to patch in a compressor, which won't just change the level, but also alter the sound by reducing the dynamics. Changing the gain of the noise gate, however, will maintain the relationship between loud and soft notes while ensuring that any extraneous noise (which guitars specialise in creating) is kept to an absolute minimum. The guitarist can then go for The Big Take confident that all he has to worry about is playing the correct notes.

This technique would not be suitable for a vocalist because the dynamic range of the voice is so wide, and each performance will be different according to the feel imparted. Instead, try recording to tape as usual, but when the track is complete, run the vocals into the noise gate (using group outputs if necessary), and again record the changes to any of the necessary settings on the sequencer. The advantage of this approach is that the procedure can be repeated over and over until a satisfactory result is obtained.

The ability to create a Note On with velocity from the level of an incoming audio signal also opens up interesting possibilities. This would have the effect of retaining the original velocity sensitivity – which would be very effective if you have a sampler with crossfade velocity (like the Akai S900) which controls the mix between loud and soft sample, subject to the velocity, so changing the texture of the instrument from beat to beat in as subtle a manner as the sound source will allow. The recently released Roland R8 drum machine works on a similar principle.

"How about recording harmony vocals over six tracks and then bouncing them onto a stereo pair while synchronising fade-ins and fade-outs, panning and so on?"

Creating rich backing vocals could also take a rather neat turn. How about recording lush harmonies over, perhaps, half a dozen tracks and then bouncing them down onto a stereo pair while running them through a MIDI gate? Synchronised fade-ins and fade-outs, panning for vocal effects and so on are all possible with a little imagination. Testing the result before committing it to tape will give better results, especially as the threshold setting is bypassed when in MIDI mode, so preventing any accidental triggering.

Quality and Cost

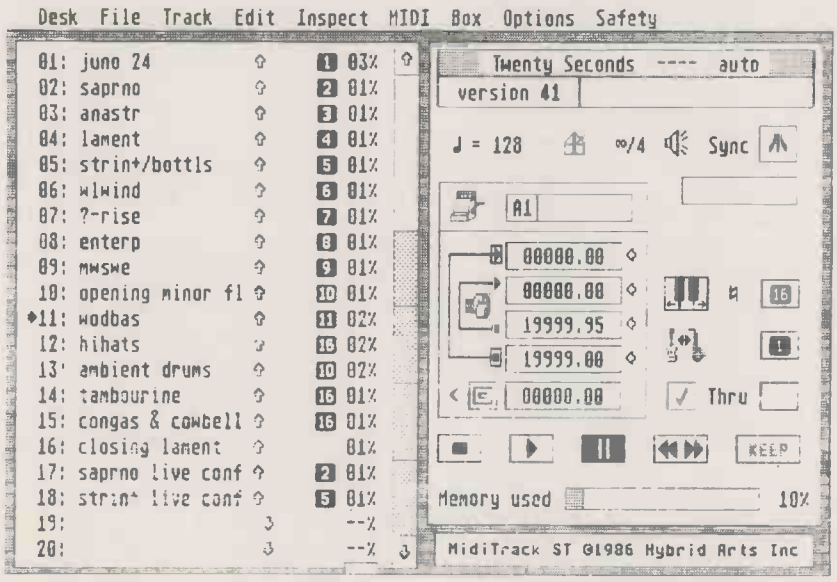
THERE ARE ALREADY a variety of MIDI-controlled mixers on the market – the Studiomaster Series II has MIDI muting of input channels and auxiliary returns; the Simmons SPM 8:2 can save 64 settings, each containing individual three-band EQ, level, pan and auxiliary send levels. However, neither of these desks approach the method of using a MIDI noise gate as detailed above.

The requirement is for a multi-channel unit dependent on the desk size, which can be programmed using specific MIDI controllers with a two-way interface (MIDI In and Out) for real-time applications through a sequencer. This would keep costs down by dispensing with a hardware remote control unit and special software for the computer. Using such a device, thought could be put into the manner of mixdown from the very start of a song with progressive ideas being stored in the sequencer. The most expensive parts of such a system are likely to be the VCAs; here there are two possible options: accept that the unit is going to be built specifically for semi-pro use and keep the cost down by conceding that noise will be audible but barely so, or wait for a manufacturer to design cheaper, high-quality VCAs. Personally I'd like to see a serious semi-pro unit that makes sensible compromises on performance and noise but opens the doors on one of the most exciting, as yet untapped applications of MIDI. ■

HYBRID ARTS

EDIT TRACK

Software for the Atari ST



Three years after the release of the first of the MIDI Track sequencers, Hybrid Arts have refined the program to compete with the German market leaders – how does it fare? Review by David Bradwell.

EVER MINDFUL OF the growing number of tapeless studios, Hybrid Arts have finally released Edit Track, the fourth in their MIDI Track series of sequencers. Both of the company's other top-line packages, SMPTE Track and Sync Track, have come complete with hardware to sync to tape. While this facility is undeniably important in conventional recording studios, for composers who never stray far from their bedroom it is a considerable and unnecessary expense.

Enter Edit Track, a sequencer with virtually all the features of its bigger brothers, but no hardware – and therefore a much diminished price tag. At the same time, the whole MIDI Track series (with the exception of the budget EZ-Track Plus) has been upgraded to final release specification. This adds new levels of sophistication and all-important user friendliness to the program that was first reviewed in MT in June '87.

The Basics

EDIT TRACK IS a 60-track sequencer that runs on an Atari ST with a minimum of 1Mb RAM and colour or mono monitor in medium or high resolution. Owners of previous software versions with 520STs (myself included) have the option of using the new program without any desk accessories and a very limited memory, or forking out to upgrade their hardware. In turn, the program offers linear- and pattern-based recording with full text and graphic editing, all under the optional control of mouse, keyboard or both.

The main screen is split vertically into two halves, one containing track information, the other the control display. All menu bar functions, with the exception of text and graphic editing, are accessed via dialogue boxes on the main screen.

Edit Track is always in Record mode, even when the clock isn't running. Pressing the space bar or clicking on Play starts the clock and plays all currently selected Tracks. Anything played over the top is automatically saved into a Keep buffer, and this can then be saved on any Track, regardless of the one selected at the time of recording. The Keep buffer is wiped as soon as the program is re-cued or any Track Editing takes place. The Keep buffer is also operative when Tracks are edited: changes are placed in a buffer, so that at the end of the editing process, it is possible to decide which Track the changes are saved to, leaving the original intact if desired. It can be frustrating to accidentally wipe the buffer before saving a performance, but once you've done it a couple of times you soon remember you have to press Keep.

Auto-locating is possible anywhere within a range of 20,000 beats of music or 5,000 bars of 4/4 time, by setting a start point and clicking on the enable bar. This is useful if you're working a long way from the start of a track, and doubles up as a default setting for the beginning of text and graphic editing. Punching in and out on a track is fully automated using points set in advance. This is done the same way as auto-locating, and allows easy correction of a section in the middle of a track, either erasing it fully or replacing notes within it. Punch In/Out is enabled by clicking on the "punching glove" icon which is then indicated by punch "impact marks" (very Mike Tyson).

The other main method of inputting musical data is Step Recording, which the manual admits can be tedious. In practice, Step Recording on Edit Track is no worse than most other sequencers once you understand the basics. Clicking on different areas of the counter allows you to control the advancement of the beat or fractions of the beat directly, where one quarter note is equal to 96 ticks. Play a note and hold it down while you advance the counter to make it last longer. If you're playing a crotchet (or quarter note, if you're American) and advancing the counter by 16ths, you hold the note down for four movements of the counter – simple really. Once a Track is successfully recorded and safely saved, it requires a name: point to the Track, click and hold one mouse button, then click the other, and type in a name of up to 16 characters – much easier than the previous menu-driven system. The same process applies to naming Songs, Sections and Registers (about which there will be more later).

Editing

ONCE THE MUSIC you've recorded has been safely assigned to Tracks, Edit Track really begins to shine. Editing is possible in three different ways. Text Editing allows you to insert, delete or modify any MIDI event from a complete list of events for every Track. Graphic Editing shows you a track graphically and permits you to move, erase or paint in new notes, as well as draw curves for attack/release velocity, polyphonic pressure, aftertouch,

control change and pitch-bend. The third type of editing is that done to the Track as a whole, and is perhaps the simplest place to start.

When selecting the Edit Menu the first thing you notice is that the name of most functions is followed by "/r" which indicates that Region Editing is possible. Clicking on the left mouse button will cause the whole track to be affected, clicking on the right only affects the Region between the currently selected start and end points. In keeping with the Hybrid Arts philosophy of non-destructive editing, all amendments can be saved to any empty Track, so the before and after results can be safely compared. This means you can take bigger risks when manipulating Tracks, which is not necessarily a bad thing.

Quantisation is one of the most used of all editing features. Edit Track offers nine different default quantise values, but you can select your own resolution for any beat value between a minim (half note) and a 192nd note. Click on the chosen value and you're asked to choose a Track to quantise. You're then asked which Track you'd like the result to be assigned to, so you select one, click on the right button and it's done for you. Computer-generated "feel" can be added to a quantised Track with the Humanise function. The computer randomly places each note near to the Quantise value, varying note placement by plus and/or minus a specified number of ticks, up to nine either side.

Durating a Track affects the length of the notes within it, rather than altering their placement in time. Again you're offered nine default options, but can override these to any beat value between a whole note and a 384th note. Tracks can be transposed and copied with similar ease. Shadow Track, a completely new feature of the software, allows one Track to be copied to another without using up any extra memory, although when you alter the original the shadow follows suit. (Similar to Creator's Ghost Track facility except that Ghost works in real time whereas Shadow is an editing facility.) Shadow Track is useful for layering different instruments – the shadow has a separate MIDI channel – as well as different Track Offsets. Tracks can be Offset by clicking on the white Multi-Function Switch at the bottom of the screen. This then converts the Track Memory Percentage display to a readout of currently selected Track Offsets, over a range of −90 to +99 ticks. These changes can be made in real time while the sequence is running, so you can get an instant idea of the effect the offset is having.

Tracks can be Mixed together to tidy the screen up (you're rarely likely to need more than the 60 Tracks provided) and similarly Unmixed either by MIDI channel or key zone, the latter being an area in which many other sequencers fall short. Unmixing is the shortcoming of Edit Track because the Track you unmix from remains unaltered, while the chances are you will want the information you unmixed erased. For example, if you've bulk dumped from a drum machine, and your whole Track has been given a default velocity setting (normally 64), you may decide the hi-hats are too loud while the bass and snare drums have disappeared. Rather than being able to unmix the hi-hats and reducing the attack velocity, you have to unmix the whole track into its component instruments (congas, cowbells, toms, cymbals, shaker and so on) or the hi-hat pattern is doubled in the original, still at the default velocity. This becomes even more of a pain where you unmix flattened chains (more later).

There are further advanced editing features which more or less speak for themselves. Insert/Remove Time allows you to insert or remove time within a track, Velocity Adjust allows you to alter the attack and release velocities, either by shifting, scaling or setting a value for them. Tempo Tracks can be built to automatically speed up or slow down a Song at any given point. Meter Tracks do much the same with regard to metre changes throughout a Song.

Text and Graphic

IF YOU'VE RECORDED a Track, quantised it, corrected the velocity and offset it to create a feel, you may find one of the notes is actually incorrect. Now's the time to start Text Editing. The Event List (selected from the Inspect Menu) allows you to view 18 separate MIDI events at a time, each of which occupies one complete row of information. Each row is split into five different areas: event time, a hexadecimal representation of the event, the channel on which it occurs, the MIDI event name (note on, note off, control change) and the event data (note, velocity and so on). Individual events can be moved in time, or altered if incorrect. In addition, events can be deleted and inserted. Any type of event can be inserted at any point in time, but you must remember to insert a seperate note off for every note on, as the sequencer won't do it for you. Text Editing enables very precise control of every part of a sequence, and it quickly becomes hard to imagine what life was like without it.

A Flip button on the Text Edit page allows you to enter the realm of Graphic Editing, the single most impressive addition to the original version of the program. Graphic Editing works in a complementary way to Text Editing, and the more you get into manipulating data the more you start regularly combining the two. To successfully work with the Graphic Screen you really need a high resolution monitor to be able to spot short notes, which may display as a single pixel. The key to understanding the system is to acknowledge the difference between Long (about quarter of a second) and Short mouse clicks. There are five Long Click modes available: Zoom, Play, Erase, Add and Move, and once you understand how to work with one of them the rest all come easy.

One mode will always be effective, and is shown in the Click Mode Indicator box. Modes are cycled through by Short-Clicking the right button within the boundaries of the Notes Display. In Zoom, Play and Erase modes you have to Select an area to be affected, Add mode lets you paint in new notes with the mouse, while Move mode is enabled when a note is selected. Areas are selected by Clicking and Holding the left button in the Notes Display, dragging the mouse to the right, and then releasing the left button. The action is affirmed by a Short Click on the left button, and cancelled by a Short Click on the right.

A Curve Display above the Note Display shows the attack and release velocities, polyphonic pressure, aftertouch, control change or pitch-bend information for that particular portion of the Track. These curves can be redrawn quickly and simply in one of two ways. In Free Hand mode you hold down the left mouse button and literally draw a curve from left to right. Straighter lines can be drawn using the intriguingly-titled Rubber Band mode. Short Click on the left button where you want the curve to start, give another Short Click where you want it to finish and Edit Track draws a straight line for you.

Play mode allows you to hear sections defined in the same way as for Zooming. It allows you to compare the edited version with the original either solo or as part of a full mix. Alternatively, pressing the space bar will play what is currently showing on the note display –whatever mode is selected. A Play Beam moves across the display, adding an element of visual entertainment to the proceedings.

Notes are painted in Add mode by clicking at the desired start point and dragging to the right. A right click automatically quantises the note on to the nearest quarter of a grid. Notes are always added with a default attack/ ►

release velocity of 64, but can then be edited with either the curve display or on the Text page.

A Short click with the left button on any note already present selects that note for editing, and it may then be moved, erased or altered in any way. The degree to which you're able to adjust notes is always dependent on the Zoom factor. If you need finer control simply Zoom in closer to the part you're working on.

Chains and Sections

THE LAST MAIN area of the program moves away from the idea of Edit Track as a linear recorder, regarding it instead as a section sequencer. A Section is a two-dimensional slice of music, comprising the data between a start and end time on one or more Tracks. Up to 100 different Sections can be defined at any one time; there is no limit to how many Sections each Track can appear in, and Sections can overlap each other freely. Each Section can be given a name of up to eight characters, and can contain up to 24 Tracks.

There are two main uses for Sections – you can either Glue one into an existing Track or create a sequential Chain of them, like song mode on a drum machine. Glueing a section is as simple as choosing a start time and deciding how many times you want the Section to repeat. The resulting Glued Section will be a mix of all its component Tracks, and can then be unmixed by MIDI channel or key zone. Chaining Sections together requires that you have a certain number of Sections ready prepared. Calling up Assemble Chain from the Edit Menu offers you the possibility of linking a series of up to 200 Sections together, which can then be saved as a Chain Track. If a Song contains several Chains you start running into problems like Chains within Chains and you end up in a mess. To get round this, you can Flatten a Chain, which converts the Chain Track into one long linear Track of the same data. This then needs to be Unmixed, which again can be messy, but you end up with a much more logical arrangement of information.

Verdict

HYBRID ARTS SEEM to have got it right with Edit Track. The lack of the ability to loop overdubs and the problems with Unmixing are disadvantages at the moment, but further updates to rectify these are being written as you read this. Other features, like the ability to import Tracks from other Songs, set up and name 27 different versions (Registers) of each Song at any given time, and to have GenPatch as a desk accessory, are worthwhile compensations. As a package Edit Track is user-friendly and the manual is clear, informative and written in an accessible style. The improvements in the software over the 1987 version make it a much more serious competitor to the likes of Steinberg's Pro24 and C-Lab's Creator – in particular the Graphic Editing is a joy to use.

The program's author, Stefan Daystrom, has taken on two co-programmers to speed up the availability of updates, although from now on there will be an upgrade fee.

Edit Track is part of the complete Hybrid Arts system, which includes scoring and compositional programs as well as a generic patch librarian. They all interact with each other and together form the basis of a very powerful studio. I have to admit to being very impressed by what's on offer. The more you use it the more intuitive it feels, and the more you appreciate its subtleties. And the more you can confidently disregard any apparent limitations. ■

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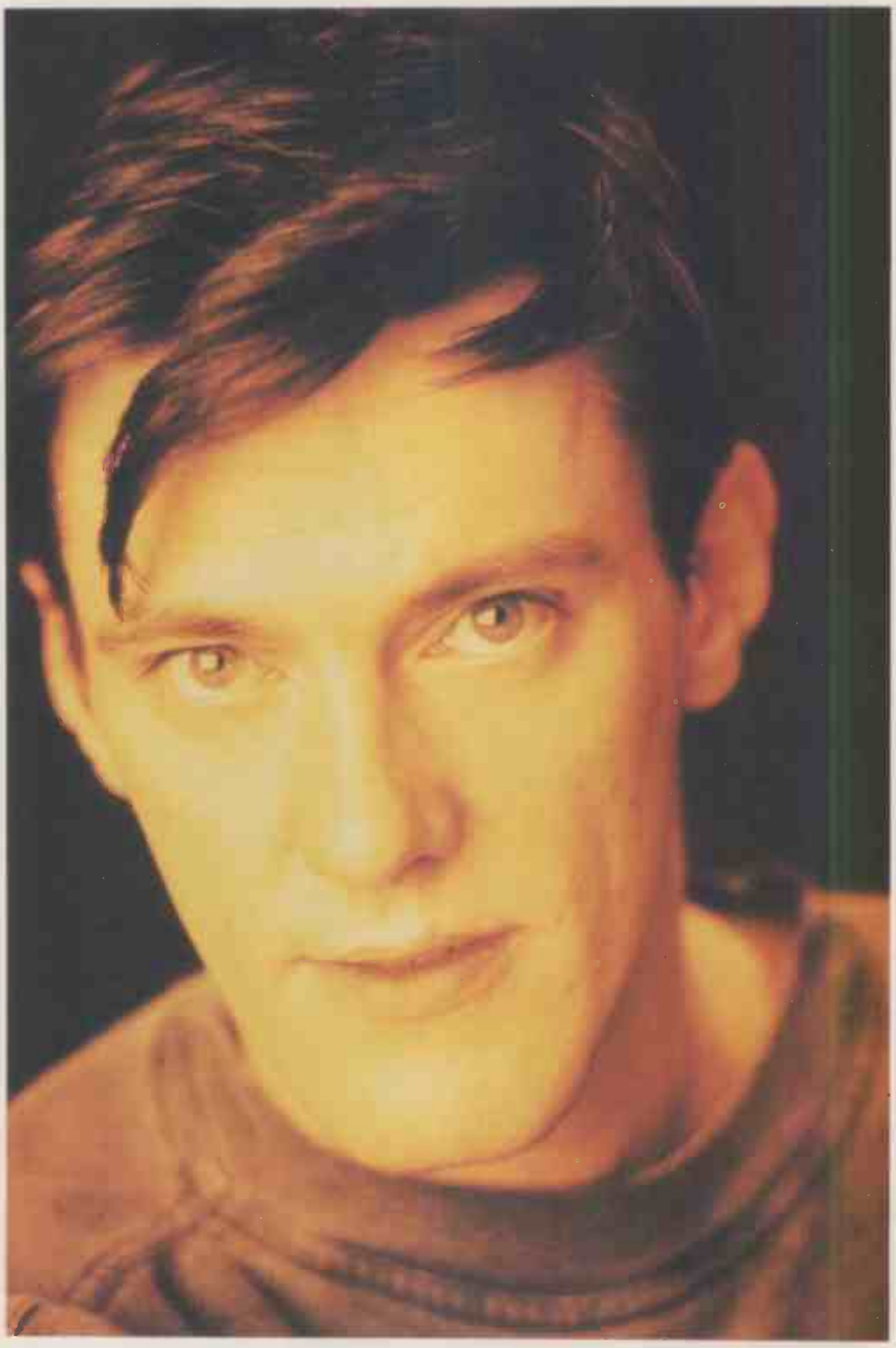

Eight years and five albums into their career, New Order are enjoying new-found commercial success; Stephen Morris talks about old songs, changing technology and the Brit awards. Interview by David Bradwell and Chris Williams. Text by David Bradwell.

THERE IS A brief half an hour left until our scheduled 11.45 rendezvous with New Order drummer Stephen Morris. Our destination is Macclesfield and panic is just beginning to set in – we are approximately 80 miles south of the target. A mishap driving through Derby (the first time) was all it took. The right road but in the wrong direction. It could have happened to anyone.

Despite our arrival an hour later than scheduled, Morris is in high spirits. We follow him to the house he shares with keyboard player Gillian Gilbert. Once inside we are given a preview of a test pressing of *Technique*, the fifth studio album to be released by New Order. It was recorded last summer in Ibiza, much of it actually in the open air, before being mixed at Peter Gabriel's Real World studios in Bath in the autumn. It is the band's most obviously commercial work to date, sounding more optimistic than previous albums.

New Order have moved on from the days of 'Blue Monday'. They have learned how to write coherent albums, their songs have been reduced from eight minutes to four. As a result they now get playlisted for daytime radio. At the same time the band have managed to maintain their credibility, building up a huge international following.

The history of New Order is well documented. Formed from the ashes of Joy Division by Morris with Barney Albrecht and Peter Hook (handling vocals and bass respectively), they

were joined on keyboards by Gillian Gilbert. Their sound has developed in line with advancements in technology, yet surprisingly it is the drummer who seems the most technologically aware.

"Playing drums is basically a very repetitive operation", Morris explains, sipping his Earl Grey. "If you're a drummer you're just doing the same things over and over again, and a lot of it is best left to a machine. Then you can do some of the more interesting bits yourself. I also always wanted to have access to a wide range of sounds, because with conventional drum kits you're stuck with one. As soon as the first little programmable drum machine, the little Boss Dr Rhythm, came out, I grabbed it. When I first got it I chucked the manual away, assumed you just had to tap your rhythm in and was disappointed to realise it didn't work like that."

Nowadays Morris has taken drum machine programming very much to heart. One of the most famous bass drum riffs of all time opened 'Blue Monday'. That was programmed on an Oberheim DMX. More recently Morris has acquired a Roland R8.

"Lovely machine, lovely machine . . .", he enthuses. "I used to have a Yamaha RX5 but that was stolen. When I went out to get a replacement I walked into a music shop and saw the R8. It looked like it was covered in fuzzy felt which I thought was a good gimmick for a start. I've not yet completely got to grips with its Human Rhythm Composer title, but it's an interesting box with good sounds. I wish Roland would bring out 808 and 909 cards for it. The thing that I liked about the R8 was that someone was putting out a drum machine with the specific idea that it shouldn't sound like a drum machine. Even putting very subtle variations in can make it harder to detect as a machine."

All the songs on *Technique* were played live on a drum kit, with samples replacing the kit sounds once the basic drum track had been recorded.

"We took the drums into loads of different rooms in the studio, whacked them and recorded them onto DAT", comes the explanation. "We sampled the best sounds into Mike Johnson's Greengate and then we recorded the drums that were on tape into the Master Tracks sequencing program on a Mac using a Syco PSP. It was the first time I've managed to get one of those to work. I've tried triggering it off tape before but never with any success. I always got a delay, but once it's recorded onto a sequencer track and you know what that delay is, you can move everything back so it all lines up. We didn't quantise it that much, we just kept the feel and replaced it with our wazzo drum sounds."

Occasional drum patterns are also worked out on an Apple Macintosh with the aid of Intelligent Music's Upbeat software. Although primarily designed for drum programming, Morris also uses it for writing sequences – especially basslines.

"I love the fact that it's so interactive", he enthuses. "It's like a massive TR808 really, because everything you put into it gets automatically quantised, and there's no way to turn it off. I generally save sequences from it as a MIDI File and load it into Master Tracks for humanisation. The Mac has become increasingly important to us as a songwriting tool. Not quite 50% of this album was written through jamming for ages and picking up on bits we wanted to work on. The rest started out as ideas that someone had got which we then all worked on with the Mac. The great thing about a program like Upbeat is that it's dead easy for anybody to knock out an ace drum riff. It's equally as easy to come up with a wazzing bassline, whereas I couldn't sit down in a practice room and come out with an ace keyboard riff because I'm not really a very good keyboard player. I'm not even that good a drummer I suppose, now you come to mention it."

WHEN NEW ORDER were last interviewed in E&MM (March 1985), they spoke of their love for a pair of Voyetra eight-voice rack-mounted synthesisers. While the company that made them, New York based Octave-Plateau, has mutated into Voyetra Software, the former mainstays of the New Order synthesiser lineup have remained intact . . . but only just.

"They're still alive and kicking . . . but very bruised", comments Morris. "They've each developed their own particular little quirks. Modulation's been spontaneously induced in one of them which is a bit embarrassing when you actually go on stage, you get a lot of dirty looks.

"The main problem with them is Voyetra themselves. They're very helpful but they've given up repairing them, and basically you're stuck with a somewhat redundant piece of equipment which is very hard to replace.

"We're thinking about sampling the basic sounds into Emulator IIIs, and then using the EIIIs to get the creative variations that we use. It's a big job really. Every time you get a piece of equipment you've got to bear in mind that you've got a back-catalogue of sounds to recreate. The obvious solution would be to sample them, but it's not as easy as it sounds."

The current New Order armoury is based around four Akai S900s and two Emulator IIs. But not for long.

"The EIIs are going, I'm afraid. They've got this annoying habit of working fine until you want them to and then they don't. We're going to France in the next couple of days and I've had an EII here. It crashed twice in the set at the G-Mex concert last month which was slightly embarrassing. But it worked fine here until the day before it was supposed to go, and then it got really noisy, the buttons stopped working, the bottom disk drive stopped working. It knows – these things know!

"We've just replaced the QX1s that we've been using ever since they came out. They were very reliable until just recently when they all went at the same time – the disk drives stopped working, and the displays went on both of them. We decided to hire one and that one broke as well. I'd never seen a broken QX1 before, but the other day I went into a shop and people were bringing them in in droves. I reckon Yamaha are putting a little bit of software like a virus into them that makes it commit Hara Kiri after five years, so you've got to go out and buy a new one. If they all had different things wrong with them I could understand it. I reckon it's a conspiracy.

"The same thing with EIIs, they lasted very well until the EIII came out. How do they know? The S900s are still there, they've seen an S950 but they still carry on working. They've not seen an S1000 yet, I'd like to see what effect that has on them."

The band bought an Emulator III while they were in the studio, but look likely to replace their Emulator IIs with Akai S1000s. ►

"Every time you get a piece of equipment you've got to bear in mind that you've got a back-catalogue of sounds to recreate."

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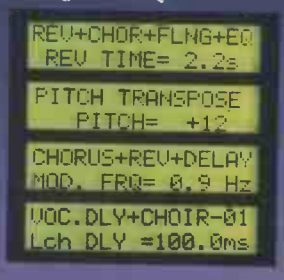

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►"The idea behind getting the EIII was that we could sample everything 16-bit, store it in the Mac, and then, if necessary, degrade it slightly to whatever samplers we bought. The weird thing we found with the Akais was that if you sampled into the Emulator which is 8-bit and then transferred it into a 12-bit Akai it sounded better then if it was sampled directly onto the Akai. Another suspicious thing."

NEW ORDER GIGS have a reputation for being joyously shambolic. A nationwide tour seems as far away as ever, but the band have recently returned from a visit to Brazil where, much to their amusement, they are regarded as megastars. Playing live does seem important to Morris, but the size and nature of New Order's following creates serious practical problems.

"It would be nice to do a full tour but at the moment it looks like we are just going to be playing two big gigs, one at the NEC and one at the SEC. We prefer playing small club-type places, but a lot of kids can't get in because of the licensing laws and people have problems if they can't get buses home. We get a lot of letters from people about seeing us live, so just this once we've decided to do big gigs.

"I don't like touring that much. Eight or ten dates is about the most I can do without feeling myself turning into a bit of a robot. We do different sets every night but there are only so many different permutations, and the whole process of touring is very repetitive. Usually live I would play to a click track. Unfortunately I must be really deaf because I have to have it so incredibly loud that everybody else can hear it and they all start playing as though they are wooden. We tried a Human Clock out the other day but it expired very rapidly. That's the sort of thing I'd like to get into – something to play live to without having to worry very much about this woodpecker taking the top off my head on every beat."

Surprisingly, New Order rarely play 'Blue Monday' now – to many fans' disappointment.

"Sometimes we play it because we fancy playing it, but most of the time we're just too sick to death of it. It's down to who decides – do you let the audience dictate to you or the other way round? We've got loads of songs as good as, if not better than 'Blue Monday', it's just like a catchphrase really and I think that's awful. I would be disappointed if I went to see a band and they didn't do my favourite song, but I'd like to think I could understand why they didn't do it."

