

AUGUST 1989
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MUSIC

technology

RAY LEMA

Hi-tech ethnic music



ON TEST

Musicsoft Syncman Tape Sync Unit
Hollis MIDIman Atari Software
Roland U20 RS-PCM Synth
XRI XR400 MIDI Patchbay
Roland GR50 Guitar Synth
Anatek MIDI Filter
Anatek MIDI Pedal
Anatek MIDI Merge

STEINBERG CUBASE

The New Sequencing Standard?

ON THE BEAT

Programming your drum machine

COMPETITION

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*the
right
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Any place

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Any software

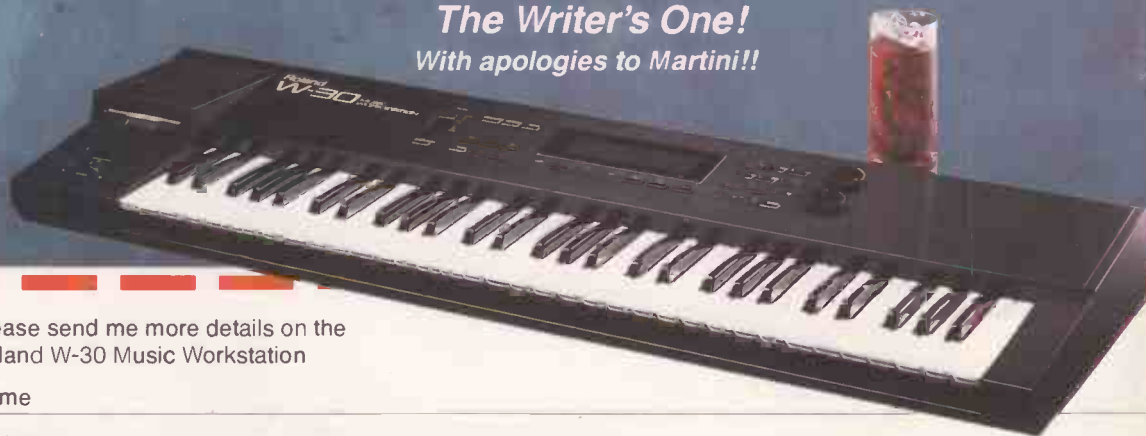
The W-30's system has been designed to accept Roland's MRC and Director-S sequencer data as well as all S-series sound disks, and because it is equipped with TVFs and TVAs you can synthesize both Sound Library and custom samples. Plus there's an optional SCSI interface (in addition to the built in Disk Drive) for efficient hard disk or CD-ROM data management.

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With apologies to Martini!!



Roland

Roland (UK) Ltd.
West Cross Centre,
Brentford, Middlesex TW8 9EZ.

Tel: 01-568 1247

Please send me more details on the
Roland W-30 Music Workstation

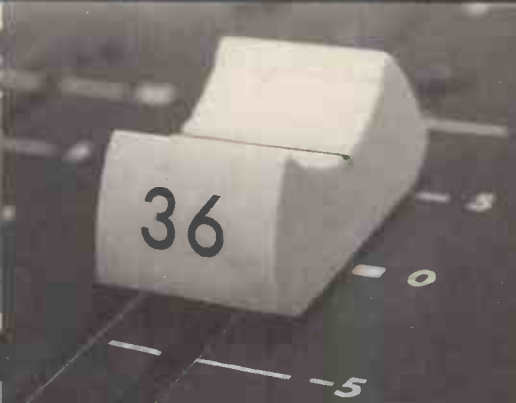
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ASSISTANT EDITOR

Simon Trask

PRODUCTION EDITOR

Debbie Poyser

FEATURES EDITOR

Nigel Lord

ART STUDIO

ART DIRECTOR

Stuart Catterson

DEPUTY ART DIRECTOR

Sam Masters

ART ASSISTANTS

Beastie Beeson, Sam Gilbert, Darryl Tooth, Hilary Reid, Chris Brennand

PHOTOGRAPHY

Tim Goodyer, Adam Jones, E. Matthew Vosburgh, James Cumpsty, Melodie Gimple

ADVERTISING

ADVERTISEMENT MANAGER

Colin McKee

AD PRODUCTION

Emma Ambrose (Manager),
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IN AMERICA

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SETTING THE PACE

YOU CAN'T STOP the march of progress, we're told. And so it is that, taking a momentary break from reporting on it, MT is about to become a victim of high technology. Has a computer virus consumed all the Free Ads, some hi-tech criminal run off with the month's hot reviews or a rogue wordprocessor chip translated the entire issue into Japanese, I hear you ask? Not quite - I'm referring to the fact that, as of our September issue, Music Technology will be what those in the know call desk-top published.

What this means to us is that our current IBM-based Itek typesetting system and "traditional" methods of magazine paste-up are to be replaced by shiny new Apple Macintosh IIs, megabyte hard disks and some of the latest DTP software. No longer will hoards of art assistants do battle with galleys, hot wax and potentially lethal scalpel blades. Instead they'll be positioning text and pictures, and choosing typefaces with the aid of computer layout screens and mice. Most appropriate, I'm sure you'll agree, although there are definite signs of culture shock in the art department at the moment.

What this means to you is that MT will look a little different. It's almost three years since the magazine underwent its last style (and name)

change. That's quite a long time in magazine publishing terms, and quite a lot of publishing water has passed under the bridge since. As a result, the changeover to DTP seemed to present the ideal opportunity for us to bring a few things up to date. First of all, there's a new cover logo - you can see it previewed at the top of this page, so you'll know what to look out for on the news stands next month. Along with this, you'll find the general layout of the magazine has been improved to make it easier on the eye.

The magazine's content, however, will remain largely unchanged. We're still aiming to bring you definitive reviews of all the latest gear, helpful and informative technical features and interviews with artists making the most interesting and innovative music. We're constantly on the lookout for fresh opportunities to bring you what you need to improve your music, your understanding of the role of hi-tech equipment in making music (any music), and your enjoyment of it, so any suggestions you may have are always welcome. After all, it's not my magazine, it's our magazine - so if any of you are doing nothing for half an hour, the mail needs sorting and there's a pile of photographs to be filed from last month's issue . . . ■ Tg

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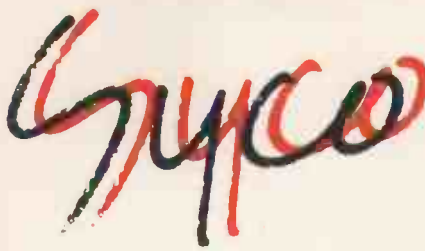
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A GOOD DEAL MORE



FOR A GOOD DEAL LESS

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Designed for music production or performance, film or video post-production, the EIII features the highest quality sampling, sophisticated editing facilities and a powerful SMPTE based internal sequencer. The EIII system now includes OMI's CD-ROM, fixed and removable mass disk storage. Blank Software's "Alchemy" waveform editor, and the best sound library of any music production system.



SCSI For Emax

SCSI Interface now available for the Emax, allowing you to store sounds on external disk systems like the 20Mb super floppy, or the 45MB removable hard disk. Only £120.00.



New Casio DAT

Casio's new DA-2 successor to the very popular DA-1 (pictured), available in June. Call us now for advanced details.

Big Macs

The new generation of Big Macs, the IIX and SE/30 are now in stock at Syco, together with Big Screens and accelerators from Radius. And with the recent price reduction, Big Macs are even more affordable. Macs now start at only £1195.00!



Sound Tools

Digidesign's Sound Tools turns the Apple Mac into a digital audio workstation for sample acquisition/editing, signal processing and low cost disk recording. Polish your digital 2-track master, create jingles and commercials, layback sound effects to film and video, turn your 3 minute single into a 12" dance mix!



Ensoniq EPS

Designed both as a complete workstation and performance sampler, the EPS-M features 20 note polyphony, full multi-timbrality and a 16 track, full feature sequencer. Performance facilities include polyphonic key-pressure sensitivity, "play-while-load" and a SCSI interface for mass-storage and fast access to stored data.

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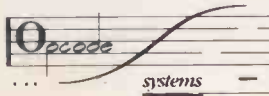
Ideal for keyboards, a 16 channel mixer with an incredible spec and lots of FX sends for only £695.00

Mac Software



BLANK ALCHEMY 2.0 is the fastest and most powerful 16 bit stereo editor available today. Version 2.0, compatible with the Akai S1000, offers time compression and expansion and enables samples to be auditioned directly from disk.

OPCODE VISION is the new sequencer which has taken the US by storm. Easy and fast to use. Vision includes all the best features of Performer and Master Tracks.



Akai S 1000

The industry standard, stereo 16 bit sampler. Available in three models with up to 95 secs. sampling at 44.1 kHz. 2Mb RAM expansion memory and SCSI interface now in stock. Huge range of fixed and removable hard disk systems available including PLI 45Mb removable HD. S1000s start at £1740.00 STOP PRESS - FREE IBM103 SCSI INTERFACE FOR S1000 WITH EVERY REMOVABLE HARD DISK PURCHASED

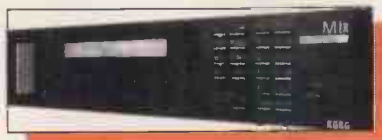
Complete range of Akai music technology on demo, including S950, the successor to the S900, MPC-60 drum machine/sequencer, ASQ-10 sequencer MX-76 mother keyboard.



45Mb removable disk drive

Sound Modules

The best sound modules from Casio, Kawai, Korg, Kurzweil, Oberheim, Roland and Yamaha.

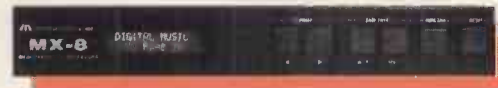


MIDIMOOG

Take the world's most famous synthesiser, the Minimoog, add a fourth oscillator, oscillator sync, a host of MIDI features including after pressure and key velocity, and re-package it into a neat, 19" rack format. The Midimoog is a superb piece of custom engineering and makes the ultimate analogue sound.

MIDI Management

Syco offers the finest MIDI Management systems available today.



The MX-8 from Digital Music Corporation is a 6x8 patchbay and offers a host of MIDI features including merge, delay, filter, transpose and patch change.

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Now available, MX-8 editor/librarian for Atari ST

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Opcode's new Studio 3 is a MIDI interface for the Mac with two ins, six out and SMPTE sync.

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Comment

2

New technology takes Music Technology into the realms of desk-top publishing. A new era and a new look for the magazine that takes music and technology on its own terms.

Newsdesk

7

New software developments from C-Lab, a new MIDI-to-CV unit from Philip Rees, a host of goodies from Groove Electronics. . . News is in abundance on the eve of the British Music Fair.

Communique

10

Offended by the contents of Tim Goodyer's editorial? Think MT's music coverage should be extended to cover amateur musos? This and other readers' points covered in this month's letters pages.

Competition

41

Solve your live and studio monitoring problems by answering a few simple questions. A pair of Celestion SR3 monitors are the star prize in this month's exclusive competition.

Free Ads

92

When the bank manager won't come up with the readies to back your latest musical venture, MT's Free Ads might be your only hope . . . The largest Free Classified section of any hi-tech music magazine.

APPRAISAL

Roland U20

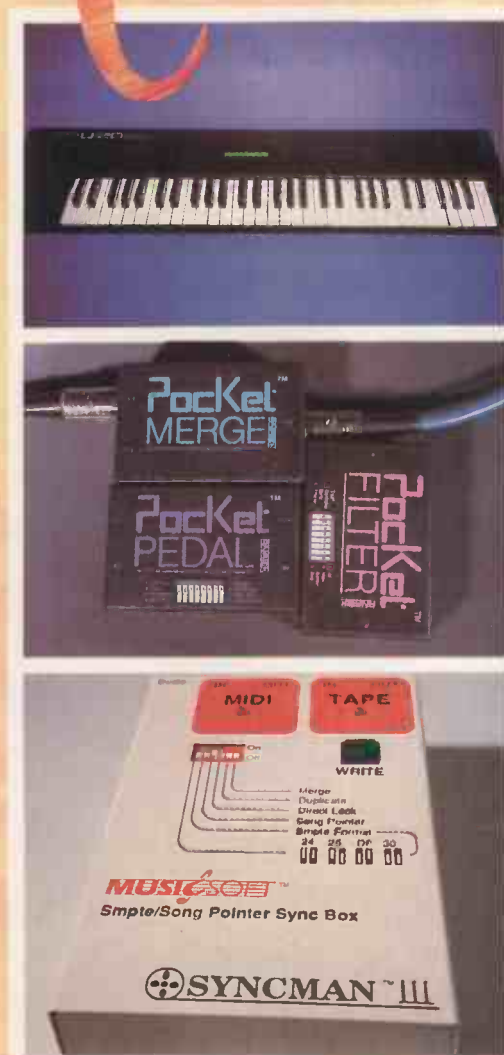
12

Roland's U110 sample reading module proved popular enough to make a second appearance, complete with keyboard, in the U20 - but there's more. Simon Trask checks out Roland's RS-PCM keyboard.

Roland GR50

56

Roland's latest guitar synthesiser is quickly earning a reputation as the most playable guitar synth yet built. Aaron Hallas turns from widdly-widdly merchant to MIDdly-widdly merchant.



Steinberg Cubase

60

They gave us the first industry-standard sequencing software for the Atari ST in Pro24, now Steinberg are making a second bid for Atari domination with Cubase. Nigel Lord says "part two next month . . .".

Anatek Pocket FX

74

What's the size of a fag packet, comes in enough varieties to ease almost any studio problem and isn't covered by British drug laws? Vic Lennard investigates a new line in MIDI effects.

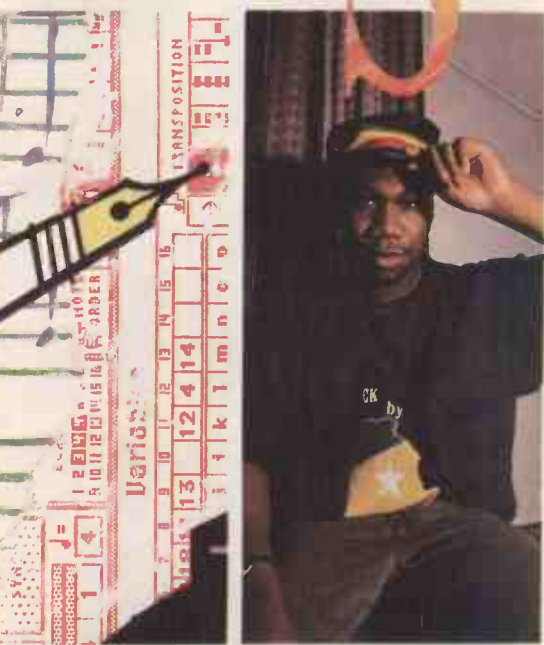
Hollis MIDIman

80

Following on from the success of the Trackman sequencing software, Hollis Research have released a universal patch editor and librarian for the Atari ST. Ian Waugh finds the universe at his fingertips.

EVENTS

R 9 AUGUST 1989



Musicsoft Syncman

86

You want to sync your sequencer to tape but the budget's tight and you don't know if FSK code's smart enough or SMPTE code's cheap enough - let Vic Lennard introduce a budget synchroniser that handles both.

MUSIC

Living Colour

28

Currently proving to the world that there can be more to metal than breakneck guitar riffs and sexist lyrics, Living Colour's Vernon Reid talks samples and technology with Lars Lofas and Nick Armington.

KRS One

34

From the New York roots of hip hop, KRS One talks about street-level production values and samples as the poor musician's alternative to real musicians. Simon Trask listens to the Music of the Spheres.

Ray Lema

48

It's the talk of Paris' hep musical set, Peter Gabriel set up a new record label for it and Ray Lema is one of its greatest exponents - Simon Trask discovers hi-tech ethnic music is about to make its mark on popular culture.

OutTakes

72

A couple of lucky readers find themselves in the company of jazz great Miles Davis when they come under the scrutiny of MT's music reviewers.

STUDIO

XRI Systems XR400

22

Do you need a MIDI patchbay in your studio? Or a MIDI merger? Or both? Vic Lennard discovers that the XR400 solves more problems than he suspected. How's the software-reviewers elbow, Vic?

TECHNOLOGY

On The Beat

18

This new series on drum machine programming is intended to provide an understanding of the drum patterns which form a wide range of music. Nigel Lord starts close to home with basic pop and rock patterns.

Music By Design

30

With algorithmic composition software finding commercial use at last, the question has to be asked "will it write a tune?". Greg Truckell takes a close look at the applications of M.

The Synclavier Story

42

In the final part of our look at the latest models of the state-of-the-art Synclavier, Scott Wilkinson homes in on the Direct-to-Disk recording system.

Microtonal Musings

68

The ability to accommodate microtonal tunings may look good on the spec sheet of your favourite synth, but what use is it to you? Scott Wilkinson reads between the lines.

Patchwork

79

Popularity is the password to this month's selection of readers' synth patches - the stars of the show are Korg's MI Music Workstation and Casio's CZ synths.

EXCLUSIVE

**STOP
PRESS**

Rhodes REPORT

**FULL
STORY
ON
STAND
C23**

IT'S BACK!!

THE RHODES PIANO is back, and that's official!! After speculation that it may have disappeared for ever, excited keyboard players have reported sightings of the new Rhodes MK-80 and MK-60 at Stand C23 of Olympia's National Hall during the 1989 British Music Fair.

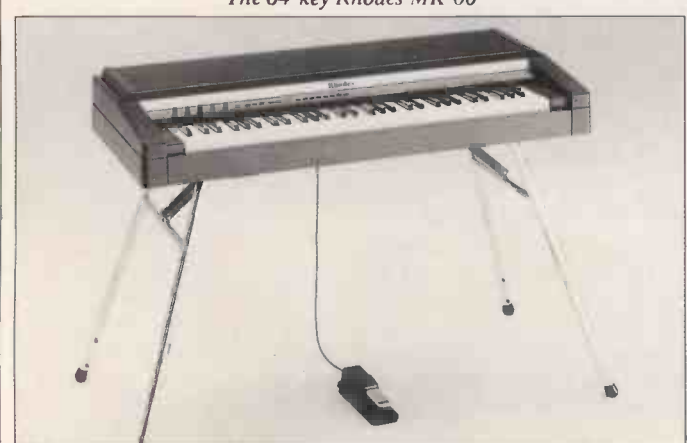
The design team included Harold Rhodes, who was responsible for the development of the Rhodes marque, and ensured that these new models (using Digital Technology) still reproduce faithfully the original, much-loved Rhodes sound.