Away from the more conventional aspects of the pop world, New Order have recently been earning some cash on the side working on the soundtrack for the BBC comedy/drama *Making Out*. As well as the opening and closing themes, they have also been responsible for all of the incidental music.

"The producer turned up about 18 months ago and we agreed to do it because it seemed an interesting project. We didn't hear any more until we got to Ibiza. Then scripts started turning up, followed by videos and then deadlines. We did it in parallel with work on the album, and that's why a version of 'Vanishing Point', one of the album tracks, is the theme tune.

"I quite like working to picture. In a band you tend to write music on fours and eights, but when you're doing stuff to picture it's threes, two and a halfs, sixes, sevens. If you listen to it on its own it doesn't make much sense, but if you're watching it on screen it does."

While Morris generally seems to have enjoyed the project, one brief from the producer caused more problems than most.

"They wanted us to play the organ for a wedding march and the bridal chorus, so we went out and got the sheet music", he recalls. "I can only read music a little bit, and the rest of it is baffling to me. I cheated really, because I laboriously entered every note into a sequencer. It was quite an interesting experiment to work on a piece of music when you know how it sounds but you don't know how to play it.

"It's amazing how difficult it was to get a really rotten organ sound that sounded convincing. D50s are only eight-note polyphonic, whereas on an actual organ you've got one note for every key, and you've got bass pedals as well. When we put the full music in, notes were being dropped and half of it disappeared. In the end we had to edit the music to fit the limitations of the synthesisers. It took ages, but you'd scarcely notice it on the programme."

BY THE TIME you read this interview New Order hope to be working with Michael Powell, "a famous but ageing film director" who the band had approached with the intention of doing a video.

"He came back to us with a specific idea which I can't tell you about because it'll spoil the surprise", says Morris, mysteriously. "We're going to base it all on a poem, so we're going to get someone to read it at various tempos, and then write the music and make the video at the same time. It's not a video to promote anything, and it's not a commercial venture in any sense of the term. There's no way it's ever going to make any money, we just wanted to work with him.

"I was saying the other day. Try and imagine the world without music video. If there were no video and radio, how on earth would people sell records? Most videos are just an advert for the song whereas this Michael Powell project is an anti-video, it's not an advert for the record, it's a film.

"We were very pleased when we won the BPI award for the 'True Faith' video, but awards don't mean bloody anything really. They're something nice to stick on your mantelpiece, but that one was buggered when we got it anyway. It had one prong broken off it, New Order was spelt wrong and they'd got the title of the record down as 'True Face'. It was a complete farce – they didn't even know we were there. Everybody else were in little boxes and we were sat with the punters, and we didn't know what to do."

"Awards don't mean anything really; the BPI award was buggered when we got it – it had one prong broken off it and New Order was spelt wrong."

Although New Order are generally independent in their work, the award-winning 'True Faith' video demonstrated their ability to profit from a liason with another artist. On the musical side, the band have tried working with several different producers and remixers – 'Round And Round', their new single, has been remixed by both Inner City's Kevin Saunderson and 'True Faith' producer, Stephen Hague.

"It would have been pointless us doing the remix because we've already done the best we could do with it", Morris explains. "Shep Pettibone originally got involved at the record company's suggestion but we liked what he did to 'Bizarre Love Triangle' so we got him to do the remix of 'True Faith'. We worked with Arthur ►

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► Baker because we'd heard 'Planet Rock' and other stuff he had done which we thought was interesting.

"If you stick in your own little world of writing songs and producing yourself, you reach a point from where you never get any further. If you work with someone else, however traumatic the process may be, they've got a way of working which is going to be a bit different to yours. It may result in a clash or it may result in perfect harmony but either way you come away with a lot of new experiences that you can employ yourself in the future.

"The 'Blue Monday' 1988 remix was just an attempt to try to get Quincy Jones off his arse and do something. We're signed to his label in America, and he kept saying he wanted a remix, so we told him he could have one if he did it."

When Stephen Hague was called in for 'True Faith' and '1963' the songs ended up being co-written by the producer.

"Most of the time we do work with producers it is a case of co-writing. With Stephen Hague we just had two very rough ideas. He wanted to do some pre-production, which we'd never done before, and which we didn't have time to do. So we just went into the studio for ten days with two ideas and wrote the whole songs from that. He has an interesting approach to the vocals – he wanted the vocals done early on so he could change the music around them. The music was just a backing to the vocal, whereas a lot of our songs are written so that the music stands up on its own before you put the vocals on, and occasionally you just get this wall of sound thing. Sometimes it must be really difficult for Barney to find any space, but Stephen Hague helped a lot. It was at the time when we were first getting into Macs. He'd got a Mac, so we got the sounds we wanted to use on our Mac and let him have them.

Indications within the industry point to the 3" CD single as the logical successor to 7" vinyl. Morris is horrified by the prospect.

"I think it's awful, a terrible thing. I can't get my head round that one at all. If sales are plummeting you should just release better singles. If you get rid of singles a lot of people won't be able to afford albums or CDs. There's something nice about a 7" single, it's nostalgia I suppose. 'Blue Monday' was a 12"-only single, but that was how long the song was, and we thought we'd be compromising it a bit to edit it down. Only the edited version of 'Blue Monday' came out as a 7" and that was somewhat reluctantly. We'd never do a 7" version of the original. You can do a lot in a 12" mix that you can't do an a 7", but if you can get your ideas out in three or four minutes why spin it out to eight? 'Blue Monday' was structured as a long song. 'Fine Time' I prefer on 7" because it gets in there and straight to the point. There's a bit in the middle of the 12" where it drops down to the bass drum for far too long, but that's just how long we did it for when we did it, and we couldn't be bothered to change it."

THINGS COULDN'T REALLY be going better for New Order at the moment. They're more successful now than ever before, and with their new-found maturity in songwriting they've earned respect right across the music industry. The weekly music press has hailed the arrival of *Technique* as the highpoint in their career. Even Radio 1 and *Top Of The Pops* seem to like them – although many producers of *TOTP* have stumbled over the band's insistence on playing live. Morris has his own ideas about why the band are successful:

"We draw our influences from things that we like or are interested in. The area known as 'dance music' is the only area where anything interesting has been happening. Rock 'n' roll seems to have gone as far as anyone can take it. There isn't really anyone doing what Lou Reed and the Velvet Underground were doing. There are loads of Velvet Undergound imitations knocking about, but there's nobody working in the same way that they were. One thing that always annoyed me about Joy Division is that we did it, and instead of other people trying to do it but differently, they all copied us. The problem with the music business is that everyone wants a record to sound like the last No. 1 record.

Photography *David Bradwell*

"I don't think we influence people as much musically as Joy Division, because Joy Division started the Joy Division Syndrome. I think 'Blue Monday' was an influential record in that it was copied, for example by Divine with 'Love Reaction'. I think there's more to New Order than just dance music, There's also acoustic stuff that's more of a soundtrack type of thing. I think if New Order were just one thing, like an electro-dance group, we could be very influential, but it's the whole attitude, and even in a way the image."

That image used to be one of great mystery, of a band from Manchester who released doom-laden records and never did interviews. Nowadays it's all so different . . .

"I don't mind doing interviews, I'll talk to anyone", Morris reveals. "Usually I get picked on by Irish tramps in the street, I'm that sort of person. Out of a group of 20 they'll pick on me and start telling me their whole life story and I, like a fool, listen to them. I can't help it – 'Oh, yeah, you're alright mate, you and me against the world eh?'."

Very often when success takes a band away from its roots its values become distorted, and that very success sows the seeds of destruction. New Order are staying true to their beliefs and their origins. They have refused to play conventional music business games and seem to have carved their own enviable niche in the world of popular music. It's a technique that's served them well for the last ten years, but the real New Order has only just begun. ■

"In a band you write music on fours and eights, but when you write to picture it's threes, sixes, sevens – on its own it doesn't make much sense, but on screen it does."

PHILIP REES 2M GROOVE ELECTRONICS MIIM

MIDI Mergers

If you've managed to connect more than a couple of MIDI devices together the chances are you've wished for a MIDI merger – how do the Philip Rees and Groove unit measure up? Review by Vic Lennard.

HAVE YOU EVER tried to splice two MIDI leads together so that two keyboards could control a sequencer simultaneously? No, well don't bother, it won't work – a MIDI In will only accept a a signal from a single MIDI Out.

Then how about controlling your sequencer from the clock in a drum machine while recording notes from a keyboard? Or playing a synth module from a keyboard while editing it via a computer-based visual editor and keeping handshaking (two-way) contact between the computer and the module? Or even controlling two voices in a multitimbral synth from a sequencer and keyboard at the same time?

Some of the above can be sorted out by using the MIDI Merge built into most sequencers which will combine the MIDI In data with that generated in the sequencer and send the mixed data back into the world from the MIDI Out. Generally, though, these tasks are best left to a dedicated MIDI Merge box. Conveniently enough, two of these units have recently appeared on the scene: Philip Rees' 2M and Groove Electronics' MIIM.

Philip Rees 2M

MR REES' MERGER is a neat looking device measuring just over four inches sqaure, and sporting the customary Philip Rees colours of black, red and white. There are two each of MIDI In, Thru and Out, labelled A and B in each case. Each MIDI In feeds the corresponding MIDI Thru, while the merged signal from the MIDI Ins is transmitted from both MIDI Outs. The top of the unit incorporates a graphic diagram of the data flow, and the 2M comes with a ready-fitted standard plug complete with a 1 amp fuse. Someone cares.

The design principle behind the 2M is that it is totally automatic in its operation, all necessary decisions being taken by the internal microprocessor, and that the internal buffers for storing information prior to transmission are large enough never to overflow – in fact there are 16kbytes of RAM available. The way the 2M works is like this: a 128 byte performance buffer is allowed to fill up with Note On/Off and controller data, after which it starts to filter out aftertouch and pitch-bend information, retaining any of the latter which is attempting to re-centre the pitch-bend wheel (without which you may find your music undergoing strange transpositions). Active sensing is completely filtered out and all note information is set as running status. This means that only two bytes are needed for each note event instead of the customary three, hence helping to prevent delays building up. Data transmission works on a priority system where Song Select and Song Position Pointer come first followed by MIDI clock and then other MIDI data. A lot of thought has been put into the Clock Interlock system to enable it to accomodate MIDI clock generating devices at each MIDI In, but only acknowledge clock pulses from the device which last sent a Start or Continue command. System Exclusive has its own 640-byte buffer which will fill to 140 bytes and then start sending byte for byte, inserting MIDI clocks where necessary between blocks to keep the timing accurate. If MIDI Time Code (not yet really with us) is being input at MIDI In A, SysEx will be stopped to allow the code to pass. Pitch-bend information from two keyboards on the same channel is added together – start bending the wheel on one keyboard, hold it and the other keyboard's wheel will continue the bend – interesting bearing in mind that pitch-bend has 8,192 possible positions, but probably the only practical approach without actually filtering out the data from one of the keyboards.

In use, the 2M is pretty well invisible, although the start-up procedure is important. Receiving modules should be turned on first followed by the 2M and finally computers and master keyboards, otherwise, due to the running status, a Note On byte could be missed and playing the keyboard will result in not a great deal happening. (To escape from this situation, simply transmit a different status byte – move the pitch-bend or modulation wheel – and all will be hunky dory again.)

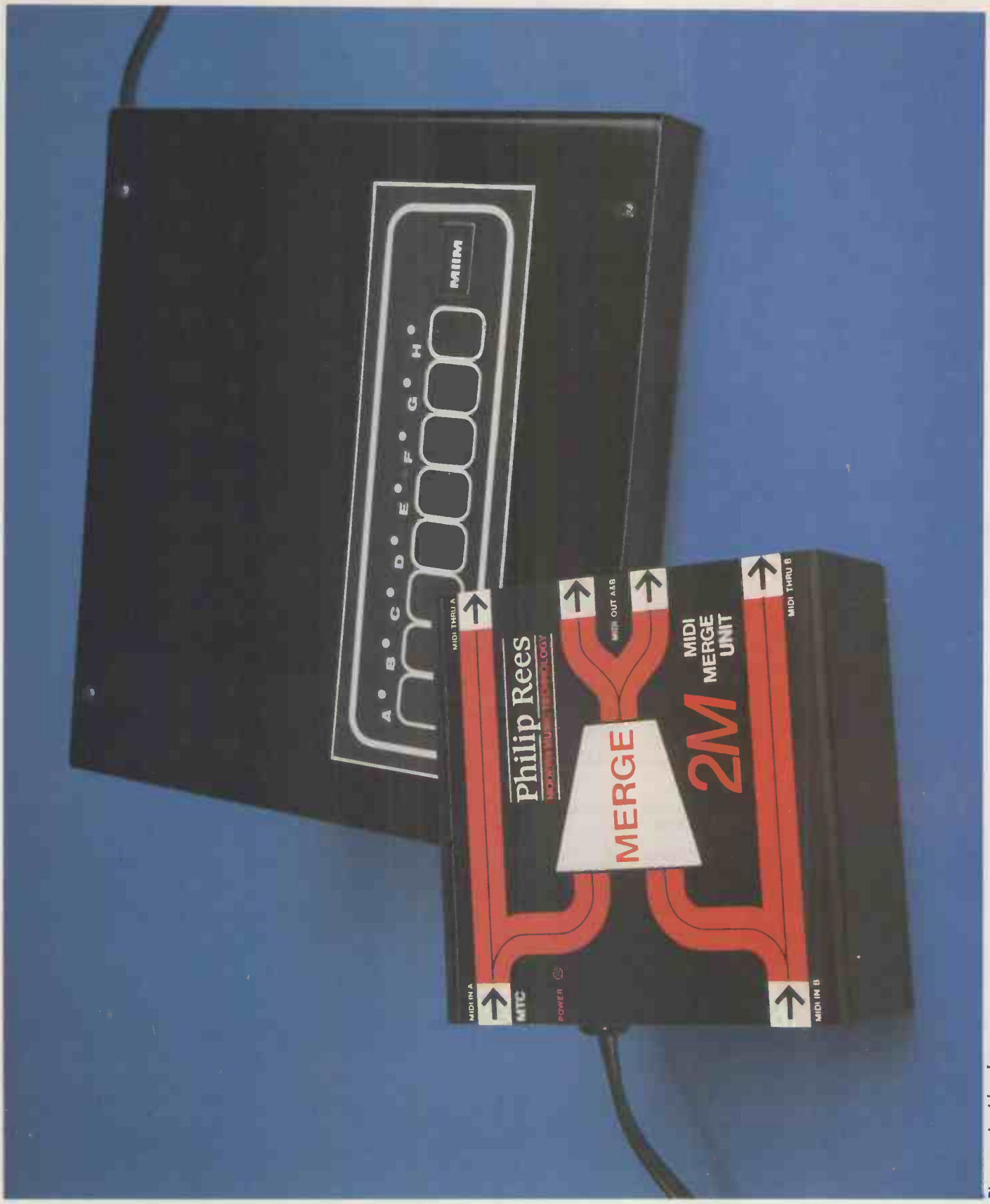
One problem that I came across was in the requesting and receiving of a System Exclusive dump. As soon as the SysEx buffer reaches 140 bytes, all Note Off and pitch-bend reset commands are sent on all 16 MIDI channels, creating an extra 96 bytes at the start of the dump. As a specific number of bytes are expected when dealing with System Exclusive you're in trouble – if status byte F0 is not received a "time out" will occur. Philip Rees assures us this has now been rectified by removing the reset commands although, at the time of writing, the revised unit was not available for testing.

Most people buying a merge box will want it either for merging performance data or for visual editing of synths using a computer. A merge box allows the master keyboard and the computer to both control the synth while the MIDI Out feeds data from the synth back into the computer – in this way you can edit and play at the same time. Using the Philip Rees merger, I tried various visual editors with a TX7 and a D550 without encountering any problems at all.

Finally, an excellent manual – including applications and a full run-down of how the box works. And all from a company who are more than happy to troubleshoot over the phone.

Groove Electronics MIIM

THE UNIT RECEIVED for review, while having final release circuitry, was in a pre-release casing, but suffice it to say that there are MIDI In/Thru/Out sockets for each channel on the rear and a row of eight buttons labelled A



Photography *Adam Jones*

to H on the top, each with its own LED, which can either be on, off or flashing.

Conceptually, the unit is very simple: Any input can be routed to any output and the choice of data filtering is left completely up to you. For setting up, MIIM offers three modes which are accessed by continued pressing of button A, the LED A will either be off (Route/Merge mode), on (Filter channel A) or flashing (Filter channel B).

The Routing and Merge mode is indicated by LED D flashing and is invoked by using buttons E and F to determine the output of channel A; buttons G and H do likewise for channel B. The two streams of data are merged if they are routed to the same output, the LEDs above each letter indicating whether that route is in use. Should a data overflow occur, LED D will go out and LED B will flash; this situation can be rectified by pressing button D to clear the backlog. Unfortunately this can lead to Note Offs being lost in the process, consequently button B also acts as a reset – turning off modulation, sustain, all notes, aftertouch and pitch-bend. This takes about 64 milliseconds.

In Filter mode, keys B to H filter out the following data respectively: System Exclusive, System Real Time (start, stop, continue and clock), pitch-bend, patch change, controllers, polyphonic/channel pressure and note on/off. Oddly, though, System Real Time does not remove active ►

► sensing (which is sent every 0.3 seconds to confirm that a controller is still connected) but passes through active sensing from both keyboards, should there be two connected. While I could not get this to misbehave, I certainly feel that it could cause problems in filling up the MIDI buffer in a sequencer.

In use, thought has to be given as to what needs to be filtered out. Channel pressure is an obvious choice unless you have a keyboard that doesn't require half a ton of pressure to respond.

If you're using the merge box to jam with two synths, you should bear in mind that many older synths only transmit on MIDI channel 1, and trying to pitch-bend on two such keyboards simultaneously can lead to highly non-musical glitches. A similar problem will also occur with cheap hardware sequencers which can only record one MIDI channel at a time.

On the other hand, the ability to re-route inputs to outputs at the press of a button makes this box an interesting proposition for two players each controlling a synth or two voices from a multitimbral expander – immediate changeovers are possible without changing MIDI channels on the synths.

Another problem occurs with our old friend System Exclusive. While any system real time information politely waits until a gap occurs between data blocks, any performance information will force its way in and cause the dump to be aborted when in handshaking mode. The only way around this is to ensure that an end-of-exclusive signal has been received before other data is transmitted, and this will certainly cause delay where MIDI clocks are concerned.

For the visual editing tests, out came DX-Heaven and the trusty old TX7 – with the same result as for the Philip Rees box: no problems at all.

Groove Electronics have never been renowned for their manuals and the seven pages of photocopied A4 which accompanies the MIIM does nothing to improve their reputation.

Verdict

BOTH OF THESE boxes suffer when asked to mix performance data with System Exclusive data which leads me to the following conclusion: only short, single voice or performance memory dumps should be attempted through a merge facility. MIDI may be fast, but, being serial, still only sends one byte at a time and this will inevitably lead to timing problems and/or the aborted dumps.

Another point to note is that it is possible to trigger the same Note On from different keyboards, and the results at Note Off time are unpredictable – either one or two Note Offs will be required to clear the two Note Ons. I found that the D50 and DX7 needed individual Note Offs, while Roland RD pianos and a JX10 cleared both Note Ons from a single Note Off. The only answer is to experiment.

Ignoring System Exclusive considerations, both these units do what they profess to. Your choice will have to depend on whether you want to be able to control data filtering with the MIIM or trust the automatic facilities of the 2M. ■

Prices *Philip Rees 2M. £79.95; Groove MIIM. £95. Both prices include VAT.*

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Further secrets of COMPUTER COMPOSITION

Deriving "rules" that a computer may use to compose music is the accepted way of approaching computer composition. But how does the approach of a human composer differ? *Text by Ian Waugh.*

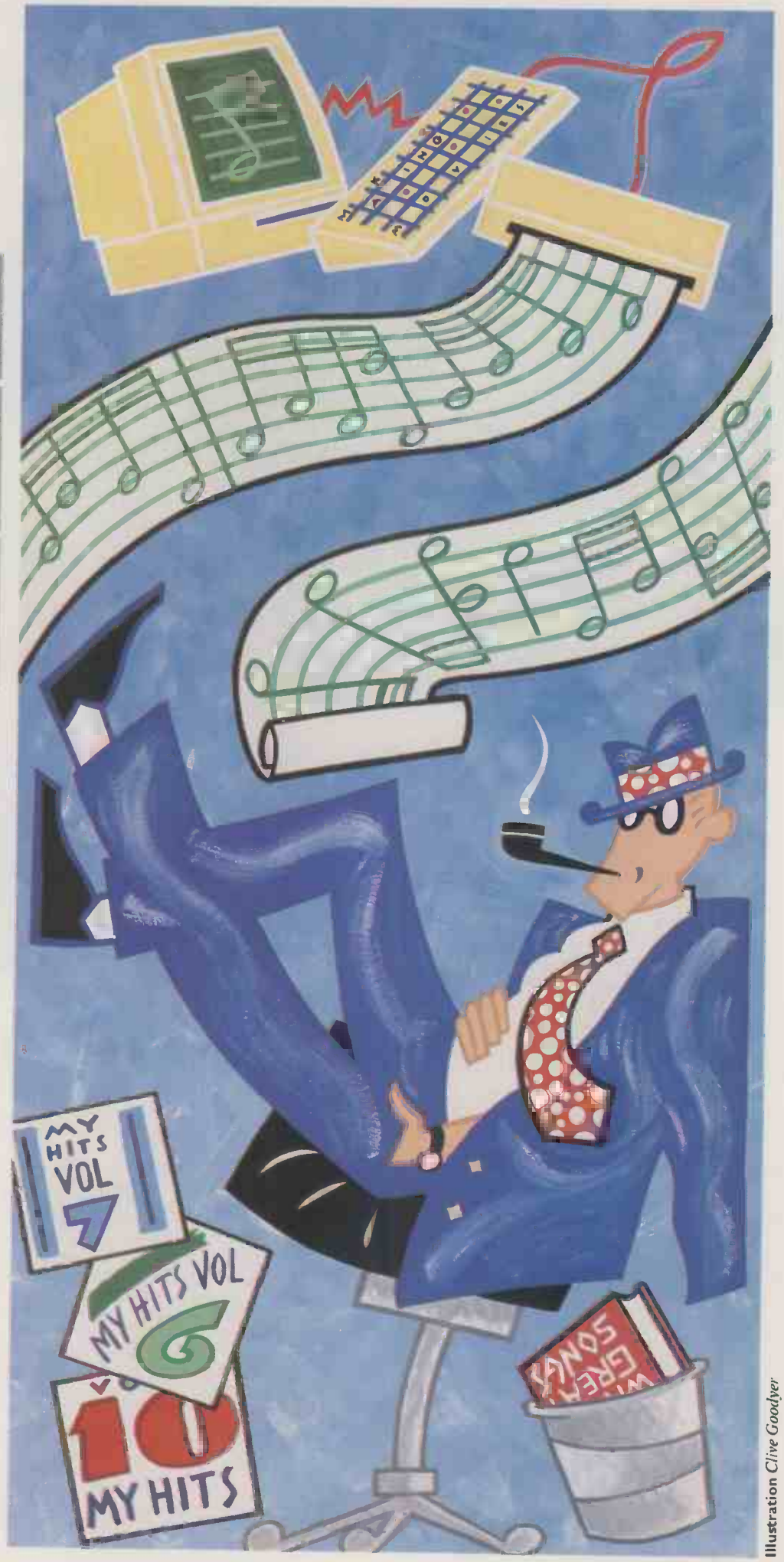

Illustration *Clive Goodyer*

LAST MONTH WE looked into the complex and contentious issue of computer composition. In particular we looked at some of the procedures used by current commercial composition programs. In this concluding article we will look at the human composition process and see how it stacks up against its computer counterpart.

Compose Yourself

MUCH RESEARCH IS currently being done in the area of AI (Artificial Intelligence) where problems are being approached in a variety of ways. In order to program a computer to tackle a problem, researchers often look at how humans themselves perform the task. Seems reasonable, so let's look at how we write music. We'll assume that you're not Paul McCartney and writing tunes requires somewhat more effort than getting out of bed in the morning.

Unless a brilliant theme suddenly bursts into your head you probably sit at a keyboard and doodle. Let's assume you're doing just that and you begin by picking out a melody line with one finger. In many respects this is what algorithmic programs do. But how would you go about it if you didn't merely allow your finger to wander around the keyboard at random? Think about it for a moment.

You'd probably doodle on your instrument until you found a few notes which went together well. You may begin by playing notes at random but you would apply your "musical sense" to reject notes and sequences which you deemed unmusical.

You probably wouldn't play a note, insist on keeping it and then go looking for another note to follow it – and so on. Nor would you be likely to create a set of pitches and then impose a rhythm pattern on top of it – a compositional technique known as isorhythm. Both these methods are the norm for algorithmic computer programs and were discussed last month.

Phrase Work

ALSO, YOU WOULD probably think and work in phrases of two, four or eight bars, the length being determined by both the pitches and durations of the notes.

Musical phrases sound complete. They are entities in their own right and have an inherent musical coherence. Although algorithmic programs may be configured to produce notes to fill a certain number of bars, there is no guarantee that the result will be a musical phrase. More often than not it won't be. How can it if the program has no musical sensibility?

However, let's assume that both you and the computer have produced an acceptable musical phrase. When you move on to create your second phrase, you begin to apply another set of musical criteria or rules. You will probably want your second phrase to bear some relationship to the first one (even if this is not always the case at least the two phrases will share the same musical style). This can be accomplished in a number of ways.

You may decide to keep the same rhythm pattern and use a different set of notes. This reinforces the tune's rhythmic structure. If the pitches in the first phrase move upwards, you could make the pitches in the second phrase move downwards. You may repeat the pitches but transpose them up or down over a certain interval. You may pivot the pitches over a central point so, for example, if your first phrase contained the notes CDEFedc (AMPLE notation described in part one) and you pivoted it around C, the second phrase would be CbagABC.

All these operations are techniques used in traditional music composition but they are also mathematically based, and most could be applied by an algorithmic procedure.

However, you could also construct an answering phrase or alter just the last few notes or durations of the first phrase. These have no algorithmic equivalents.

You could construct a second phrase which has no obvious melodic or rhythmic similarity to phrase one but which still fits (the musical logic behind this is a lot more difficult to analyse and we won't attempt it here). The equivalent process in an algorithmic program is to simply let it create another phrase using the same parameters as the first one. Being constrained more by mathematics than musical sensibility this could result in a phrase identical to the first or, more likely, bearing no rhythmic or melodic similarity.

There are a number of songwriters' tricks which you may apply either consciously or subconsciously to turn those phrases into a complete tune. (Phrases can normally be analysed into shorter sequences of notes called motifs but that's another bag of chips altogether.)

There are two things of import to notice here, and although they've been mentioned before they are worth repeating: (1) you will generally make up the pitches and durations of the notes at the same time and (2) you will tend to work in phrases. In fact, I'd go as far as to say that we consider the phrase (or possibly the motif) as the smallest cohesive musical particle and, during composition, juggle the pitch and durations of the notes to fit the phrase concept. (This may occur on a conscious or subconscious level.)

Contrast this with algorithmic routines which produce a sequence of notes (which may or may not be a phrase) by putting together an arbitrary number of totally unrelated rhythms and pitches.

Well OK, perhaps I'm being rather hard on algorithmic programs. I don't think any claim to be able to produce a "tune" and, indeed, they are better looked upon as a source of phrases (Tunesmith's documentation describes it as a phrase generator).

There is a further problem, however, and that is picking out a good motif or phrase from a continuous string of notes. Still, if composing was so easy everyone would do it.

Harmony In

ANOTHER APPROACH TO composition is to start with a chord sequence and construct a melody over it. Paul Simon has confessed to using a technique employed by many songwriters, especially when inspiration is in short supply – that of playing along to a recording of someone else's tune. He follows the harmony and gradually introduces chord substitutions and makes changes to the melody until it's far enough removed from the recording to be called original.

"Although algorithmic programs can produce notes to fill a certain number of bars, there's no guarantee the result will be a musical phrase."

The only commercial program I know of which can construct a melody from a chord sequence is Big Band. In fact, it insists on a chord sequence before it will compose a melody line (it will also harmonise any melody line you give it).

A human composer may work out a complete chord sequence and then put a melody to it. But he or she is probably more likely to play a couple of chords, find notes which fit – a phrase – and then add more chords and more notes. The melody can often influence or suggest the direction in which the chords should move.

Now we've added a third factor – harmony – to the composition process. We've left current composition programs way behind, even Big Band, as it does not create harmony and melody concurrently. Also, the programmer has kept Big Band's composition algorithms to himself and there is little scope for user interaction. If you use Big Band you will discover that it calls upon a limited set of rhythm patterns and the pitches it puts onto them are produced by a limited set of "melody rules", too.

To be fair to composition programs, the human compositional process is incredibly complex. In order for a computer to generate human-like compositions, an enormous number of factors would have to be taken into consideration. I doubt if the human composition process has been analysed sufficiently well enough for it to be converted into a computer program. Not yet at least.

Variations on a Theme

LET'S LOOK AT another aspect of composition – variations. A variation is the result of modifying a theme in such a way that the result is recognisably derived ▶

► from the original. Five basic devices are used: variation of melody, of figuration or texture, of rhythm, of tonality (major for minor, for example) and of harmony. Any or all of these may be combined in the same variation.

Programs which manipulate data (as opposed to generating it) will be able to produce variations – of sorts – and Dr T's Tunesmith is actually subtitled a "Theme & Variations Generator". But is the computer's idea of a variation the same as a musician's?

Harmonic variations are commonly practised by jazz musicians who often substitute one chord for another. In as much as Big Band can put a (limited) number of different harmonies (chords) to a given melody line, it could be said to be capable of producing harmonic variations although none will shake the foundations of the jazz world.

Many tunes have a distinctive chord progression, not always the most obvious one. An extreme example is 'One Note Samba' which relies completely upon harmony for its effect. Have you ever heard a busker playing a song using simple chords (the three-chord trick) instead of the correct ones? Grates, doesn't it?

It can be quite interesting to take a melody and set it to different chords to see how well – or badly – the substitutions work. Big Band can do this but rarely will it produce a melody's original harmony except perhaps in the simplest of tunes.

Tunesmith's Accompaniment Generator can add parallel (and partial parallel and random) harmonies to a line and several other programs (including "straight" sequencers such as Comus' Studio 24) can add harmonising notes to a melody line. These harmonising routines work well at a low level (although they may throw up one or two anomalies) but they work on notes individually rather than the phrase as a whole. They are certainly not up to tackling a Bach chorale (although a rule-based expert system has been constructed which is capable of such feats – see first article).

Melodic Manipulations

MELODIC VARIATIONS ARE easier for a program to produce – you just apply a manipulation process to the music and there's a variation (we discussed many manipulation procedures in the first article). However, most routines have their basis in maths rather than music.

The most common method of manipulation is to randomly alter the note series in some way. A routine could play notes from the series at random, apply random durations to them or delete notes at random. These processes are ideal for texture music but they have no musical precedent and are not guaranteed to produce a variation in musical terms (although the variation may be recognisable under mathematical analysis).

How does a musician vary a phrase? If it's in "straight" time he can swing it or take other liberties with the timing such as squashing the notes in a phrase together or stretching them out. As rhythm tends to play a more important part in creating the character of a tune than the pitch of the notes (as discussed in the first article), this needs to be handled with care.

Other methods of variation include the omission of non-essential or "passing" notes. These will tend to be the ones which fill-in between those notes that fall on the main harmony points of the tune. You could also fit extra notes in between the melody notes or substitute melody notes with notes from the chord which is supplying the harmony at that point in the music.

Classical variations include embellishment of individual notes (trills, mordents, and so on) and phrases (with runs and arpeggios).

All of these variations require a great deal of musical awareness and are beyond the capabilities of any current composition program.

At its highest level, a variation can merely *suggest* the original theme rather than make a reference to it directly. (We'll skip an analysis of this, too.)

Having used several composition programs to produce music in a variety of styles, I wondered why they used such a mathematical approach rather than a musical one, particularly as I had written some, admittedly simple, music-based composition programs for the BBC micro way back in '84.

BASIC Experiments

AN EARLY PROGRAM used weighted dice rolls to produce durations, and pitches were selected from a preset pitch table. The procedure was not unlike that used by Dr T's Fingers but rather more basic and limited.

I began to develop a rule-based system with rules such as:

1) The first note must be a member of the tonic chord. In the key of C that would be C, E or G.
2) The interval between any two consecutive notes must not be more than four tones.
3) The Leading Note must go to the Tonic (so B would go to C). ►

Composition Programs currently available in the UK

Program	Manf	Dist	ST	Amiga	Mac	Reviewed	Comments
M	Intel Music	MCM	£135.00	£185.00	£165.00	March 89 March 88	
Fingers	Dr.T	MCM	£ 79.95	£ 49.95		Oct 88	
Keys!	Dr.T	MCM	£ 49.95				Sequencer with Auto Composer
Tunesmith	Dr.T	MCM	£135.00	£135.00		Jan 89	
Ludwig	Hybrid Arts	Hybrid Arts	£129.95			April 89	
Big Band	Comus	Soundbits	£169.95	£169.95		Nov 88	
Jam Factory	Intel Music	MCM			£120.00	Feb 87	
Upbeat	Intel Music	MCM			£120.00	Sept 87	
MidiDraw	Intel Music	MCM	£ 69.95			Jan 89	
Riff	Intel Music	MCM			£135.00		
MidiPaint	Southworth	MCM			£149.95		
RealTime	Intel Music	MCM	£299.00			April 89	Sequencer with composition facilities
KCS MPE PVG	Dr.T	MCM	£199-£275	£225.00	£275.00	Aug 88	Sequencer with Programmable Variations Generator

MCMXCIX, 9 Hatton Street, London NW8. Tel: 01 258 3454.
Hybrid Arts UK, 24/26 Avenue Mews, London N10 3NP. Tel: 01 444 9126.
Soundbits Software UK, 48 Galton Tower, Civic Close, Birmingham, B1 2NW. Tel: 021-233 3440, 021-733 2063 (sales).

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4) The last bar must end on the tonic (C in the key of C) and last for a complete bar.

It produced sequences of notes (you'd hardly call them tunes) four bars long. The note durations were fixed to eighth and quarter notes except for the last note which lasted for a whole bar. In an attempt to make it more musically and rhythmically cohesive, I developed two more rules:

1) If quavers occur, there must be at least two of them consecutively.
2) A bar cannot start with a series of three quavers.

And an additional instruction:

3) Bar one must have the same duration value sequence as bar three, bar two must be the same as bar four and so on.

"Programs which manipulate data will be able to produce variations of sorts – but is the computer's idea of a variation the same as a musician's?"

The program certainly produced music superior to totally random output but nothing to write home about. You'll also notice that pitch and duration were largely treated separately.

However, five years on my point is how much easier it would be for a musician to tailor the output of a composition program to his requirements if the rules and methods of operation were musical rather than mathematical. That's not to say that some mathematical rules don't produce musically interesting results. We don't have to remove mathematical rules but let's have some musical rules, too.

Note Analysis

AT THE SAME time I also devised a note analysis program. This produced interesting results, but its method of operation hasn't, as far as I am aware, been implemented in a commercial program as yet. The idea, however, was

"In order for a computer to generate human-like compositions, an enormous number of factors have to be taken into consideration."

not original and a similar process was carried out on Stephen Foster songs over 25 years ago. (He wrote such standards as 'Camptown Races', 'Oh Susannah' and 'Old Folks at Home'.)

At its simplest level the program produced a frequency table of how often each note occurs in a tune. This is first order analysis. A second order analysis was done based on how often each note followed every other note. A third order analysis was also done which analysed each consecutive pair of notes and the note which followed them.

When the analysis was complete, the program would play back the notes according to the frequencies in the first, second or third order analysis tables.

My program only analysed pitches, not durations, but there's no reason why the pitch and duration of each note could not be analysed in a similar way. The pieces I chose for analysis contained notes having mostly the same duration. Bach was a firm favourite. An interesting "game" was to start with the first order table and ask a listener if they could identify the tune. By the time it reached third order, snatches of phrases from the original tune would occur.

I can't claim that the results were as musical as the originals but I wonder what results could be obtained if you analysed melodic, rhythmic and harmonic aspects of several tunes by one of our great songwriters or composers.

My final attempt at computer composition was to write a chord-based program. The idea was trite in the extreme but it produced better tunes than the other programs – and it predated Big Band by a few years (although Big Band is infinitely more sophisticated).

Simply, you entered a chord sequence and it would play notes from the chords at random (a similar program can be found in Acornsoft's *Creative Sound* book). What made it so musical was the fact that it played the chords as well as the melody so the listener had a concrete harmonic base to relate to. But more importantly, it could choose from about five preset one-bar rhythms and so produced tunes in phrases, albeit of only one bar. Hardly spectacular, but Western ears are used to hearing tunes in phrases so that helped its credibility.

Calling the Tune

I'M PROBABLY STICKING my neck out here but I offer my concluding remarks as food for thought rather than as immutable facts.

The current range of algorithmic programs are highly suited to the creation of several types of music, notably that which may be described as textural, floating, serialist, minimalist and so on. Highly structured and melodic tunes, however, are not their forté although they are capable of producing phrases which can be used in them.

Why is it so difficult to produce stylised music – the "good tune" which was defined in the first article? Algorithmic programs can produce pleasant series of notes but they are not capable of ordering them into the highly structured format demanded by our "good tune". It's not because they are using the wrong approach; it's just that they are working at such a low level.

I believe this is also the reason why their functions appear so mathematical. At this level music is mathematical, but good maths do not (necessarily) good music make. The human composer has absorbed, subconsciously if you like, the mathematics behind the music and composes on a much higher level. A comparable analogy is our walking function. We think of where we want to go and our body does the rest. We don't have to consciously lift one foot, put it in front of the other, put it down, lift the other foot and so on. Nor do we have to instruct the individual muscles to contract and relax. If you accept the analogy then composition programs are just starting to find their feet.

Programs such as Intelligent Music's Jam Factory and M, and Hybrid Arts' Ludwig (reviewed in this issue) are going in the right direction but stop at the ground floor.

By allowing you to work directly with chord sequences and melody lines, Big Band would appear to be operating at a higher level. It does this because its lower levels are largely preset. It is, in a way, like the Mozart dice program (mentioned in Part 1).

It all comes down to control, and in order to produce convincing computer-generated music you need a higher level of control such as that offered by a high-level language. This would let you manipulate the individual elements of a composition and give you control over form and structure. Current programs don't allow this. You would need to be able to design your own algorithms, too. If Big Band had programmable algorithms it would be a different program altogether.

We're entering the realm of the programmer here and it's probably fair to say that most musicians want to get on with the task of making music – they don't want to learn how to program. It's interesting to note, however, that most if not all the successes in the academic field have been produced by specially-written programs.

Interested musicians-cum-programmers may like to check out MIDI LISP for the Mac, HMSL (Hierarchical Music Specification Language) for the Amiga and LOCO, a LOGO-like music language available for the Apple IIe and Mac. These are languages, however, and not plug in and go systems.

A more widely-used language worth investigating – and probably easier to learn – is AMPLE which is implemented on the BBC micro as part of the Hybrid Music System. It has already been used by composers such as Tim Souster (of *Hitchhikers Guide* fame) and Patrick Gowers who used it to write some of the music for the Sherlock Holmes TV series.

Current algorithm and manipulation programs have taken their composition procedures just about as far as they can go. The next stage in program development is to allow users to operate at a higher musical level. Simply giving us more varied and exotic algorithms is not going to contribute much more to what we already have.

The problems are many and the solutions will not be easy to implement, but the rewards could be enormous. ■

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IF YOU'VE BEEN studying your copies of Music Technology avidly over the last two months you'll have read the *Secrets of Computer Composition* articles. Even if you haven't had time to read them yet you'll have surmised that they deal with the ability of computer programs to write music. This controversial subject was originally the exclusive territory of those musical intellectuals with access to complex and expensive computer installations. Then personal computers arrived on the scene and blew the lid off computer composition.

The first – and still extremely popular – composition program for the Atari ST was Intelligent Music's M. And it's a copy of M that's on offer as this month's competition prize.

To dwell on the software for a moment, M is an algorithmic composition program. This means that it uses a series of rules to manipulate a piece of music that you play into it. The rules are flexible and allow you to control the fashion in which, and the extent to which that piece will be modified. M works with both "conventional" musical parameters and parameters that can be imposed through MIDI processes. Control can be exercised over the music in real time whilst the music is playing if you wish. The resultant composition can then be saved as a MIDI File and loaded into any MIDI File-compatible sequencer. All in all, a pretty powerful and creative program. (For a more detailed description see review in MT, March '88.)

NOW YOU KNOW what we've done for you, it's time for you to find out what you're going to have to do for us. By way of a change from the usual selection of questions, this month we've hidden the phrase *"Making Movies"* somewhere in this issue of the magazine; your mission, should you decide to accept it, is to find out exactly where the phrase is and let us know. Simple.

Answers should be on a postcard only please, and arrive not later than Tuesday, 2nd May at the following address: *"M Power", Music Technology, Alexander House, Forehill, Ely, Cambridgeshire CB7 4AF.*

Entries from employees of Music Maker Publications have been prejudged as incorrect, as have multiple entries from over-enthusiastic members of the readership. Some of you are still not really paying attention out there, are you P Stevenson of Staincross, Barnsley?

Thanks to Jonathan Cole at MCMXCIX for kindly providing the prize for this month's competition.

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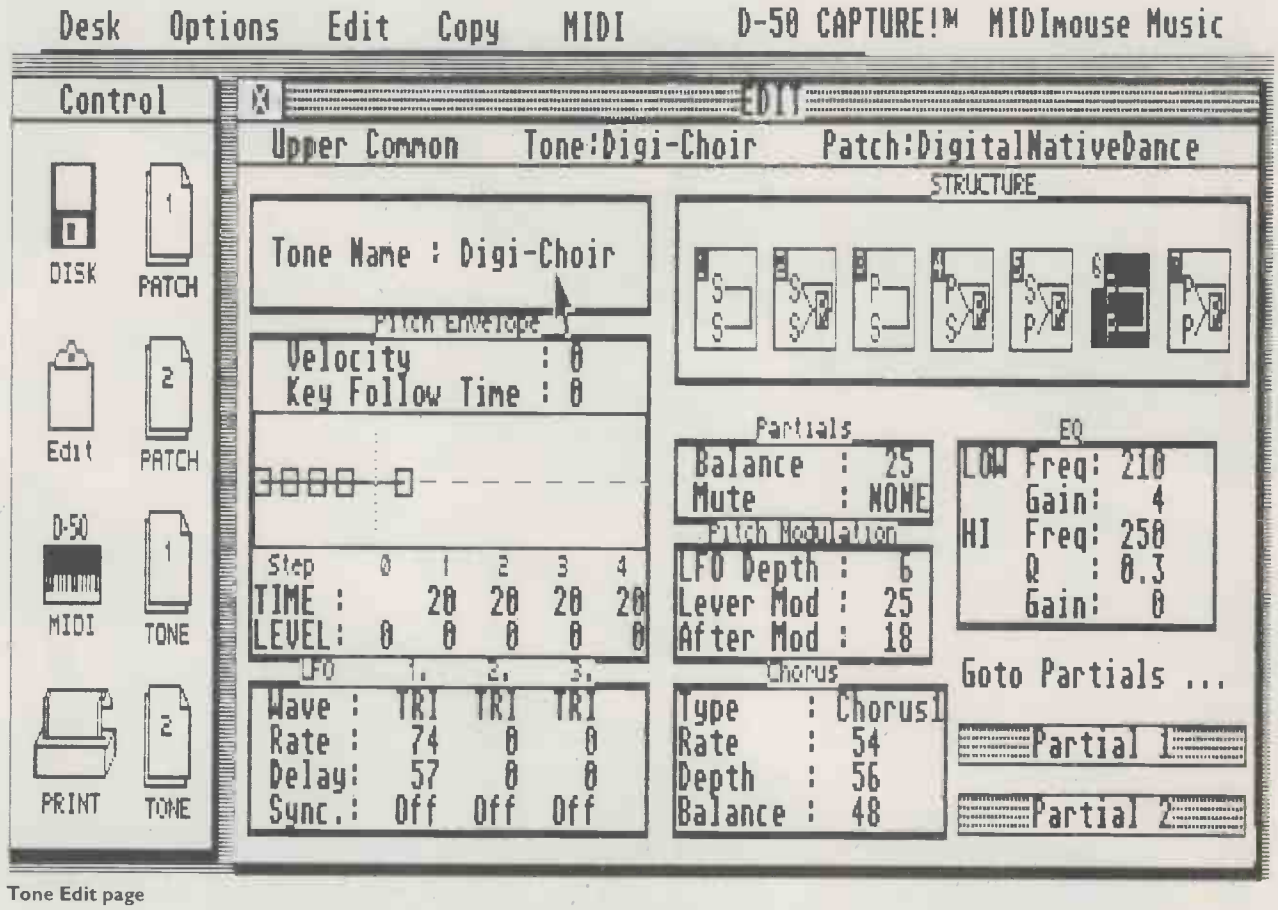
MIDI MOUSE
SONICFLIGHT D50/550 CAPTURE!
Editor/Librarian for the Atari ST



Tone Edit page

If editing and shuffling patches around in your D50 or D550 is stifling your music, Sonicflight's Capture! could be your salvation. Text by Gordon Reid.

THE SCENE: THE track has just started coming together. Inspiration has been fired and the band are buzzing. But as the clock passes midnight, the guitarist can't come to terms with any of the sounds the keyboard player is giving him from his D50. He goes through scores of patches but the guitarist doesn't like any of them. The moment is lost . . . As the band break down their equipment a lone figure works on another song in another studio with another D50. Again the sounds he seeks elude him. He sighs and looks at his watch; it tells him it's 2.15am and that the moment is lost once again.

What is actually needed is a system for loading up whole banks of sounds in seconds which at the same time makes it possible to edit patches quickly and easily. In addition, it should offer almost unlimited storage capacity for the D50's Tones, reverb settings and Patches in order to keep all sonic experiments for future reference (and probable disposal). In fact, what's needed is a MIDI controlled Editor/Librarian – and as far as MIDImouse Music are concerned, their SonicFlight D50/550 Capture! for the Atari ST is perfect.

For almost two years now the Roland D50 has remained one of the most sought-after professional synthesisers on the market. The reason for this lies in the quality and range of voices available from the instrument. The patch structure of the synth combines a limited number of PCM samples with four powerful analogue polysynths and enables the creation of complex sounds. The price to be paid for this flexibility is, however, ease of programming. In essence the D50 is quite straightforward, but the sheer number of parameters have confused many potential programmers. Any editor worth the name has to simplify the programming process as well as providing additional facilities and storage. Which neatly brings us to Capture!.

Starting Up

THE SOFTWARE IS supplied in the standard plastic box with cut-outs for a single 3.5" disk and manual. At 15 pages the manual is very compact but to its credit all the information is clearly printed and well laid out. Following more than a month's usage I could find no omissions or errors of any consequence. The software is "key-disk" protected and cannot be copied by normal backup procedures. To obtain a backup you will have to send away for a company-produced copy. Software protection is a sensitive issue, but you really should be entitled to a reserve copy of software for which you've laid out good money. To use Capture! (which works equally for the D550) you require an Atari ST520 (or better) and the synth coupled together in "hand-shake" mode – with the MIDI Out of the Atari connected to the MIDI In of the synth as well as vice-versa. This allows all editing and

librarian functions to be carried out in real time. It also facilitates a Listen Mode whereby all modifications to a patch can be previewed in real time. A useful feature is Soft MIDI Thru which enables the Atari to transmit not only program-generated data out of the Atari MIDI Out port, but also any data coming from the D50 (effectively merging the two data streams). This is referred to as Merge Mode and can be switched on and off at the main menu bar. Also provided is a Send All Notes Off option to silence any of those annoying hanging notes that sometimes creep in.

Loading Up

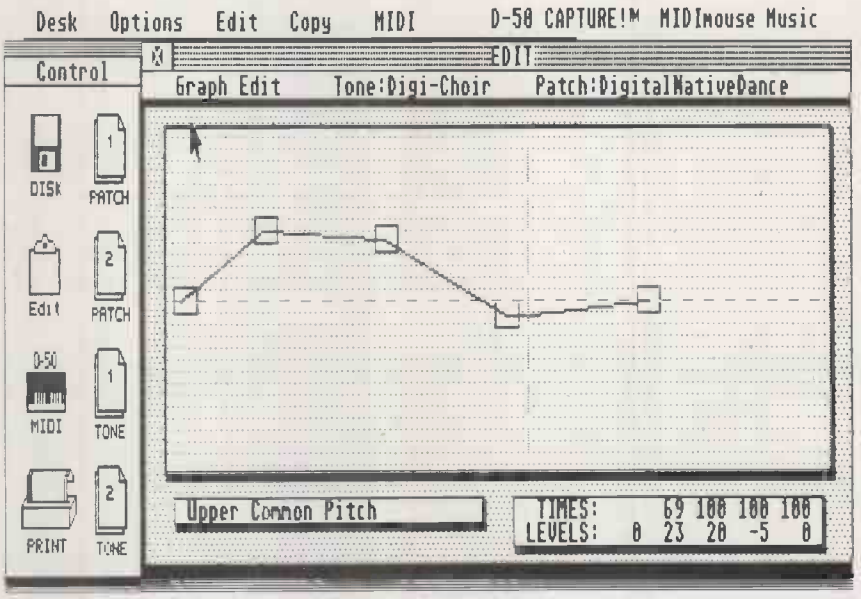
TO LOAD CAPTURE! simply insert the disk, reset (or switch on) the Atari, and click on the "D50.PRG" icon. You will quickly be presented with the Control Window, and the ubiquitous menu bar. The program runs on mono and colour monitors without any fuss, and fully utilises the GEM interface – so seasoned Atari (and Macintosh) users will have no difficulty finding their way around all aspects of Capture!. In addition, many of the menu bar commands can be duplicated on the keyboard using the "Control" key, so all preferences are satisfied. The program loads fully into RAM so there is no need for the master disk to be inserted while running – a real plus point for users with only one disk drive.

The Control Window is neatly laid out and only takes up about 20% of the Atari screen – yet in many ways this is the heart of the program. There are eight icons in the Control screen. These represent: disk storage, an Edit Buffer, the D50 itself, a printer, and two banks each of Patches and Tones. If you click the mouse over any control icon the pointer changes to a "document" icon which can then be dragged to any other control icon. If the defined operation is valid the operation will be carried out – with appropriate prompts if necessary. If the requested operation is invalid nothing will happen. No crashes occur – in fact, no wobblies at all. All Patch and Tone banks are empty when the program is booted so you can start building sounds from scratch, or you can load patch banks from disk or the synthesiser if you wish.

To start editing you drag a Patch to the Edit icon, and you can then access any part of it from the Edit menu. There are three levels of edit screen available which parallel the internal operating system of the D50. These are: the Patch Factor screen, two Common screens (one for each of upper and lower Tones) and one screen for each of the four Partials. Each Partial can be thought of as a single oscillator eight-voice synthesiser. These can be combined into two dual-oscillator synths via the Common screens, and finally into one four-oscillator synth (which is what the D50 is) on the Patch Factor screen. In all the edit pages, parameters can be modified by clicking on the value to be changed and using the mouse buttons – left to increment and right to decrement. Alternatively, the old value can be deleted and a new value typed in, or finally, the "+" and "–"keys on the numeric keypad can be used to increment and decrement the values by various amounts. All tastes are catered for. A few D50 parameters are toggles, and clicking on the parameter name will switch these from one state to the other.

Editing

THE HIGHEST LEVEL of editing is the Patch window which contains the parameters that act on the whole of the Patch (obvious eh?). These include Reverb settings, Chase, Controller Allocations, Play Mode, Patch Tuning, and the Patch Name. Immediately below the patch window (in structural terms) are the two Common windows. These introduce graphics and, alongside numerical parameters such as LFO settings, Chorus, and EQ, the pitch envelope is shown graphically as well as numerically. If you wish to stay on the Common screen you can adjust the Pitch Envelope numerically using the values below the graph. However, if you click on the graph itself you are taken to the Graph Edit screen. This blows up the graph shown in the Common page to full size and you can then drag the cusps of the graph around on-screen using the mouse. For all you ADSR afficionados this is a far more satisfactory way of doing things (yes – it's a pitch envelope not a VCA, but the principle holds) and the Graph Edit screen is quick, simple, and intuitive to use. If you want to play with the numbers you can still do so because they're duplicated at the bottom of the Graph Edit screen. The lowest building block of editing is the Partial Edit screen which is where the real meat of programming the D50 takes place. If a PCM sample is selected parameters that are not relevant are "greyed out" – that is, the TVF and wave areas are de-selected for you – which greatly simplifies programming. There are two graphics windows available from each Partial Edit page – TVF envelope and TVA envelope. These are accessed and used in exactly the same way as the Pitch Envelope page providing consistency throughout the program.



Graph Edit page

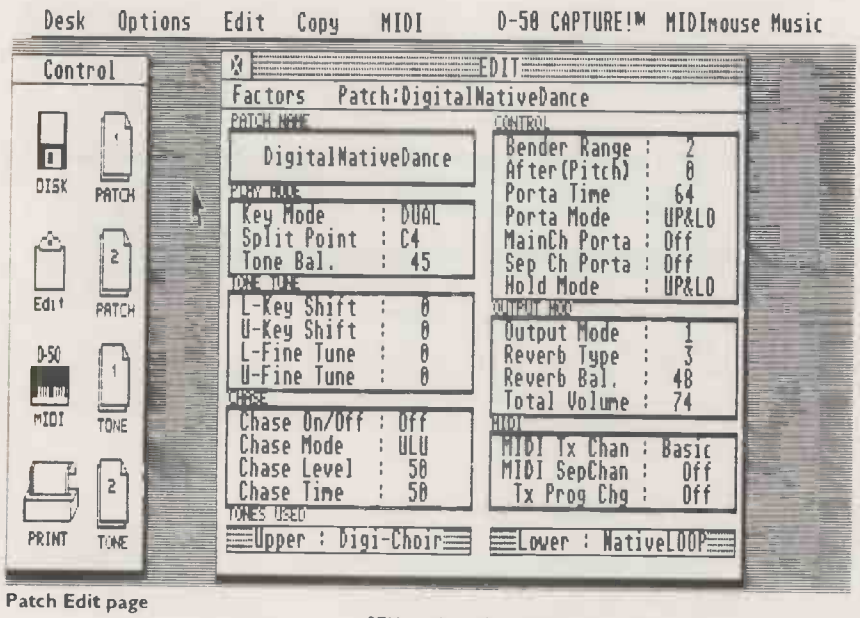
Editing is quick and easy, and a number of shortcuts have been provided to enable you to get results as quickly as possible. All edit pages are available through the Edit menu which is always present at the top of the screen and this avoids you having to step up and down through the structure of the D50. In addition, parameter changes can be speeded up by use of the Shift and Alt keys which change stepping "in ones" to stepping "in fives" (Shift/Click) and selecting the maximum or minimum value possible for the chosen parameter (Alt/Click). Another useful feature is the inclusion of a Copy menu which allows you to duplicate and swap around Tones, Partials, or even parts of Tones and Partials. This greatly speeds up the editing process when new sounds are closely related to existing ones, and also introduces some novel experimental possibilities. On the down side there is one seriously annoying flaw in the editor. Because Partials can only be muted or un-muted from the appropriate Common page – not even from the appropriate Partial Edit page – a sequence of commands can be necessary to switch Partials on or off whilst editing. Strangely, many other editors suffer from this flaw, although it could be easily solved by having the partial mute "buttons" on the menu bar and therefore permanently available. ►

Randomiser

► RANDOMISING PATCHES IS a novel way of creating new sounds and the optimistic among you may hope to stumble across an earth shattering new Patch by accident. I suppose that if you try randomising enough times you must eventually come up with something worth using. Perhaps. In truth, there are (literally) infinitely more unpleasant noises than there are aesthetically pleasing ones, so complete randomising is a waste of time. To make the process more meaningful, Capture! has a randomising Mask which acts like a template on top of the Patch, Tone, and Partial parameters. The mask enables you to switch on – or off – the randomising of any given group of parameters (such as TVA or TVF) but unfortunately there is no facility to mask individual parameters. The effectiveness of the randomising algorithm can be varied on a scale of 0 to 100 where zero has the least effect and 100 has the most. This scale acts uniformly on the whole mask and therefore only provides crude control over the randomiser. It would be nice to see each parameter group split further into individual parameters, each provided with its own randomising factor. Nevertheless, through frequent playing with the randomiser you can build an interesting experimental library and, who knows, some of your patches may eventually find their way on to vinyl.

Librarian

WITH RAM AND ROM cartridges costing anything up to £100, Capture! justifies its purchase with its librarian functions alone. It will save complete banks of sound on to disk, and load and dump them to the D50 in about 20 seconds. During this review 14 banks of Patches were created. These used up 376kBytes on one 3.5" disk. At 27K per bank I reckon that you'll get 30 banks on one disk (costing £3.50) – or, to put it another way, 12p per bank of 64 patches.