But the new Rhodes offers much more than its predecessors ever did. The eight preset voices include:

- ★ **Classic** - The authentic rich and warm Rhodes;

- ★ **Special** - the sound of a customized Rhodes with clear highs and full-bodied midrange;
- ★ **Blend** - naturally dis-

The 64-key Rhodes MK-60



A Star is Reborn: the Rhodes MK-80

torting lows with sharp attack in the mid/high frequencies;

- ★ **Contemporary** - the modern Rhodes, crisp and brilliant tones with metallic highs.

PLUS

- ★ **Concert Grand Piano.**
- ★ **Electric Grand.**
- ★ **Clavi and Vibes.**

Built with performers in mind and fully MIDI equipped, these Rhodes Pianos retain the warm characteristics of the early analogue Rhodes without the mechanical and tuning problems.

And these pianos employ a revolutionary new 'Stretched Scale' system, which reflects the imperfections that give traditional instruments their harmonic interest and tonal variations. Both the 88-key MK-80 and the 64-key MK-60 have EQ and Effects built-in.

Rhodes

A division of Roland (UK) Ltd.
West Cross Centre, Brentford,
Middlesex TW89EZ ☎ 01-568 1247

THE DAY THE MUSIC DIED

Despite some ten years of "enterprise culture", it seems the British haven't quite lost their talent for the missed opportunity. How else would you explain the almost total absence of any music-based software at a show dedicated to the machine, which, (with its two MIDI ports), has become almost standard issue in computer-based music systems in this country.

I speak of course, of the ST and last month's Atari show at the Alexander Palace in London. The two exceptions to the rule both appeared on the *Power Computing* stand - a new version of the Pro Sound Designer sampler and a more broad-based program known as Music Mouse - which though not being demo'd during the time I was at the show, looks like being a departure from the standard sequencer, editor, sampler programs we've come to expect for the Atari.

But these were the sole representatives of the music side of things as far as the ST is concerned. Anyone expecting to see new programs like Cubase or Virtuoso

NEWSDESK

would have been sorely disappointed. And indeed, taking on the mantle of everyday punter - getting down by train from Manchester and slogging it across London - I knew exactly how it felt. Really, I cannot understand Atari's thinking here: quite apart from having no direct involvement with the show, they seem to be painfully slow in taking advantage of the foothold the ST has in the market in this country. I cannot believe that in the States, where the ST has to fight for every inch of ground it gains from the Macintosh as the premier music computer, Atari would allow such an opportunity to go simply unnoticed.

Perhaps Atari UK might like to comment... ■ N/

UPDATOR

C-Lab fetishists will be pleased to hear that Version 2.1 updates for Creator and Notator are now available, offering enhancements of current features as well as new facilities.

Additions to Creator include the Tempo Interpreter (to inject the now-trendy human feel into your music), and the new Fittime Calculator, which means that Creator will be able to set the correct tempo for an allotted time span - ideal for film work. RMG setups can now be captured in 16 individual snapshots which can be stored and recalled at

any time during a sequence. Enhancements to Creator include Dynamic Mouse Control and a Mouse as Slider function.

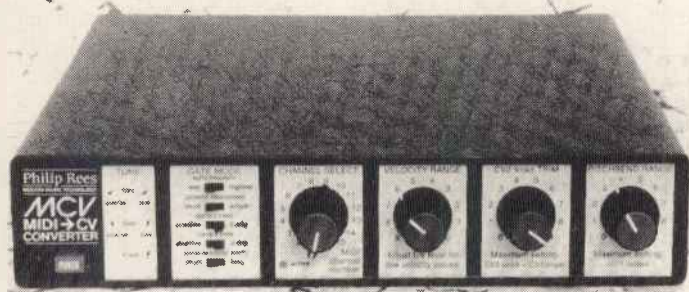
Notator gets all the above, as well as enhancements of both scoring and printing, now supporting the Atari Laser printer and the Hewlett Packard DeskJet 300. Printing on standard dot matrix printers has been enhanced and speeded up. On the scoring side, there is now automatic display of sloping beams, manual entry of rests and the availability of 2/2 time - and the whole thing is available in glorious colour.

On the Unitor front, synchronising capabilities have been expanded, with software support of the new C-Lab Human Touch (an audio-to-ST device which will, for example, read click pulses from tape or triggers from a live drummer). There is also a quick Tempo Change Create function and a SMPTE/MIDI learn mode to facilitate syncing up to any type of sync box' MIDI Clock.

More info on all this from the C-Lab User Club, Sound Technology, 6 Letchworth Business Centre, Avenue One, Letchworth, Herts SG6 2HR. ■Dp

You probably know British company Philip Rees for their compact, reasonably priced and very pretty MIDI devices - such as the V3 and V10 MIDI Thrus and the 2M MIDI Merge. Latest addition to the flock is the MCV MIDI-to-CV converter, capable of controlling two of your analogue babies simultaneously (though on the same MIDI channel) and responding to pitch, pitchbend and velocity. Pitchbend sensitivity is alterable by means of a front-panel control, and the option is available of increasing the minimum gate pulse width to improve compatibility with

CONVERSION FACTOR



certain devices, such as my old favourite, the Roland MC202, which has a slow CV-Gate input interface. A front panel rotary switch allows easy selection of MIDI channels, and you can select last/highest note priority and legato retriggering. MCVs are cascadable to provide polyphonic control of several synths. The MCV will set you back £169.95.

All this, and they even give you a

More from Philip Rees. Unit B, Park End Works, Croughton, Brackley, Northants NN13 5LX. Tel: (0869) 810948. ■Dp

Tons of info from those inventive bods, Groove Electronics, in the wilds of Wiltshire... of interest to existing owners of the Groove MIDI Merj (they're nice chaps, even if they can't spell) will be a new upgrade, offering the following: filtering of all information on all but specific assignable MIDI channel (for synths with early MIDI specs being fixed to Omni On); split point facility for JX3Ps and their like. The upgrade now comes as standard with the MIDI Merj and will be free of charge to existing owners.

Groove are also pleased to announce the birth of the M4CV, big brother to the two-output M2CV. The new arrival is aimed at the gap in the market left by the Roland MPU101 (you might have noticed that the MUSIC TECHNOLOGY AUGUST 1989

MPU101 is now increasingly difficult to find), and offers four CV and Gate outputs on four assignable MIDI channels. Each channel will respond to pitchbend and will convert Velocity, aftertouch, mod wheel and breath control into a filter output level. Sync 24 output and Simmons trigger mode make this a pretty flexible beast - yours for £199.

A bit more off-the-wall is the Groove Oratron: you may have heard and played with computer programs which synthesise speech, and might even have been so childish as to request the synthesised voice to utter rude words and phrases, like... well,

GRAVY, BOOBY

we won't go into that right now. Imagine having that capability at your disposal under MIDI control. The mind boggles. The Oratron is a MIDI-controlled speech synthesis unit that provides control over pitch, level and metering of the speech. Pitch can be varied over a range of about two octaves and is controlled by the pitchbend wheel. An almost unlimited vocabulary is available, due to the sampling of all necessary allophones (basic constituents of speech, philistines). Desired words or phrases are programmed into one of 32 memory locations in the Oratron, and programming requires the use of a 5-

octave MIDI keyboard with pitchbend wheel, as it isn't possible to program phrases from the unit's front panel. Five modes of playback of the programmed speech are available: in One-shot mode, the phrase is output as programmed; in key-follow mode, the words in the phrase are stepped through with each new key on; in pitch-follow mode, the pitchbend wheel can be used to control pitch; in velocity-follow mode, the key-on velocity controls the level of the phrase, and in clock-follow, the metering (timing of the output of the speech) is sync'd to the MIDI clock. Sounds groovy to me.

More info from Groove Electronics, Unit 30, Barnack Industrial Centre, Kingsway Trading Estate, Wilton, Wiltshire SP2 0AW. Tel: (0722) 743712. ▶

GOING DUTCH

From the land of cheese, tulips, dykes, clogs and windmills (sorry, chaps) comes news of the "first ever Universal desktop Manager/Editor" for the Atari ST. Uni-Man from Zadok Products is a program designed to be capable of storing, managing and editing sounds and patches from any equipment which communicates over MIDI according to the 'bank/sound/patch' system - including synths, samplers, drum computers, effects units and MIDI sound/light mixing desks.

Using Uni-Man, you will be able to create configurations for whatever MIDI equipment you own, although configurations (Device Adaptors, in Zadok-speak) for most popular MIDI instruments are supplied, including Kawai K1, DX/TX7, DX7II, TX802, TX816/TFI, DW8000, Alpha Juno, TX81Z, Korg M1 and A3, Roland U110, D50, D10/20, R8, Oberheim Matrix 6/1000, and others. These Device Adaptors are also stocked with sounds for the above mentioned instruments.

Uni-Man is also compatible with all

other sound/patch/data files, so any old files can be converted, loaded and used in Uni-Man.

It sounds like a pretty neat program - if only it made the tea as well, my life would be perfect. Watch out for a review in MT in the not-too-distant future.

Zadok have no distributor in the UK at present (though they are seeking British distribution, and welcome enquiries from anyone interested in taking on their products), so Uni-Man can only be obtained mail-order. Payment can be by IMO, attention Bob Blok, to Zadok Products, PO Box 1192, 2260BD, Leidschendam, The Netherlands. Alternatively, payment can be made by bank transfer to NMB Bank, Leidschendam, The Netherlands, BA Number 66.95.2g.583, attention Zadok Products. The price of Uni-Man will be £140 plus £7 shipping.

Enquiries to Zadok Products, PO Box 1192, 2260BD Leidschendam, The Netherlands. Tel: 010-31-70-200209. ■ Dp

STOP PRESS

Arriving almost too late to be included on these pages comes news of the new Yamaha National Tape Showcase competition. Fancy winning yourself £500 worth of Yamaha gear and a chance to audition for the Yamaha Band Explosion Showcase? Well, whack one of your superb demos into Yamaha (very quickly, as the closing date for entries is 31st July) and you'll be in with a chance of doing just that.

The showcase, in its first year, aims to discover and further new musical talent at all stages of development, encourage new bands to form and existing bands to improve, and finally, showcase the best potential chart

bands and musicians. It's open to musicians of all ages and standards, and 50 tapes will be selected, following assessment, to be heard by A&R personnel at major record companies. A final group of ten bands considered to have the greatest chart potential will be awarded the £500-worth of gear and the chance of a further audition.

So if it's not too late by the time you read this, the address to send your tape to is Graham Taylor, National Tape Showcase, Band Explosion '89, Yamaha-Kemble Music (UK) Ltd, Mount Avenue, Milton Keynes MK1 1JE. ■ Dp

UK ELECTRONICA '89

Yes, it's that time of year again. The great UK Electronica publicity machine has started rolling once more, and we can now bring you details of this year's events and attractions.

The 7th UK Electronica will be held in London, at the Logan Hall, 20 Bedford Way, WCI on Saturday, September 23rd.

Artists appearing include Daniel Biry from France, whose debut CD is out on AMP Records; May East and her band from Brazil, presenting electronic, ecologically-conscious New Age music from the Amazon; Mark Shreeve, "inventor of heavy rock

synth music" and writer of Samantha Fox's 'Touch Me'; and Robert John Godfrey of the Enid, launching his solo career with material from his new album.

Other events will include live computer graphic video projection using the Fairlight Computer Video Instrument, a unique laser sculpture, lights, dancers and special effects, and generally all the fun of the fair.

Tickets (with full travel details) are £12 in advance from AMP Records, PO Box 387, London N22 6SF (enclose sae). Details can be obtained on 01-885 5665 during office hours. ■ Dp

MY ANALYST TOLD ME...

For lovers of little MIDI gadgets, Studiometer present the MA36 36-function MIDI Analyser, "a device which will become as essential to the MIDI user as a guitar tuner is to a guitarist". Well, they would say that, wouldn't they?

Levity aside, the MA36 could turn out to be quite a useful diagnostic aid when you're in deep sh... trouble with where your MIDI data is (or isn't) going. This pocket-sized black box is simply connected to the end of a MIDI lead, or in-line anywhere in your system, and it will show on its

LED display precisely the MIDI information being transmitted, what MIDI channel the information is on, and any errors which may be occurring. So if you screwed up trying to filter out channel pressure, or SysEx data, or Active Sensing, or any of a list of 36 types of MIDI data, now you'll know about it from the word go. The MA36 is expected to sell for under £50.

More information from Studiometer, Studiometer House, Chaul End Lane, Luton, Bedfordshire LU4 8EZ. Tel: (0582) 570370.

GIGSOUNDS EXPAND

Gigsounds are announcing major expansion with the opening of the large PA and Recording Systems showroom at their Streatham branch at 86 Mitcham Lane. The new department stretches over two floors, so as you can imagine, there's a lot to see.

Also new is the opening of a Guitar, Amp and Drum department at the Catford branch of Gigsounds, located at 22 Rushey Green, London SE6.

More details from Gigsounds on 01-690 8621. ■ Dp

The Audio FX sample library is now being distributed in the UK by Syco Systems. The range includes the Poolside Drums, which you might remember seeing mentioned on these pages before (to refresh your memory, these drum sounds were recorded at White City Swimming Pool to take advantage of the bright, natural ambience), as well as strings, brass, woodwinds, synth basses, and more. The sounds are available for both the Akai S1000 and the S900. The Poolside drums are "proving very popular", and have been purchased by some fairly illustrious bods so far,

IN FULL FX



including Ian Curnow of PWL.

Sounds are mastered on the S1000 and transferred via Alchemy software to the S900, resulting in a considerable extension of the S900's bottom end.

By the time you read this, a special set of Reggae Bass and guitar chord "chips" will be available for the S1000 (apparently virtually a ready-made backing track), with the S900 to follow soon.

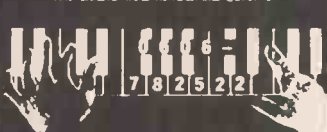
More info on prices, availability, etc, can be obtained from Syco Systems, Kimberley Road, London NW6 7SF. Tel: 01-625 6070. ■ Dp

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For many musicians, the process of shaping distinctive sounds involved combining elements from many sources - multiple synthesizers, samplers and acoustic instruments, all processed by digital effects.

Now Ensoniq has incorporated this technique into a single keyboard. Using custom VLSI chip designs and a group of top studio pros, the Ensoniq Music Industry Advisory Panel, we've created a great-sounding new synthesizer - the Ensoniq VFX.

Its vast number of digitally encoded waves include acoustic/electronic hybrids, complex digital textures and rich analog waveforms. In addition to these waves, Ensoniq's musical engineers have created new ways to make dynamic timbres especially for the VFX. Like TransWave™ which incorporates spectral motion into a single wave. These unique new timbres give you a colourful palette for sound design.

You can create new sounds simply by double-clicking buttons, layering up to six

waves in any combination. Or you can modify each individual wave with a vast array of editable parameters.

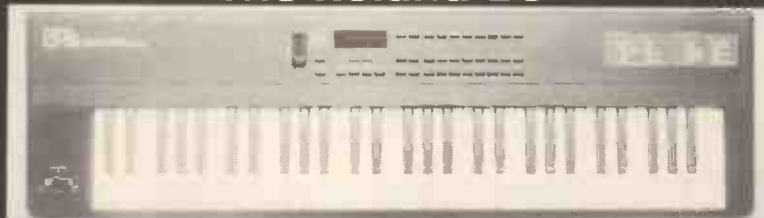
In performance. The Patch Select buttons, another Ensoniq exclusive, provide four variations of these wave combinations instantly available for each program.

The fundamentals of the VFX's voice architecture, first introduced on the Ensoniq EPS Performance Sampler, encourage experimentation and guarantee great results.

With the advent of Ensoniq's new digital signal processing chip, you can control fully programmable stereo effects in real time. Imagine changing the depth of your reverb setting with Poly-Keys™ Pressure or sweeping the Flanger with the Mod Wheel. These exclusive performance features fully integrate effects processing into your sound and playing for the first time ever.

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The Roland D5



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COMMUNIQUE

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

Studio Material

I must say I found Tim Goodyer's comments on studio owners (see The Technology Angel editorial, MT July '89) a bit tasteless.

If someone was not made to be a musician who could survive on it, then why make them feel worse about it? If they can turn their attention to capturing the music - not creating it, it's the producers and musicians who create - then what's wrong with that? Musicians are extremely fortunate to be able to communicate through the devotion of others who love music enough to capture it for wider distribution in a form palatable by the ever-demanding consumer. Musicians need records just like film stars need studios and cameras. Why should you suddenly question the whole concept of trying to capture moments of performance to give to others?

Would you like all the studio owners who couldn't cut it musically to try again out of guilt? Then who's going to record the working musicians?

I will admit to being a failed musician. It broke my heart too because I really tried. But when I think back to my childhood, I was more interested in recording - whether it was drawing or with cameras or with tape machines. And your point about studios swamping performing musicians, they will quickly learn by experience, as will the studio owner when they don't come back.

And if this failed musician can't cut it as a musician, then it doesn't guarantee him a passport to success in recording. Believe me, there are studio owners who don't have what it takes - and to reverse your point, some of these people are better musicians than studio owners. And studios do go bust quite often, you know.

So I ask you, what's wrong with being successful at the art of recording?

■Felix Lanza
Glasgow

To take your last point first, Felix, nothing at all. But I think you've completely missed the point I was trying to make.

Of course there's a place for studio owners and studio engineers in 1989's musical scheme of things - possibly a more important place than ever before, and certainly a technically more demanding one. But that wasn't what I was commenting on.

Sure, I accused "many" studio owners of being failed musicians, but I did not go on to demean their efforts as engineers because of it. I was critical of those musicians who had substituted material goals for musical ones. Specifically those for whom the "studio has become the focus of his or her attention rather than a medium through which musical ideas can be recorded". If you're content to derive your pleasure from owning pieces of studio equipment rather than from making music (or helping other people record theirs), then I'm talking to you.

If you still think what I have to say is tasteless then you're kidding yourself. If you think I've clarified my point and you now agree with me, you're probably a perfectly normal paranoia victim. I don't think it can be put much more plainly than that, do you? ■Tg

Dear MT

Workstation or Music Centre?

Remember when hi-fi went through a "workstation" phase? They called them "music centres" then . . .

A genuine music enthusiast would be no more likely to buy a workstation than a music centre, but how many people are genuine enthusiasts? How many people actually want their home to look like a recording studio? Many people have been looking to upgrade from their £100 Portatone keyboard but without wanting a single extra cable in sight. Such people would not buy an X-stand, for instance,

because it's not a piece of living room furniture. While the enthusiasts are catching on to mother keyboards, samplers, synth modules (and other rack units), workstations are creating a new market division - one which makes Korg's MI a home keyboard of a new kind.

Many people seem eager to see this "workstation craze" die out. If it does, a large section of the public will lose out. The manufacturers will then lose out on the revenue that would have been generated by workstations, and the enthusiasts will lose out because their next rack-mount unit will have been under-researched by the amount that the workstations could have financed. But I'm optimistic. Supply will meet demand. Long live the workstation, but not to the exclusion of pro gear please.

■Julian Treppe
Middlesex

Dear MT

Are We Not Good?

On opening the July issue of MT and turning to page 19, I was taken aback/pleasantly surprised to see Mark Mothersbaugh of Devo staring at me. A case of mistaken identity? No, it was he, in a damn good interview (thanks).

Music Technology is going from strength to strength; relevant and informative reviews, and INTERESTING interviews (not your gear lists - unlike certain magazines).

Finally, please could you interview Clock DVA, who released the brilliant 'Hacker' last year - prime MT material judging by the sampling used.

■A Non
Uranus

We Are MT. ■Tg

Dear MT

What Time Is It?

Isn't it time you wrote an appraisal of the new digital synth from Cheetah? After all, it has been out for a few months now and

for just under £200, it's got to be worth looking at. Cheetah may be a small British firm, but they're the only mass producer of synths in the UK and a little bit of support could go a long way

OK, you've done the Synclaviers and the £2000 Roland reverbs, how about something on the intelligent use of affordable equipment - the stuff that in combination rivals the Synclavier in terms of sound scope? Perhaps a feature on the benefits of combining a multitimbral analogue synth and multitimbral digital synth - say the Cheetah MS6 and a Yamaha FB01 - would be interesting.

Also, have Roland done a multitimbral Juno yet, and if not, why not?

■Mike Humby
Southend

It's almost time we wrote a review of the new Cheetah digital synth module - but it hasn't actually become available yet. Cheetah are promising much for this year's British Music Fair, but at the time of writing this is still a couple of weeks away.

I suspect you've got the impression that the unit is available from what's called "advance advertising". Had you tried to buy one of the units, you'd have found out the true situation. You could also be forgiven for believing the Korg SI and TI, and the E-mu Proteus (to take just a couple of examples) have been around for a while. Again, this is not the case. Rest assured (sounds like an advert for a bed), Mike, as soon as these pieces of kit are available for review, we'll be on the case.

And you want an article on synths used in combination, eh? Well there could be something in that. We'll put one of our best men on it and see what he comes up with.

Finally, in answer to your questions about Roland: no and I don't know. ■Tg

Dear MT

Personal Services

Firstly, may I thank Nigel Lord for giving my demo tape such a good review in your July '89 issue - it came as a great surprise! I really didn't know what to expect, and this is the reason I am writing.

I suspect that a large proportion of your readership is in a similar position to my own - bedroom musicians with little or no contact with the professional music world. This makes it very difficult for us to assess our own work, and DemoTakes enables musicians such as myself to see how their music stands.

I wonder, though, if this service to amateur musicians could be extended? While us amateurs enjoy reading features about Fairlights and Synclaviers, most of us have never even seen a Synclavier. An article on the exploits of an amateur musician could prove highly interesting as it may help us get a clearer idea of where we stand and what other "bedroom" musicians are doing.

I've no doubt you can see an ulterior motive emerging here! My equipment setup was put together on a pretty small

budget (about £1500) and really is in my bedroom. Perhaps an interview with myself and/or other musicians in a similar position would bring bedroom music out of the closet and give bedroom musicians an insight into what their fellows (as opposed to their peers) are doing. Ready when you are.

■Neil Sharpe
Herts

Yeah, what about a cover interview, Neil? Do you charge for interviews? Sorry, it just slipped out.

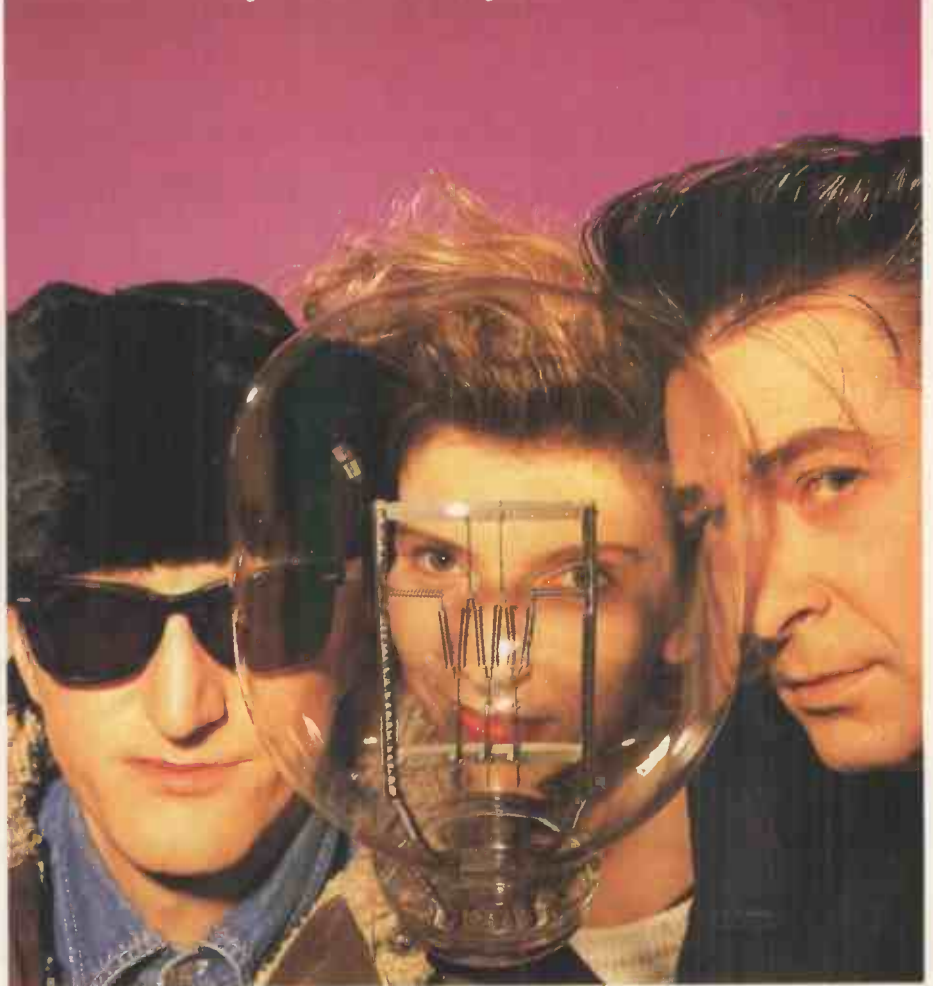
Yours is not an unsound suggestion in principle, but it does have a couple of major flaws. First of all, there's not too much of a gap between many "bedroom" studios and the facilities "pro" musicians put together for songwriting and pre-production work any more. Also, many of the interviews we conduct follow an artist's work from the home studio (perhaps one like your own) into a commercial 24-track and onto the radio, into clubs, into peoples' homes . . . Presumably these people are doing something "right" by the record-buying public; would you prefer to read about a bedroom artist who is more limited in experience and who may or may not be likely to achieve any recognition for their work? It may make you feel a bit better, but it's a lot less likely to help you further your own career or improve your working practices. Last month's cover interview with the Beatmasters comes quickly to mind as an example of a band working in part with "affordable" equipment and making a living out of it.

In fact, interviews with musicians in music magazines have probably never been quite as important as they are today. Because of past musicians' wishes to have more and more control over their music and the power of technology to grant these wishes, more and more musicians are approaching music with the "bedroom perspective". As a result, there is less interaction between today's young musicians, and correspondingly fewer opportunities for musicians to exchange ideas. One of the few sources of information, therefore, is through artists' interviews. Whether or not you like the music made by the musician, whether or not you respect their points of view - even if your haircut is better than theirs - you can learn a lot from them that it would take you a long time to fathom out on your own. Remember the value of a good interview.

In addition to these points, there is a limited amount of space in the magazine each month. Into this space we try to put articles that will most benefit the readership. You're right: we do have a lot of readers whose creative musical activities are confined to their own bedrooms. But we also have pro musicians who demand to be educated in hi-tech developments and the activities of other musicians. It's a delicate balancing act and we endeavour to fill the magazine with the most effective features we can.

Sorry if all this means you won't get your face in the magazine at the moment - but as soon as you move a little higher up the league, we'll be ready. ■Tg

The Beatmasters: Making music with a domestic light bulb



ROLAND U20

RS-PCM Keyboard



With the U20, Roland have introduced yet another term to the hi-tech vocabulary – Resynthesised Pulse Code Modulation – and another slick, cost effective keyboard to the market. Review by Simon Trask.

IS IT A synth? Is it a sampler? Is it, perhaps, a bird? No, it's an RS-PCM keyboard instrument, and it's playing at a music shop near you soon. RS-PCM stands for ReSynthesised Pulse Code Modulation, a technique new to Roland instruments whereby PCM-encoded samples are, ahem, resynthesised.

As its name suggests, the U20 is related to Roland's U110 PCM Sound Module (reviewed MT, January '89), a multitimbral sample replay expander, hence the PCM tag. In fact, the crudest definition of the U20 would be that it's a U110 with a keyboard tacked on, but in terms of features it's both more and less than a U110 (mainly more), and stands as an instrument in its own right rather than a simple repackaging exercise.

The first thing that strikes you when you play the U20 is how clean it sounds, much cleaner than the U110, in fact. This cleanness is apparently down to the U20's superior internal processing, which shouldn't be confused with the new RS-PCM technique that it employs. In fact, it's not at all clear what advantage RS-PCM has over the U110, which uses straight PCM sampling. And unfortunately the U20 manual's flimsy explanation of this new technology doesn't make us any the wiser. No-one's asking to be blinded by

science, but I can't help feeling Roland owe it to their customers to provide a better explanation than "RS-PCM uses Roland's unique technology to analyse, modify and 'resynthesise' the PCM-recorded instrumental sound. This results in a realistic sound that can be controlled in musically appropriate ways". Wow and triple golly gosh.

Overview

THE BASIC UNIT of the RS-PCM sound generator is the Tone, namely the sample data. The U20 has 128 onboard Tones, divided into Piano, Vibraphone, Bell, Marimba, Guitar, Bass, Choir, Strings, Organ, Wind, Synthesiser and Drums categories. If you're a Roland U110 sample module owner, these categories might seem familiar; in fact, the U20 provides you with many of the U110 samples plus an added section of synthesiser sounds.

Further Tones can be accessed from ROM PCM cards. In fact, the U20 can read existing U110 PCM cards, of which there are currently seven available from Roland, via its two rear-panel PCM card slots.

At this point you may be wondering: if the U20 sounds

MUSIC TECHNOLOGY



Photography James Cummins

A Keyboard Patch allows you to program the four front-panel Performance functions (keyboard transposition, chord play 1 & 2, and arpeggio play) and to define various MIDI transmit channel options. Onboard the U20 you have access to 64 Sound and 64 Keyboard Patches, while further Patches can be accessed from a RAM card which can be plugged into the U20's rear panel. One Sound and one Keyboard Patch can be active at a time, and can be selected independently or together from dedicated front-panel buttons. In this way you can, for instance, vary the Performance function settings for a single Sound Patch, or select several different Sound Patches while keeping the same performance settings.

The Rhythm Set section allows you to program a "drumkit" across the keyboard, with each key drawing on any one of the 128 internal Tones or PCM card Tones. In this way your "drumkit" isn't restricted to traditional drum and percussion sounds - you can incorporate tuned percussion, bass sounds, horn sounds, anything you feel is appropriate.

The U20's five-octave, synth-style keyboard is sensitive to attack and release velocity and channel aftertouch (though the instrument's sounds can also respond to poly aftertouch via MIDI) and has a comfortable yet substantial feel. To the left of the keyboard are the familiar Roland bend/mod lever and a volume slider, together with two control sliders, which can be programmed to allow real-time editing of internal sound and effect parameters and/or transmission of MIDI controller data during performance. And, unusually, you can program separate bend up and bend down ranges for the lever.

The U20 comes complete with a feature common on keyboard instruments nowadays, namely onboard digital reverb and chorus (the U110, you may recall, was limited to chorus and tremolo). You can route individual sounds through the reverb only, the chorus only, chorus and reverb, or bypass the effects altogether. For chorussing, the U20 allows you to select from chorus 1 & 2, FB-chorus, flanger and short delay effects, with level, delay time, rate, depth and feedback all programmable per patch. The reverb settings provide a choice of three rooms, two halls, gated reverb, delay and cross delay (repeat delays pan left and right), with associated time, level and feedback parameters. As generally seems to be the case with onboard digital reverb, you get neither the sophistication nor the quality of a professional stand-alone unit, but while professional studios might shun these effects in favour of their Lexicons and AMSs, they are perfectly adequate for the home studio setup. Incidentally, anyone not wanting to make use of the onboard effects can switch them out globally.

Roland have provided large and informative LCD windows on recent instruments like the W30 Music Workstation and A50/A80 MIDI Keyboard Controllers, but the U20 sticks with the more familiar two-line backlit LCD. Also familiar is the low-profile, minimalist front panel layout which is becoming something of a Roland trademark.

Operationally, the U20 is similar to the U110, with a limited set of buttons leading you through a hierarchy of software pages. However, because there are many more pages on the U20, this approach can get a little tedious, so Roland have included the Jump function which they introduced on the W30. In this way you can assign 16 software pages to the Bank 1-8 and Number 1-8 buttons, and jump straight to any one of them by pressing the Jump button followed by the relevant page select button. A welcome feature.

Rear panel connections offer MIDI In, Out and Thru; two PCM sample card slots (whereas the U110 has four slots on its front panel); one RAM card slot for patch ▶

cleaner than the U110, what will U110 samples sound like on it? I wasn't able to check this out, but according to Roland they sound as clean as the U20's onboard samples, because any noisiness on the U110 was introduced by its internal processing.

Although the U20 is 30-voice polyphonic, in practice the polyphony depends on whether the Tone you're using is single (68 internal), detuned (25), dual (20), velocity-mixed (♫) or velocity-switched (♬) - obviously, single and velocity-switched allow 30-voice polyphony while the other types allow 15-voice. And, of course, when you layer Tones you reduce the polyphony even further.

Organisationally, the U20 is divided into five sections: Setup, Keyboard Patch, Sound Patch, Timbre and Rhythm Set. The Setup section is for global parameter.; here you can set the master tuning, adjust the LCD contrast, and define a variety of MIDI transmit and receive settings. A U20 Sound Patch consists of six Parts and a Rhythm Part, ie. a multitimbral configuration. You can select one Timbre for each Part, a Timbre consisting of a Tone plus parameters governing level, pitch and vibrato modifications to that Tone. These are the only modifications you can make to a U20 sample. Unlike Korg's M1 and Ensoniq's VFX synths (both of which draw on samples as their raw sound material) and unlike Roland's own W30 sampler-based workstation, the U20 has no filters. Meanwhile, for the Rhythm Part within a Sound Patch you can select one of four onboard programmable Rhythm Sets. The U20's voices are allocated dynamically across the six Parts and the Rhythm Part, but you also have the option to reserve voices for individual Parts (so that a prominent musical line needn't be robbed of voices at a crucial moment).

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From a musician's point of view the variety of audio output options on Roland's instruments can be rather bewildering. After all, everyone wants as many outputs as possible, but what you get ain't necessarily what you want. The realities of cost and of marketing strategy have the final say. For instance, the more expensive U20 loses two outputs compared to the UI10, but then it gains onboard digital reverb. The most obvious division of labour across the two stereo pairs is to separate out the drum sounds from the instrumental sounds, taking some or all of the former out via the dry pair for external processing. Multiple dry mono outs might have been preferable in this context, but for anyone wanting to route the U20 directly into a portastudio or into, say, an eight-channel mixer, I guess the dual stereo configuration strikes an, er, effective balance. The other advantage the U20 has over the UI10 in this area is that you don't have to contend with the latter's convoluted voice output assignments.

Tones, Timbres & Multitimbres

THE U20'S SOURCE samples, known as Preset Tones, all exhibit great clarity and presence. Roland have provided a good range of familiar instrumental sounds, multisampled where necessary. These include ten acoustic pianos (ranging from soft to bright to honky-tonk), seven electric pianos (with warm, smooth and bright, percussive versions), five acoustic guitars, six electric guitars (including muted and distorted versions), several vibes and a marimba, 12 slapped basses (with harmonics in the upper range), one nicely woody double bass (with fingerboard noise mixed in when you play hard), a couple of beautifully warm, rounded fretless basses, eight punchy synthbasses, the usual (for Roland) strong array of electric organs, impressive choirs and ensemble strings, some reasonably realistic saxes and trumpets, and a varied array of synthesised sounds including bells, harps, synth choirs, Jupiter brass and strings, pulse and sawtooth waves, and even Native Dance (remember that D50 patch? This is along similar lines).

The next step is to assign one of these Tones to a Timbre and either use it as is, or twist it around a bit using the U20's Level, Pitch and Vibrato sections. These allow you to do such things as impose a different ADSR amplitude envelope on a Tone, specified as +/- offsets from its default envelope (altering the attack time is a familiar way of altering the character of a sound), determine the detune depth of detune-type Tones, add auto pitchbend, and modulate the pitch using triangle, sine, square, sawtooth (up or down), trill 1-4 or random 1-4 waves, with programmable rate, depth, delay and rise-time. You can also specify velocity and aftertouch sensitivity for all of these sections. Using these editing options, you can come up with some surprising variations on what start out as familiar sounds.