Patch Edit page

D50 Capture! comes with two complete banks of Patches. The factory presets are on the program disk and therefore free up the backup RAM cartridge supplied with the synth. This alone is worth £55 and gives you the option of loading up the cartridge with your own sounds and using it live – giving 128 patches immediately available onstage. A bank of additional Patches is also supplied. I wouldn't rush out to buy these but there are some usable sounds provided, and a few that responded very well to a little tweaking. You could write off another £10 or £20 of the price of Capture! against these.

The program not only holds Patch banks but also Tonebanks – vital if you want to experiment with combinations of Tones into Patches. Two complete banks of Patches can be loaded simultaneously alongside two complete Tone banks – five windows in all. This facility is invaluable when building libraries from diverse sources and enormously simplifies the process of configuring Patch banks. Because of the real-time Listen mode new Patches can be auditioned instantly on the synth. Neat.

Printing

MIDIMOUSE HAVE INCLUDED a comprehensive set of printing capabilities within Capture!. By dragging Patch, Tone, or Edit icons to the Printer icon you can print any set of parameters making up an individual Patch or Tone. In addition, a listing of all Patch and Tone names held within a bank can be printed. Most exceptionally of all, Capture! allows you to print all the parameters of all the Patches in a Patch bank – each Patch is split into 1 Common page, 2 Tones and 4 Partials. This takes a little over three pages of A4 per Patch, but 200 pages will accomodate every parameter in every one of your Patches. In addition, you can of course screen dump any of the edit windows and screens. Unfortunately, the TOS control panel is not included on the MIDImouse disk so, if you want to perform a screen dump on an 80 column printer you'll need to copy the control panel or boot from another disk. Otherwise, Capture! defaults to 1280 pixels per line and the screen will not fit onto a page.

Desk Accessories

TWO DESK ACCESSORIES are supplied with the program. Keyit! brings up a picture of a one-and-a-half-octave keyboard onscreen. This can be transposed up and down by 52 semitones (four octaves) as well as by an additional octave – giving an 11½ octave range. Since velocity can be adjusted between 0-128 the whole MIDI note and velocity spectrum is available and a Patch can be tested to its extremes quickly and easily. Keyit! enables you to play the synth from the bottom two rows of the Atari keyboard or by using the mouse – just point at the appropriate note and click.

D50 Sender is every bit as useful as Keyit! and has been provided to allow you to load Patch banks from disk and dump them to the synth even while in another program. But be warned – it's a large program in its own right and will not run alongside many sequencers and cannot run in conjunction with Capture! on a 520ST. Sender can hold three Patch banks simultaneously as well as reverb data, making it ideal for use within professional sequencing applications.

Verdict

DESPITE ONE OR two shortcomings Capture! is an endearing program. Time and again I found myself playing with the package rather than studying it. The temptation to experiment is enormous, and the ease of doing so makes it almost inevitable. The librarian functions and the desk accessories are first rate and overall D50 Capture! is as good as any other editor/librarian at the price. ■

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HYBRID ARTS LUDWIG
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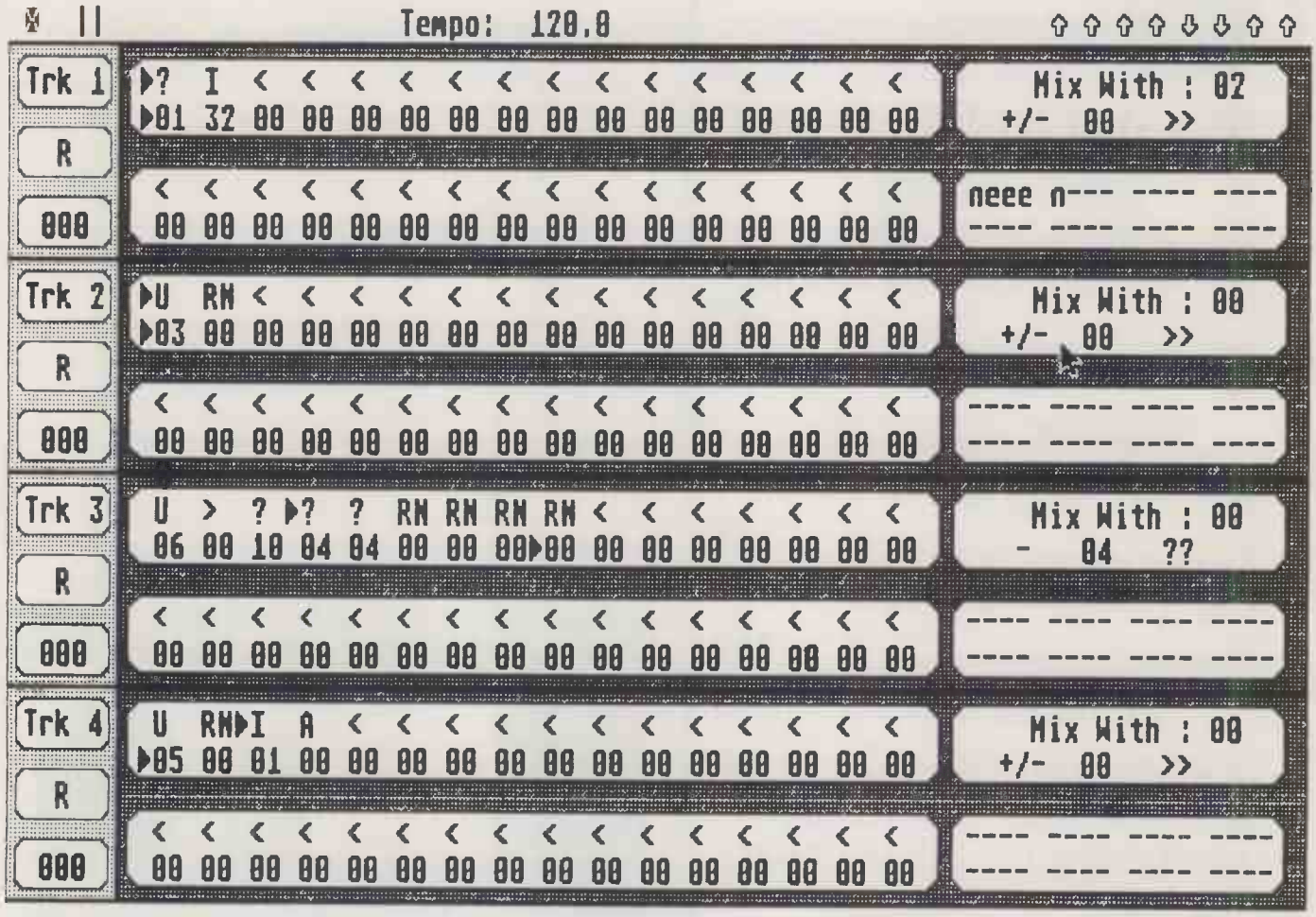


Ludwig Main Screen

Ludwig represents Hybrid Arts' first foray into the arena of music composition programs. Do its many manipulation features set it above the competition? Review by Ian Waugh.

OF COURSE, YOU can tell Ludwig is a composition program from the title although the author, Tom Bajoras, would have us believe that it's named after Hybrid Arts' R&D Director's dog and not a German classical composer. Accordingly, click on the About Ludwig option under the Desk menu and you'll see Ludwig (the dog) wearing shades.

But has Ludwig anything new to offer the growing library of composition software? Well, if you've been following our regular coverage of composition programs (and the articles on Computer Composition, see elsewhere in this issue) you'll know that commercial composition programs generally have a bias towards one of two methods of operation – generation or manipulation. Dr T's Tunesmith (reviewed MT, January '89), for example, generates its own musical phrases (which it can then manipulate). Intelligent Music's M on the other hand, manipulates data entered by yourself and cannot generate its own material. Ludwig cannot generate its own material, unfortunately, and relies completely on user input. However, I think this is generally more useful than being restricted to lines the computer dreams up.

Ludwig will run on a 520 or a 1040 ST in high or medium resolution. The package includes a program disk, a demo disk (called Bones in keeping with the canine theme) and a manual in a sturdy binder. Let's see how the program is organised.

Soft Cell

LUDWIG HAS EIGHT tracks. Each track holds data for a line of music (this can be up to 16-notes polyphonic) which is split in true algorithmic fashion into three series – pitch, duration and velocity. (See the *Secrets of Computer Composition* series for a more in-depth look at algorithmic processes.)

Next comes the concept of a Cell. Think of a Cell as Ludwig's equivalent of a drum machine pattern. The Pitch and Rhythm Series can each contain up to 1024 Cells. A Cell contains an arrangement of events – pitches, time values and so on – which are combined with other Cells to make a complete Track. When a Track is playing, play arrows move along the top and bottom rows of the Cells. The arrow in the lower half of the Cell shows which one is currently playing.

You can see the Cells in the middle of the screen in the accompanying screen dumps – they consist of an upper one or two-character mnemonic (the operator) and a lower figure (the operand). An operator is an instruction

which may be simply to play back a pattern of notes or it may transpose or reverse it. Operands specify things like the number of the pattern being played or the amount by which a pattern is transposed. There are 30 pitch and 30 rhythmic operators.

The Velocity Series works in a slightly different way (it's mapped onto the Track) and can contain up to 32 steps. Each step can take one of eight user-definable velocity values ranging from *ppp* to *fff*. To make everything clear, the manual explains Ludwig's hierarchical organisation of data by referring the reader to a diagram – which isn't there. C'est la guerre.

Well, shades of Fingers' (reviewed MT, October '88) interactive series control elements here, I thought, but it's actually not as complicated as it may sound. Honest. A little use does help breed familiarity. However, the program is highly numeric in operation.

The main screen is divided into four sections each giving some information about one Track. Clicking on the Track box on the left calls up one of the other four Tracks. Clicking on the box below that cycles through the Pitch, Rhythm and Velocity Series, the contents of which are reflected in the Cells to the right. Only 32 Cells can be shown on screen at once and clicking on the lowest box will scroll through the Cells.

The manual starts by telling you to load a demo file and explaining some of the program's functions. Next you're encouraged to enter a pattern yourself. Although pitch and rhythm are treated separately, you can link them during recording and this is what the manual suggests you do.

A Series is limited to 32 notes or chords (in Ludwig terminology, a single note is also referred to as a chord) which are quantised during recording to note values of 1/4, 1/8, 1/16 or 1/32. In practice I found it very difficult to use the pitch/rhythm link, particularly with quantise values smaller than 1/8th note. The manual says problems can be caused by a variety of reasons but even relatively simple entries were difficult to record. The program expects a complete "hands off" between notes. Too long and you get a rest in your pattern; not long enough and the notes are bundled together under one step. Often only the first note or two will record: I never fathomed this out.

So far so unimpressive. The manual then bows out of the tutorial section and sets about describing the screens, menu options and their functions. I was little miffed at this as only about one percent of the program had been discussed. I do feel tutorials should be more substantial.

However, with some rudimentary knowledge of how Ludwig works let's put something in and see what comes out.

Series Creation

THE FIRST STEP is to enter a Pitch Series. We'll be conventional and start with the first Cell. Shift-clicking on the operand of the Cell calls up a grid-like Pitch Pattern editor. Each column in the grid represents one chord. Notes in a chord are toggled on and off by clicking on them. A chord can contain up to 16 notes and although you can scroll the column, notes are restricted to what can be shown in a column at any one time (a full 16-note chord therefore, would sound totally cacophonous).

Pitches can also be entered in semi-real-time from a MIDI keyboard. I found this by far the easiest and quickest method of pitch entry.

You can enter random pitch series by clicking on the Randomise box. These can be monophonic or polyphonic and you can add random notes to an existing melody line. Unfortunately these are *completely* random and the chances of salvaging anything melodically usable out of this procedure are limited.

You can create up to 96 user-defined patterns and give them names – very helpful.

The next stage is to create a Rhythm Series in the Rhythm editor. As already mentioned, you can enter a maximum of 32 rhythm steps per Cell. The durations are shown in traditional notation and range from a 32nd to a whole note. Values are increased and decreased by clicking on the notes. If you Shift-click you can move in increments which can be displayed as a single untied note.

"There are shades of Dr T's Fingers' interactive series control elements here, but it's actually not as complicated as it sounds – honest."

You can also enter rhythms in real time but you face the same problems which are evident in pitch/link recording. There is a Condense function, however, which aims to help by removing rests and extending the durations to fill the gap.

Slave to the Rhythm

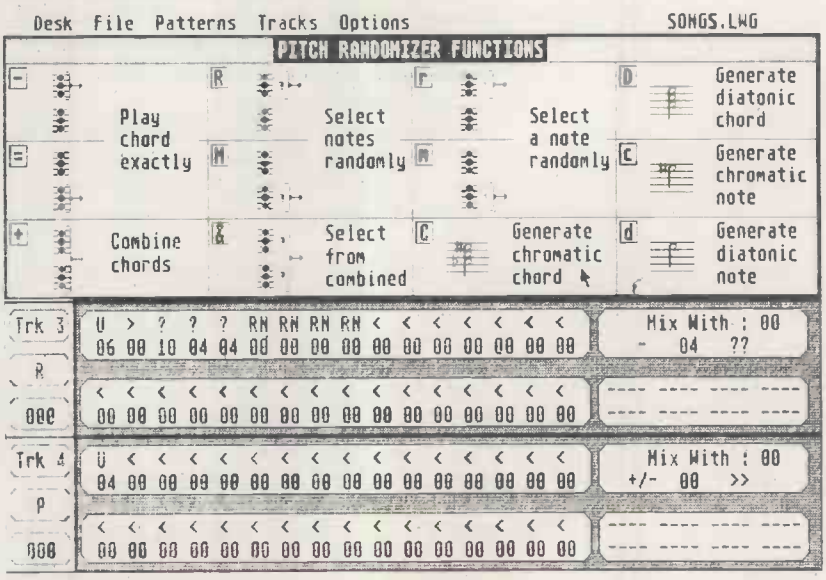
ALTHOUGH PITCH AND Rhythm patterns are separate, you can link them together in the Pitch and Rhythm Editor screens. You can move from one editor to the other at the click of a button, which allows you to construct related pitch and rhythm series quite easily. To get them to play together in a Track, however, you must see that the corresponding Rhythm and Pitch Series Cells contain the associated patterns.

It's fairly easy to produce the kind of isorhythmic patterns associated with M although you may have to access a screen or two to see which patterns are involved and what they contain.

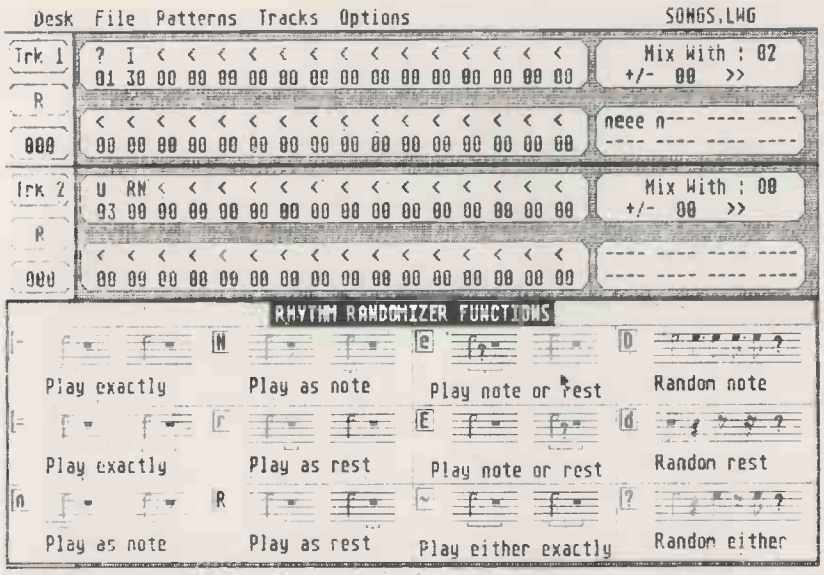
As Pitch and Rhythm Series can be of different lengths, they may not always tie up exactly as you would wish. You can, however, connect them in a Master/Slave relationship (not getting too Marquis de S, are we?) to pull one into line with the other.

The Velocity Map dictates changes in velocity. As mentioned earlier, there are eight velocity levels (user-definable) and you can add accents and a random shift to give a human feel.

There are many other editing facilities including track and Cell copy, insert, delete and fill functions and so on; enough to give versatile control over the construction of Cells – and thereby Tracks. Ludwig's real forté, however, is its ability to perform a vast number of manipulations on the Pitch and Rhythm Series, and it is these which lie at the centre of its compositional abilities. ▶



Pitch Randomiser Functions



Rhythm Randomiser Functions

► Let's start with the Randomiser function. This takes two user-defined patterns and mixes them according to a few carefully-chosen (by you) settings. You need to specify the two patterns, the chords within those patterns which will be used, the order in which they play and what you want to do with them. Options include adding random notes and rests and selecting notes and chords from the combine patterns. Randomiser settings are made in the boxes on the right of the screen labelled Mix With.

Some of the functions involve chromatic and diatonic intervals and you can set eight diatonic scales to be used in these and other operations.

The other manipulation processes are called Transformations. There are separate Transformations for Pitch and Rhythm Series although some perform similar functions (all will be revealed in a moment). There are a total of 30 Transformations for each Series although some are simply loops and "play again" instructions. They're shown in a Cell's operator as a one- or two-character abbreviation.

Transformations

THERE ISN'T ROOM to detail all the Transformations but we'll look at some of the more interesting and unusual ones. Pitch Series first.

Reflect pivots every note across a specified tone. For example, C reflected across D is E.

Expand/Compress calculates a mid point for each chord and then moves the notes in the chord further away from it (expansion) or closer towards it (compression).

Accompany uses one of the eight diatonic scales to place triads below a melody line.

Reverse reverses the order of a specified number of notes and **Exchange Adjacent** swaps adjacent pairs of chords. This can produce some nice musical variations.

Play Odd/Even plays only the odd or even notes in a pattern substituting rests for the other ones. **Warp Melody** inserts notes or rests between the chords. **Un Chord** breaks chords into their individual notes and plays them one after each other, arpeggio style.

"The demo pieces are rather good, although it's interesting to note, as ever, that the most 'musical' pieces make minimal use of random functions."

Two easy ones – **Substitute Rest** substitutes rests for chords and **Invert Chords** inverts every chord in the pattern. This is very musical.

Mix Adjacent mixes together the pitches in adjacent chords (the length of a pattern, therefore, will be halved). This may or may not be musical.

Echo takes every chord in a pattern and repeats it a specified number of times although it will not lengthen the pattern beyond its 32-chord limit.

Harmonise Above and **Harmonise Below** add a note from a diatonic scale above or below the chord. You can specify the interval or leave it up to the program (random).

Rhythmic Transformations include **Divide/Multiply** which divides or multiplies each duration by a specified or random amount. This can be quite interesting. Durate sets all notes in the pattern to a multiple of a 32nd note.

Rests/Notes changes all notes in the pattern to rests or vice versa.

Reverse, Exchange Adjacent, Play Odd, Play Even, and Echo work in a similar way to their counterpart pitch transformations.

Warp Rhythm introduces timing errors to a pattern (human feel) while **Rotate** moves the pattern backwards or forwards in time. If you move it backwards, for example, the first note in the pattern will become the last note.

Random Order and **Invert Note/Rest** are fairly obvious. **Mix Adjacent** adds the duration of adjacent notes and rests. This doesn't increase the overall duration of the series, it just results in fewer durations.

Split works a little like Echo but it changes the value of each note by a specified amount.

Finally, **Swing** introduces a swing feel by altering the durations of adjacent notes.

Most of the Transformations have several variations (made by altering the operand) which increase the variety of output even more.

As the play arrows move from Cell to Cell, each Transformation is applied to the result of the previous one. A long line of Transformations, therefore, could easily totally rehash the original pattern. For example, suppose you had the following series:

U	RV	HB
00	00	10

First, user-defined pattern 00 would play, then it would play again with a random number of its chords reversed. Then the reversed pattern would play with added harmonisation. To bypass the middle men, so to speak, the Combine function lets you combine the activities of two or more operations. Using it on the above example you would *only* hear the reversed and harmonised pattern.

You will probably recognise several manipulations here which have their foundation in traditional music composition techniques as well as some which are decidedly mathematically-based.

The Transformation section of the manual is excellent and shows exactly what happens to the transformed music in traditional notation. Ten out of ten here, Hybrid.

Configurations

THERE ARE SEVERAL demo files on the Bones disk. The drum patterns are configured for the Kawai R100 and R50 (a popular choice?). To configure them for your machine you can reassign the note numbers on your drum machine or find the Ludwig patterns in the Pitch editor and change them (the demo doc tells you which pitches have been used). The demos are rather good although it's interesting to note – as ever – that the most "musical" pieces make minimal use of random functions.

There are options to transmit MIDI Sync and output Patch Change commands. Tracks can be soloed and muted and you can edit a Cell on the fly, too, although the results

won't take effect until you exit the edit procedure.

During a performance, playback is stored in a play buffer which can be saved as a Song file and loaded into other Hybrid Arts sequencers.

Most mouse options have equivalent keyboard commands but many mouse operations require you to hold down a key on the ST's keyboard while clicking. This is rather a nuisance, albeit perhaps of a minimal nature, but why it is necessary to do this with some options (scrolling the columns in the Pitch Editor, for example) is a mystery. Have keyboard controls by all means but if you're going to give the user mouse control – do it! Let's not have to mess about with the computer keyboard as well.

Although the tutorial section is short, it does get you into the swing of things quite quickly. The manual does its best to be light and informative although an index wouldn't go amiss. You'll need to read it carefully, too – you won't get very far with Ludwig otherwise.

There are several niggles, inevitable in this sort of program, I suppose. Apart from the difficulties in recording rhythms in real time (could it be me?), an Undo option would be nice for those occasions when you randomise and marmalise a carefully-entered sequence. A command to blank a pitch or rhythm grid would be useful, too.

Changing durations in the Rhythm Editor is just a tad sluggish as various bits of the display update after each alteration. There is no confirmation prompt on the quit option. This is unforgivable (guess who accidentally clicked here when aiming for Hybriswitch? – which Ludwig is compatible with, of course).

Finally, because of the sheer amount of data and the number of manipulation facilities incorporated into Ludwig, you have to access several screens to see exactly what music the program contains. Entering and editing a few connected series requires a fair amount of clicking.

Verdict

IF YOU'RE IN the market for a composition program there are more to choose from now than ever before. Comparisons become increasingly difficult and in any event a choice will be a highly personal decision.

M was the first composition program on the market and I confess a personal liking for its graphic approach. All the other composition programs are highly numerically-based, including Ludwig.

Although composition programs are fun – and, arguably, useful (I've used M to produce several pieces) – we've now passed the "Wow, gee whiz, look what this can do" stage of software development and I think users, musicians especially, expect software which is more immediately accessible than a page of numbers. However, just as most of the early sequencers were heavily into numbers while later ones seem to be adopting a more graphic approach, perhaps future composition programs will follow the same line of development.

Having got that little observation off my chest, Ludwig is intrinsically no more difficult to use or understand than any other numerically-based music program, so I can't really deduct Brownie points for that. It does have many more manipulation features than any other composition program currently on the market which elevates it to Blue Peter Badge status.

And that really is the bottom line. It'll be a long while before you've explored all of Ludwig's possibilities and, after all, isn't that why you use a composition program in the first place? ■

Price *£129.95 including VAT*
More from *Hybrid Arts (UK) Ltd. 24/26 Avenue Mews, London N10 3NP. Tel: 01-444 9126/7*

patchW·O·R·K

If you're still waiting to see your particular synth featured in these pages, then why not be the first to submit some sounds?

Don't forget that if your patch gets published, you'll receive a **free year's subscription** to MUSIC TECHNOLOGY with our compliments. So send us your favourite sounds on a photocopy of an owner's manual chart (coupled with a blank one for artwork purposes) accompanied by a short demo-tape (don't worry too much about classic performances and impeccable recording quality; just present your sounds simply and concisely – and convince us you're the best of the bunch). Include a decent-length description of your sound and its musical purpose in life, and write your full name and address on each chart. And remember, edited presets are all very well, but an original masterpiece is *always* preferable. OK?

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

ROLAND D50
Seagulls and Surf
Tim Donovan, North Humberside.

This is one for soundtrack and atmosphere fans everywhere. Waves crash on the lower half of the keyboard while uncannily realistic seagulls circle the upper. In the distance a foghorn sounds on bottom C, cutting through the imaginary fog. Marvellous. ■

Tone Name GULLS(UPPER) Used Patch No.

[Common Parameters]

Structure No	01
Partial Mute	2

Pitch ENV	
Velocity	00
KF(Time)	00
L0	00
T1	00
L1	+01
T2	09
L2	-01
T3	19
SusL	00
T4	21
EndL	-17

LFO	1	2	3
Wave	TRI	TRI	ENV
Rate	54	00	42
Delay	00	22	00
Sync.	KEY	OFF	OFF

Pitch Modulation	
LFO Depth	100
Lever Mod	100
After Mod	06

EQ	
L0	+00
Lg	-07
Mf	1-2
HQ	1-4
Hg	+09

Chorus	
Type	01
Rate	00
Depth	00
Balance	09

[Partial Parameters 1/2]

WG	1	2
WG Pitch: Coarse	C4	
Fine	00	
KF(Pitch)	1	
WG Modulation: LFO Mode	+	
P-ENV Mode	+	
Bender Mode	KF	
WG Wave Form	SAW	
PCM No	1	
WG Pulse Width: PW	100	
Velocity	00	
After Touch	00	
LFO Select	+1	
LFO Depth	30	

TVF	1	2
TVF: Frequency	43	
Resonance	27	
KF(Freq)	1/4	
Bias Point/Bias Direction	7<5	
Bias Level	-01	
TVF ENV: Depth	65	
Velocity	+7	
KF(Depth)	00	
KF(Time)	04	
TVF ENV: T1	00	
T2	39	
T3	00	
T4	00	
T5	62	
TVF ENV: L1	00	
L2	00	
L3	00	
SusL	37	
EndL	00	
TVF Modulation: LFO Select	+1	
LFO Depth	05	
After Touch	00	

TVA	1	2
TVA: Level	100	
Velocity	+25	
Bias Point/Bias Direction	7>4	
Bias Level	00	
TVA ENV: Velocity (T1)	00	
KF(Time)	00	
TVA ENV: T1	40	
T2	11	
T3	44	
T4	27	
T5	00	
TVA ENV: L1	100	
L2	100	
L3	30	
SusL	00	
EndL	00	
TVA Modulation: LFO Select	+3	
LFO Depth	10	
After Touch	+02	

Tone Name SEAHORN Used Patch No.

[Common Parameters]

Structure No	03
Partial Mute	

Pitch ENV	
Velocity	00
KF(Time)	00
L0	+50
T1	00
L1	00
T2	16
L2	-50
T3	50
SusL	-05
T4	00
EndL	-01

LFO	1	2	3
Wave	ENV	TRI	TRI
Rate	100	58	77
Delay	00	00	42
Sync.	KEY	OFF	OFF

Pitch Modulation	
LFO Depth	96
Lever Mod	23
After Mod	100

EQ	
L0	63
Lg	-09
Mf	1-2
HQ	6-0
Hg	+02

Chorus	
Type	01
Rate	00
Depth	00
Balance	09

[Partial Parameters 1/2]

WG	1	2
WG Pitch: Coarse	D3	C2
Fine	+09	00
KF(Pitch)	1/8	1/8
WG Modulation: LFO Mode	OFF	OFF
P-ENV Mode	+	OFF
Bender Mode	KF	KF
WG Wave Form	SAW	SAW
PCM No	76	03
WG Pulse Width: PW	100	100
Velocity	+03	00
After Touch	00	00
LFO Select	+2	+2
LFO Depth	00	100

TVF	1	2
TVF: Frequency	100	98
Resonance	00	00
KF(Freq)	1	0
Bias Point/Bias Direction	KF	SAW
Bias Level	+07	-07
TVF ENV: Depth	100	100
Velocity	00	63
KF(Depth)	00	00
KF(Time)	04	00
TVF ENV: T1	00	44
T2	45	25
T3	100	03
T4	00	09
T5	82	16
TVF ENV: L1	100	100
L2	53	07
L3	95	00
SusL	00	04
EndL	00	00
TVF Modulation: LFO Select	+2	-3
LFO Depth	00	00
After Touch	00	00

TVA	1	2
TVA: Level	85	76
Velocity	+09	00
Bias Point/Bias Direction	KC#4	>C2
Bias Level	-12	-12
TVA ENV: Velocity (T1)	02	00
KF(Time)	01	00
TVA ENV: T1	74	44
T2	71	61
T3	47	67
T4	09	93
T5	82	28
TVA ENV: L1	100	100
L2	36	100
L3	35	100
SusL	27	77
EndL	00	00
TVA Modulation: LFO Select	-3	+3
LFO Depth	100	00
After Touch	00	+02

Patch No.
Patch Name SEAGULLS AND SURF

Key Mode	SPLIT
Split Point	C5
Tone Balance	58
L-Key Shift	00
U-Key Shift	00
L-Fine Tune	00
U-Fine Tune	00
Bender Range	00
After (Pitch Bender)	00
Portamento Time	00
Portamento Mode	U
Hold Mode	U
Output Mode	01
Reverb Type	01
Reverb Balance	39
Total Volume	100
Chase Mode	UL
Chase Level	00
Chase Time	00
MIDI TxCH	
MIDI SepCH	

Used Tone
Upper GULLS
Lower SEAHORN

CASIO CZ101
It's Krafty
Simon Ellis, Birmingham.