Once you've decided on the Timbre(s) you want to use, you can set up a Sound Patch multitimbral configuration to play them within. As I mentioned earlier, the U20 provides you with six Parts plus a dedicated Rhythm Part. Each Part can be assigned one sound (Timbre), while the Rhythm Part can be assigned one of four programmable "drumkits" (Rhythm Sets). Each Part can be given its own MIDI MUSIC TECHNOLOGY AUGUST 1989

receive channel, key range and velocity "window", allowing you to define a wide range of textures. You can also program a volume level (1-127) for each Part and the Rhythm Part, and a pan value (+/-7 or random) per Part - in the case of the Rhythm Part, each key can be given its own pan assignment. However, in practice the U20's multitimbral glory isn't immediately apparent, because for most of the instrument's factory Sound Patches Roland have turned off Parts 2-6 and the Rhythm track (by setting their MIDI Receive channels to off), assigning just Part one to the keyboard.

With the U20 Roland have come up with their most sophisticated "drumkit" implementation yet. Each key in the range B1 to D7 can be assigned any one of the instrument's onboard or card Tones (and any pitch of that Tone), together with its own level, velocity sensitivity, envelope mode (sustain or no sustain), ADR amplitude envelope (allowing you to shape a sound specifically for the Rhythm Part), pitch transposition (+1/-3 octaves in semitone steps, together with +/-50 cents fine-tuning in cent steps), separate channel and poly aftertouch sensitivity, pitch randomise value (so that each time you play the sound it will be at a different pitch - a great feature for both pitched and unpitched sounds), auto bend depth and rate, detune depth, output assignment and pan value. That little lot doesn't leave much to be desired.

Another neat Rhythm Set feature is the ability to assign an alternative "mute key" to each key, allowing one key to automatically mute another when played; the obvious uses here are for open and closed hi-hats, or for retriggering a note (ordinarily a new voice will be used each time you replay a note), but bearing in mind that you can incorporate all manner of instrumental sounds into a Rhythm Set, it's a potentially far more creative feature than you might think. Also, using the pitchbend lever, or inserting pitchbend values into a sequencer track, to change the pitch of drum and percussion sounds in real time can be extremely effective, and greatly enhances the sonic variety of the U20's "rhythm section". And by zeroing the volume on selected keys and assigning sounds on an external drum machine or sampler to those same keys, you can effectively incorporate external sounds into your U20 "drumkit". Incidentally, instead of having a straightforward reverb on/off switch for each key, you can take advantage of all the output routing options -effected or dry stereo pairs, reverb only, chorus only, reverb plus chorus, or dry within the effected stereo pair. All in all, then, the U20 provides pretty impressive opportunities for inventive rhythm programmers.

To play Parts on the U20's keyboard, you must set the keyboard to transmit and the Part(s) to receive on the same MIDI channel. If you've set up a multitimbral configuration in conjunction with a sequencer, the easiest thing is to adjust the keyboard transmit channel to the Part you want to play. Alternatively, with the U20's MIDI Local function set to off and your sequencer's soft Thru function switched on, you can control what Parts you play from the sequencer's track assignment(s). Incidentally, a neat keyboard transmit feature is the ability to assign a velocity range per Keyboard Patch, so that for instance you could tailor the velocity range to the response of a particular internal sound or external sound, or even set a fixed velocity for playing, say, bass and snare drum parts.

So what sort of "arrangements" does the U20 allow you to create? As an example, you could have the Rhythm Part being played from a sequencer on MIDI channel 10, Parts one, two and three used to create a piano/bass split with the piano doubled by strings, all set to MIDI channel one, while Part four is used for a synth lead sound. You could assign a voice reserve value of one to Part four, so that the accompaniment Parts can't choke off your solo just as you're getting into full stride, and route the Part via the dry

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Of course, as always, these flights of multitimbral fancy will be brought swiftly down to earth if there simply aren't enough voices to go round the Parts - for instance, if you're playing five-note chords using two layered Parts, that's ten voices if both Tones are single or velocity-switched, 20 voices if they're both detuned/doubled/velocity-mixed. Still, the U20's complement of 30 voices is pretty much the maximum you're going to get out of any synth or sampler at the moment.

Incidentally, you can call up Keyboard and Sound Patches from a sequencer via their own programmable MIDI receive channels, or call up individual Timbres by sending patch changes on the relevant Part channels. To change effect settings and the output routing of different Parts, you'll need to select a new Sound Patch, while to change the MIDI performance effects you'll need to select a new Keyboard Patch.

Performance Functions

ROLAND'S DESIGNERS seem to have a partiality for keyboard performance functions. Me, I'm not so sure, though Chase Play has always been an interesting effect (not on the U20, though - it hasn't been implemented).

The U20 offers Transpose, Chord Play 1 & 2, and Arpeggio functions, each of which is programmable per Keyboard Patch and accessible from a dedicated front-panel button for ready selection. Arpeggio has a straightforward implementation, with programmable rate and a choice of up, down, up and down or random directions; unfortunately the rate can't be synced to an incoming MIDI clock, nor are MIDI clocks transmitted. But perhaps the most interesting effect is Chord Play. Roland's Alpha Juno 1 and Alpha Juno 2 synths featured a Chord Memory function which allowed you to program one six-note chord and play it from any note (transposed accordingly). The U20 allows you to program a chord of up to eight notes for each semitone within the octave, effectively taking you into the realm of arrangement. The chords themselves aren't limited to an octave spread, but can be any collection of up to eight notes played on the U20's keyboard. Up to eight of these Chord Sets (collections of 12 chords) can be programmed into the U20's internal memory. You then assign, per Keyboard Patch, a Chord Set to each of the two Chord Play buttons, which allows you to quickly switch between two "arrangements". You can also set a key offset for each Keyboard Patch, so that the same Chord Set can be used for playing in different keys, while because Chord Play is a monophonic function (no spontaneous bitonality here, I'm afraid), you can set the retrigger mode to off, low or high. When more than two notes are held down on the keyboard, retrigger determines which (if any) key and associated chord will be triggered when you release the sounding note. Unusually, the velocity of the retriggered chord is determined by the velocity with which you release the first chord's key.

The notes resulting from each of these Performance functions are transmitted via MIDI, and so can be recorded as part of a sequence and/or doubled on other instruments (the arpeggio function even has its own MIDI transmit channel assignment). However, you can't trigger these functions from incoming MIDI notes (interestingly, the Alpha Juno's Chord Memory function allowed you to do this - so why not on the U20?). Another shortcoming, it seems to me, is the fact that the Arpeggio and Chord Play functions apply to the whole keyboard when selected - a programmable key-range parameter wouldn't have gone amiss.

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Finally, Roland have included an altogether more esoteric function in the form of a MIDI Monitor page which allows you to see incoming MIDI data (with or without MIDI real-time messages) or MIDI data that is being transmitted from the U20's keyboard. This data is placed in a 256-byte buffer and scrolled across the U20's LCD window as it's received; you can also use the Part +/- buttons to scroll in either direction through the buffer's contents yourself. All very handy, you might think, but there is a catch: due to the window's limited display capabilities, all data is displayed in hexadecimal notation. Whoops, user-friendliness goes out of the window (literally).

On a more positive note, Roland now seem to have wholeheartedly adopted the index as an integral part of their manuals, as do an increasing number of manufacturers. Perhaps my days of moaning about indexless manuals are over at last (and not before time).

Verdict

HOOK THE U20 up to an external sequencer and you've got a well-thought-out and flexible multitimbral sequencing setup, complete with powerful rhythm facilities and, with the addition of the U110 Latin and FX percussion PCM ROM cards, a solid if largely unadventurous range of drum and percussion sounds to draw on. The inclusion of digital reverb and chorusing and the dual-stereo output arrangement make a lot of sense for the musician on a budget who is perhaps recording direct onto a personal multitracker rather than onto 24-track tape via a 32-channel mixer. It's really the home musician of relatively modest means, and the newcomer to musical technology, that the U20 is aimed at.

However, there's a danger that the U20 might end up falling between two stools (or, if it's anything like a certain MT editor, two bar stools). Why? Well, it's neither a sampler nor a synth, and although the relatively limited editing facilities and the ability to layer sounds do allow you to "transcend" the source samples to some extent, it's still basically a matter of what Roland decide to provide you with in the way of internal samples and U110 PCM sample cards, is what you get. Consequently, to a large extent you're dependent on Roland's idea of what sounds you should have. In comparison, Ensoniq's new VFX synth really lets you play around creatively with sound, get between the cracks and subvert the sort of creeping compartmentalisation offered by an instrument like the U20. And Korg's M1 synth, which like the U20 allows you to access further samples via plug-in PCM ROM cards, lets you use its samples in their natural state or put them through a full-blown synth section. Meanwhile, any sampler will allow you to incorporate and use in your music whatever sounds you see fit. Personally, I hope that the U20 isn't the forerunner of a new type of keyboard instrument which limits your sonic choices. There may be a "preset culture" among musicians nowadays, but that doesn't mean manufacturers should pander to a mentality which they have helped to create through convoluted digital-access editing systems. Rather, they should concentrate on providing much better editing access - open up, don't restrict.

So is it to be the sample playback of the U20 or the more sophisticated sonic manipulations of the M1, the VFX, or Kawai's new K1 II synth? Let the musicians decide.

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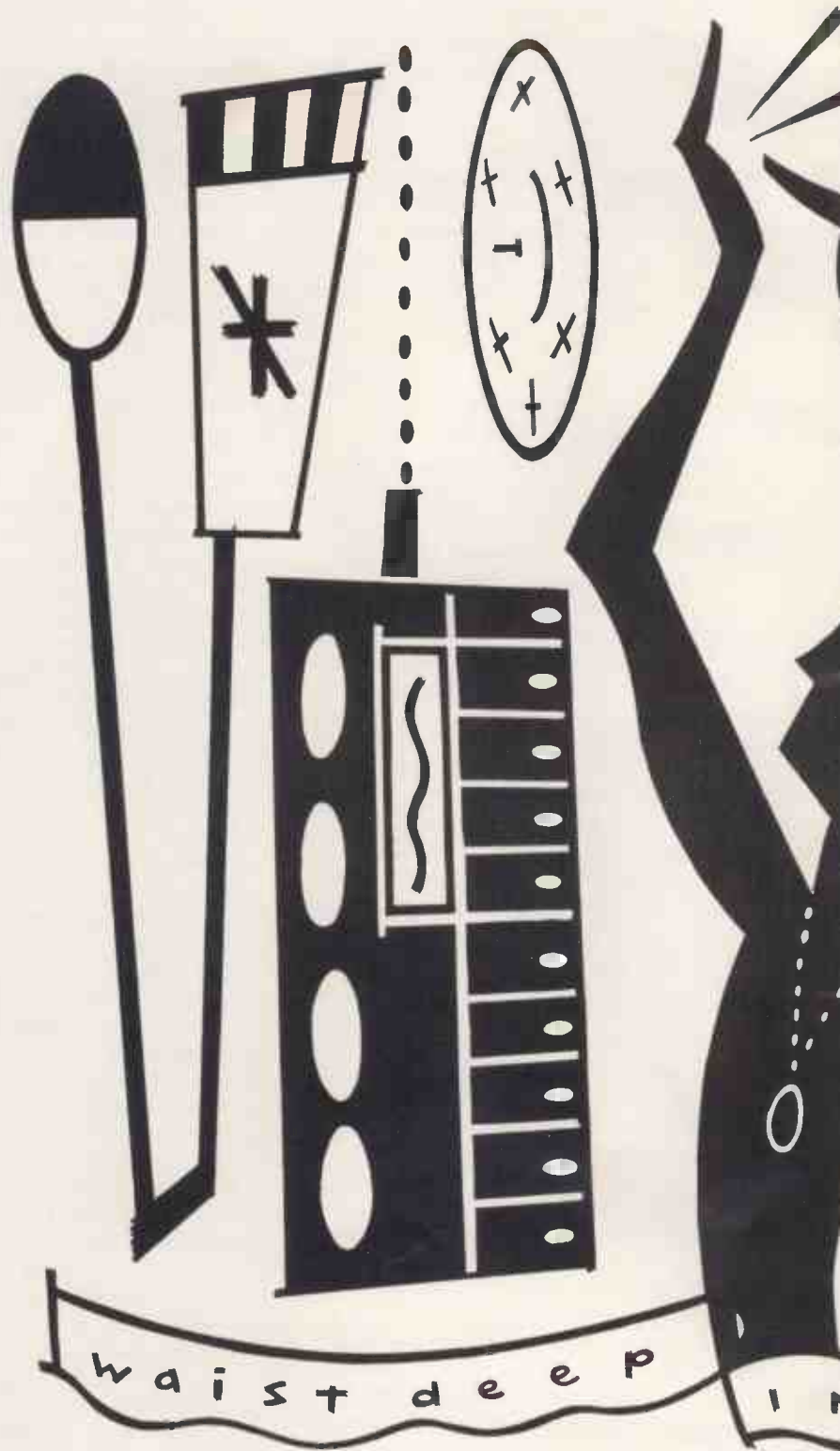
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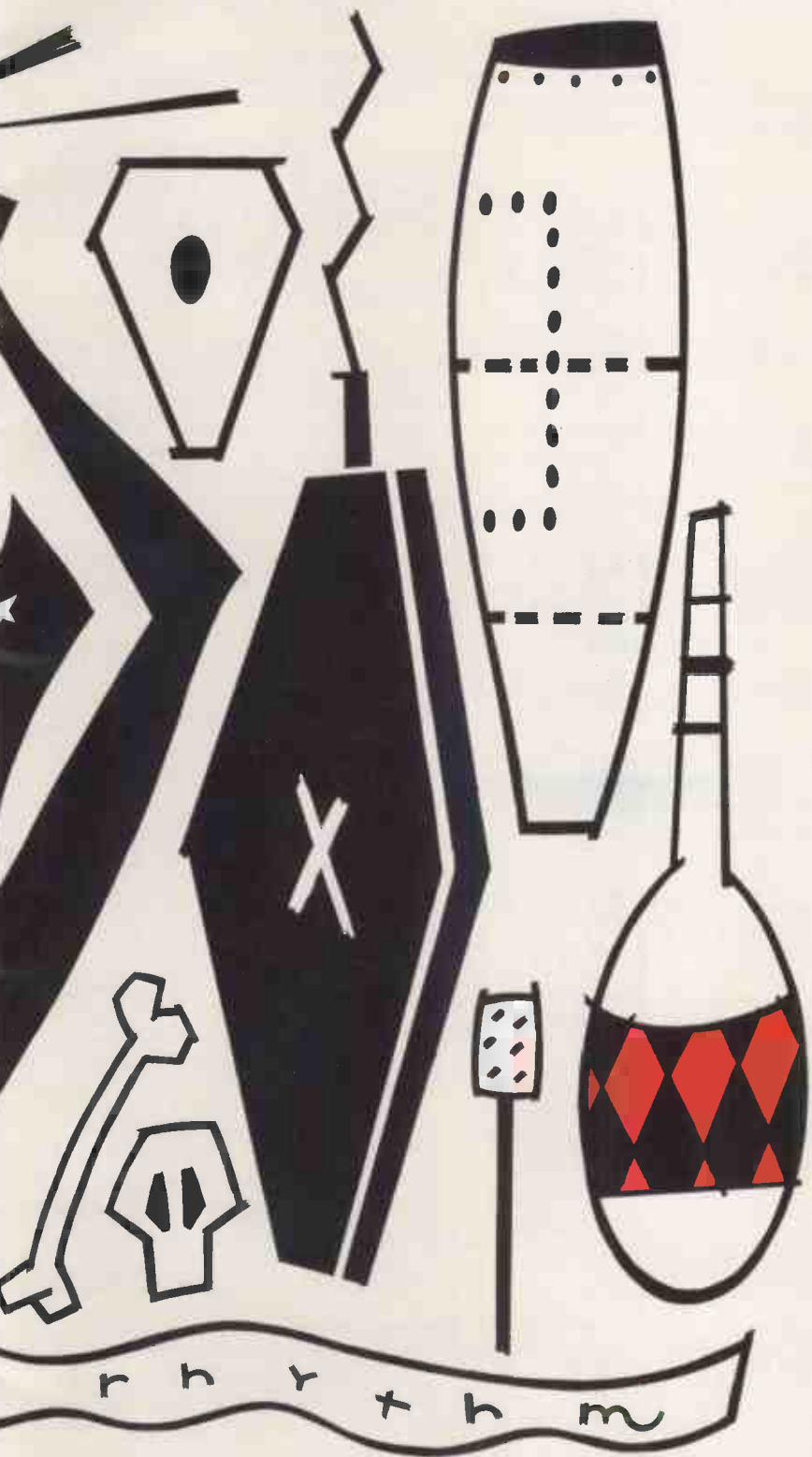
This introductory series on drum machine programming will cover not only programming basics, but the basis of a variety of rhythmic styles – in the months to come we'll look at styles including rock, reggae, go go and hip hop. First a few pop basics . . .

Text by Nigel Lord.

AS THE PERSONIFICATION of all that is wrong with pop in the '80s, the drum machine has few equals. Often the only piece of equipment which can be cited by name in one of those full-blooded Luddite rants we've all been subjected to over the years, it has reserved for it that special brand of vitriol poured over any piece of equipment with the temerity to

take on a role previously associated with a human being.

Yet still they endure. Despite the re-emergence of the real live article, despite public rejection of the more obvious strains of synthesised music, despite the current disenchantment with a system which constantly entreats us to upgrade in favour of this year's model, we have seen a



whole crop of machines released over the last 12 months, all anxiously snapped up and in some cases, generating that special buzz of excitement which accompanies the release of a genuinely ground-breaking instrument. Clearly, the beat-box – however humble or sophisticated its operating system – is no mere passing craze; it has withstood the rigours of time

and fashion, and more than a decade after its inception, still maintains its presence as a viable musician's tool.

Despite the longevity of the machine, however, it really cannot be argued that the skills required to program it have developed much beyond the rudimentary. I speak, of course, in very generalised terms: there are programmers around

who can take your breath away with the intricacy and subtlety of the patterns they coax from their machines. Likewise, there are those whose simpler, more powerful programs can be guaranteed to fill a dancefloor, even though their only distinguishing feature may be a particularly insistent bass or snare drum sound.

In the broader field, however, rhythm programming still tends to sound stilted and dull. Irrespective of the massive leaps in beat-box technology over the years, it seems we are quite content to fall back on the cliched and predictable. And despite the availability of a vast range of percussive and rhythmically useful sounds, we still rely on the bass/snare/hi-hat combination which has characterised pop music for more than three decades now.

THERE IS, OF course, considerable debate as to who makes the best programmer. As Editor of a magazine for drummers and percussionists for some four years, it might be assumed I'd automatically lend support to the theory that only in the hands of a real drummer can we expect to hear convincing results from a drum machine. And indeed, there is definitely something to be said for this argument. But the days of drum machines *having* to sound like real drummers are thankfully at an end; and certainly, some of the most innovative and compelling rhythm programming I've come across over the years has come from players with no experience in the rhythmic arts whatsoever.

Primarily, this relates back to the point I made earlier about most programming being bound by convention. Quite simply, if you're not aware of the conventions and there is nothing to stand between you and your natural creativity (technique not being a consideration when it comes to hitting buttons), then clearly, there is more than an outside chance that something new and original may shine through. The difficulty for most of us, however, is that whether we have experience of actually creating rhythm patterns or not, we are nevertheless bound by what we perceive to be the "right way" to go about programming them. And the problem is compounded by the fact that genuinely new and original rhythm tracks tend to be specific to the piece of music they are written for. It is not usually possible to hold them up – out of context – as examples of how we should approach programming.

Illustration Clive Goodyer

What we are left with, then, is the process of taking patterns which may justifiably be called conventional, but adding to them a little spice here and there, so that although they may still be readily used within the more popular song structures, they carry with them that extra sparkle which lifts them above the mundane and the predictable.

And indeed, this will be the aim of the first few articles in this series. As you ▶

► might imagine, this approach puts them very much in the beginner's class, but in my experience this is precisely where most people tend to stagnate and need a little extra push in the right direction.

ONE OF THE main obstacles to overcome in a tutorial series such as this, is that of keeping it relevant for users of equipment of varying degrees of sophistication. Inevitably, you find yourself taking a "lowest common denominator" approach - and in all honesty I can't pretend to have totally avoided that here. If however, the examples given are used in the right way - as pointers to particular programming techniques and as a spur to further experimentation - then this should pose no problem. For the average programmer it shouldn't be too difficult to spot the potential of a particular rhythmic phrase, and from this, determine how it can be best realised using the facilities at his or her disposal.

The other difficulty, as you might imagine, lies in simply knowing where to start. Too advanced, and you risk going over the heads of people on the first rung of the ladder (with the most basic equipment); too simple, and there's a danger of losing the interest of more competent programmers (probably with more sophisticated machines) by re-treading ground they covered some time ago. But I have to say I do tend to favour the latter approach; at least that way you cannot be accused of leaving anyone behind on the grounds of limited knowledge - or limited equipment. To the more advanced programmers I can only say: keep watching this space, sooner or later you're bound to find something of value. And even with the most simple patterns, you might just come across an interesting variation on a theme.

One thing I will take for granted, however, is that everyone understands the standard "grid" system of rhythm pattern notation. It is without doubt the simplest way of transcribing patterns on paper, and is the system employed on most Roland machines, as well as the drum edit pages within many software sequencing systems. Needless to say, it will be supplemented with further information where necessary, and any deviation from the standard format will be fully explained.

RIGHT, LET'S GET cracking with a handful of variations on the standard bass/snare/hi-hat combination found throughout rock and pop music. The purpose of these examples is to illustrate the vast range of different grooves which may be created simply by shifting around a few bass and snare notes within a two-bar, 4/4 pattern. This month, we'll make no effort to program dynamically - all notes are of fixed volume (unless you feel like getting adventurous) - and no other instruments are involved, so all these patterns can be produced on the most basic machines.

Taking as our rhythmic base a pattern which is probably the most common in popular music:

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum			•					•	
Kick drum	•			•	•				
TIME SIG: 4/4				Bar 1				Bar 2	

... we can, by simply inserting a space between the two consecutive bass drum notes, take a little of the mechanical feel out of it:

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum			•					•	
Kick drum	•			•		•			
TIME SIG: 4/4				Bar 1				Bar 2	

Then, by moving the third bass drum note back a beat, we can produce a rather more driving rhythm ...

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum			•					•	
Kick drum	•			•		•			
TIME SIG: 4/4				Bar 1				Bar 2	

By adding an extra bass drum note at the end of the second bar, the driving effect becomes even more pronounced, but we lose the feel of a two bar rhythm:

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum			•					•	
Kick drum	•			•		•			•
TIME SIG: 4/4				Bar 1				Bar 2	

The insertion of a fifth bass drum note lends an even harder edge to the pattern and re-establishes its two-bar feel:

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum			•					•	
Kick drum	•			•		•			•
TIME SIG: 4/4				Bar 1				Bar 2	

IN MANY WAYS, the development of the last five examples reflects the change in emphasis - away from the snare and onto the bass drum - which has characterised much of the dance music of the last ten years or so. If, however, we turn our attention to the snare line and add an extra note here, we produce a pattern which, though much favoured by punk bands in the late '70s, should be avoided at all costs as a machine program ...

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum			•					•	
Kick drum	•			•		•			
TIME SIG: 4/4				Bar 1				Bar 2	

Things get a little better with the re-introduction of a third bass drum note - but not a lot ...

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum			•					•	
Kick drum	•			•		•			•
TIME SIG: 4/4				Bar 1				Bar 2	

AS IF TO prove that it's not the complexity of pattern which gives it the necessary feel, this next rhythm actually uses less snare and bass drum notes than any of the preceding ones, yet produces a far more effective groove, which can form the basis for a vast array of rhythmic variations:

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum								•	
Kick drum	•			•		•			
TIME SIG: 4/4				Bar 1				Bar 2	

Try adding an extra bass drum note on the off-beat just after the snare:

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum				•				•	
Kick drum	•			•		•			•
TIME SIG: 4/4				Bar 1				Bar 2	

Moving the extra bass note to the off-beat just before the snare gives the pattern the feel of a closing phrase ...

Hi-hat	•	•	•	•	•	•	•	•	•
Snare drum					•			•	
Kick drum	•			•		•			•
TIME SIG: 4/4				Bar 1				Bar 2	

Linking patterns nine and ten together produces a simple, but highly effective groove which works well as a framework for a more complex bass guitar line (or any bass instrument) to be woven through it.

Finally, those into heavier musical styles might like to try omitting every other hi-hat beat from any of these patterns; the effect is more ponderous, but speeded up a little, can be very usable.

And that's about it for this month. In the next article there should be much less in the way of chat and more practical examples - this time with a few dynamics thrown in. So until then ...

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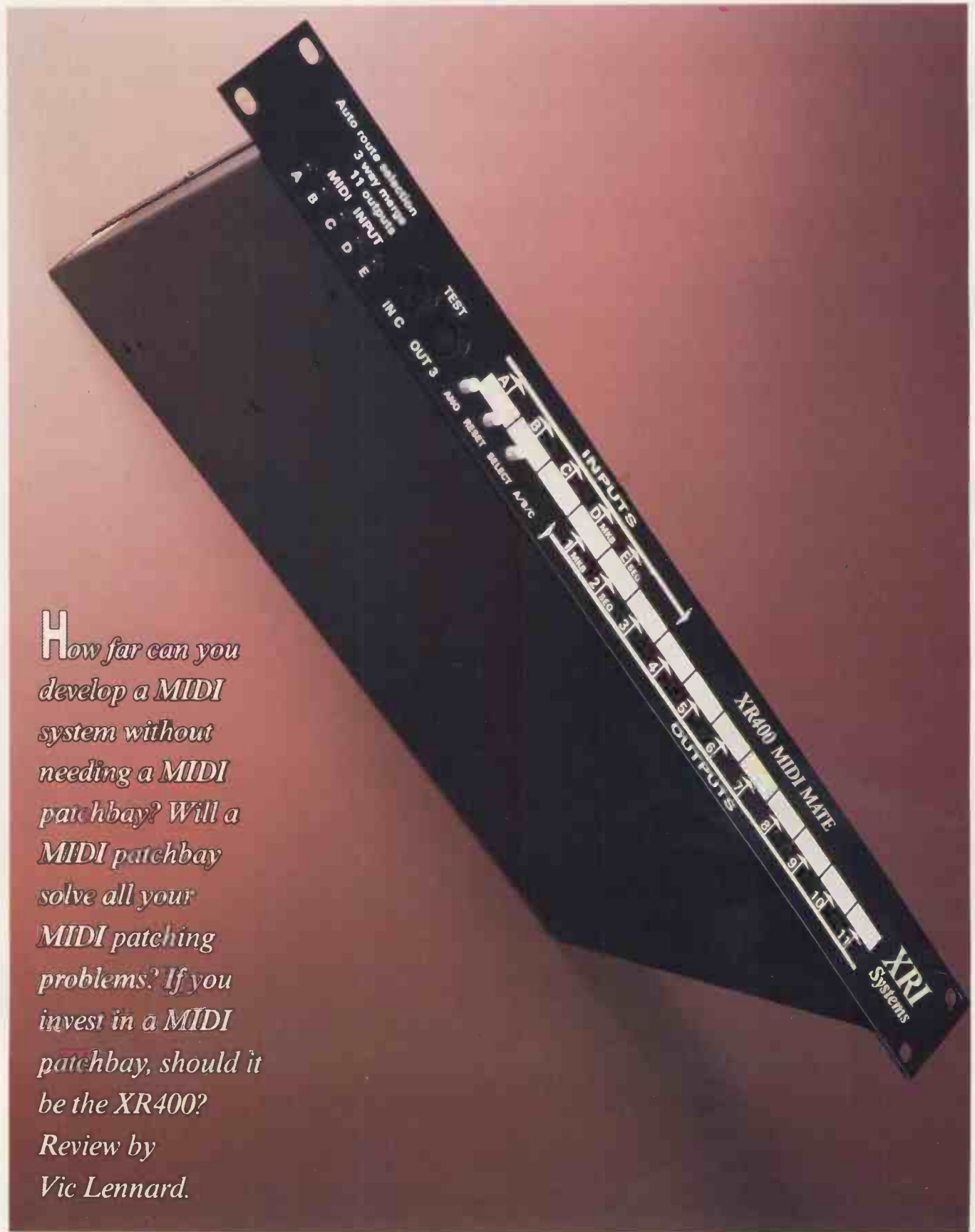
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XRI

XR400 MIDI MATE

MIDI Patchbay



How far can you develop a MIDI system without needing a MIDI patchbay? Will a MIDI patchbay solve all your MIDI patching problems? If you invest in a MIDI patchbay, should it be the XR400?

Review by
Vic Lennard.

Photography James Cumpsty

MOST OF US with a drum machine and a couple of multitimbral synths in their home studio eventually invest in an audio patchbay, to ease the strain (mental and physical) of continually repatching leads. We could adopt a similar policy to relieve some of our MIDI patching headaches, but there's a problem. The complexity of even a modest MIDI setup seems to be enough to scare us off. Patching a MIDI system is bound to be more complex than its audio counterpart – for starters, MIDI In, Out and Thru sockets are to be found on most devices, which means that you have to work out what equipment is transmitting data to which devices and patch accordingly. The truth is that a couple of synths, a computer with visual editing software and a mother keyboard are quite enough to confuse us all.

But the day finally comes when we've had enough. The only alternative to the asylum is a MIDI patchbay. It must be the solution to our troubles. But hold on, not only do we have to suss out which way round to plug in all the leads but we also have to program the configurations for each situation. Not only that but most patchbay screens are made up solely of numbers and letters (and not in word form). All we really need is some bright spark to suggest a MIDI patchbay as a suitable place to incorporate a merge box, and the asylum starts to sound like an attractive proposition. I was that man.

What's needed is a MIDI patchbay which can accommodate a sufficient number of inputs and outputs, with a merge facility built in that doesn't need to be programmed. XRI, a Birmingham-based company known for their XR300 SMPTE-to-MIDI converter, have designed and built the XR400 MIDI Mate, the first automatic routing MIDI patchbay.

Description

PACKAGED IN A 1U-high 19" rack case, the XR400 has five inputs (A-E) and 11 outputs (I-II). Input C and output three are both on the front panel – good idea – while the remainder constitute the connections on the rear. Inputs D and E and outputs I and 2 are specifically intended for a master keyboard and sequencer respectively, while any one of the remaining inputs can be active at one time and are selectable via a front-panel switch. Each input has an associated LED which is on when that input is selected (D and E are permanently on) and which flicker when a data stream is being received. The remainder of the front panel is made up of white labels on which the name of the connected piece of equipment for each input and output can be noted.

Internal Connections

THE DESIGNATION OF specific inputs and outputs for the master keyboard and sequencer is intended to prevent MIDI loops from occurring. While this should be sufficient, XRI have also included a software routine which checks the MIDI data at inputs D and E and prevents the same data appearing at their corresponding outputs, I and 2.

To understand the idea behind MIDI Mate, it is important to appreciate the internal wiring. The Master keyboard (D) can pass MIDI information to outputs 2-II while the sequencer (E) passes data through to outputs I and 3-II. For both of these, all types of MIDI data will be passed. Inputs A, B and C can pass all data through to outputs I and 2 but will have system exclusive information filtered from outputs 3-II. The reason for this is that a MIDI loop could occur when using visual editing software with a MIDI module.

Because a Master keyboard will automatically be connected to sound modules on outputs 3-II, a problem

can arise when using a sequencer with software MIDI Thru. The data will reach the modules both from the keyboard input D and via the sequencer input E and will lead to double notes or worse. This "soft" Thru is also used to re-channelise MIDI data. For instance, instead of changing the MIDI channel on the Master keyboard each time a different sound module is to be played, it is easier to simply set the output MIDI channel on the sequencer. To counter this, there is a button labelled ANO (Alternative Note Output) on the front panel, which disconnects the Master keyboard from all outputs except the one for the sequencer, number 2. Consequently the Master controls the sequencer, which then controls everything else. The original design of the XR400 had this as a non-latching switch, which led to confusion as to whether the function

"In use, no timing glitches or hanging notes occurred, which shows that the theory behind MIDI Mate also works out in practice."

was on or off, especially as it defaulted to off when the unit was turned on. That has now been replaced with a latching version. Talking of switches, the mains power supply switch is conspicuous by its absence, and I would certainly prefer to see one.

Should the XR400 lock up in use, there is also a Reset button which sends out all-notes-off and pitch wheel centre commands on each MIDI channel. Disconnecting MIDI leads, turning equipment on and off and changing the source of MIDI clock from one device to another are all situations where a press of this button should help to ensure problem-free operation.

Sequencers

ONE OF THE main areas in which MIDI Mate is likely to find itself being used is with a computer sequencer. XRI have apparently used small buffers for MIDI data and rely on the speed of their microprocessor to ensure that these buffers do not overflow and lose important information. A lost Note On means that a note doesn't sound, while a Note Off going astray leads to the note hanging – which will sometimes be sorted out when that particular note is pressed and then released again. Nothing that I did could make the buffers overflow, including running 16 MIDI channels of data at 480bpm and sending out the equivalent of 5000 notes in the course of two seconds – just the kind of situations that occur in everyday life.

Seriously, no timing glitches or hanging notes occurred, which shows that the theory behind MIDI Mate also works out in practice. In fact, XRI claim a maximum MIDI Thru delay of 300 microseconds which is approximately one third of the time taken to transmit a MIDI note on. The Alternative Note Output switch was permanently on so that MIDI information could be re-channelled. From the point of view of patching, running with a sequencer is no big deal as the MIDI wiring network could be permanently set up if this were to be the only use. However, using the main Master keyboard with another controller, be it drum pads or a guitar synth, requires the use of the merge facility on the XR400, and again it seemed to work fine.

Visual Editors

USING A VISUAL editor running on an Atari ST, with a MIDI sound module usually entails one of two possibilities; play the module via the on-screen keyboard (Steinberg, Interval), invisible equivalent (Dr T, Soundbits) or by mouse (Pandora) – none of which can ever give the correct feel and which are often lacking the pitchbend, ►

- ▶ velocity sensitivity and modulation facilities you might need to audition a sound – or use a merge box.

The necessary connections are for the Master keyboard and sound module outputs to be merged and to control the computer which in turn controls the sound module. Any alterations on screen will be sent to the module and vice versa, while the keyboard sends note data via the computer to the module. MIDI Mate comes into its own here. I tried it with Dr T's editors for the Yamaha TX7 and Roland D110, Interval Music editor for the Kawai K1 and Soundbits editors for the D110 and K1. No problems were encountered with any of these.

As far as editors are concerned, the acid test tends to be with the Pandora Technology ones for the Korg M1, D110 and DX7. These are desktop accessories and so co-habit with the sequencer. Using C-Lab's Creator for instance, it is possible to edit a synth while the sequencer is playing it and to record these edits on a separate track (the M1 version was reviewed in MT, December 1988). This stretches both the computer and the MIDI patchbay to their limits, due to the mixing of performance and system exclusive data. Using the DX7 editor resulted only in the occasional glitch. The D110 version would have made a more interesting test as two-way MIDI connection ("handshaking") is required, but you never can try out everything, can you? This would essentially be the same situation as described above, with a standard visual editor but with a lot more MIDI note information involved.

Drum Machines & Synchronisers

THE ONE SITUATION usually guaranteed to cause problems is when two devices are sending out MIDI real time information – such as timing clock and start/stop commands. As soon as the XR400 receives any message pertaining to MIDI timing at an input, that input is designated the "master clock" and will continue to be so until the unit is reset. Any MIDI clocks appearing at another input are ignored. A Roland TR626 was set at input A churning out MIDI clocks to an Atari sequencer which then echoed them back to input E – which had no adverse effect, as the system continued to function.

A synchroniser converts either tape sync or SMPTE to MIDI song position pointer and timing information. Most have a built-in merge which can be used to good effect here. Simply connect the Master keyboard to the sync box, which will combine the note data with that internally generated for timing and send this to the sequencer. Alternatively, should the unit not have a merge facility, the one within the XR400 can be used instead. Connect its output to input A, B or C and the timing data will be merged with any information generated by the Master keyboard.