Simon is obviously a big fan of Kraftwerk and has programmed this sound to prove it. Reminiscent of the Fab Four in their 'Computer Love' era, 'It's Krafty' has a synthetic, nasal feel to it, and should be equally at home with mechanical basslines or slow rate melodies. ■

PARAMETER	TONE NAME	CARTRIDGE NO.	TONE NO.
	IT'S KRAFTY	/	/

LINE SELECT	MODULATION RING	MODULATION NOISE	DETUNE OCTAVE	DETUNE NOTE	DETUNE FINE
1+1'	ON	/	/	/	/

VIBRATO WAVE	VIBRATO DELAY	VIBRATO RATE	VIBRATO DEPTH	OCTAVE +/-	OCTAVE RANGE
/	/	/	/	/	0

1

DCO 1

WAVE FORM FIRST	WAVE FORM SECOND	VELOCITY
4	0	

ENV (PITCH) STEP	1	2	3	4	5	6	7	8
RATE	93							
LEVEL								
SUS/END	E							

DCW 1

KEY FOLLOW	VELOCITY
4	

ENV (WAVE) STEP	1	2	3	4	5	6	7	8
RATE	99	45	50					
LEVEL	99							
SUS/END	S	E						

DCA 1

KEY FOLLOW	LEVEL	VELOCITY
7		

ENV (AMP) STEP	1	2	3	4	5	6	7	8
RATE	99	32						
LEVEL	99							
SUS/END	S	E						

2

DCO 2

WAVE FORM FIRST	WAVE FORM SECOND	VELOCITY

ENV (PITCH) STEP	1	2	3	4	5	6	7	8
RATE								
LEVEL								
SUS/END								

DCW 2

KEY FOLLOW	VELOCITY

ENV (WAVE) STEP	1	2	3	4	5	6	7	8
RATE								
LEVEL								
SUS/END								

DCA 2

KEY FOLLOW	LEVEL	VELOCITY

ENV (AMP) STEP	1	2	3	4	5	6	7	8
RATE								
LEVEL								
SUS/END								

YAMAHA DX7
Tight Bass
Robin Kanagasabay, Fulham.

These days there's only one thing more common than an air disaster and that's a new bass patch for the DX7. So it's encouraging to be able to report that 'Tight Bass' is better than most, seeking as it does to emulate a Minimoog, and fulfilling its task reasonably successfully. It can also be used in the upper registers for brittle, metallic stabs. ■

						17	7	A	35	0	0	0	ON	3	0 0 0 0 0 0
						ALGO-RITHM	FEED-BACK	WAVE	SPEED	DELAY	PMD	AMD	SYNC	PITCH	AMPLI-TUDE
								LFO						MOD. SENSITIVITY	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	POLY/ MONO	PITCH BEND		PORTAMENTO											
		RANGE	STEP	MODE	GLISS-ANDO	TIME									

OP																											
6	F	1	000	0	99 99 99 3				0							0	23	0	99 99 23 32				40 00 00 00		C2	TIGHT BASS
5	R	0	50	0	85 99 57 0				0							0	87	0								
4	R	0	50	0	39 99 99 7				0							0	94	0								
3	F	1	479	0	99 17 24 2				0							0	75	0								
2	R	6	00	+3	90 50 24 2				0							2	82	0								
1	F	1	000	0	76 28 21 5				0							0	99	0								
	MODE/ SYNC	FREQ. COARSE	FREQ. FINE	DETUNE	1 2 3 4 RATE				1 2 3 4 LEVEL				BREAK POINT	L R CURVE		L R DEPTH	K.BOARD RATE SCALING	OUTPUT LEVEL	VELOC-ITY SENS.	1 2 3 4 RATE				1 2 3 4 LEVEL		KEY TRANS-POSE	VOICE NAME
	OSCILLATOR				EG								KEYBOARD LEVEL SCALING				OPERATOR			PITCH EG							
17	18	19	20	21					22				23	24		25	26	27	28	29				30		31	32
	MODULATION WHEEL				FOOT CONTROL								BREATH CONTROL							AFTER TOUCH							
	RANGE	PITCH	AMPLI-TUDE	EG BIAS	RANGE				PITCH				AMPLI-TUDE	EG BIAS		RANGE	PITCH	AMPLI-TUDE	EG BIAS	RANGE				PITCH		AMPLI-TUDE	EG BIAS

STILETTO PRO-SOUNDS
Ensoniq Mirage Vol I and II

The philosophy behind the Stiletto Pro-Sounds library is that there shall be "no orchestral hits, no 16-way multisamples of Gaelic two-fingered thigh trumpets and no Phil Collins gated snare drums." The absence of these (and the inevitable Peter Gabriel Shakuhachi) frees space for truly innovative sounds that you wouldn't be able to get if you didn't have a sampler. Each of the two volumes contains just three disks, each of which has a theme. Volume One contains disks A, B and C; Volume Two contains disks D, E and F, and between them there are a total of 102 wavesamples. Also enclosed with each volume is a copy of Hackerfax, containing an abundance of information for the Mirage enthusiast and immense detail as to how each sample was achieved.

The sounds themselves are everything you'd expect from a top professional library – with quite a bit extra thrown in besides. Disk A includes a variety of drums and percussion, along with an assortment of bass and melody sounds, ideally suited to putting together a good groove. Disk B is known as *The Fret Set*, and is a collection of seventeen different bass samples, including the extraordinary 'Yeehaa' and 'Screep'. Disk C – *Beyond The Mirage* – contains mainly choirs and pad sounds that defy the usual library of clichés.

Volume Two continues the high standard set by Volume One. Disk D is called *Seqs Appeal* and has a standard organisation of all three pairs of wavetables. This means that if you're working with an external sequencer you can take advantage of program changes while the sequencer is running, thereby using more wavesamples in your music without having to buy another sampler. The sounds themselves are mainly synthesised, created on an analogue modular system specifically for sampling purposes. Disk E is called *Breathers* and has eight wavesamples of flutes, bottles and synthesised chiffers. Disk F, *Beyond The Mirage II*, is a sequel to disk C, and contains more of the same sounds unique to sampling.

There are three particularly good things surrounding Stiletto's Mirage library. Firstly the sounds themselves – consistently clear, eminently usable and uniquely innovative. Second there are accompanying leaflets which tell you all you need to know and will probably give you a good laugh as well. And finally there's the price – £10 for a complete volume seems ridiculously little and makes the samples thoroughly, thoroughly recommended. ■ *David Bradwell*

Price *£10 per volume*
More from *Stiletto Sound Systems, 14, Nelson Street, Dumfries DG2 9AY. Tel: (0387) 65276.*

KLASSISK CUT

When you're one of the most controversial forces in Swedish music and have a revolutionary new instrument, only one thing in life is certain: nobody loves you. Interview by Tim Goodyer.

IT IS USUAL, when a new instrument is invented, for that instrument to inspire innovations in music. It is a rare occurrence that an instrument should be invented to fulfil a musical need. Yet this, simply, is the story behind Stig Miölssön's *Solsken*.

Although a recognised and well-respected, if controversial, musician in his native Sweden, Miölssön has yet to receive the same level of recognition throughout the rest of the world. And this situation seems destined to change only slowly as he invariably turns his attention to the challenging fringe areas of music rather than indulging himself in the attention that accompanies mainstream success. That said, if any of Miölssön's activities to date is likely to gain him notoriety abroad, his use of the Solsken is the one.

The history of the Solsken (pronounced sool-shien), begins with Miölssön's presence at the '87 DMC convention. There he saw people taking commercially available records and making new music from them with the help of a pair of turntables and a small disco mixer. In so doing they were availing themselves not only of other musicians' playing skills (on which much of the current controversy is centred) but the ingenuity of other composers and the facilities of studios all over the world. The idea intrigued Miölssön, but his classical background left him thinking along entirely different lines to the DJs he'd seen mixing and scratching in London.

For Miölssön, there were greater possibilities for the DJs' mixing skills than dance music. More specifically he wanted to combine classical music with his own ideas, but instead of composing variations he decided to take existing recordings and treat them in his own inimitable style. To this end he needed to be able to take analogue recordings of music and manipulate them, as he'd seen DJs do, and also add to them with his own instruments.

Regardless of his years spent studying piano at the Swedish Royal Academy of Music, recent years had seen Miölssön's interest in high technology grow alongside his awareness of contemporary music. Sitting in his private recording studio in the fashionable Söderteljä suburb of Stockholm, he had a Roland Super Jupiter, Yamaha TX802, Emulator III, Akai S900 and Roland TR707, 727 and 808 drum machines all under the control of a Yamaha QX1 sequencer. All that was required was a means of linking this equipment to the turntables that had accompanied him on his return from London.

Enter Anne Sofie Eriksson, electronics specialist and long-standing cohort of the illustrious Stig Miölssön. Presented with the problem of syncing together a mechanical turntable and sequencer, she devised a system that could derive a sync code from the record deck and use it to control Miölssön's QX1. In so doing she had made Miölssön's ideas a viable proposition.

The first work to result from Miölssön's use of his Solsken was a piece entitled *The Dream of Solsken*. Inspired by Sir Edward Elgar's own comment on his score for *The Dream of Gerontius*, "This, if anything of mine, is worthy of your memory", Miölssön had chosen to remember it with a rework that drew on excerpts from Sir Adrian Boult's recorded version, and elaborated upon it with his synthesisers. Within the classical fraternity the work was regarded as nothing short of sacrilege. His record company withdrew his contract and the Swedish branch of the MU expelled him. Miölssön remains unrepentant.

"This is the way forward I see for the classics", he says from atop a piano in the foyer of one of London's more exclusive hotels. "It is not enough simply to reinterpret the works of composers like Elgar, we must take from them ideas and give back new music."

Miölssön's presence in London is part of his now annual pilgrimage to attend the DMC competition. Later this evening, as DJs from all over the world demonstrate their virtuosity with a pair of Technics SL1200 turntables, the Swede will be looking for new techniques to incorporate into his *Att tar Bitar* approach to writing.

The Dream of Solsken, hurriedly re-released on Miölssön's own hastily-established Skruv Mejsel label was just the start. His work soon began in earnest on *Sl*ägga, as Miölssön has christened his new musical movement.

"There was right and there was wrong in *The Dream*", he explains. "I had to go on to explore the possibilities of the music. With 'Also In C' I set out to put all that was wrong with *The Dream* right, but of course, it cannot be done – it takes time. For six months I work on 'Also In C', and now I am using the TR707 as well as the synthesisers. This is the first time a drum machine appears in classical music. I make it a lot shorter and not so close to the original piece."

'Also In C' is taken from the third movement of Shostakovich's Symphony No. 8 in C minor, as recorded by Dutch conductor Bernard Haitink. Here Miölssön has enlarged upon the opening cello lines with synthesised flutes and added a bizarre percussive element with the TR707.

"You see, the cello lines are meant to sound machine-like because the music is about war", he continues, "and so I added more machinery with the drums. The cellos, to me, sound like samples already, so the result reminds me a lot of what popular music is doing with its sounds. The theme of the symphony is war and yet I'm having fun with it, perhaps more fun than the kids with their pop music."

Since the exploratory steps of *The Dream of Solsken* and 'Also In C', Miölssön's compositions have become more refined. 'The Fifth Season' and 'Scherzo: Vivace' displayed the composer's ability to incorporate a variety of

Photography *Adam Jones*

classical styles into *Slägga*, while 'Fortune' (taken from the opening section of Carl Orff's *Carmina Burana* (perhaps better recognised as the theme to the film *The Omen*) – found itself containing sections of Michael Jackson's 'Speed Demon'.

"You don't know this, but there's only a couple of beats per minute difference between them – I think they are 138 and 140bpm, something like that. With a little pitch shifting, the two pieces fit together *som magiskt*. The title I take from Orff's title 'O Fortuna' and the fortune with which the pieces of music are matched."

The critics continue to criticise and Miölssön happily continues to offend.

"In my studio at home I am making a recording using Satie's 'Gymnopodies'", Miölssön announces proudly. "In this I take the gentle piano music of Satie and add some samples – like Brian Eno and David Byrne did with *My Life in the Bush of Ghosts*. So many sampling records are angry that I want to make a happy one, so I take music that you don't have in pop music and add some samples I take off television commercials. Do you know the happiest music is in commercials? 'Do the Shake 'n' Vac and put the freshness back . . . ' 'They're tasty, tasty, very very tasty, they're very tasty . . . ' 'She won't make a racket, as long as it says Walkers on the packet . . . ' They're the happy tunes. If you listen to the words from the commercials but forget what they actually say, you find little bits of happiness you can put into your own music. I am stealing the happiness they're using to sell their products and I am giving it away with my recording."

ON THE TECHNICAL side, Miölssön is as quick to praise his Steinway grand piano as his TR808 or his Emulator. They are all simply instruments to him, as is the Solsken.

As Eriksson is only too happy to explain, the Solsken works by generating a sync code from the rotating turntable with the help of an optical sensor. The sensor reads light reflected from the stroboscope bands around the edge of the platter (the same bands that are used to accurately set the turntable speed). This information is then converted into FSK timecode that the sequencer and drum machines read. The principle is simple but there is one complication. ►

► "The problem Stig brings to me is a simple one of timing. Mind you, most of Stiggy's problems have to do with his timing", says the attractive blonde in even more broken English than Miölssön. "All Stig needs was an easy box to make his *grammafon* talk happily to his sequencers. I take a few bobs and bits I have lying around and *precis*!, I have made the Solsken.

"It is a nice machine that we have much interest in Sweden. Already many people are wanting my services."

"To begin with, we had much trouble getting the records and the sequences to start together", recalls Miölssön. "The machines would run in time but they wouldn't start at the same time. Anne Sofie spent many problems here."

The solution to the problem turned out to be simpler than she or Miölssön suspected.

"I scratch all my records", he reveals with a laugh. "It's true – all my records I must scratch from Stravinsky I do it with the orchestra on the record, not with a copy of the orchestra on the record. If I could do it with the orchestra itself I would do it. I try once with the orchestra in Sweden. I hire them into the studio and I play them some records and a sample from the Fairlight and say 'we play these!'. But the orchestra don't like what I do so they leave. They don't even try. How can classical musicians say technology steals their jobs when they won't even try? Perhaps I don't buy their records any more."

TODAY IN SWEDEN, hundreds of young musicians are using Miölssön's and Eriksson's Solsken design to sync turntables, sequencers and drum machines to produce just the sort of music Miölssön is anxious to avoid.

"The trouble is it's so easy", he says. "Anne Sofie's design is so simple anyone that can use a soldering iron can give to their record player the

if I am to use them with the Solsken! If there is an audio event – a scratch – some place before the music begins, I can make an offset for the sequencer so both musics begin at once. But you must be careful to have only one scratch or things they don't go well."

But why go to so much trouble with turntables when much of what Miölssön has achieved could have been done with a sampler?

"The sampler's sounds are its own", comes the reply from atop the piano. "The records and the samples don't sound the same and they don't play the same. When I want to scratch in a chord Solsken. In Sweden the circuit was printed in a magazine and the next thing we know we're receiving all sorts of pop and rock and dance music for the record label from the young music makers. Of course we cannot release it because it is not in the interests of *Slägga* that the label supports such music. But there are labels in Sweden now putting out what they're calling *Rispa* – the popular version of *Slägga*, if you like. Some of it's very good too; you could do with it over here instead of this Reynold Girls nonsense. When have I heard such *skit* – such silliness?"

When indeed, Stig, my old son? ■

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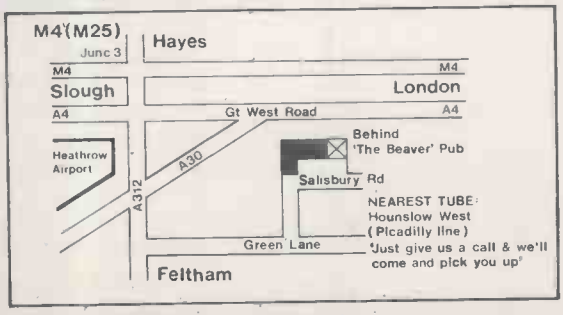

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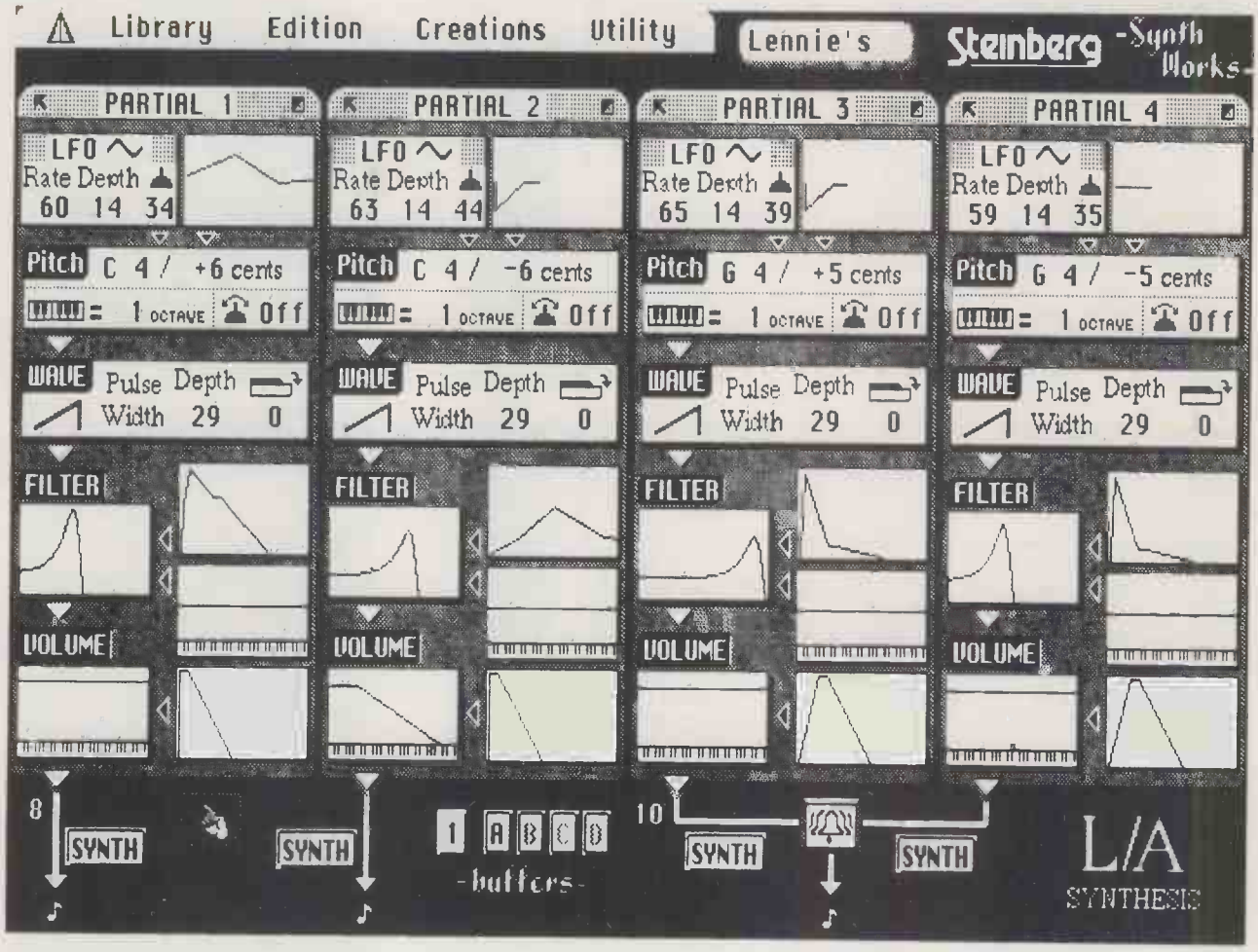
STEINBERG SYNTHWORKS D10/20/110/MT32

Software for the Atari ST



Tone Edit page

Roland's popular MT32 and "D" series of synths have prompted the release of a series of software editors to assist their users – cue Steinberg's Synthworks. Review by Vic Lennard.

VISUAL EDITING OF synthesiser patches using a computer has become a way of life – necessarily so with the advent of digital parameter access and multi-function buttons. Roland's D110 is a fine example of an expander that employs a terrifyingly confusing editing system – all in the interests of cost-effective design, you understand. And while the D10 and D20 lack certain of the D110's facilities, envelope editing is always going to be easier from a computer monitor using a mouse. Meanwhile, the ability to save banks of MT32 sounds to a disk –sounds which would otherwise be lost on power-down – is a necessity for the serious programmer (a cartridge is very expensive in comparison).

So we have Steinberg's Synthworks – not just for the D110, not just for the D10 and D20, but for the "three D"s and the MT32. With all of their current crop of editors for the Atari ST, Steinberg have attempted to work around the computer's slow GEM interface by implementing their own alternative. (For those interested, this differs in the following respects; left mouse click selects an icon while a right mouse click replaces the cursor with the icon ready for relocation; top left box icon exits from the page while the top right brings down a further set of instructions; three sets of arrows are given at the side of windows for up/down to top of list, one page or one line; finally, screens dissolve into one another.)

Basic Setup

AFTER PLUGGING IN the inevitable dongle and loading up, certain aspects of the editor require selection – the most basic of these being the type of synth which is to be edited. While there is no difference between the D10 and D20, they differ from the D110 in that the location of the patches within the synths have been altered, meaning that they are incompatible and so are lost when changing from one to the other (although Tones and Timbres are safe). The MT32 is significantly different in that it has a different set of PCM sampled waveforms which have to be loaded from disk when this unit is chosen for editing. There are two modes for which subjective choices have to be made. The first of these is mouse acceleration – how fast do you want the cursor to move relative to the mouse? There are three options: normal, fast and bloody ridiculous. The second is for the mode of editing: this offers mouse

buttons to be changed round in operation (good for left-handed people), set as a virtual slider, vertically or horizontally, or for terms to be typed in. Final decisions are MIDI orientated and concern merging and re-channelling, including an auto option for multitimbral applications where sounds are assigned different MIDI channels.

Tone Editing

THE TONE EDIT page greets you as you load up. Most of the features are self-explanatory with arrows leading from one function to the next; LFO-Pitch-Wave-Filter-Volume, all four partials for any sound are shown on the same page. The layout is quite simply excellent.

Each Partial has the requisite envelopes for pitch, filter and volume, and clicking on any of these brings up a high-resolution graph whose points can be moved around by dragging with the cursor "finger", which changes the numerical values in the window at the same time. Various options are offered including access to any of the 12 such graphs for any of the Partials for comparative purposes. A couple of helpful touches are the eight preset curves in the top right-hand corner of the window which can be used as starting points for the filter and volume graphs, and the various other functions pertaining to the envelopes, which sit along the base of the graph. The speed with which editing can be accomplished is certainly impressive.

At the bottom of the edit page are the output options. These allow one of the 13 choices of PCM/Synth/Ring modulation along with the four edit buffers to be chosen. At the top of each partial window there is an arrow for muting that partial and a box on the right for soloing it and when the waveform selection is for PCM, a click on the arrow next to "choice" brings up a list of the viable alternatives.

A Partial Copy menu option brings up a further window offering the choice of copying any Partial from any one of the four buffered sounds to any other. As each Partial is a separate entity and sound of its own, this can be very useful indeed.

Multitimbral Configuration

EACH OF THE synths are eight-part multitimbral and all functions for the setting up of a Patch reside on the Configuration page. Timbres are shown in eight vertical columns with visual representation of output channel (D110) and a push-button switch for reverb on/off (D10/20). Grab the level slider and it moves smoothly up and down while the numerical equivalent changes at the foot of the slider. This function is more comfortable than any other piece of editing software I can remember. The whole page resembles an in-line mixing console and is extremely friendly. This is certainly starting to grow on me.

The top left-hand corner of the window has a drum kit which, upon selection, takes you to the Rhythm Setup page. Here 16 piano keys are shown vertically, each with an assigned Tone, output and pan for the relevant synth. Another volume slider in a more conventional block bar represents the same setting both visually and numerically. Scrolling downwards allows all keys to have Tones assigned to them – either Rhythm or otherwise – or as few as takes your fancy. These can then be saved to disk. It's also worth mentioning that if you attempt to scroll upwards or downwards after reaching the end of a bar, a face appears in place of the cursor and winks at you – it's not enticement to repeat the mistake.

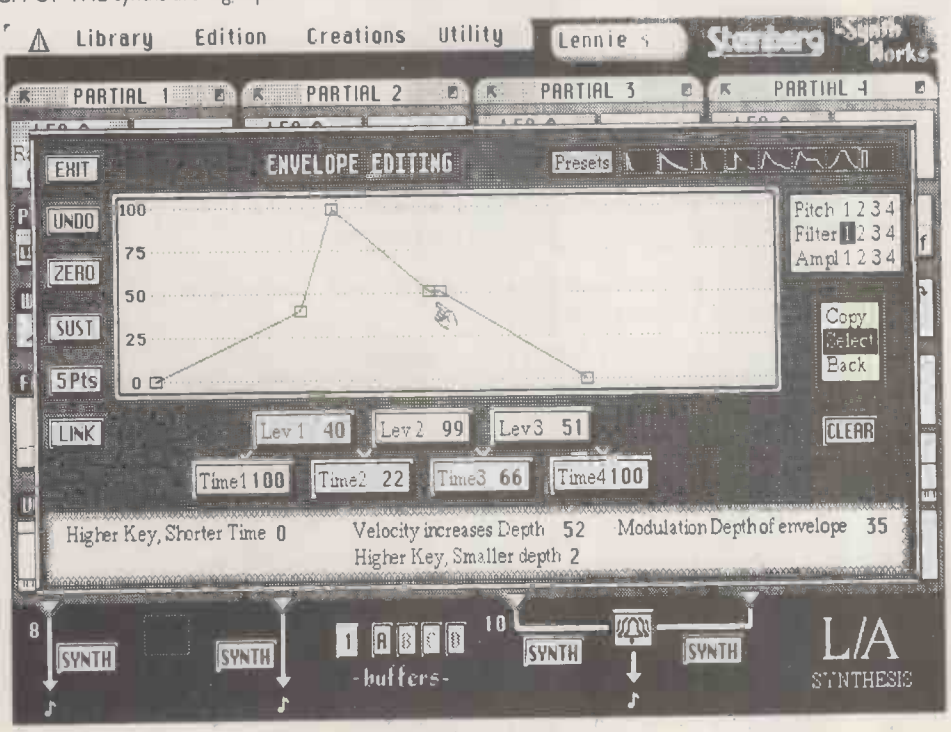
A separate Reverb window lets you select one of the eight effects on offer along with the reverb time and level. Similar options are available for the performance aspects of the D10/20 where, like the D50, whole, dual or split modes can be assigned.

Librarian

THE D10, D20 AND D110 contain two banks of 64 preset Tones (A and B), one bank of 63 rhythm Tones (R) and one bank of 64 user Tones (i). These can all be seen on the Librarian page which holds two complete banks as well as up to 1000 Tones in a custom library which can be saved to and loaded from disk. The 128 Timbres and Patches can also be recalled by clicking on the relevant icons.

Movement between the banks, library and buffers is straightforward, and while in the interests of neatness it's possible to put the Tones into alphabetical order, the links with the timbres are then lost.

One of the principal features of the Librarian is "Semantics" – the assigning of up to eight adjectives to each Tone to describe its sound – 'Brassy', 'Bass', 'FMDigital', ▶



Tone Edit Envelope display

► 'Bleedin' Awful' or whatever, from a list of 255 choices. Tones can be categorised and added to the library, and selections can be made by asking for certain criteria to be satisfied. To this end, a scanning depth can be set so that if a percentage of the chosen adjectives appear within the classification of the Tone then it will be selected. For example, choosing four adjectives and 50% will mean that any Tone with two or more of the qualifying conditions will be accepted. Now while I can see the benefit in setting up such a listing, it will take a long – and I mean long – time to organise. Still, once done it will save time finding a particular type of sound during a session . . . Oh, and it also has a checker which will warn if two Tones with identical parameters have been saved in the library.

Sound Creation

EVEN WITH THE visual power of this editor, programming one of these synths may not be everyone's cup of tea – cue the program's various methods of creating new sounds (Crossbreedings). Crossbreeding is capable of creating either a single new voice or 32 of them based on existing voices and uses a mask system to keep certain blocks of parameters safe from computer modification.

Quadratic Mixture places the four buffer Tones onto the corners of a box and produces differing new sounds dependent on where a cross is placed in the box. Partial Fantasy selects bits from current Tones in the library and throws them together to create a new Tone, while Slight/Medium Variations changes the Tone in buffer A, and Blind Random wreaks havoc on all and sundry. Blind Random may throw up the odd useful voice, but it's the sort of trick that's worth keeping for one of those days when nothing else has gone right.

Testing Edits

FOR IMMEDIATE FEEDBACK on the effectiveness of an edit, an on-screen keyboard is available which, via various mouse options, offers velocity sensitivity, aftertouch, modulation and pitch-bend to allow a Tone to be thoroughly tested.

Bearing in mind that the above is more than most other editors offer, it is surprising to find a 3000-note sequencer which can record and play back a series of notes, looping at the end, or can load in a pattern from Pro24 and play that continuously while edits are made – brilliant.

Alternatively, a note can be made to sound each time an edit is performed – possibly useful, but distracting and annoying after a while.

Verdict

I DO HOPE that you aren't reading this before the rest of the review because if you are, you have missed out on a write-up of one of the best-written pieces of software that I have ever come across. Faster both graphically and screen redraw-wise than any of the competition and offering a choice beyond the average person's imagination. If I am going to pick fault with anything it's this: is there too much on offer? Some of the extra features make Synthworks more difficult to use than a more basic editor – which may be what some people decide is in order for them. However, if I had one of these synths I would certainly add this piece of software to my collection. ■

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a WINNING streak

Photography *David Bradwell*

Jean Michel digs deep

It's not often a competition prize has already secured its place in musical history; this is the story of one RMI Computer Keyboard – but who won it? Text by David Bradwell.

THEY CAME IN in droves. Correct entries, incorrect entries, multiple entries (from the unprincipled), even the occasional anonymous entry (from those for whom the thrill of entering was more important than winning). Yes, November's *Vive La Revolution* competition, with Jean Michel Jarre's RMI Computer Keyboard up for grabs as first prize, elicited the largest response in the history of Music Technology competitions.

Jean Michel himself had offered to pick the winning entry and 14 runners-up from a hat, so it seemed appropriate that the draw should take place in the Jarre studio, on the outskirts of *gay Paris*. Airline tickets were arranged, train details were finalised and hotel reservation was made. All was running smoothly until a phone call brought it all forward a day and there was chaos . . .

Emerging into the Paris twilight from the relative safety of Charles de Gaulle airport, I was struck for the first time by my total inability to cope with what the rest of the world call "the language of love" and the French use daily to communicate. Stranded at an RER railway station with a silly grin and a bag full of postcards isn't my idea of jet-setting. Several hours later, having discovered the location of Jean Michel's house and studio, my language problems are brought home to me for a second time at the reception desk of my hotel. They say these things come in threes, but I have to wait until the following morning before I find myself thinking uncomplimentary things about a French taxi driver. Undeterred, I arrive at the studio for the LP and book signing, photo session, and the all-important draw.

In a quiet moment I take in the scenery. Not the *Tour Eiffel* and the *Champs Elysees* but the contents of the studio. In one corner an ARP 2600 stands atop the Geiss Matrisequencer. Another ARP occupies another corner next to an archway leading through to a mixing console. Standing proudly in the middle is a collection of synths and samplers that redefined my notion of paradise. Several Fairlights are accompanied by an Emulator II, two Elka Synthexes, two Yamaha DX7s (old and new), an Akai MPC60, and a host of racked or modular synths and effects. The whole setup is painfully tidy, depressingly dust-free, and immaculately wired. The gap left by the premature departure of the RMI Computer Keyboard seems already to have been filled – time heals even the deepest of wounds.

A commotion outside heralds the entry of Jean Michel's current collection of musicians. They introduce themselves to me, and then leave for a "band meeting". Trouble is they introduced themselves in French, and I haven't got a clue who anybody is. Eventually Jean Michel arrives, proving once again to be a thoroughly decent chap, and once the books and records are signed the draw takes place. Fifteen cards are picked out of a natty plastic top hat, and then the first-prize winner is chosen from them. Closer inspection reveals the winning entry to have come from one Porl Farrer from Malvern Wells in Worcestershire.

BACK IN ENGLAND Porl sounds pleased on the phone. A few minutes later, when it sinks in that he's won his hero's keyboard, he's ecstatic. A visit to Ely is arranged, and at 11.30 one morning he arrives – with father in tow. A tour of the building is followed by a short presentation speech from editor Tim ("Mine's a pint of Adnams") Goodyer. After lunch and a guided tour of the Music Maker empire, Porl and Pater departed, laden down with plastic bags full of freebies, and staggering under the weight of the RMI.

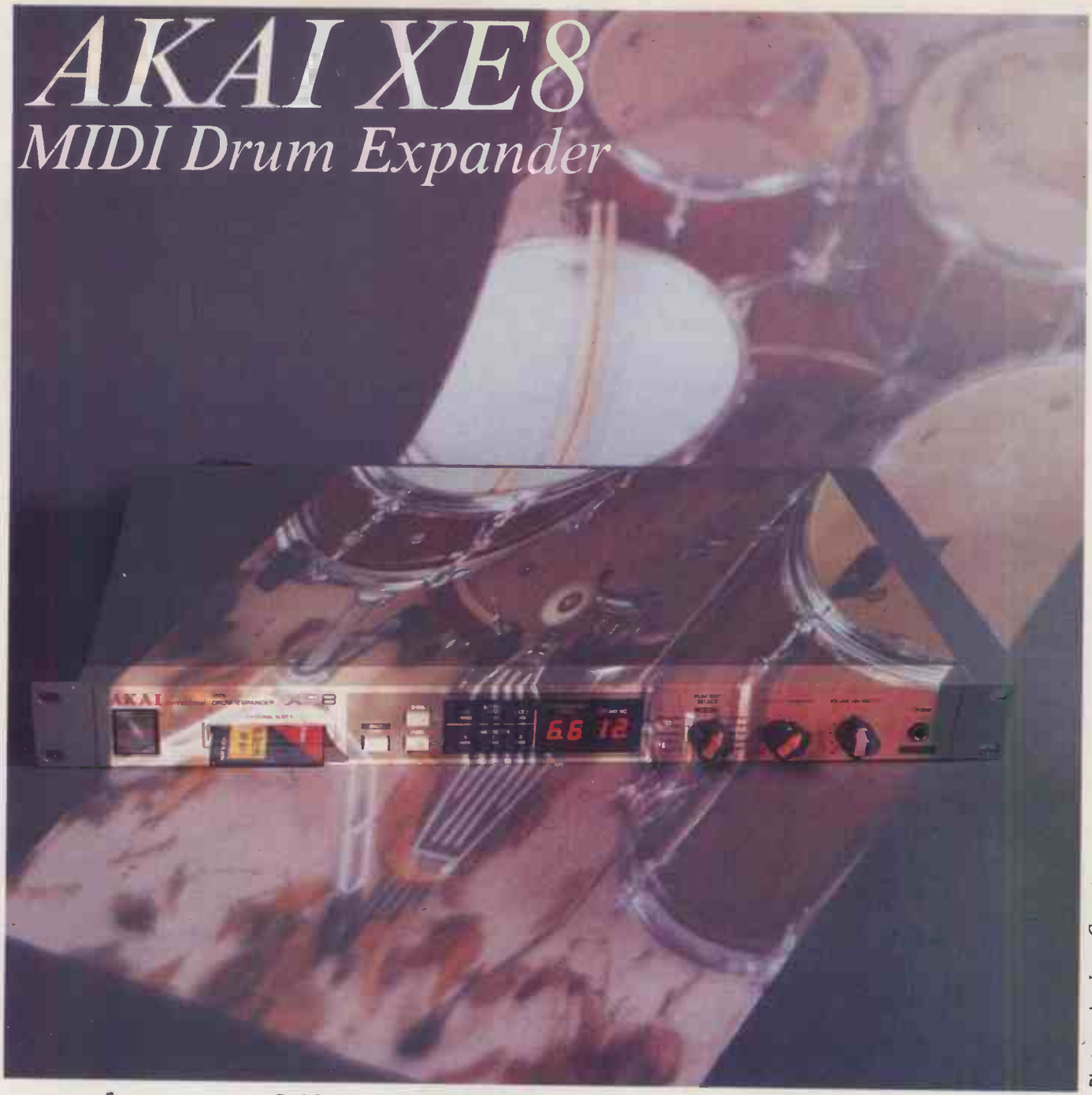
As for the rest of the winners, all runners-up prizes have been despatched by post – anyone requiring a list of winners should contact the MT offices.

All that remains is to thank everybody who entered the competition along with Polydor Records (for providing copies of *Revolutions*), John Huins from MacDonalds publishers (for providing copies of Jean Louis Remilleux book *Jean Michel Jarre)*), and in particular both Jean Michel Jarre and Michel Geiss for their time and generosity. ■

Photography *Adam Jones*

Winner Porl and the travelling Bradwell

AKAI XE8
MIDI Drum Expander



Photography: *James Cumpsty*

Akai's XE8 discards the onboard sequencing of traditional drum machines, says hello to MIDI and concentrates on sounds. Review by Simon Trask.

DECISIONS, DECISIONS, DECISIONS. These days you don't so much have to think about which drum machine is most suitable for you as what is the most suitable approach to providing drum sounds. MIDI-based modularity and affordable sampling have, between them, removed the traditionally-conceived drum machine from its pedestal.

For one thing, as more and more musicians turn to sequencing their rhythm parts from a MIDI sequencer, the drum machine's onboard sequencing capabilities start to look redundant - unless you happen to be using Roland's new flagship drum machine, the R8, which throws a spanner in the works by only revealing its full capabilities when its onboard sequencer is being used.

At the same time, the traditionally closed sonic nature of the drum machine is being challenged by general-purpose samplers and by sampling drum-machines. Drum boxes offering a limited set of sounds are no longer enough to satisfy contemporary rhythm requirements, especially at the pro end of music-making. What's more, it's becoming increasingly common for multitimbral synths to include a healthy selection of sampled drum and percussion sounds along with their synthesised sounds (witness Korg's M1, Kawai's forthcoming KI MkII, and most of Roland's L/A synths).

Perhaps surprisingly, the MIDI drum expander (a MIDI drum machine minus the sequencing capability) has rarely been attempted by manufacturers. Korg tried, without great success, as far back as 1985 with the MR16. This MIDI expander unit combined the sounds of the company's DDM110 and DDM220 non-MIDI drum machines, added individual audio outs and removed the sequencing capability. I remember being a bit puzzled by it at the time. MIDI sequencers were much less sophisticated than they are now: they had far fewer tracks and far less memory, and possessed no drum machine-style recording and editing capabilities. In short, recording drum parts into a MIDI sequencer in those days had considerable disadvantages.

Nowadays the situation is reversed, which I guess makes the MR16 an instrument ahead of its time, and anyone who bought one far-sighted. However, it wouldn't be at all fair to compare the MR16 and the XE8; the latter offers better quality sounds and is much more attuned to contemporary requirements, as you'll discover.

Layout

THE XE8'S 1U-HIGH 19" rack-mounting format will no doubt please anyone looking for a compact addition to their MIDI setup. On the other hand, the necessarily

limited panel-space seems to have posed problems for Akai.

On the front panel, a Play/Edit Select knob allows you to select the XE8's parameter groups, while a Parameter Select button with associated indicator LEDs allows you to select the parameters within each group. In combination they make parameter selection a speedy process, but unfortunately their effect is somewhat negated by the clumsy dual-concentric knobs used to select which program or sound you're editing and the data value of each parameter. The XE8's miserable display capabilities (a couple of two-digit LED windows with not even a handy mnemonic in sight) ensure that editing the expander is initially an irritating and bewildering experience. While the bewilderment subsides as you become familiar with what and where all the parameters are, the irritation hangs around – particularly with that clumsy dual concentric knob.

More encouraging news is the provision of a dedicated Shot button for triggering the currently-selected sample, and of a MIDI Monitor function which provides a quick means of telling what samples are assigned to what MIDI notes.

The slot on the XE8's front panel is for inserting an Akai ROM sample card; a second card slot can be found on the rear panel (an arrangement clearly prompted more by lack of panel space than by any thought for user convenience). Nestling alongside this second card slot are MIDI In, Out and Thru sockets, a mix audio output and eight individual audio outs (of which more later).

Sounds

THE XE8 COMES with 16 samples permanently stored onboard in 1MB of ROM. These divide into four bass drums, three snares, three hi-hats, two toms, a crash cymbal, a ride cymbal, handclaps and "percussion". Further sounds can be accessed by plugging Akai sample ROM cards into the aforementioned two slots. Each card provides a further 1MB of sample memory, though the number of samples per card varies (up to a maximum of 16).

The good news here is that the first two sample cards in Akai's library are included free with the XE8, giving you a total of 48 samples to start out with. The manual lists the contents of two further sample cards, suggesting that Akai realise the importance of supporting the XE8 with a sample library. However, so far the company's concept of what samples to provide XE8 users with is disappointingly narrow and traditionalist; not that providing a variety of basic kit sounds is a bad thing, but, considering the sampler challenge, a more adventurous spirit wouldn't go amiss. As it is, the sample cards which come with the XE8 provide more of the same, though they do manage to add the occassional percussion sound such as cowbells and congas.

Sample resolution is 16-bit linear, while, according to the manual, a combination of 33kHz and 44kHz sample rates have been used. Possibly, sounds with a longer decay (crash and ride cymbals, for example) have been recorded at the lower sample rate in order to save on sample memory; this would accord with the existing cymbal sounds, which don't have all the higher-frequency detail found on some other drum machines.

So what does the XE8 sound like? Well, to my mind it doesn't qualify for the "acoustic realism" school, but if you like hard, punchy, upfront "electronic" drum sounds then you could soon be making friends with it. With the exception of one bass drum, the XE8's sounds have been recorded dry (none of this ambient stuff), so you have plenty of scope for treating them yourself.

I have reservations about the cymbals; they seem too upfront and brash. However, the bass drums kick like hell, the snares are tight and snappy, the toms are deep and resonant, the cowbells and other short high-end sounds are bright and dynamic. All in all, the sort of sounds which can punch holes in speakers if they're really cranked up.

Playing back the samples in their original form is only part of the story, however. The XE8 allows you to alter its

"Bass drums kick like hell, snares are tight and snappy, toms are deep and resonant . . . the sort of sounds which punch holes in speakers if they're cranked up."

Sounds by tuning them in coarse and fine amounts (+7/8 in both cases), reversing them, altering their amplitude envelopes (hold and/or decay) and creating tuning envelopes (with high-to-low or low-to-high sweep). All the samples remain clean and clear across their full tuning range, so you won't find yourself having to sacrifice quality for the sake of variety. One point worth making is that an envelope decay can be much longer than the sound itself, and sometimes this leads to a faint click following the sound; if you notice this, shorten the decay.

Using the above edit parameters it's possible to create a much wider range of sounds on the XE8 than its list of samples might suggest; in particular, use of pitch sweep can create some unexpected effects out of familiar sounds.

Additionally, the tuning, amplitude and envelope decay of a Sound can each be controlled by MIDI note offset or MIDI velocity, with associated depth values. You can use velocity control of pitch and decay, and you can "loosen up" the mechanical exactitude of the XE8's sounds by introducing subtle fluctuations in pitch and duration. To use multiple tunings of a Sound across the keyboard, you just assign it to a suitable note range and set its pitch to be controlled by note offset (the maximum depth setting of 15 is equivalent to equal temperament). Using these edit parameters in conjunction with the XE8's ability to layer its sounds further increases the sonic possibilities open to you.

Programs

THE XE8 HAS 32 onboard Programs, each of which allows you to use a maximum of 16 samples drawn from the internal memory and the sample cards. Sounds (as the selected samples are known) can be played with up to eight-note polyphony and output via the mix out and the

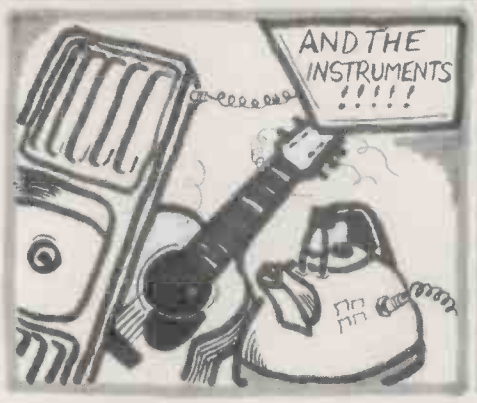
"As more musicians sequence their rhythm parts from a MIDI sequencer, the drum machine's onboard sequencing capabilities start to look redundant."

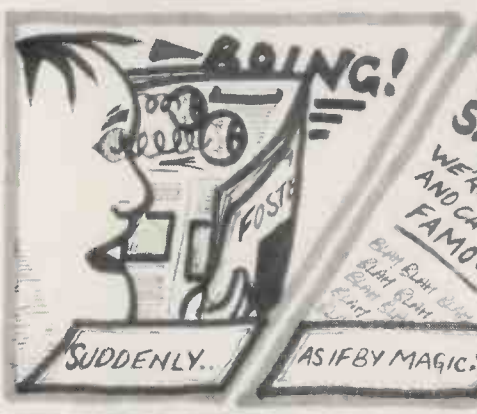
eight individual outs. All of the Sound-editing parameters described above are storable per Program.

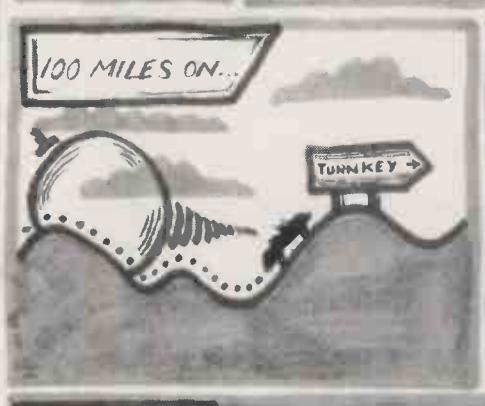
The 16 Sounds of a Program can be organised into a "drumkit" (an assignment of samples to MIDI notes), so that each time you call up a Program from the front panel or via MIDI patch changes you're calling up a new "kit". This is quite different from the typical approach on drum machines, where *all* the drum sounds are mapped across the MIDI note range in a single "kit", and carries with it a potential problem, namely that in changing to a different Program you might cut short, for instance, a strategically-positioned crash-cymbal hit. The good news is that you need have no fear of this on the XE8: active sounds play for their full duration regardless of Program changes.

But does this mean you can literally change Program at any time and get the results you intend? It's most likely that you'll be selecting Programs via MIDI patch changes, whether from a MIDI keyboard, percussion controller or sequencer. Using a sequencer playing or recording at ►

DAK SPANGLE AND THE TURNKEY EXPERIENCE







► 120bpm (in my case it was C-Lab's Notator), you can insert patch changes as little as one 768th note (2.6 milliseconds) after and two 768th notes (5.2 milliseconds) before a Sound is played and you'll get consistently correct results. If you want to get clever with your XE8 and a MIDI sequencer, you can use rapidly-switched MIDI patch changes to combine Sounds from different Programs into a single rhythm pattern.

Now, you could say that with a single "kit" consisting of all the available samples you wouldn't need to resort to such deviousness. However, Akai's approach has its own distinct advantages, most notably the fact that the samples being played are independent of the MIDI notes being used to play them (whereas the more familiar drum-machine approach uses fixed assignments). If you stick to the same Sound-to-note assignments across all your Programs, you can change your "drumkit" at any time simply by inserting a patch change into the sequence.

Actually setting up "kits" on the XE8 is a laborious process, so using the same mapping for all Programs soon becomes a good idea (you just have to Copy the one Program). "Kits" are defined by setting upper and lower note-limits for each Sound (unfortunately, you can't take the easy way out and play these in from your keyboard). Each Sound can have its own independent note-range, allowing you to layer a maximum of eight sounds per note (with a consequent reduction in polyphony, of course).

Akai have included factory preset Programs which can be recalled individually at any time, but in truth these are very poorly programmed and of limited practical use. A better set of Programs would have made the XE8's abilities more readily apparent, and lessened the need for immediate full-scale editing. Sometimes I wonder if manufacturers really care about putting their instruments across.

Outputs

THE XE8'S ATTEMPTS to release its Sounds from their 19" cage meet with mixed success. For one thing, its individual audio outs are monophonic; for another, the 16 possible Sounds have to be assigned to eight outputs. What's more, you can't de-assign Sounds – all 16 have to be assigned to the outs in some combination. This in turn means that Sounds are present at both the individual outs and the mixed out, whereas it might've been more useful to have some sounds coming out of the individual outs and others coming out of the mix out.

There are two alternative ways of assigning Sounds to the individual outs: free and fixed. The former is perhaps of limited use, as it assigns consecutive Sounds to the next free output, or to the output with the currently lowest volume level, and only outputs one Sound at a time. Fixed, on the other hand, allows you to assign each of the 16 Sounds to one of the eight outs.

However, because the individual outs are monophonic, if you assign more than one Sound to the same output channel then they can't be output simultaneously, and one active sound will be cut short by the other (of course, sometimes this might be what you want, as with open and closed hi-hats). This does rather tend to put a damper on the XE8's Sound layering possibilities.

Finally, the XE8's onboard capacity of 32 Programs can effectively be expanded by means of SysEx data dumps. Unlike many other companies, Akai include no data details in the manual (instead, you are requested to "please inquire the Akai Electronic Instruments Sales Division about the content of Exclusive"), but a quick inspection suggests that the XE8 deals in straightforward Program dumps (no SysEx edits) which can be originated from the instrument's front panel.

Verdict

I DON'T THINK Akai have an automatic winner on their hands here. The XE8 strikes me as being the sort of instrument which will find its devoted followers but not widespread popularity. Certainly the sounds won't be to everyone's taste. They have a hard, upfront, electronic quality which should appeal to musicians who want a tough, punchy edge to their drum sounds; I can see the XE8 coming through well on the dancefloor (it was learning to trance-dance just before Christmas), perhaps finding a niche for itself in hip hop and house music. However, Akai must come up with a broader and more adventurous range of sounds to support the XE8, as the current library is on the limited side to say the least. As it stands, the variety of drum and percussion sounds offered by Roland's LA synths and by their U110 sample expander (particularly with its Latin and FX Percussion card) outdo the XE8.

"If you want to get clever you can use rapidly-switched MIDI patch changes to combine Sounds from the XE8's different Programs into a single rhythm pattern."

One thing's for sure: the XE8 doesn't win any brownie points for operational convenience. Basically, Akai haven't made the best use of the XE8's front-panel space. Clumsy dual-concentric knobs and uninformative two-digit LED windows do not make for user-friendly operation. "Plenty of buttons and knobs" does not necessarily equate with "ease of use". Clear parameter organisation and straightforward access are just as important; in this respect, Akai could learn a lesson or two from Roland's U110 sample expander, which has a very fast edit system and still manages to find room for four card slots on its front panel.

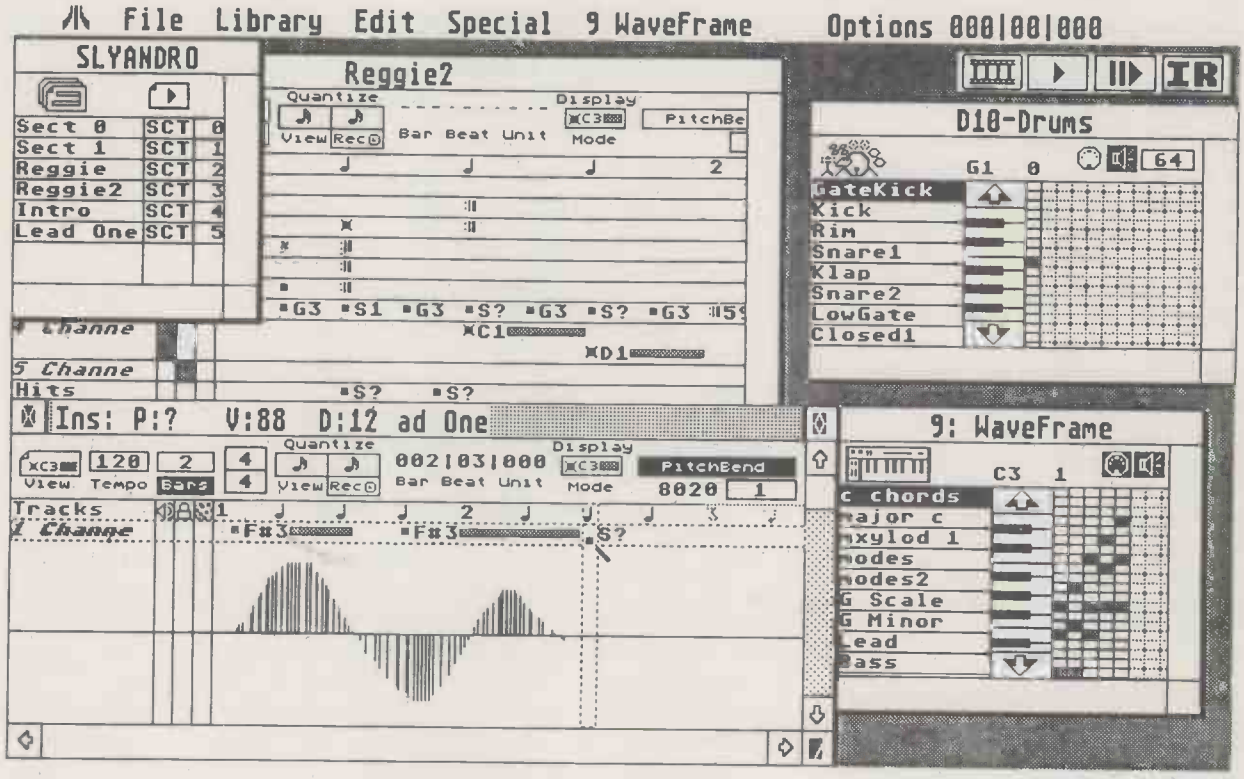
When it comes to sonic open-endedness, the XE8's two card-slots are a strong point in its favour. However, you should bear in mind that second-hand samplers (like Ensoniq's Mirage and Akai's own S700) can be picked up as cheaply as, if not cheaper than, the XE8, and are still inherently more open-ended. On the other hand, even with its operational awkwardness the XE8's advantages shine through: the straightforwardness of having ready-made samples (though remember that you're at the mercy of Akai's sample library), the convenience of a dedicated "drumkit" approach to organising sounds, and the immediacy of access to samples provided by card as opposed to disk storage. What's more, Akai have struck a good balance between sonic flexibility and editing simplicity on the XE8. On the other hand, while it's good to see individual audio outs on the expander, it's also a shame that they're monophonic, that there's no stereo output and that Sounds can't be assigned to individual or mix outputs.

The XE8 is up against stiff competition, and is maybe over-priced considering its expander status. After all, if there's no economic advantage to a sequencer-less drum expander, you might as well consider that a drum machine gives you the sequencing for free. Nonetheless, if you already own a MIDI sequencer and/or a MIDI controller, if you like the XE8's hard-edged electronic sounds, and if its semi-closed sonic nature doesn't pose any problems for you, then Akai's MIDI drum expander may strike just the right balance both in your music and in your MIDI setup. ■

Prices *XE8, £499 (including two ROM cards); Extra ROM cards £59.95. Both prices include VAT.*
More from *Akai (UK) Ltd, Haslemere/Heathrow Estate, Parkway, Hounslow, Middlesex TW4 6NQ. 01-897 6388.*

REALTIME REV. 1.1

For the Atari ST



From the pioneers of algorithmic composition comes an Atari ST program that adds intelligence to sequencing. Review by Chris Meyer.

THESE DAYS COMPUTER sequencers seem to demand ever higher levels of understanding before you can hope to get a song out of them. It's all very well for the songwriter who knows exactly what he or she wants to do before sitting down to record and edit, but my songwriting ideas are a lot more muddled and I use a sequencer to help me sort them out. Call it cheating if you like, I'm sure I'm not alone.

RealTime is a sequencer that actively encourages muddling and experimentation. It has a friendly graphically-oriented interface, and most of the normal sequencer editing features you would expect. It also allows you to make your edits while a section is looping (to hear the changes at once), has a number of "humanising" editing commands to add feel to your work, and has a few algorithmic composition tools thrown in to boot. It's also impossible to describe all it can do in under four thousand words – the friendly-but-to-the-point manual is over 150 pages long and raises more questions than it answers.