SysEx

SYSTEM EXCLUSIVE information is one area of MIDI which is always likely to be fraught with problems. SysEx is the method by which MIDI devices transmit and receive their internal parameters, be that a single parameter change or an entire bulk dump of the voice parameters. There are practically as many protocols as there are manufacturers and the speed with which the MIDI device hardware can react and receive data is highly variable. Computer software written specifically for this often has to insert pauses to allow for a synth to "digest" the data received.

Hybrid Arts' Genpatch (a generic librarian) found itself sending and receiving data through the XR400 for the purposes of this review. Of the devices I tried, there were no problems with the Akai S900 and S950, Kawai K1, Roland D110, Yamaha TX7 and Casio CZ101. However, a Matrix 1000 had to be reset, because although the data was transmitted OK, it was corrupted when sent back. Similar problems occurred with a Roland MKS70 (JX10 module) and with a one-way dump from a Roland D50 (although the latter worked fine in handshake mode). The Matrix 1000 and the MKS70 have difficulty coping with SysEx MIDI data running at full tilt and it is quite possible that the XR400 would need fine-tuning to handle it and them. XRI say they're quite happy to look into any incompatibility problems . . .

Using more than one of a particular MIDI device presents no problems to the XR400 when each machine is given a separate ID. Roland allow each synth to have a "unit number" to distinguish it from another of the same model, but this isn't always the case. A dump request via the XR400 to a sampler will initiate the dump procedure on any other with its MIDI In and Out connected to the computer.

Another problem with SysEx is one which is beyond XRI's control. SysEx information always starts with the hexadecimal byte F0 followed by the Manufacturer's Identification code, data, and an F7 to finish off. The data can be anywhere from 5 or 6 bytes up to 64,000 and beyond. SysEx protocol does not allow for any MIDI note, performance or timing data to butt in between the F0 and F7. If this should happen, the SysEx transfer will be aborted. I tried injecting MIDI clock and notes at the same time as a SysEx dump and found that the results were variable. The results appeared to depend on which editor was being used to transmit the voice parameters back to the sound module. This situation is unlikely to occur in general practice as few people will want to send full memory dumps at the same time as playing a sequencer. You might want to send the odd edit buffer, but we're only talking about 150 to 500 bytes which didn't cause any trouble when tried.

Verdict

WHAT WE ARE talking about here is a device which is, at present, unique. It is aimed at the working musician as opposed to a technophile who wants to push everything to its limits. As such, it works admirably. There need be no more MIDI lead mix-ups or patchbay programming problems each time you want to spend a couple of hours updating the libraries on your synths or samplers with a visual editor. No more swearing as you try to unravel the bird's nest of MIDI cables.

On the negative side, I would have liked to have seen more MIDI inputs on the unit. There are a couple of spaces on the rear of the unit and I understand that XRI are considering enlarging the choice outside the Master keyboard and sequencer to one from five instead of the present three. Apart from that, the XR400 is difficult to fault. It comes complete with an excellent manual which includes 14 diagrams of practical situations, along with a section on trouble-shooting and hints.

At an RRP of £200, this is likely to sell well. Perhaps the time is ripe for you to stop doing large amounts of damage to your MIDI leads and your sanity. ■

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MULTI COLOURED SOUND



Prominent in the energy of Living Colour's musical stories is the dynamic guitar sound of virtuoso Vernon Reid, whose playing is augmented by more than a few technological tricks... Interview by Lars Lofas and Nick Armington.

VERNON REID'S MASTERY of his instrument often seems almost unearthly – or so a more poetical soul might have it. But in this age of semi-skilled multi-instrumentalists, his dedication to one instrument – the guitar – and his unique playing style make a significant contribution to both the critical acclaim and commercial success of the band Living Colour.

Too easily dismissed on casual listening as yet another brand of “metal” rock, the music on the group's debut album, *Vivid*, addresses a variety of subjects. Reid's guitar blasts through an unexpectedly wide spectrum of styles, at times paying homage to early power rockers like The MC5, Jimi Hendrix, Ten Years After and The Who, while at other times dashing off funk licks that would make Nile Rodgers or George Clinton grin. Most of the time, though, Reid wails with a sound to which he alone can lay claim. And alongside Reid's guitar runs a healthily technical vein. Samples as varied as snatches of John F Kennedy, sit easily with sample loops that provide rhythmic as well as tonal elements of the band's music.

Together with vocalist Corey Glover, bassist Muzz Skillings, and drummer Will Calhoun, all of whom are strong musicians in their own right, Reid has managed to create a record which makes a strong social and economic statement while managing to go platinum in the US and attract much attention in the UK. This album, propelled by the success of its first single, ‘Cult of Personality’ as well as the band's energetic live shows, has established Vernon Reid as a

modern-day guitar hero for a new generation of young players.

Despite the fame and attention granted to him in recent months, Reid remains disarmingly shy and soft-spoken. The transformation he undergoes night after night on the stage is remarkable, as up close he's decidedly unlike his onstage persona. We recently caught up with him while shopping at Manny's Music in his home town of New York City, curious about exactly how he manages to create those incredible sounds that make Living Colour's music so undeniably vivid.

“Most of the time”, says Reid, “we've been lucky in finding the right sound by trying all kinds of things until we find something we like a lot.” Pressed for details, he offered examples from the recording of *Vivid*. “We took a lot of different amplifiers and put them in a big room. Then we miked all the different corners of the room, with mics close in, far away, and in places where they would catch the sound from an amp bouncing off a wall, and brought all of these mics into the console.

“I think we had practically one of every amp made, including Marshalls, Fenders, Vox and Dean Markleys. For example, on ‘Cult of Personality’, we used the Marshalls and a Dean Markley DR150 amp, and the sound on the solo is a combination of the Marshall, the Dean Markley and one of the new Fender Showman amps.”

Although the system of outboard electronics and preamps that he uses onstage to recreate the album's sound is quite elaborate, Reid recalls

that he followed a much more low-tech course in the studio. "At the time we were recording *Vivid*, I still had a lot of floor pedals that I had used for years.

"Two of my favourites were a distortion box called The Rat, made by Pro-Co Sound, and an old ADA chorus reverb that didn't have MIDI. I also had some Boss reverb, chorus and flanger pedals. For a long time, I was using an Electric Mistress flanger made by Electro-Harmonix and an old Roland floor-pedal chorus device.

"I experimented with using a lot of old gear that hadn't been used a lot recently. For example, there's a Vox Cry Baby wah-wah on the song 'What's Your Favorite Color?', and a Talkbox on the track called 'Memories Can't Wait', which was first done by Talking Heads. The Talkbox was also put through a reverse gated reverb at the board, which clipped the attack of the vocal and gave it a very 'other-worldly' kind of sound."

REID AND HIS bandmates also make use of numerous non-musical samples on *Vivid*, which add a sense of historical context to the music. "We listened to a lot of old records to get the samples for the album", he explains. "The John Kennedy speech on 'Cult of Personality' was on tape, and we ended up using the actual recording instead of a sample, but we did a lot of old-fashioned tape editing to make it sound the way it did.

"If you listen to the original speech, where he says the words 'Ask not what your country can do for you . . .', it's spoken much slower, with a lot of dramatic effect. We had to edit out the pauses in the speech, and we also sped up the two-track tape of Kennedy while slowing down the multitrack when we laid it into the song. Later on, when we started playing the song live, we sampled it into an Akai S900 sampler, and Will, our drummer, triggers it with an Octapad."

Reid himself does much of the sample design for the band, and is currently updating his stage gear to make more use of the MIDI interfaces built into the equipment he's using these days.

"I've started to use a device called the RFC1 MIDI Mitigator, made by Lake Butler Sound in Florida, which runs my whole system now.

"The Mitigator is a MIDI controller for guitar, with five footswitches and a display built into the unit. I use it to send MIDI note messages and implement program changes. My guitar is wired normally, with 1/4" guitar cables looping through all the effects, and the Mitigator is hooked up with MIDI cables going to each unit's MIDI In and Thru jacks. Each footswitch can simultaneously change programs and turn a MIDI note on or off.

"The Mitigator also has a keyboard mode, so that a MIDI note is transmitted as long as you keep your foot on the pedal. You can also set it up so that hitting a pedal once sends a MIDI Note On message, and hitting another pedal sends a Note Off. I'm going to use it more when I start using some of the sample loops we've developed onstage."

Sample loops? This sounds intriguing, and potentially puts Reid in a league with ex-King Crimson main man Robert Fripp and sometime David Sylvian collaborator David Torn. Reid admits the idea's a little unconventional, and certainly a far cry from the slow-attack sound

that's come to be associated with MIDI guitars.

"What we are doing is taking a bunch of samples and grouping them across the keyboard. When you take a rhythmic sample, and put in a long loop, it ends up sounding and acting almost like a sequencer. This way, you can have a whole sequence thing with a lot of information in it assigned to a single MIDI note, so if you key-group a whole bunch of these things in your sampler, one program can conceivably have a ton of stuff in it.

"We use this technique when we play 'What's Your Favorite Color?' live. There's a sample of Chicago house music that we use in a break section of the song, and I use the Mitigator to turn on a MIDI note to start this loop, which sounds like a sequence. Some of that is going into Will's monitor, and he'll play in time with the sample. It's cool.

"On top of that, with my current setup, I can actually string together a bunch of sample loops for different parts of a song. If I adjust all of the loops to play at the same tempo, I just hit the next pedal every time I want a part to change. Plus, I've programmed the Mitigator to send program change messages to my ADA MP1 Guitar Preamp and my DigiTech IPS33 Pitch Shifter, so I can play the samples and change the sound of my normal guitar at the same time."

When Living Colour appeared as the musical guests on America's *Saturday Night Live* TV program a few months ago, an Akai S900 was sitting prominently in Reid's amp rack. But recently, he's traded it in.

"The band recently bought a brand-new Akai S1000HD sampler, with a hard disk", he explains. "In fact, I've been sitting in front of the thing all week, loading in samples from the S900 and from the Oberheim DPX sample player, which I used before the band bought the S1000.

"We're starting to use a lot more sampling live, so we want to improve the quality. The S1000 is really easy to use. In a way, I'm kind of a dunderhead, because I have to read manuals over and over and over again, fiddle with the gear, then go back to the manual and fiddle around some more until I get it down and figure it out.

"The Akai's got a really logical operating system, and I love the fact that it comes with a hard disk built in - it's great to have all the samples there ready to use so that you don't have to reload them each time you turn the machine off. In the past, whenever we played live, one of our technicians would keep changing the disks, checking his set list to make sure that the right disk was loaded at the right time. Now, we'll be able to control most of that ourselves."

Despite all the technology that's around him, Reid quixotically - and humbly - admits that the toys he's acquired over the past year or two serve mainly to enhance the band's overall presence, rather than his own sound. "I'm a little bit amazed by all the attention to my playing, because I've sounded more or less the same for quite some time now.

"Even though we've bought all of this equipment, what's still really personal is what's inside of you as a player. Someone could go out and buy all the same stuff I have, but unless a person really wants to study how I play, he's not going to sound like me. What really makes a player unique is the way he or she decides to use technology and samples. It's not really what the equipment brings to you, it's what you bring to the equipment!" ■

"When you take a rhythmic sample, and put in a long loop, it ends up sounding and acting almost like a sequencer."

Music By Design

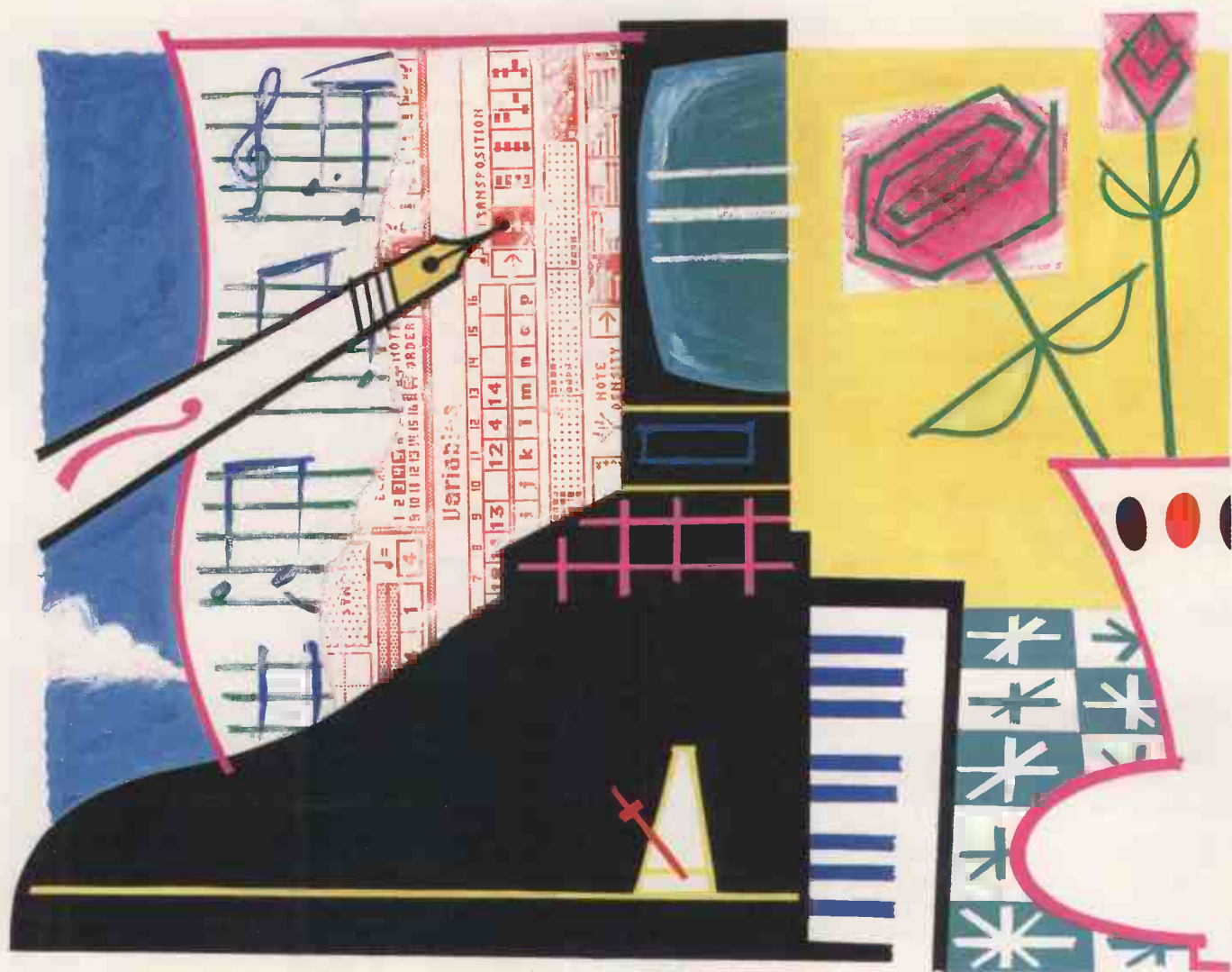


Illustration Clive Goodyer

Music composition software may be well suited to experimentation, but can it help you write a decent song? This two-part series examines the practical applications of Intelligent Music's M and Dr T's KCS. *Text by Greg Truckell.*

SINCE THE DAWN of synthesis, before the Minimoog had established itself, before the first tick of the clock of some steam-driven sequencer, the fingers have been pointing. "It's not real music", cried the "serious" composers and musicians who, of course, had no idea what they were talking about. They must be as sick as parrots by now.

In this two-part series, we'll explore some applications of certain sorts of computer software. Broadly labelled "compositional" software, we're in the realm of algorithmic sequencers and artificial intelligence. The aim of this series is not to consider the history of this family of software (see *The Secrets of Computer Composition*, MT March and April 1989). Instead, we'll consider the potential of compositional software in terms of what it can be persuaded to do. Algorithmic sequencing excels in such areas as textural, serialist, minimalist, atonal, avant garde and other similar musics. This series is intended to show that you can also get well funky with artificial intelligence.

There's a lot of software to choose from. However, for the purposes of this series we'll consider two programs: Intelligent Music's Interactive Composing and Performing System, M, and Dr T's Keyboard Controlled Sequencer. M takes most of the brain-ache out of using computer-controlled user-variable part random processes by using icons, and allowing you to slide things about the screen and so on. Just in case you get too comfortable with M, we'll be looking at probably the most expensive, and arguably the most powerful piece of compositional software: Dr T's Keyboard Controlled Sequencer, Level II, with Programmable Variations Generator (KCSII for short). As far as hardware is concerned, apart from an Atari ST, we'll assume that we're talking along the lines of a Roland D110; we need plenty of drum and percussion voices, and a few synths or samplers. At a push you could compose with a scorewriter co-resident in memory, and play the parts on acoustic instruments, but that wouldn't be real MIDI, would it... This month we'll look at M, leaving KCS for next month.

Let's introduce a rather important concept; this software can't write a good piece of conventional, structured music, any more than Spirograph can create an old master. It should be viewed as a compositional tool, no more. The basic ideas still have to come from you.

Down to business. A bassline is more

than a collection of notes; dynamics, and perhaps even more importantly, the rhythm in terms of note duration and staccato/legato articulation, are what gets toes tapping. But what do you do if you haven't got the right notes to begin with? You could try this; put just one note into your sequencer (which we shall assume is M), create a loop or loops for the dynamics, the note durations, and their articulation. Hopefully the rhythms you create will suggest directions for the bassline to take.

So how does M create rhythmic loops? The first thing to note is that it's one of the growing family of software sequencers which you don't need to stop. As soon as you put in a note, off it goes until you stop it (you can also record into M while it is stopped, if you feel the need for tranquillity in which to choose the next note). This feature makes M ideal for working on fairly repetitive phrases like bass riffs and drum and percussion parts. Regrettably though, this same feature has led certain parties to liken M to an overgrown arpeggiator. To use M as a tool for arranging a longer section of music composed from a number of different lines in different combinations and at various transpositions, you must employ the Conducting Grid, Snapshots, and Movies. You have to admire Intelligent's choice of jargon - they brought in Bondage in Realtime!