The Whirlwind Tour

REALTIME IS A GEM-style Atari ST application that comes on a copy-protected disk (send off your warranty card and you get a backup plus hard disk installs). As mentioned, the program is graphically oriented. You can choose several ways to display notes, with the most common being a little head (whose shape gives you a rough idea of the velocity), followed by the note number and a grey bar denoting the length. Percussion tracks have just the head (you can define if a track is a percussion or "synth" track – see below). One continuous controller of your choice can also be displayed (graphically) per track. You can define the display resolution, and either manually scroll across your work or have RealTime do it while running. RealTime also does many things automatically, such as opening a new track as soon as you start recording. All in all, very friendly.

A Section is the current fragment of music you're working on. It can have up to 999 bars (with a wide range of time signatures) and up to 256 Tracks. Any track can be muted or "locked" (protected from accidental recording or editing). Sections can be strung together and looped into Songs. A Song may also include another song, and a standard MIDI file can play back in parallel with a Song. You can take a "Movie" of a Section or Song, save that as a MIDI file, re-open it as a new Section (all the MIDI channels will sort themselves out into the appropriate Tracks), and record over it if you so desire. RealTime also makes it easy to save or load individual sections or the entire work in progress, and contains all the usual cut, copy, paste, merge and shift functions you would expect.

RealTime loops in record mode. You can auto-correct before or after recording, and looped recording can add to or replace what was there previously. Resolution is 192ppqn. It will wait for you to play something to start recording, or start off immediately upon you telling it to do

so (by the way, you can set up specific MIDI controllers and notes to remote-control RealTime's transport and tempo). RealTime syncs to MIDI clock (including song position pointer), MIDI Time Code, or Dr T's Phantom (it can also run by itself). When running by itself or against SMPTE, you can set up and graphically edit a tempo map of speed variations. Individual tracks within a Section can loop independently, or the whole Section can loop in sync.

Graphic editing includes a number of tools which are only ever a pair of mouse clicks away. The first is Striker – this is for painting in specific notes in specific places (RealTime makes a graphic and functional distinction between performed and painted events). You can position the tool and play the desired note and/or velocity over MIDI, or type in the note value or "step" in a table of pitches. The velocity and duration of the notes you strike in can also be selected by clicking on one of the five preset velocity and articulation palettes. The values each of these icons represent may be edited elsewhere. The sixth icon to the right of each row represents a totally random number.

The monkey wrench tool is my favourite, and is for adjusting notes already recorded – clicking and dragging edits a note's pitch, velocity, and duration in fairly intuitive ways. Other tools include an eraser for blotting out mistakes, a rest, a loop marker, regional editing and adjusting an event's position in time. When editing continuous data, the striker, wrench, loop tool, and rest tool turn into crosshairs for reshaping the data (the others work as you would expect). By the way, there's also a menu command for thinning controller data in a selected region.

While moving around inside a section's workspace, crosshairs show you what time division and Track you're on (the display resolution autocorrects your edits – to tweak the time of an event just a little, you need a very fine display resolution); on the upper left line of the section window are numbers that show you the pitch, velocity, and duration of the note most recently selected. Your current "time" is also always displayed. You'll give your mouse hand a workout, but I prefer graphic editing to retyping numbers in an event list – particularly since the section keeps playing while you edit it.

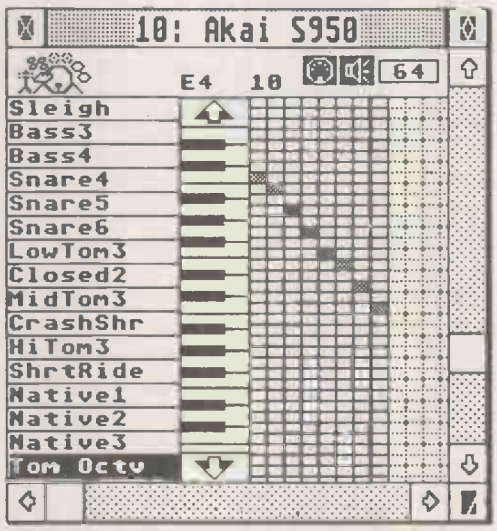
For those who prefer a more numerical form of editing, there's "smart" editing with the Edit Transforms. You can choose the type of event you're editing (performed notes, painted notes, and all the various controllers), their pitch/value range, velocity and duration (in the case of notes), and where they fall in time. RealTime will then take this and convert it into the event type (notes must remain notes), change their values (set them to an absolute value, add or subtract a fixed amount, quantise their value, or scale them by a percentage), and quantise them. This covers about every change-value type of edit, although it means you have to go through the whole process to perform relatively simple edits. And no, SysEx recording or editing is not supported (although Intelligent are looking into it).

Speaking of transposition, you can temporarily transpose a Track within a Section. You can also shift it in time or make it for a slow sampler or synth. This is done in what Intelligent term a "View". A View is what type of information is currently being displayed for the Tracks in the current Section. You have eight Views to choose from, the most common being the Main (velocity/pitch/duration) view. Pitch and Time views also allow humanisation of data; the Velocity and Articulation views allow you to customise the values represented by the icons used for hand-painted notes. The Velocity and Articulation percentages are for blurring the strengths and lengths of all notes; Bond and Fills are algorithmic-style functions. Finally, the MIDI view allows you to set the channel, default patch number, and initial MIDI volume level for each Track.

Devices

DEVICES ARE ONE feature of RealTime that looks to be a clean, simple, old fashioned "good idea". In reality this turns out to not only be the feature of the program with the most potential, but also potentially the most frustrating aspect of the whole program.

The basic concept is simple – for each of the 16 MIDI channels, you can create a "device". Not only can you name this device (so that the name of, say, the synthesiser on that channel always automatically appears as the track's name), you can state if it's a drum machine or a keyboard



device. This affects how the events for that device are displayed in RealTime's Main view.

If it's a drum machine, you can create sub-devices for individual sounds and assign them specific MIDI key numbers – the snare always comes in on C3 and so on. You can paint in a drum pattern with the Striker without having to worry about what MIDI note the sound is assigned to. Better than that, when you record from a drum machine that has a properly-built device, it will automatically open and fill Tracks labelled with the appropriate names for each sound. (If a note comes in that hasn't been assigned, a blank sub-device is created, Track opened, and unassigned note painted in.

These sub-devices don't have to be restricted to just one MIDI key – and this is where the fun (and frustrations) come in. Along with a MIDI note number, each mapping for a sub-device has a "step" number. For a sampler with a drum set spread out across the keyboard, you can define the (for the sake of argument) octave that the snare is spread out over as 12 different steps. When you record, the step number appears as part of the note's definition (as opposed to an "absolute" pitch, such as C3). If you randomise the pitch of something recorded as a step pitch, only pitches with steps assigned to them are legal – in other words, you don't have to worry about a random pitch playing out of range and triggering a kick drum by mistake.

"RealTime makes it easy to save or load individual sections or the complete work, and contains all the editing functions you would expect."

The steps can be pitches in a melody for a keyboard-style device. Or notes can be piled up on a Step, and each Step can be a chord – all handy for those who prefer to paint in their notes, or want to use the algorithmic/random facilities in RealTime to vary a progression. These ►

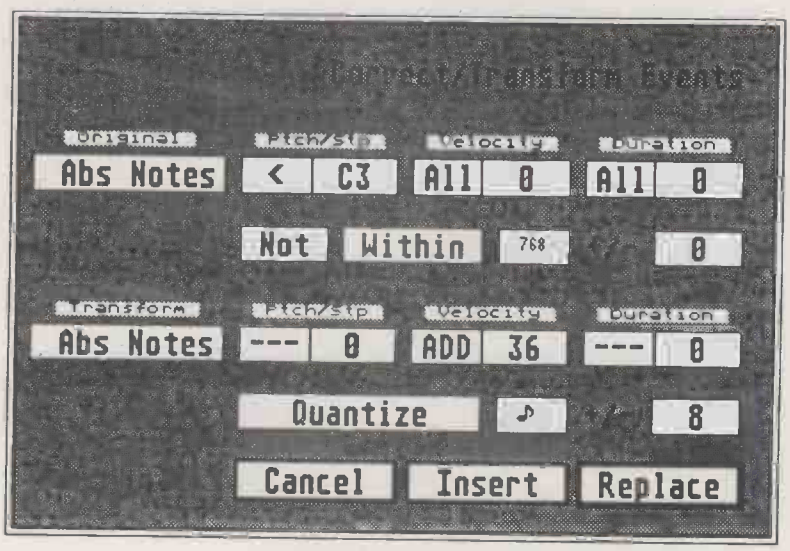
► mappings get remembered per Track, and can be edited or swapped with others after the fact.

Problems? If you define a keyboard sub-device with steps and record the track via MIDI, the Step numbers won't be entered into the Track – just the absolute pitches. That throws the full marriage of MIDI entry and algorithmic variation out the window. They'll record as Steps if you call it a "drum" sub-device, but then they aren't displayed or treated as real notes with durations and other note-like trappings. This prejudice against those who would prefer to play a normal instrument than enter everything at a computer is common to the computer music crowd, and one of the things that makes many people computer-shy in the first place.

Human Touches

AS ALREADY STATED, RealTime will "blur" what you've entered into it, as opposed to replaying it with computer precision. This goes a *long* way towards making your one-bar bassline hold up for 137 looped repetitions (I don't care how clever the notes are, repetition's repetition). You can enter a plus/minus range for velocity, pitch, duration ("articulation"), and timing – or "Time Deviation". There are no time-variable templates – you can't hold downbeats steady and vary the notes in between, or set patterns for variation of events over the course of a bar – but it still helps loosen things up quite a bit. Blurring pitch can be disastrous, but when used to play back a percussion sample (with the legal notes bounded by the Track's device range), you can have fun with conga and other ethnic-style percussion lines.

Apart from blurring occurrences of notes, you can also arrange to have them not appear, or scramble their order. You can set a percentage probability that successive notes will or will not play. Again, this is useful for percussion (for thinning out overly-busy percussion lines, and making them sound different on each pass), or for "bonded" tracks (see below). If you entered notes with the Striker, and told them to play the notes in a Device in order, you can determine how often that order gets scrambled. Even loop points can have probabilities – a looped bassline or tom beat may occasionally open up into a fill or variation on the theme. All of these processes are fun, and don't take too much mental involvement (with the exception of scrambling the order of notes) to experiment with and reap the rewards from.



Time to look at Track Bondage – give Intelligent credit for their imagination. Here you can assign a Track to not play its own notes, but the notes of another Track. Simple layering? Not when you take time and pitch shifts and the ability to only play some of the notes into account. During my very first session with RealTime, I spent about a half hour getting a bassline monkey-wrenched into shape (concentrating on its feel), and then bonded a vocal patch to it. I set it a little bit ahead of time (to compensate for its slow attack, and to lead the bassline a little), transposed it an octave above the bassline, and had it play just 20% of the notes – instant accompaniment. And believe me, I wouldn't have thought of playing that.

Now for some real fun – Fills. RealTime will create extra notes in between the ones you've already recorded. You can set a percentage for how often they happen, a time division for how many notes the program tries to slot in, which Track's sounds are used to perform the fills and other rules concerning their timing constraints. In its simplest mode, RealTime looks at two successive notes, and tries to repeat the first note "x" number of times between its original occurrence and the next note. (Unless you create a "step" note with a device, then the program will pick a random step for the fill – fine for percussion, but often senseless for melodic work). For example, if you have a snare beat on half notes, and "x" (the Fill time divider) set to two, RealTime will occasionally put snare hits on the quarter notes in between. It'll also shorten the duration of the first occurrence of the note, so it won't overlap with the fill note. Sound over-simplistic? Try it.

Another odd feature of RealTime is its ability to run another GEM application simultaneously – and control RealTime's transport while its desk accessory ("DA") is open in that other application. RealTime won't let you record while in another application; it'll either ignore you or bomb (which it did to me while in WordWriter, a popular and common ST word processor). Marrying RealTime with even a basic word processor would be nice, because there's no "notepad" area for reminding yourself which sampler disk to load or how to set up the knobs on your mixer. It's basically for playing your own background music while muddling about in another application.

On the subject of bombs, RealTime isn't the most bulletproof application I've come across. The above bomb is the only out-and-out crash I've "legally" encountered; I've also had a handful of display bugs, some data got trashed when I overfilled a disk, and there have been other minor head-scratchers. On the other hand, Intelligent Music seem genuinely eager to resolve anomalies as well as add features.

Verdict

I'M NOT 100% in love with RealTime. The sketchy manual (credit where credit is due: the tutorial is good . . .) means you'll have to spend a(nother) month of experimenting. About half of the program (fortunately, the half I use 90% of the time) is intuitive but the rest requires use of the manual and hidden-function chart. The rough edges need to get sanded off, and Devices need to offer to keyboardists what they offer hand-painters of notes.

After extensive talks with Eric Ameres (RealTime's creator), I feel confident that the rough edges are going to be sanded off, and my current reservations cured – so much so, I'm planning on it being the main program in my setup. For people like me who are better at muddling than premeditation when it comes to making music, RealTime is a gift from above. After nearly four years of muddling and being scared off by big sequencers and having to do everything myself, I'm finally recording music again. Thanks, Intelligent Music. ■

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COMPUTER NEWS!

Ever fancied a computer based sequencer but couldn't afford it? For a limited period, we are giving away a Steinberg Pro 12 (the ½ size version) with every Atari 1040 absolutely free! At only £499 + VAT this has to be worth looking at. We also have some demonstration 1040 + mons at £425 + VAT (new computer + mon + pro24/C-Lab is £675 + VAT)

THATCHED COTTAGE AUDIO SERVICE

At our fully equipped in-house service centre we can service all types of equipment (esp. 8-16 tracks) Every reputable audio dealer should have one on site (don't let anyone tell you any different). Believe it or not, some retailers actually sell complex electronic equipment from their front room or garage (nothing wrong with that of course - we all had to start somewhere - when you are successful though, you outgrow it pretty quickly!) It does though tend to suggest a lack of back up facilities. So if your multitrack needs a service or the heads looking at give us a call before its too late.

For those of you who are seriously considering starting a commercial studio we've come up with three packages, each containing everything you will need for your first paying session, from the Multi-track Machine right through to DI Boxes and Cables. The price of the 8 Track System is £4,300 + VAT, the 16 Track is £7,800 + VAT and the 24 Track is £15,750 + VAT. At Thatched Cottage we proved it *could* be done, and we have helped many new studios to open and start making money — our experience could help you. Give me a ring and have a chat — what have you got to lose? Plus: FREE Thatched Cottage Recording School Course to package buyers!!

HOT NEWS!

The new Fostex Portastudio (X26) and 8 track (R8) from Fostex are in stock and destined to be world beaters. Full details in the fax pack and news letter.

We still have some Yamaha MT2X 6 channel, double speed, super porta studios available - great value £390 + VAT

Yamaha SPX1000 mind blowing multi effect unit, now in stock £868 plus VAT!

Fancy a 32 input 16 monitor consol for under £1500 + VAT? Check out the astonishing new Studiomaster console! Call for information

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WE HAVE LAUNCHED A QUARTERLY FULL COLOUR MAGAZINE FULL OF NEWS, VIEWS, RECORDING ARTICLES AND DETAILS OF OUR BARGAINS. WRITE OR TELEPHONE FOR YOUR FREE COPY.

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Telephone (0223) 207979 VISA

Thatched Cottage Audio, North Road, Wendy, Near Royston, Herts.

SELL IT FOR NOTHING

with a free classified ad in Music Technology

MUSIC TECHNOLOGY's free classified section is now the biggest of its kind in the business. Every month, we carry more ads for synthesisers, samplers, computers, signal processing gear and assorted other goodies than any other monthly magazine. So when musicians and studio engineers are on the lookout for some extra gear to update their line-up, they turn to these pages *first*.

If you're a private seller, advertising in the back of MUSIC TECHNOLOGY really couldn't be simpler. And if you're searching for a specific piece of equipment or looking for other musicians to fill a gap in your band, we can help out there, too.

Just fill in the form at the end of this section, indicate which sub-section you'd like your ad to appear in, and send it to us by the date specified. We'll do the rest – and it'll cost you no more than the price of a postage stamp.

If you buy and sell musical equipment as part of a business, you'll have to use the regular classified section on the last page. And we regret we can't answer any queries regarding free classifieds published in MUSIC TECHNOLOGY.

Keyboards

CASIO CZ1 + cart, mint, £550; HT700, £125; DX7, backlit, supermax update, £700 ono. Tel: 061-620 0058.

CASIO CZ1, boxed, immac cond with stand and sustain pedal, £450. Tel: (0533) 606038 (Leics).

CASIO CZ1000 polysynth, perfect cond, boxed, manuals, etc. Tel: (0279) 54338.

CASIO CZ1000, home use only, boxed, manuals, £200, buyer collects. Tel: Crewe (0270) 874469.

CASIO CZ230S, £150; Korg SQ8 seq, £80; Marshall 2X8 cab, new, £90. Tel: (0273) 493659.

CASIO CZ230S, £155; Yamaha FB01, £120; Yamaha KM802 mixer, £160; SZ1, £95. Tel: Sussex (0273) 493659.

CASIO CZ230S MIDI synth with built-in drum machine and sequencer, immac, £139. Tel: (0483) 33605.

CASIO CZ230S, psu, perfect, £160; Spectrum computer, microdrive, Cheetah MIDI interface/sequencer, £120. Tel: (0332) 702417, eves.

CASIO CZ3000, CZ101, Boss RRV10 reverb, KMS30 sync box, all boxed. Also TR808, good cond, must sell. Dave, Tel: (0758) 613721.

CASIO CZ3000, immac cond, will deliver, £300 ono. Mike, Tel: (0752) 269639, eves.

CASIO CZ3000, £300; Roland MT32, £280; Yamaha QX5, £150, all vgc, offers accepted. Tel: (0733) 321726.

CASIO CZ5000, case, RAM, cartridge, multitimbral, sequencer, vgc, £480. Tim, Tel: Bagshot (0276) 74763.

CASIO CZ5000, built-in 8-track sequencer, multitimbral, manuals, £375 ono. Tel: Medway (0634) 722961, eves.

CASIO HZ600, fully programmable synth/MIDI controller, £150 ono. Tel: (0258) 72216.

CHALLEN GRAND PIANO, excellent tone and action, £1900, or swap for quality keyboard/sampler. Tel: 01-997 2179.

CHEETAH MK5, MIDI master kbd + psu, vgc, £60. Tel: Windsor (0753) 867552, after 7pm.

CHEETAH MK7VA plus manuals and power supply, three months old, upgrading. Simon, Tel: (06633) 2827.

CRUMAR BABY GRAND piano, new key contacts, home use, fully polyphonic, lovely sounds, £300 ono. Tel: (0430) 422700.

ELKA OMB3 expander plus accomp. rhythm, as new, £300. Tel: 061-998 3494.

ENSONIQ ESQ1, cartridges, hard case £685; Yamaha TX81Z, £245; AHB System 8, loom, £730. Tel: (0424) 218711.

ENSONIQ ESQ1, boxed, sequencer expansion ESX1, £550; RX17, boxed, £130. Tel: (0442) 53095.

ENSONIQ ESQ1 V3.5, mint, can deliver, £750 or p/x Kawai K5. James, Tel: (0329) 833576.

ENSONIQ ESQ1 (expanded), £750; Porta 2, TR505, all pristine, offers? Chris, Tel: 01-987 0389.

ENSONIQ ESQ1, £750; Roland Juno 106, £350, both including flight cases; 15" bass speaker, £80. David, Tel: 061-705 2534.

ENSONIQ ESQ1, perfect cond, £650 ono, will deliver reasonable distance. Tel: Reading (0734) 664043, eves.

FENDER RHODES 73 MkII and Roland HP70 touch sens pianos, superb cond, £280 ono each. Tel: (04446) 43410.

FENDER RHODES Stage 73 electric piano, £150. Martin, Tel: (0785) 823555.

HOHNER DIGITAL PIANO DPI/R, £750 (RRP £2250), any trial. Tel: 051-334 8367 (Wirral).

JULAND ROPITER 9, classic, nice colour, long legs, one confused lady owner. Quick sale will help clear freezer. Deirdre, Tel: (0286) 870120.

JVC STEREO electric organ, ten sounds, ten rhythms with stand, £250 ono. Tel: Thornbury (0454) 414432.

KAWAI K1, Alesis MMT8, £775 ono, brand new, manuals, etc, stand and wiring included. Paul, Tel: Oxford (0865) 68430, eves and weekends.

KAWAI K5 keyboard, £590; Yamaha TX802, £795, both home use and mint. Tel: Carnoustie 54780.

KAWAI K5M, unused, still in box, £550 ono. Tel: (0273) 695336, eves.

KORG DW6000, £290; Roland Juno 6, £155. Please, somebody buy them! Roz, Tel: (0742) 630838.

KORG DV800, amazing old stereo monster, "the softcell synth", £110 ono. Dave Wilder, Tel: 01-340 6593.

KORG EX800, Simmons FM expander, Cheetah MK5, £280 the lot. Tel: Huddersfield (0484) 602193.

KORG EX8000, as new, home use only, £450. Tel: 01-969 9660.

KORG EX8000, boxed, as new, £395; Korg Poly 800 plus case, £260. Darren, Tel: 01-648 8713.

KORG M1, 2 mths old, boxed, incl switches and damper pedal, £1350. Tel: (0443) 685786.

KORG POLYSIX, £195; Mellotron, £100; ARP Quartet, £75; Cavendish portable 2, £150. Tel: Torquay (0803) 34878.

KORG POLY 61, £255; Roland 505, £165, both mint. Dave, Tel: (0299) 404197, after 5pm.

KORG POLY 61, £255; Roland TR505, £165, both mint. Dave, Tel: Bewdley (0299) 404197, after 5pm.

KORG POLY 800, mint, boxed, £180 ono. Shure SM10A, never gigged, £80 ono. Tel: (04917) 242.

KORG POLY 800, instructions, box, adaptor included, good cond, £250 ono. Francis, Tel: (0724) 852171.

KORG POLY 800II, £300; DX27, £300; RX21, £200; Dynamix 12:2, £300 or £950 the lot, excellent cond. Paul, Tel: (0280) 702189, eves.

KORG POLY 800, boxed, exc cond, £155 ono; Roland SH101, boxed, exc cond, £115 ono. Tel: (0272) 720302.

MIDI FOR SALE. You can have it all, it's ruining my life. Free to first genuine caller. The Man in the red hat, Tel: (0279) 8060.

MOOG PRODIGY, good cond, £110 ono. Tel. Guildford (0483) 502370.

OBERHEIM MATRIX 1000 multitimbral module, 1000 sounds, new, £350 ono. Write to Chris, 2 Stirling Road, Woodgreen, N22.

OBERHEIM OB1 duophonic (sequencer, 2XSEM, etc), £250; Korg Mono/Poly, £170. Grant, Tel: (0597) 2138.

ROLAND ALPHA JUNO1 synth, superb sounds, easy edit + sustain pedal, £295. Tel: Beds (0525) 714984.

ROLAND D10, as new, boxed, 1 RAM, 1 ROM card, £740; CZ1000, £250 ono. Tel: 01-654 6873.

ROLAND D20, £900; Kawai K5M, £800. Both exc cond, swaps? Tel: (0246) 200847.

ROLAND D20 + stand, home use only, immac, £945. Tel: (0794) 512164.

ROLAND D20, ungigged, f/case and extra disks, surplus to requirements, offers? Tony, Tel: (0994) 230807 or 230175.

ROLAND D20 SYNTHESISER, mint condition, boxed and extra sounds, £980. Paul, Tel: 01-886 0696, after 7pm.

ROLAND D50, home use only, £950 ono. Tel: Bristol (0454) 775827.

ROLAND D50 + case and 500 sounds, £800; CP70 electric grand, exc cond, never gigged, £700. Richard, Tel: 01-731 7337.

ROLAND D50 + case + stand + manuals + music, Toa KD1 combo, TR505 d/machine, 3 mths old, £1450. Tel: (070 559) 1477.

ROLAND D50, Roland Juno II, Roland TR505, 6 months old, all boxed, immaculate. Tel: (0473) 686720.

ROLAND D110, £450; Roland PR100 seq, £280; Boss BX800 mixer, £150. All boxed, immac. Tel: (072) 687661.

ROLAND D110, £450; Seck 12:2, £350; Midiverb 2, £200; Atari 520 STFM, £250; Juno 106, £350; Julian, Tel: (0254) 382913.

ROLAND E20 kbd, brand new, boxed, bargain, £800. Tel: Blackpool 37057.

ROLAND E20 synth, boxed, manual, mint cond, 5 mths old, £900 ono. Tel: 01-755 2720.

ROLAND EM101, preset MIDI expander, £60; 2 Accessit companders, £10 each. Tel: (0532) 400337.

ROLAND ALPHA JUNO 1 with stand, immac cond, home use, £350. Tony, Tel: Shrewsbury 67551.

ROLAND JUNO 106, MIDI, real controls, vgc, £350. Paul, Tel: (0784) 255986, Ashford, Middx.

ROLAND JUNO 106, cased, £375; CZ1000, boxed, £375, leads etc, all immac cond. Gavin, Tel: 041-339 1452, Mon-Fri, after 6pm.

ROLAND JUNO 60, good cond, boxed, manual, £275 ono. Tel: (0438) 351557, after 6pm.

ROLAND JUPITER 6, extra voices, flightcase, chorus, £600. Mark, Tel: (0203) 365756, after 6pm.

ROLAND JUPITER 8 with f/case, superb! £700. Tel: (0992) 27260.

ROLAND-JX3P. Swap for MT32? Gordon, Tel: 031-667 1971, ext 3027.

ROLAND JX8P/PG800, stand, £650; Yamaha FB01 multitimbral sound generator £150, all ono's. Tel: 01-458 8242.

ROLAND MKS 70 (JX10 module), classic, analogue, £760, or p/x Juno 106/60, Tel: Yeovil (093 586) 2573.

ROLAND MODULAR SYSTEM with MPU-101 MIDI/CV converter, unique sounds, £500 ono. Tel: (0203) 544439.

ROLAND MT32, £300; RE150, £250; Rackmount f/case, 8U high with wheels, £130. Tel: 01-698 1025.

ROLAND MT32, mint cond, home use only, £299. Tel: (0933) 50821, Rushden, Northants.

ROLAND MT32, immac, £300; Brand new Fostex 160 4-track, unused, £350. Tel: (0384) 79820.

ROLAND MT32 with Cheetah MIDI kbd + editing s/ware + Steinberg Pro 24, £400. Tel: (029 383) 534.

ROLAND MT32, home use only, boxed, exc cond, bargain at £245. Tel: 01-639 5717.

ROLAND PG1000, immaculate, boxed, reluctant sale, £250. Tel:(0227) 728336, days.

ROLAND SH3A analogue monosynth, vgc, £99. Tel: (0933) 50821.

ROLAND SH101, modulation grip, strap, carry bag, £100. Tim, Tel: Bagshot (0276) 74763.

ROLAND SH101, boxed, manual, Boss psu, £100; Solina string ensemble, case, pedal, £60. Tel: 01-291 1001.

ROLAND SH101, £100; Pianet T £80; Laney 50W combo, 2X12 cab, piezo cab, offers. Glen, Tel: Bagshot (0276) 71673.

ROLAND SH101 with manual and psu, £95. Tel: Southend (0702) 75257, after 6pm.

ROLAND SH101, built-in sequencer, ideal for today's sound. Tel: (0784) 255986, Heathrow.

ROLAND SUPER JX10 megasynth plus Cheetah MK7VA mother kbd, £825 and £290, free delivery. Andy, Tel: (0429) 276301.

SEQUENTIAL PROPHET VS, studio use only, £1050 or swap D50 or OB8. Tel: (0203) 520020.

SIEL DK80 polysynth, touch sens, MIDI, £220; JHS delay/reverb, £80. Tel: (0299) 400293.

SIEL DK80, touch-sens poly, £295; Yamaha CX5, large keyboard, 8-track sequencer, £200. Tel: (0924) 364703.

SIEL DK80 touch-sens polysynth, ROM/RAM cartridges, good master keyboard, £250. Mike, Tel: (0582) 664377 eves.

SIMMONDS SDE EXPANDER, FM, synthesis, 6-note poly, velocity sens, boxed, barely used, £150. Tel: 061-256 2357.

SOLINA STRING MACHINE, rather tatty but still sounds good, £90. Tel: (09277) 66664.

TECHNICS SXK200, stereo keyboard £165. Tel: (09544) 8989 days, (09544) 232 eves.

SWAP YAMAHA PSR70 for Atari 1040ST + hi-res mono monitor. Shaun, Tel: (0405) 768391.

YAMAHA CS60 POLYSYNTH, classic analogue synth, ringmod, immac, £250 ono. Tel: (0268) 734416.

YAMAHA CS70M, analogue megasynth, bargain at £375; ARP electronic piano, wooden keys, only £250. Tel: (0895) 677634.

YAMAHA CS80, good cond but tuning problems. Buyer collects, £400 ono. Chris, Tel: 01-684 2853, eves.