Having enabled record and MIDI Thru on the Patterns Window (Figure 1), and selected your MIDI Channel and program number on the MIDI Variables Window (Figure 2), we're ready to select a Pattern Type and go into record. For the purpose of recording a bassline, there are two possibilities, namely Pitch Distribution Pattern or Step-Time Record Pattern. The former does not allow polyphonic playing (hardly a problem with the average bassline); the relevant differences lie in how the software regards the source data - the notes you play - for randomisation/variation and editing purposes. Pitch Distribution Patterns can be more fun, but Step-Time Record Patterns give you the composer more control of the sort you are used to expecting; namely, being able to go to a step, and edit it.

As you record notes in Step-Time Record or Pitch Distribution, the Note Counter changes. The handy thing here is that you can click on the numerical to reduce the number of notes in the Pattern, and restore them later by increasing the numerical up to the

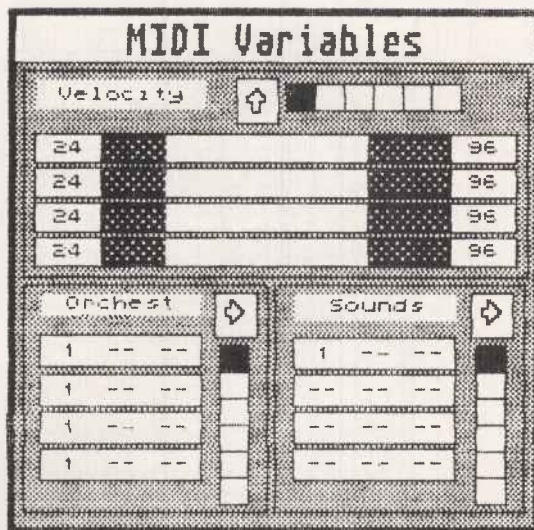


Figure 2. MIDI Variables window

number of notes you put in; this means that you can experiment with poly-rhythms and pattern phasing, whenever the whim takes you.

M plays the number of notes indicated by the Note Counter in a loop, at a tempo controlled by the Pattern's Time-Signature Numericals and the Tempo Numerical in the Global Control Window (Figure 3). At this stage each note has the same velocity, duration and articulation (the glorified arpeggiator).

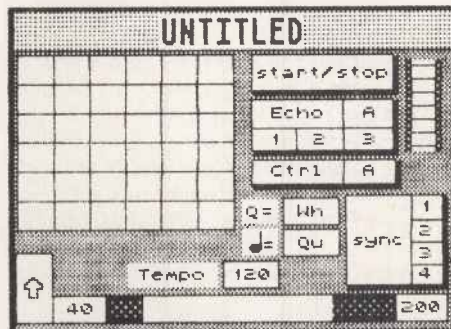


Figure 3. Global Control window

Time now to look in some detail at the principal means by which M allows you to create rhythms. The Cyclic Editor Window looks like some ancient Chinese board game, but in fact it does for the creation of rhythms what Roland's TR707 window did for drum machine programming. I should stress at this stage that just about any piece of compositional software will allow you to do what the Cyclic Editor Window does, in its own way. The trouble is that most other ways involve screens full of numbers, and that can just be far too cerebral for the average pop muso.

There are four grids on view at any time in the Cyclic Editor Window; they will be either the Durations, Articulations, or Accents Cycles, for Patterns 1 to 4. All 12 grids are independent of each other; the length of each grid is 1-16 determined by the position of the last column used in the grid. Each column consists of five rows, and these correspond to five different values for Duration, Articulation, and Accent - the values can be adjusted if the defaults do not suit your needs. Basically, the idea is that the higher (vertically) a value in a column, the longer or louder that step in the cycle will be. The system is

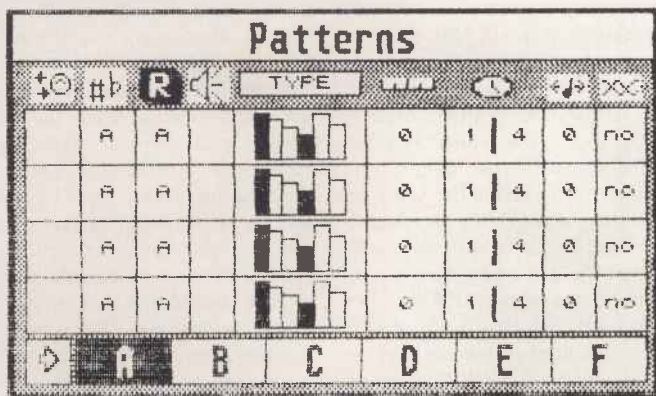


Figure 1. Patterns window

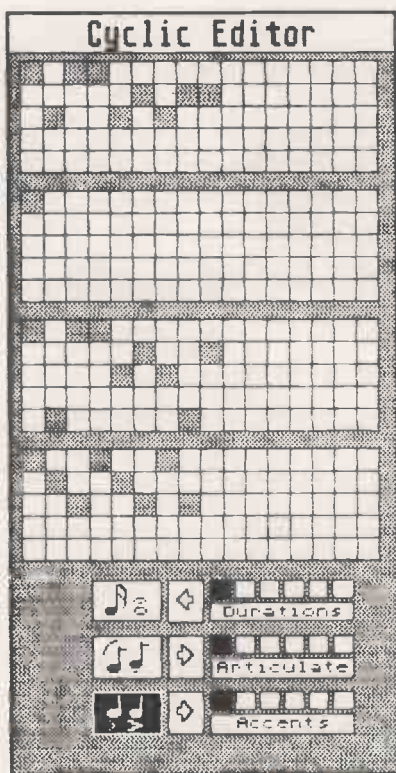


Figure 4. Cyclic Editor

▶ not without its problems; inserting or deleting a step or steps in a Cycle involves manually copying data to its new position, as does shifting a Cycle backwards or forwards relative to other Cycles. The advantage of M is that figuring out what is going on is as easy as spotting a full pint glass on a table full of drinks.

Time for an example – a few notes to get things rolling. If you have M at home you can try this, but make sure there's a grown-up there to help you, because some of the notes are sharp. You're still ready to record, so play the following notes;

ABf#bC#DGd

Just in case you don't read AMPLE MCL too fluently (I only picked it up from reading MT), upper case means you go up in pitch from the previous note, lower case means you go lower in pitch. Simple.

First things first; let's sort out the note durations. Nine notes of equal length don't make the ideal 4/4 bassline, do they? Let's pinch the phrasing from a well-known toon. Set the length of the Durations Cycle for Pattern 1 to 9, and set the levels in the columns to 1, 2, 2, 1, 2, 2, 2, 2. In AMPLE what you should now get is;

AB/f#/b/C#D/G/g/D/

For those of you still struggling with pidgin AMPLE (I include myself), the "/" means that the note should be held for an extra beat. The riff now works in 4/4, because of the way the values in the columns add up. The Durations rows default to values such that each row is twice as long as the row below it – you can change these values if they don't suit your plans. As long as the values in the rows add up to a multiple of eight (or

whatever), your Pattern will stay in the groove. Change one column without changing another to compensate, and your Pattern will shift out of the groove, in a polyrhythmic manner. Change the length of the Durations Cycle so that it's not an integer multiple or division of the Note Counter Numerical, and your Pattern will shift out of the groove in an equally fascinating isorhythmic manner. The same thing will happen if you change the Note Counter Numerical so that it is no longer an integer multiple or division of the number of steps in the Durations Cycle.

As things go so far, our bass riff is no further forward than the sort of thing you might get from a Roland TB303 Bassline with the bare minimum of effort. Even the Bassline has an accent facility, so let's go there next. The Accent Cycles are shown for Patterns 1 to 4 in Figure 4. Once again, the ability to place an accent of whatever strength on any beat without having to learn to play the thing is a strength of this sort of software.

Next in line for our attention is the Articulation Cycle; with conventional analogue (or should that be traditional, or medieval . . .) sequencers, changing a note from legato to staccato might involve inserting a rest. With MIDI sequencers the event duration would have to be numerically edited. Not so with M; enter the following step cycle:

Step	1	2	3	4	5	6	7	8	9
Value	1	1	2	3	1	2	3or2	3or2or1	3

Steps 7 and 8 are now up to M to consider. Their Durations will be selected each time at random from the range set in the Cyclic Editor Window. This allows controlled randomness, only about certain parts of the riff, that can turn what is actually a very repetitive Pattern into something with a little more life to it, while allowing you to preserve certain parts of the riff.

The Articulation Cyclic Editor Window is, in my opinion, one of M's most powerful and endearing features. I don't care how good your keyboard technique is; if you're trying to fake Tony Levin, piano grade eight is irrelevant. With algorithmic sequencing you can emulate the articulation of modern bass playing in no time at all, complete with subtle variations. Another interesting possibility is to set the Articulation Cycle to 15 steps instead of 9; this means that the bassline repeats every five passes (the smallest number into which 9 and 15 both divide is 45; 45/9 notes = 5 passes). Since your pop song is unlikely to have verses five lines long, there should be a rich sense of variety throughout the song, without throwing the listener off the trail.

Don't be mistaken about the sense of simplicity running through the techniques discussed so far. The points to note are, first of all, that it's "just a pop song" we're discussing here, not some IRCAM-styled exercise in self indulgence. Secondly, software like this, used at this level, seems to work at its best with small amounts of material at a time. The avid listener picks

up very quickly on repetitive phrases, or motifs; consequently, they'll notice any simple variation on these motifs, as a variation. If the degree of variation from a simple motif is too great, then the listener will fail to make the connection. Thirdly, if you already have a complete song composed, arranged and orchestrated in your head, then you'd be best advised not to key it into an algorithmic sequencer. Fourthly, I've suggested but not implemented a range of possible variations which generate polyrhythms, isorhythms, and some other sorts of pattern phasing whose names I don't even know. The reasons for this are simple; what I'm looking at for now is the simple backbone of a verse or chorus. The more oddball variations would be inappropriate, as they would not give a regular beat. They should instead be used for variety at the ends or starts of sections, as little breaks, or as secondary sequences running alongside the main bassline, indulging in a little interplay. I'll say no more; this is a family show.

Let's deal with some drum and percussion parts. Such is the formula for the pop song, and dance music in particular, that there are rules which need to be followed. We're almost certainly talking 4/4 time and around 120bpm tempo; but there are other, more subtle rules. In all probability there will be a kick drum on most of the odd-numbered

downbeats, and the snare is unlikely to be a major source of surprises, except at the ends of phrases of four bars or so. There is of course no reason why you should stick to the currently fashionable drum pattern, but don't despair if you've already set your heart on ripping off that pattern. There are plenty of other percussion sounds to play with, and we'll come to them in the fullness of time.

Meanwhile, let's tackle the kick and snare. We already have a bassline or lines to keep us going, but a regular snare pattern of the simplest order might be handy. You can always add the odd handclap or cowbell just to keep boredom at bay.

Back to the kick; a fairly standard, but effective trick is to have the kick follow the bass notes. Not all the time, of course; but as a change from the usual thud-crash routine, this is a promising starter. Stick a kick on the next free Pattern, then copy the Duration Cycle from the bassline Pattern to the kick Pattern. This has to be done "by hand" as the Copy function from the Edit menu only copies Pattern Type and note information. At this stage, every bass note is doubled by a kick – and there may very well be rather too many of them. Copy the Accent Cycle from the bassline Pattern to the kick Pattern, then reduce to zero the Accent level of any kick that needs kicking out (see Figure 4). It's possible that the level of the kick is varying too much; dynamics are one thing, but delicate kick drums don't cut the

groove. Simply raise the lower (and upper, if need be) limits of the Velocity Range Bar in the MIDI Variables Window. This will bring the quieter kicks up in level; the dynamic variation will be preserved, but compressed.

Once all is fine down below, we can return to the snare drum. There isn't much you can do to a simple Drum Machine Pattern (although they can be real fun with sounds other than drums). Create a New Pattern instead of the original, and make it a Pitch Distribution Pattern. Record one snare drum, and set up a two-step Accents Cycle, with step one at zero, and step two at full level. The result should be the same as you had earlier. You could now enter another, different snare sound in the Pitch Distribution Pattern, either by recording it or by editing it in. This would create an effect whereby every 2nd snare was slightly, or radically, different, where "n" is the new Note Counter value. Since only one snare was recorded, the proportion of usual to alternate snares can be set, and changed at any time, by recording more of either snare; M will make the choice between the two, in sequence, or however the sequence is varied by such features as Note Manipulation (see below); also bear in mind that the two-step Accents Cycle effectively mutes half the snares. If you want to use extra snare fills it's probably best to record these in real time over the completed arrangement, then fine-tune and flam to taste. More on this next month; in the meantime, what you should have so far is at

least one near-to-completed groove up and running.

Time to do something silly; Latin percussion would seem a good place to start. Take three Latin sounds – a handful of bongos, timbales, congas or such like. We want 16 notes to be going on with, so divide these notes between your sounds, then record, in the Pitch Distribution Pattern, all the notes for the first instrument, then the second, then the third. Set up a reasonably simple Accents Cycle – high levels on steps 1, 4 and 7 of an 8-step Cycle, for instance. Set Duration to a 1-step Cycle. Now it's time to play seriously with the Note Manipulation variables (Figure 5).

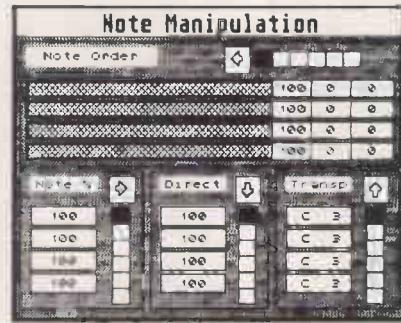


Figure 5. Note Manipulation window

M approaches each note as a possibility; it looks at the Note Manipulation Window Numericals, throws the random number generator a couple of times, and takes action accordingly. For example, the Note % value determines the likelihood that any note will actually be played. Set

75%, and each note has a three-in-four chance of sounding. This can be handy for thinning out an over-busy layer of Patterns, without losing the sense of a full orchestration. The Direct value determines which direction M will take from any given position; set 75% and each note will be the next note three times out of four, and the previous note once out of four. Set a value around 50%, and M will stagger through a Pattern rather than just play through it. Set 0% and the Pattern reverses altogether. Last but by no means least (apart from the Transpose function, which does just what you would expect), are the Note Order bars. Here you are presented with three percentage values; the first is the chance that the next note will be the next note; if it is not, it will probably be the next note from a scrambled version of the sequence using only the original notes – if you don't like the way M has scrambled your Pattern, you can rescrumble it. If the next note isn't the next note or the next scrambled note, then it will be any note at all, randomly selected from the notes in the Pattern.

Back to the bongos; try a setting of 50% – 25% – 25% on the Note Order bar, and 75% on the Note Direct. That should shuffle the pack a little. Depending upon how busy the rest of your groove is, you might be able to afford to lose some notes altogether, and you could try 75% on the Note % numerical. Any algorithmic sequencer could do this, but none as intuitively or elegantly as M. Now for KCS...

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**THE BLUEPRINT
OF HIPHOP**

Photography / Nunniski

One of the most influential figures in rap music is KRS One; his DJ may have been shot dead in New York but his enthusiasm for technology and his vision of music live on. Interview by Simon Trask.

NEVER SHORT OF a constructive message, KRS One, aka Kris Parker, even turned his own name into one: Knowledge Reigns Supreme Over Nearly Everyone. Nowadays the 23-year-old rapper and producer is one of the most respected figures in hip hop, and one of the most articulate and radical. As a rapper he deals with topics ranging from the stark realities of life for poor blacks in America's cities, to the massive US drug and associated corruption problems, to black African history, to safe sex. And he should know: he's literally picked himself up off the street, having spent most of his teenage years living off his wits on the streets of New York.

KRS One met his future production partner and DJ Scott La Rock (Scott Sterling) in a men's shelter where Scott was a social worker. The pair formed their own production company, Boogie Down Productions, paying \$40 for the privilege. After gaining experience on numerous minor productions, they got a deal for their own album *Criminal Minded* with B-Boy Records in New York, going on to produce other acts for the label. *Criminal Minded* is a hard, powerful album, both lyrically and in its sound, and has stood the test of time to become a hip hop classic. Unfortunately the pair never saw any money from it; victims of an unscrupulous record company and a bad deal they were only able to escape from when they signed a deal with Jive Records.

Subsequently, La Rock was shot dead, the victim of typically senseless New York violence. KRS One resolved to continue flying the BDP flag with *By All Means Necessary*, which has proved even more influential than its predecessor.

Having been involved in the production of his own albums from the outset, KRS One has been building a reputation as a producer, with records like fellow rapper Just Ice's second and third albums, 'Self Destruction 12" (a kind of "rap aid" record directed against black on black violence), production on three tracks from Steady B's most recent album, and now his own, third album *Ghetto Music: The Blueprint of Hip Hop*. Perhaps his biggest production break to date is Sly and Robbie's new album *Silent Assassins*, on which the duo wanted him to turn them into rap artists, and guest rap himself. Other productions include Young MC, Queen Latifah and the Shah of Brooklyn. Life is getting busier for the young New Yorker who aims to become a billionaire by the time he's 30. A recent promotional trip to London afforded the opportunity of an interview where he was at ease talking about the technological aspect of his work.

MUSIC TECHNOLOGY AUGUST 1989

"I HAVE LOADS of equipment but I still don't have my own studio", he begins. "Before a producer I'm a businessman, so I'm like a partner in a 48-track SSL studio called Powerplay Studios, which is in Queens, New York. We use it so much it's like I'm paying for the studio!"

Today the BDP production team also consists of recording engineers Dwayne Sumal and Rebekah Foster and co-producer and keyboard player Sidney Mills.

"A lot of my studio experience comes from Dwayne and Rebekah. I trained them in the language of hip hop and rap music, they trained me in the laws of engineering and distortion. I'd have Dwayne telling me 'You're distorting, look at your levels' and I'd be saying 'But that's the sound I want'. So he'd say 'Well, you've got to compromise, send it through a compressor'. It's important that they know what I want, because I can't be there all the time; sometimes they have to be left to do things and they have to sound like what I want.

"Sidney has a 16-track studio called Living Room Sound, which is literally in his living room. We work out of there, too. Jive is building a studio in New York, which I'll be ruling with an iron hand."