YAMAHA DSR2000 SYNTH, touch-sens, MIDI keyboard, rhythm, sequencer, boxed, £600. Tel: (0865) 510723, Oxford.

YAMAHA DX5, boxed and as new £995, also QX7 £99. Tel: Blackburn (0254) 47199.

YAMAHA DX7, 2 ROMs, manual, still boxed, good cond, £550. Tel: Bath (0225) 859592.

YAMAHA DX7, 3 ROMs, Dr T's editor plus 1000 sounds, boxed, immac, as new, £595. Tel: (0746) 766897.

YAMAHA DX7, exc cond, f/case, cartridges, manual, hardly used, emigrating, £600. Tel: 061-761 5704, eves.

YAMAHA DX7, mint, 700 extra sounds, ROMs, £680. Tel: Byfleet (09323) 53430.

YAMAHA DX7, pristine, ungigged, 2 ROMs, sustain, £650. Colin Tel: (0273) 833187.

YAMAHA DX7 MKI, absolutely mint cond with case, £500. Tel: 01-947 4864.

YAMAHA DX7 IIFD, mint cond, still boxed with extras, £1050. Rafael, Tel: Sheffield (0909) 487109.

YAMAHA DX9, £300 or best offer. James, Tel: (0609) 2631.

YAMAHA DX9, MIDI synth, ideal intro to FM synthesis, manual, £225 ono. Warren, Tel: 01-593 2019.

YAMAHA DX21, £295; Yamaha QX21 seq, £100. Tel: (0244) 48810.

YAMAHA DX21, f/case, pedals, mic stand, manuals, £350; Boss DR220A, cased, boxed, manuals, £80. Tel: (0925) 814385.

YAMAHA DX21, vgc, 300 extra sounds, breath control, £350 ono. Tel: (0432) 58973, Hereford.

YAMAHA DX21, boxed, manuals, home use, will deliver anywhere, exc cond, record and MIDI facility. £325. Tel: (0202) 33171.

YAMAHA PSR70 programmable accompaniment, PCM drums, MIDI, boxed, exc cond, £300. Jim, Tel: (0582) 664946.

YAMAHA PSR70, £470; DX7, £500; TX7, £200; Roland Juno II, £500. Tel: (0923) 672120.

YAMAHA portable YC-45D bass pedals, £450 ono. Leslie. Tel: (0742) 585253, eves.

YAMAHA PSR22, 256 voices, digital synth, auto accomp custom drummer with stand, £199. Tel: (0276) 353386.

YAMAHA SHS10 FM synth, MIDI, vgc, free video + strap, £70. Tel: 061-301 2661.

YAMAHA TX802, perfect, boxed, £850. Andy, Tel: 01-250 1887, X318, office hrs.

YAMAHA TX81Z, boxed, manual, cassette lead, excellent cond, what more can I say? £265. Tel: (03543) 5239, eves or weekends.

YAMAHA TX81Z, boxed, new £275 ono or p/exchange KIM, KIR or D110 plus cash. Tel: (0324) 33194.

Sampling

AKAI S700, as new, 20 disks, £450. Tel: Wirksworth (062 982) 4213 (Derbyshire).

AKAI S900, perfect cond, disks, boxed, etc, £800. Dave, Tel: York (0904) 35453, eves.

AKAI S950S don't have velocity XFade or decent autoloops, my S900 2.1 (including library) does. Tel: (025 76) 2609.

WHY SELL IT then? (Ed).

AKAI S1000, only £2270; Casio FZ10M, £980, plus lots more, all ono. Tel: (0222) 611463.

AKAI S7000 with expansion board, multi-out lead and many disks, £535. Tel: Walsall 643255.

AKAI X7000, mint cond, hardly used, with 10 disks, £700 ono, buyer collects. Tel: 01-959 0620.

AKAI X7000, as new, boxed, guaranteed with disks, quick sale, £600 ono. Tel: 01-883 5051.

CASIO FZ1, £975; MT32, £300. Both under guarantee, home use only. Tel: (0223) 246096.

CASIO FZ1, 2Meg, boxed, £795; REX50, boxed, £200; Desctech 12:2 mixer, immac, £230. Tel: (0737) 351794.

CASIO FZ1, perfect, boxed, plus disks, £900. Tel: Bedford (0234) 45920.

CASIO FZ1, £950, still boxed, also Sony 2HD blanks, £5 each. Tel: Edinburgh 343 6665.

ENSONIQ MIRAGE, £400; Casio CZ5000, £250 new condition. Tel: Berkhamsted (0442) 866741.

ENSONIQ EPS with disks and advanced applications guide. 3mths old, £1400 ono. Tel: David (0344) 429188, after 6pm.

ENSONIQ MIRAGE DSK + disk library, £700. Tel: (020 488) 2871 after 6.30pm.

ENSONIQ MIRAGE plus large original library, manuals, etc, exc cond, £675 ono. Steve, Tel: (024 027) 310, anytime.

E-MU EMULATOR II with SMPTE and library, £1500 ono. Tel: 01-286 2101 or 01-286 9532.

E-MU EMULATOR II with massive library, latest v3.1 Mac update, SMPTE, etc, flightcased, offers? Also Simmons SPM 8:2, £200. Tel: (03917) 2937.

KORG DSSI, home use only, f/case, £1095. Tel: 01-851 8113.

KORG DSSI, as new, c/w flight case, pedals, £850 ono or swap. Tel: Stubbington (0329) 668210.

KORG DSSI, boxed, AI cond, £1050 ono. Sean, Tel: 01-366 1480, 6.30pm.

ROLAND MKS100 sampler, 30 disks, £350; ART DR2A reverb, £125; Switchcraft patchbay, offers. Pete, Tel: 01-367 1720.

ROLAND MKS100 12-bit sampler, £350; SCI Drumtraks, chips, needs attention, £200, Tel: 01-367 1720.

ROLAND S10 sampler, immac cond plus top ten D50 sounds, £600 ono. Steve, Tel: (0933) 56800.

ROLAND S10 sampler with 30 disks, under warranty. Tel: (0865) 723829.

ROLAND S50, immac, monitor, disk library, £1250. Tel: 091-272 3755, eves.

ROLAND S50, many disks, boxed, perfect, £1100. Tel: Chesterfield (0246) 852023.

ROLAND S50, as new, mint cond, disks, manual, stand, £1100 ono. Tel: 01-693 7773.

ROLAND S330 sampler, monitor, mouse, lots of disks, sells for best offer. Tel: (0272) 421313.

ROLAND U110 sample player, new, £475. Tel: (0440) 707610.

SEQUENTIAL PROPHET 2000 sampler, analogue section, velocity, £750. Tel: 01-249 3727.

SEQUENTIAL PROPHET 2000 plus library, vgc, full-bodied sounds, easy to use. Matt, Tel: 01-458 9236.

SEQUENTIAL STUDIO 440 drums/sampler/sequencer, £2250 ono; Emax samples (50+ disks), £4 each. Steve, Tel: 061-336 0366.

Sequencers

ALESIS MMT8, cassette player, £210; Korg RAMs, Roland RE201, £200. Tim, Tel: 01-354 1678.

ROLAND MC4B, £119; DX100, £189; RX21, £95, Wanted: Poly 800, TR505, cheap. Tel: (0525) 716577.

ROLAND MCS00 and disks, perfect cond, £500. Tel: Reading (0734) 664043, eves. Will deliver.

YAMAHA QX1 sequencer, 30,000-note storage, immac, £449 ono; Roland MSQ700, as new, £135 ono. Tel: 091-565 4334.

YAMAHA QX3, £600; Yamaha RX5, £600, brand new. Maxie, Tel: 01-637 1333.

Drums

ALESIS HR16, as new, boxed with manual and psu, £295. Tel: Southend (0702) 75257, after 6pm.

ALESIS HR16, £285 ono; MMT8, £185 ono, or both for £450. Both new, and boxed with guarantee. Tel: (0909) 566695.

BOSS DR110 Dr Rhythm Graphic, fully programmable. Alan, Tel: Selby (0757) 705018.

BOSS DR220E drum machine, programmable, 8 songs, manuals, £65. Martin, Tel: (07292) 2415, daytime only (N Yorks).

CASIO RZ1, including 300+ sample library (E-mu, Fairlight, TR808, etc), £150, p/x TR707 and cash. Tel: (0225) 444285.

CASIO RZ1 drum machine, exc cond, £125 ono. Kathleen Collins, Tel: Castleton 680434.

E-MU DRUMULATOR, £150; TR606, £75, vgc, a réal bargain. Steve, Tel: 091-281 6269 (Newcastle).

KORG DDD1 plus manual, ROM and RAM cards, touch-sens, individual outs, £399 ono. Tel: (0203) 637388.

KORG DDM110, good cond, boxed, manuals, £70. Pete, Tel: (0923) 677360.

KORG DRM1/Dynacord 5-piece MIDI kit complete, as new, cost £1300, now £800. Tel: Watford 243502.

MPC DRUM COMPUTER including flight case, £50; Boss chorus, £25. Tel: 061-620 0058.

OBERHEIM DX drum machine, boxed, mint cond, £250. Tel: Billericay (0277) 630423, eves.

OBERHEIM DX drum machine, MIDI, separate outs, tape sync, individual tuning, bargain, £200. Dean, Tel: (0689) 28055 (Kent).

PEARL ELECTRONIC DRUMS, pads, brain, cymbals, stands, pedals, etc, £550 ono. Tel: 01-848 1318.

ROLAND TR505, vgc, home use only, £149. Tel: (0933) 50821 (Rushden, Northants).

ROLAND TR505, exc cond. £150. James, Tel: (0786) 78655.

ROLAND TR505, separate outs, home use only, very quick sale hence £100. Tel: (0483) 579633, eves.

ROLAND TR505, mint, £150; Alesis Microverb, £100; Frontline X8 stereo mixer, £80. Tel: 01-458 8242.

ROLAND TR606 Drumatix, classic drum machine with so many features not found on today's machines, £75 ono. Robert, Tel: (0272) 732807.

ROLAND TR606 Drumatix, £60; GBS reverb (not working but has XLR leads), £30. Steve, Tel: (0642) 590477.

ROLAND TR727, perfect sond, boxed, manuals, psu, £150 or swap for Yamaha MDF1. Don, Tel: 031-441 3948.

ROLAND TR808, £299; Yamaha R100 digital reverb, £85. Tel: 01-485 7663.

ROLAND TR909 drum machine, £270 ono; Roland MC202, £100 ono. Both £350. Andrew, Tel: (0284) 810524.

ROLAND TR909, ggod cond with manual, £299. Tel: Maidenhead (0628) 25802.

SCI DRUMTRAKS plus 10 sound chips, £200. Tel: Brighton (0273) 414663.

SCI DRUMTRAKS digital drum machine, includes 30 extra sounds, £250. Bruce, Tel: (0532) 780954.

SIMMONS SDS9 BRAIN, £550; Yamaha MT44, £150; Yamaha TX216, £695, offers? Steve, Tel: 061-336 0366.

YAMAHA RX5, mint, boxed, cartridge, £600; X7000, as new, disks, f/cased, £600. Steve, Tel: (0909) 771581, eves.

YAMAHA RX5, exc cond, home use only, one cartridge, £650 ono. Tel: (0302) 832420.

YAMAHA RX5, perfect, flightcased, 4 waveform cartridges, RAM4 storage cartridge, MIDI, cassette leads, manual, psu, £800. Tel: Oxford (0865) 721643.

YAMAHA RX11, boxed with manual, etc, £180; MT32, new cond, £300. Tel: (049 17) 242.

YAMAHA RX11, immac cond, hardly used, box and manuals included, £220. Rob, Tel: 01-300 0827 (Sidcup).

YAMAHA RX11, £180; Boss CE3 chorus, £150; Roland SIP30 bass preamp, £80. Tony, Tel: (0429) 869121

YAMAHA RX17, £150, Yamaha QX21 sequencer, £100, both mint, no offers, cheap enough. Tel: Leeds (0532) 505359.

YAMAHA RX17 drum machine, mint, £170; Cheetah MK5 controller kbd, £65, must sell. Tony, Tel: (0925) 828501.

YAMAHA RX21L, boxed, manuals, psu, absolutely mint, £80 ono. Tel: (0293) 551297.

YAMAHA RX21L (latin) drum machine, £75; Korg Poly 61, bargain, £165. Tel: 01-399 1942.

Computing

AMIGA 500, 120 disks of software, including Dr T's and MIDI interface, joystick, mint cond, boxed, £360 ono. Simon, Tel: (0533) 362625, after 6pm.

AMX MOUSE INTERFACE, Control and Art software, £50, worth £85. Robin, Tel: (0842) 63550.

APPLE IIE, twin drives, monitor, Greengate DS3 sampler, Master Tracks Junior plus samples, £600. James, Tel: (06284) 76184.

ATARI: Microsoft Write, £69; VIP Professional, £59; Database Personal, £35. All brand new, makers box, books. Chris, Tel: (0232) 328269, days.

ATARI 1040STF, mono monitor, Pro24 V3, all as new, £600. Tel: (080 83) 353.

ATARI 1040 STFM, Pro24 V3, Hybrid Arts Master Tracks Pro, MS-write word processor, games, business, MIDI s/ware, hardly used, £650 ono. Robert, Tel: (0272) 732807.

ATARI 1040STFM, mono monitor, 30 disks and box, Joystick, vgc, £500; Pro24, £200; Printer, £100. Tel: (0255) 431079.

ATARI 1040STFM plus Iconix and ESQ editor, £480 ono. Tel: (0926) 336668, after 7pm.

ATARI 520STM, monitor, two drives, £350 of soft/mags, fast basic, Joystick, worth £1000, sell £550 ono. Tel: 061-723 5621.

ATARI ST SOFTWARE: Dr T's KCS Level II, £100; Passport Master Tracks Pro, £100, both new and unused. Tel: (0740) 30001.

BBC EMR MIDITRACK Performer editor and interface, £60. Tel: 061-434 9973.

CHEAP DX7 EDITING using Yamaha's own system, includes computer, module and cartridge, £275. Tel: Exeter 213385.

COMMODORE 64, AL25 MIDI interface, Joreth Music Composer system including Linker, £130. Tel: (0602) 473199.

EMAX SOUNDWORKS editor, £150 ono; Roland MC202 analogue plus sequencer, £120; Drumatix with separate outs, £60 ono. Tel: (0909) 732692.

HYBRID ARTS Master Tracks Junior for the Atari 520ST, £75. Tel: 01-657 6873.

KORG M1 and TX802 ST editors, £30 each. Novaseoni, v. Vergani 9-20092 Cinisello, Milano, Italy.

OPUS DISCOVERY disk drive for Spectrum, mint cond, £80 ono. Robin, Tel: (0847) 63550.

RAM MIDI INTERFACE/Amdrum drum machine package, DCHP 8-tr sequencer, £25 each or p/x QX21. Tel: C/Heath 410853.

RAM MUSIC MACHINE, sampler/MIDI interface for Spectrum, £20. Colin, Tel: Portsmouth 863108.

ROLAND D110 EDITOR/Librarian by Dr T's for Atari, plus 256 sounds, £70. Gary, Tel: (0744) 33574.

SOFTWARE MUSIC editor, Music system for BBC B, half price, £40. Tel: 01-859 3254.

SPECDRUM and four kits, £20; Spectrum 128+2, games, joysticks, £90. Colin, Tel: Portsmouth 863108.

SPECTRUM 48K and games, £40. Anyone interested in swapping SQ80 sounds? Nell, Tel: (0772) 687252.

SPECTRUM 128+2 plus many games and two joysticks, £90. Colin, Tel: Portsmouth 863108.

SPECTRUM plus disk drive, XRI sequencers and editors, £200 the lot. Tom, Tel: (0706) 44410.

STEINBERG ATARI 1040 ST TX81Z Synthworks voice editor, extensive features, hardly used, £80 ono. Peter, Tel: (0434) 604101.

STEINBERG MASTERSCORE, new update, £180; Dr T's sequencer, V1.5, £120. Tel: (0239) 711032.

STEINBERG PRO24 v111, £175 ono. Tel: Portsmouth (0705) 814863, after 6pm.

STEINBERG PRO24 v1, hardly used. Tel: (0239) 86636.

STEINBERG TIMELOCK, SMPTE for Pro24 users, £290. Darren, Tel: 01-648 8713.

SUPERCONDUCTOR ST software, complete, £30. Wanted: FB01 voicing s/ware. Tel: (0905) 60723, anytime.

SUPERCONDUCTOR 16-track sequencer, £30 ono. Tel: Bournemouth (0202) 535150.

YAMAHA CXS, large kbd, DMS sequencer, other software, 600+ voices, immac, £185. Tel: 01-223 8568.

YAMAHA CX5M, large kbd, composing, voicing, MIDI recording s/ware, £220. Nick, Tel: 01-440 7370.

YAMAHA CX5M, voicing, composing software, small kbd and 800 extra voices, £135. Tel: (0795) 536767.

YAMAHA CX5M, SFG05, DMS 16-track, composer, voicing s/ware, boxed, as new, £185. Tel: (0480) 215815.

YAMAHA CX5M, large kbd, voicing, composing, RX editor software, plus RX15, £300. Hugh, Tel: (0734) 599587.

YAMAHA CX5M plus voice library, seq and edit software, voice macro, large keyboard, £180 ono. Tel: (024 027) 310 anytime.

YAMAHA CX5M, kbd, voicing, composing and chord progression software, still boxed, £200. Tel: (0732) 451802.

Recording

AKAI 4000DS open reel tape deck, SOS, exc cond, £49 ono. Steve, Tel: (0782) 262286.

ALESIS MIDIVERB digital reverb, still the budget leader. Bargain, £80 ono. Dave, Tel: (0639) 843372.

ALESIS MIDIVERB, £175; RX21, £100; Peavey Keyboard 100, £160; Pearl drum kit, 9-piece, £375, loadsa bits. Tel: 01-950 0950, X209.

AUDIO TECHNICA Pro 22 mics, four, new, plus stands, £200 ono. Nigel, Tel: 01-363 1965.

BANG AND OLUFSEN reel-to-reel, many features, SOS etc. Offers over £50. Tel: (0772) 687252.

BEL BC3 16-TRACK, noise reduction system. Unused, £350. Alan, Tel: (0603) 592453, 9-5.

BOSS BX8 8-channel mixer, two effects sends, equalisation, LED meters. Brand new, £275. Robert, Tel: (0272) 732807.

BOSS BX800 8:2 mixer, boxed, manual, as new, 2-band EQ, effect send and return, £170. Write: M Senyk, 41 Regent Park Square, Glasgow G41.

CANARY 16:2 DESK, £200. Boss CE300 rack chorus, £90, both vgc. Steve, Tel: 564476 (Teeside).

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FOSTEX 250, vgc, hard case, £250; Boss DM100, £50 Steve, Tel: 01-801 9099 or 01-739 7018.

FOSTEX A8, in need of attention hence £450. Tel: (0273) 605182, Brighton.

FOSTEX X26 4-track, Dolby, equalisation, 6-channel mixer, LED meters, brand new, £275. Tel: Robert (0272) 732807.

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IBANEZ STEREO CHORUS, £50; Steinberg Yamaha RAM (DX7), £35. Tel: 061-620 0058.

KORG 8:2 MIXER, Sharp stereo tape deck, Realistic graphic, 10 bands per channel, boxed, exc cond, offers. Tony, Tel: (0203) 310808.

RSD 38:8, full MIDAS metering/routing, 5 auxiliaries, internal patchbay, flightcase, needs attention, £2500. Tel: 01-515 0200.

SECK 12:2 MIXER. £325: AKG CE5 35EB, £110; Yamaha MZ105EB dynamic mic, £35. Tim, Tel: (061 945) 1811.

TASCAM PORTA ONE, mint cond, £250. Tony, Tel: Shrewsbury 67551.

TASCAM 38, as new, full remote, £1000; Allen and Heath 16:8:2 desk, home use, £900 ono. Tel: (0742) 754914/721123.

TASCAM 144 PORTASTUDIO, perfect cond, £300. Alan, Tel: (0603) 592453, Norwich, 9-5.

TASCAM 234 with remote, £400; TR707, £225; M64C cartridge, MT32. Simon, Tel: (0256) 87294.

TASCAM 244 PORTASTUDIO, boxed with manual, hardly used, £400; M202, boxed, £80. Tel: (0932) 562066.

TASCAM 244 PORTASTUDIO, £400; Roland MT32, £300, both in good cond. Tel: Bath (0255) 859840/448297.

TEAC 144 PORTASTUDIO, recently serviced, £310; MT32, £340, both vgc. Tel: 01-502 3271.

TEAC 2340 4-track, 7.5ips, good cond, £300. Alan, Tel: (0603) 592453, 9-5.

VESTAFIRE MR30, excellent condition, £130; DX100, £130. Kenny, Tel: 041-336) 8461, after 5.30pm.

YAMAHA MT44, with MTR 6/4/2 mixer. Both Immaculate, boxed with manuals, £275. Tel: Leeds (0532) 487698.

YAMAHA MV802 rack mixer, £195; Roland TR505, £125. Tel: (0294) 215529.

YAMAHA REX50, £220; Desctech 12:2 mixer, boxed, £280. Jonathan, Tel: (0737) 351794.

YAMAHA REX50 as new, £200, HH 12:2 mixing desk, new faders, £190. Chris, Tel: Bristol (0272) 775747.

YAMAHA REX50, £225; Ibanez UE405 multi effects, £175; Roland TR505 drum machine, £145. Tel: (0533) 849368.

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Personnel

FREELANCE PROGRAMMERS required. Write with details of experience to PROMUS, Kings House, Langport, Somerset TA10 9ES.

GUITARIST DESPERATELY wanted, New Order, Numan sounds. Enthusiasm and some talent required. Chris, Tel: (0732) 451802.

GUITAR SYNTHIST would like to share ideas, etc with other guitar synthists. Tel: 01-902 2941, after 8.30pm.

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SERVICE ENGINEER/recording musician seeking employment S.E. anything considered. Mac. Tel: (08832) 5842, after 7pm.

16-YEAR OLD seeks studio experience in Stockport area. Andrew, Tel: (0663) 65404.

17-YEAR OLD student seeks part-time studio work around Merseyide. Tel: 051-520 1147.

Misc

A-FRAME STAND, three tiers, immac cond, 18mths old, cost £130, bargain at £70. Sean, Tel: Tadley (07356) 6138.

CASIO MG510 guitar synth, absolutely perfect cond, bargain, £300 ono. Tel: 01-394 0432.

ESQI ROMS: Executive Audio, Valhala, 320 sounds each, £120 the pair. Tel: 01-444 6668.

500W PA, RMS, bass, treble, mid speakers, MTR 16:2 desk, leads, DDL, £800. Tel: 01-366 1480, eves.

KORG 8:2 MIXER, Sharp stereo tape deck, Realistic graphic, 10 bands per channel, boxed exc cond, offers. Tony, Tel: (0203) 310808.

KORG KMS30 MIDI synchroniser and psu, £50. Mike, Tel: 01-691 4400.

MASTER MATRIX MIDI-controlled audio patchbay, 32X24, £280; Tantek sampler/delay with MIDI/CV, £150. Tel: (0438) 350471.

MELOS TAPE ECHO unit with tape cartridges, £30; original 12" Celestions, 2X12" cab, £50. Alan, Tel: Norwich 592453.

NOMAD AXXEMAN guitar processor, chorus overdrive, compression, ADT, inc footswitches, £200. Tel: (0239) 86636.

SFG01 multitimbral sound generator, £30; 2 Rittor ROMs for Yamaha DX7, 128 professional sounds, £20. Yatzek, Tel: 01-874 9957, 4-6pm.

SONY CCD V50E Camcorder, £700 or swap for ESQ1, buyer collects. Tel: (05806) 3946, eves.

360 SYSTEMS MIDIBass, 4 sampled bass guitars, bargain at £175 ono. Tel: (0706) 54138.

Wanted

AKAI S700 with memory upgrade if possible. Cash waiting for right price. Other samplers considered. Tel: (03543) 5239, eves and weekends.

ANY 5-OCTAVE MIDI-equipped keyboard/synth? Mark, Tel: 061-881 9170, after 6pm.

ANYONE LIKE TO swap their DW8000 for my EX8000? (Miss keyboard). Paul, Tel: Preston (0772) 315638.

DX7 MKI ACCESSORIES, ROMs, RAMs, pedals, flight case, books. Steve, Tel: (0734) 668292.

FAULTY OBERHEIM, Memorymoog synths, Electro-Harmonix effects, faulty samplers. Tel: 021-420 3295, eves.

FREUR/UNDERWOOD information, records, tapes. Write to Mike, Flat 2, 237 Radford Road, Hyson Green, Nottingham NG7 5GU.

MIDI-CV CONVERTER, Roland MPU101 or similar, cash waiting for right price. Tel: (03543) 5239, eves and weekends.

DESPERATELY SEEKING ARP Axxe manual (or photocopy). Gill, Tel: (0225) 333448, days.

MIXER WANTED: As many inputs as possible into eight or four. Age immaterial as long as it's clean and quiet. Cash waiting for right desk and price. Tel: (03543) 5239, eves or weekends.

MIXER 8:4:2 approx, digital delay, damaged/faulty units considered. Alan, Tel: Norwich (0603) 592453, 9-5.

ROLAND JUPITER 8 at reasonable price, good cond. Tel: 01-556 9401.

ROLAND SBX10 or Korg KMS30 MIDI to sync converter box wanted urgently. Tel: 01-272 3726.

SCI MULTITRAK, cash waiting. Tel: (0248) 354626.

SCI PRO ONE, cash waiting for reliable machine. Paul, Tel: Lancashire (0942) 816424, eves.

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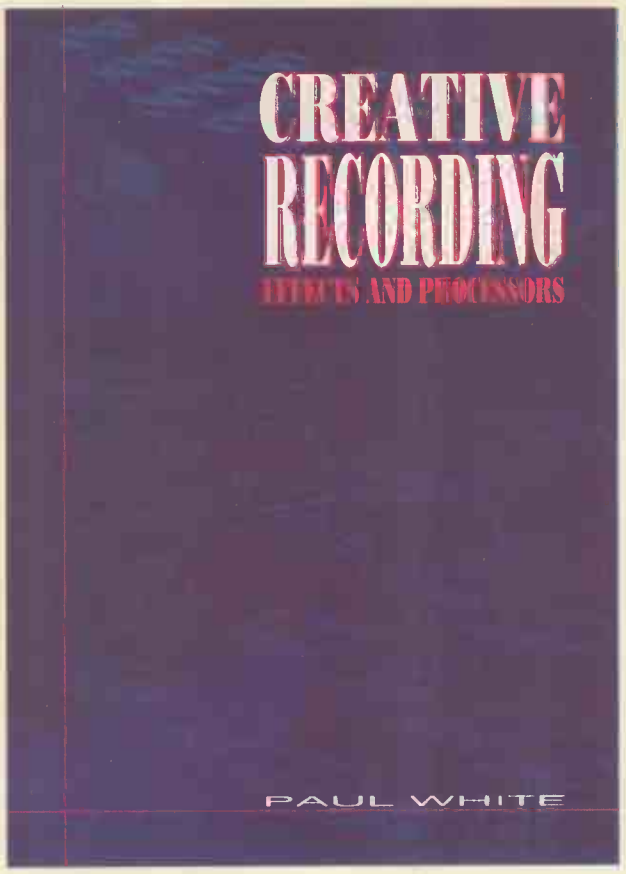

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Power To Perform

The M1 brings a new level of power to live performance with 2 megawords of ROM. Every one of the Programs and Combinations (up to 100 of each) is ready to play *instantly*. There's no loading time, because there's no loading. Nothing else gives you sounds this good, this fast.

The 61 note velocity and aftertouch-sensitive keyboard includes extensive parameter voicing that puts literally unlimited performance power in your hands with features like layers, splits and eight way zones across the keyboard.

Power To Produce

The heart of M1's power is 4 megabytes of 16 bit PCM ROM with multisamples of pianos, strings, brass, voices, guitars, attack transients, waveforms and much more.

M1's full-function drum machine has over 42 internal drum and percussion sounds that can be grouped into four user-defined drum kits.

Give extra dimension to your sounds with M1's 33 digital multi-effects including reverbs, stereo delays, panning chorusing, a digital exciter, distortion and more with a choice of four effects per program or combination independently routable to the four polyphonic outs.

Put an entire musical composition or arrangement together with M1's comprehensive 8-track sequencer with song position pointer, phrase and linear based recording, dynamic voice allocation, as well as single event editing.

And M1 power is designed to grow with you: RAM card memory stores extra sequences or programs. And there's an expanding sound library on ROM cards.

Let M1 power turn your ideas into realities. See your authorized Korg Dealer to find out more about the M1 Musical Workstation.

KORG (UK)

8-9 The Crystal Centre,
Elmgrove Road, Harrow,
Middlesex HA1 2YR.
Telephone: 01-427 5377