So where does KRS One keep his gear if he doesn't have a permanent studio to store it in?

"In a very disorganised room at home which I call the junk room", comes the reply. "I have records, clothes that are too short for me, and equipment just all over the place, like E-mu SP1200s, DATs, all kinds of DAT tapes, cassette decks, a little four-track, two Technics SL1200 decks, loads of mixers, EQs, amps, compressors, dbx, all kinds of weird things - but none of it's hooked up. I take every piece when I need it. I've got two SP12s and an SP1200 gathering dust, only because Powerplay has the same machines; basically I use them for touring.

"Recently I bought a Korg M1; Sidney forced me to get it. That instrument is hype. We did my whole album and Sly and Robbie's whole album with the M1 linked up to to a DX7 and a Juno 106. All the basslines are played by Sidney on the Juno."

When it comes to looping beats and other pieces of records, there are no half measures.

"For looping we use the Publison Infernal Machine, which allows you to change the timing without changing the pitch, or the pitch without changing the timing. Everything you hear that's

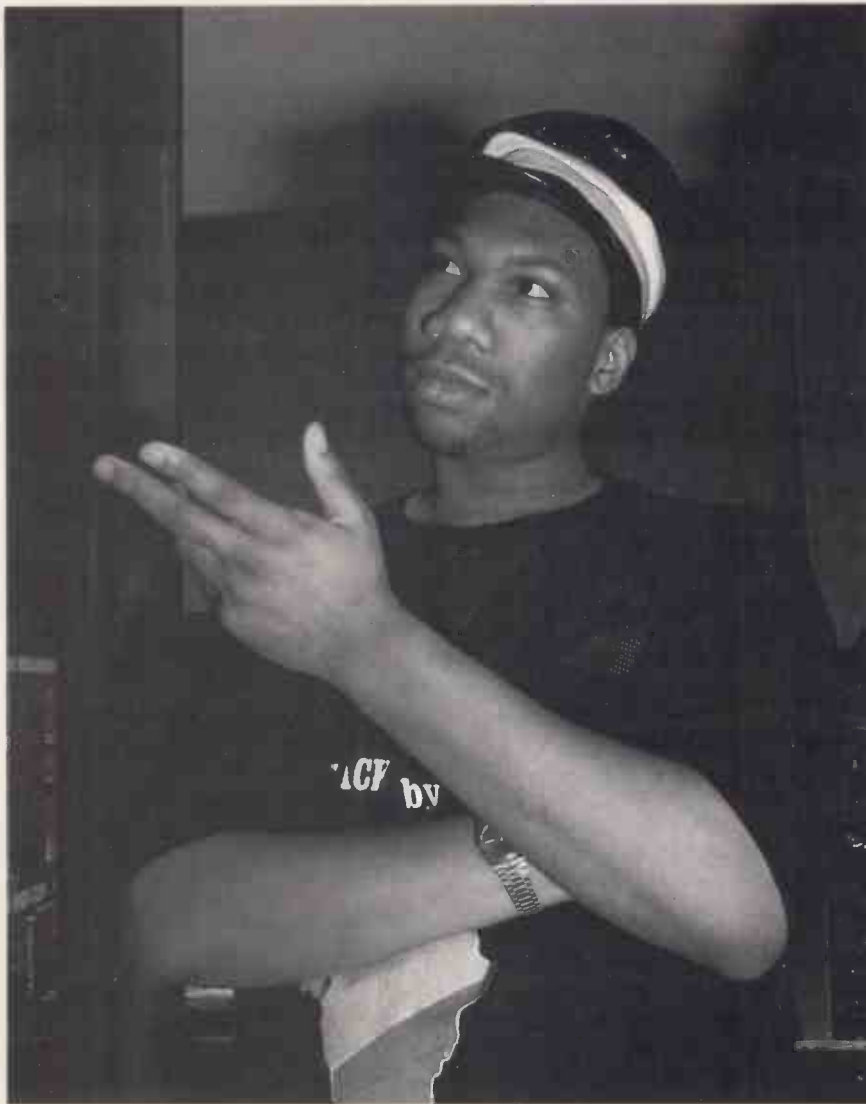
"We sampled everything from James Brown to opera, after first EQing -I have no boundaries when it comes to sampling. None."

looped on my album is looped on the Publison."

For drum samples, KRS One uses what he refers to as the "Criminal Minded samples", samples which he and Scott La Rock created for their first album. According to the producer, these samples are "floating through the industry", finding their way onto many rap albums. Although nowadays it's the E-mu SP1200 which forms the centrepiece of a BDP production, the samples were originally made on its more modest predecessor, the SP12.

"We sampled everything from James Brown to opera, after first EQing them differently so that to some extent they were original. I have no boundaries when it comes to sampling. None."

The normal setup in the studio is one SL1200. ▶



Photography James Cumpsky

sits and samples all his life comes to a point where he says 'Why can't I just do that?'. The light comes on. Why sample when you can just get the guy to play with the beat you want? I guess I reached the end of my rope in sampling and decided to get some live stuff going.

"The original idea for sampling and looping was because the original rap artist was too poor to afford a band, and lacked musical knowledge on how to compose music. It was cheaper to buy the record and cut up the section that you liked. But now it's evolved into a whole way of making music. Look at the De La Soul album; you wonder if there's really a limit to how far you can go with publishing rights."

When Stetsasonic used the Lonnie Liston Smith 'Expansions' bassline on 'All That Jazz', they paid a fixed fee. But when they did their cover of the Floaters classic 'Float On' and added their own lyrics, they couldn't get any publishing rights on the lyrics.

"It's the concept, number one", says KRS by way of explanation. "Number two, the people with money control; the richer you are the more power you have. There's a lot of politics involved."

Ghetto Music sees KRS One taking hip hop increasingly in a live direction, with Sly and Robbie handling the drums and bass on 'Bo! Bo! Bo!' and 'World Peace'. The latter track, which closes the album, is an all-live excursion consisting of rhythm section, keyboards and horns (handled by the A-Team), and rap and harmony vocals. KRS One explains the surprising genesis of the track.

"I was talking to this guy about recitativo in opera, and how rap is similar to that. I tried in my twisted mind to get that in there somewhere, but it turned into something else. Just keep in mind there were an awful lot of Heinekens in that track."

So what did the rapper and producer learn from working on Sly and Robbie's album?

"One thing I learnt is that you don't compromise on perfection. If someone wants their idea on tape, you perfect their idea. Your idea goes to your album, and leave it at that. This time around Sly and Robbie are r'n'b rap artists; a little taste of reggae but not as much as you would think they should have on their album."

Producing the Sly and Robbie album also taught KRS One the importance of EQing live drums and of music theory.

"Even when you rap, your voice is in some sort of key, and what Robbie's playing has to be in key with that, and Sidney's got to lay the keys to what everyone else is doing . . . That was a total mindblower for me. I had to sit there and learn this boring theory, man; oh boy! It wasn't forced upon me, it was just for the perfection of the job. I had to learn what key a rap was in. I think it'll help me for the future, but I don't know. It just reminds me of one of those things you learn in school that you rarely use."

What's the secret of a good hip-hop production - apart from the Heinekens?

"Loads and loads of bottom; you need that boom-shattering low. Forget engineering law, forget the laws of distortion. A lot of bottom, crack snare, strong, powerful vocals. Nowadays a good hip hop record has to be well rounded in terms of speeds, and it has to have strong lyrical content. A good hip hop record has a lot to do with the fad of where the music's going. There

► a PMX4000 mixer, and the Publison triggered by the SP1200 from a click.

"We get the loop going and then we send everything to tape at one time. After that we'll overdub any live keyboard parts, and then add the vocals. We usually record the vocals on two tracks, one straightahead and one backup. We use EQs, a harmoniser, sometimes a Lexicon, and Panavision for panning sounds back and forth. Also we have seven Neve EQs and we patch those in for bass and snare. We also have Tubetech EQs, Tubetech amps and Tubetech compressors. My voice goes through the Tubetech compressor, and the bass drum goes through the Tubetech amp and EQ so that we get this enormous *b-o-o-m*."

If there's one thing missing from this setup, it's computer-based sequencing.

"It's in the studio but we hardly ever use it. Everything's either a loop or a sample or live."

IN FACT, THERE appears to be a gradual move towards live playing in hip hop. Stetsasonic claim to being the first hip hop band, complete with live drums and keyboards, while DJ Mark uses live sax and flute players.

"I don't know if it's the move for the industry, but it's the dream of every rap artist to do live music, because we sample breaks from the livestuff, like 'Funky Drummer'. The person who



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► should be a lot of songs on the album, and each one should be a hit. Also, calculation is very important: when you drop your stuff, how you're going to support it, who's coming out around you? You've got to know who's coming out when you're coming out, 'cos you've got to know where to go.

"The basis of our production company is to create styles. I don't like to stay on the old styles, 'cos although they're hits, you can't dwell on them. I could have done another *By All Means Necessary* really easily, and I could have done that style on other productions, too, but you've got to find a new style."

KRS ONE MAKES sparing but effective use of samples on his records, displaying a keen understanding of what works and where it works best. How does he go about choosing his records?

"I spend about \$800 a month on records. I pick a section of records in the store and buy hundreds of dollars worth of that section only; it could be African music, soundtracks, anything. Your will has to be in order here, because you'll see another record you'd really like, but you have to say 'No, I didn't come here for that'. If you buy up a lot of one thing, then you hit something hype, something fresh is in there, because you bought so much that you can't lose.

"The Steady B 'Serious' remix I did was made to sound like old Mississippi jazz, but actually it was Nino Puente; we sampled from one of his Latin albums and used the Publison to speed it up. You've just got to use pieces . . . Thinking of the turntable as an instrument and not as an appliance will bring you new ideas. 'Breath Control' off my album uses a track called 'Look What They've Done To My Car, Ma'; that's big band music. We didn't use the Publison for that, but just used the turntable and pitched it to the track. I cut it in every so often, and actually it went out of time a couple of times and I had to kind of slur it back in again, but we just left it like that because it fitted the odd style of the track.

"On the Steady B album, there's a track called 'Give It Up Or Turn It Loose', and that

"I don't know if it's the move for the industry, but it's the dream of every rap artist to do live music, because we sample breaks from the livest stuff."

cut is James Brown. When I was here in London last year I went to this record store in Camden Lock and bought a whole section of James Brown. There was a whole bunch of other good stuff there, but I just stuck with the James Brown because they had rare 45s that you'd never ever see in America. So I got loads of 45s for £60 and I'm still using these same records today. On Ms Melodie's debut album we've got 'Licking Stick' and some other stuff he did, but the kids don't know it. We waited until he played out; the kids sampled and sampled and sampled James Brown, but they only sampled one era, like the '60s and early '70s. But James Brown had '50s stuff, the JB's had their own stuff . . ."

And what does KRS One look for when he's spinning his records?

"I look for loops first, and then samples.

Everything you can't use as a loop becomes a sample. Samples are always in records; any record can be sampled, it's according to your imagination. I just put my records aside in my junk room until it's time to use them. I have a wide selection of weird music, some really crazy stuff, and a lot of it's unheard in hip hop. I've got some good metal; I'm just waiting to hit the industry with this. They're going to say it's not metal, it sounds like Chuck Berry."

So how catholic is the KRS One record collection?

"I've got a \$700 collection just of opera, and the rest of classical music is a whole other section. I've got so much African music, everything; it even goes into reggae sometimes. It bugs me out to listen to how African music goes right into calypso, right into reggae - but it's not reggae, it's something else. Also I've got that Paul Simon record *Graceland*.

"The object is not to limit yourself, but to understand that music is one thing. I have a large section of African music, a large section of German metal, a large section of Russian metal, which is very melodic stuff and very hard to get hold of in the States. Then of course I've got a large selection of funk and r'n'b; I save that stuff for my outside productions, 'cos everyone else is always a year behind me.

"This year the rest of the producers are chasing Teddy Riley and that swingbeat concept, but he's chasing 'Funky Drummer'! That's the sound. It's good for me, because I'm not chased. Certain producers like Jimmy Jam and Terry Lewis get followed to the tee; I'd be very frustrated if that happened to me, because I like origination. If people are on your back with your style, you should give up the style and come up with something better. I can always outrun the followers, but I don't want to have to run. Now I have to come out with something new and different in rap style just to keep the suckers behind me. It has a lot to do with bees and honey: the style we put out is the honey."

Not everybody has the young producer's somewhat Cageian outlook on the relationship between sound and music, an outlook which he developed during his stay at the men's shelter. As he recalls.

"I met this old guy, a really intelligent man who had been a foot doctor before he lost his job for malpractice. I just let this guy rattle on, and we started getting into astrology. He was saying 'You want to be a musician? One thing you've got to know is that your ears are only hearing one type of music'. He went on to say that the worlds that revolve in the universe are giving off sound, which is music - the music of the spheres - and if you listen of spirit and not of material then you'll hear those sounds.

"That's stuck with me, and I'm on this never-ending quest to listen and to hear; if only I could figure out what that sound is. But it was the concept that broke me out of being limited to rap, being limited to sampling breakbeats. Now I listen just to sound, sound, sound. Anything is music to me, and according to your imagination you can fit it in somewhere. Any sound can be turned into rhythm, can be turned into music."

KRS One's way of hearing sound and music has already given him some unconventional ideas for the samples on his next album. However, he's not about to reveal them in print, so you'll have to keep guessing - or maybe just start listening out for sounds of your own. ■

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THIS IS THE plan: sometime in the not too distant future, we here at Music Technology want to claim to have given away a complete recording studio. Not in one go, you understand - we haven't been able to persuade anyone to be quite that generous, just yet - but we're aiming to do it one piece at a time. To this end we've had everything from synthesisers and samplers to keyboard and computer stands to offer as prizes in MT's regular competitions. It's been quite a comprehensive list to date, but we hadn't managed to put a pair of speakers on it - until now, that is.

So, let me introduce this month's star prize: one pair of Celestion SR3 loudspeakers, one SRC3 speaker control system and a pair of SRH16 speaker mounts. The SR3 speakers will handle 150 watts (with the SRC3 control unit) and are suitable for use as studio monitors and live reinforcement purposes, so they should find a place in most musicians' lives. And the whole package weighs in at just over five hundred quids' worth - well worth the price of a stamp and a little effort.

For the technically minded, here are a few further details of the SR system: The SR3s are compact, full-frequency, bass reflex speakers capable of throwing out a maximum SPL (Sound Pressure Level) of 117dB. The SRC3 is a 19" 3U-high rack-mount unit claiming less than 0.01% THD (Total Harmonic Distortion). The SRC3 allows the SR3s to handle 300 watts per pair, whilst another controller, the SRC1, allows a pair of SR3s to handle an impressive 500 watts. Celestion claim that "use of the SRC1 controller ensures your SR3 loudspeakers are virtually indestructible".

So there you are, the latest in the MT Grand Plan to give away a recording studio. Now if you could

arrange to be the winner of every competition that MT runs...

Of course you do have to do something to qualify as the winner of the competition. How about answering three simple questions:

1. What is the frequency response of the SR3 speaker?
2. What size of driver does the SR3 use?
3. Why does the SR3 employ a concentric hard-dome radiator?

IF I HAD to guess, I'd say you're unlikely to know all the answers offhand. Now, between you and me, I reckon there are a couple of ways you might find them - you could drop in on a nearby music store and ask the friendly and knowledgeable staff, or you could give Celestion a call direct and ask them a few well-chosen questions. You could even look up the Celestion stand at this year's British Music Fair, as the SR3s are sure to be getting a good airing there.

However you arrive at your answers, your entry should be made on a postcard only please, to arrive not later than second post on **Monday, September 4th**. Please remember to include your address and a daytime phone number with your entry. This multiple entry business is becoming irksome, to put it mildly, so anyone caught submitting more than one entry is likely to attract the attention of the MT Hitsquad - in case you've never heard of them, they specialise in practical jokes perpetrated through the medium of the postal system. You have been warned (again).

As usual, employees of Music Technology Publications and associated companies are ineligible for entry. Entries should be sent to "**Celestial Harmony**", Music Technology, Alexander House, Forehill, Ely, Cambs CB7 4AF.

the SYNCLAVIER story

PART 3: DIRECT-TO-DISK AND SYNTHESIS



In the final instalment of the Synclavier Story, we investigate the depths of Direct-to-Disk recording and synthesis in the new generation Synclaviers. Text by Scott Wilkinson.

DURING THE PAST two months, we have been taking you on an extended tour of the world's most expensive hi-tech music system. The newest generation of Synclaviers offers unprecedented fidelity and control over sound with high sampling rates, long sampling times and a host of editing features. Likewise, the Synclavier's sequencer is very powerful and the music notation package produces exquisite output. The addition of a Macintosh II to provide a front end for the system was a stroke of genius, although its horsepower is highly under-utilised at the present stage of software development. The user interface itself also suffers from a command-driven orientation that seems antithetical to the Mac's usual user-friendliness.

In this, the last instalment of the series, we'll look at the ins and outs of the Direct-to-Disk recording and synthesis

capabilities of the musicians' ultimate toy. We'll see how NED maintain their hold on the high end of the hi-tech music industry.

Synthesis with the Synclav

AS YOU MAY recall from the first part of this series, the Synclavier actually started life as a synthesiser. As a matter of fact, I remember working with the first prototype of the Synclavier that was developed at Dartmouth College (Hanover, New Hampshire, USA) back in the mid-'70s. At that time, it was a 16-voice additive synthesiser controlled by a Data General minicomputer. The system also had two enormous hard disks that held 1.5Mb of data each.

While the computing power and hard

disk capacity have improved greatly in the intervening years, the basic synthesis capabilities have not. Of course, the Synclavier is not primarily a synthesiser any more, and the timbre frames and resynthesis capabilities (explained below) were not present in those early days. Now the system can accommodate up to 96 voices of synthesised sound, but the basic means of creating a sound have remained essentially the same.

Synthesis on the Synclavier, which is available only on the 9600 system, is basically an additive process. You can construct waveforms by specifying the relative strength or volume of up to 24 sine wave harmonics. These harmonics are fixed in the harmonic series, which means that their frequencies are whole number multiples of the fundamental frequency. For example, the frequency of the first overtone above the fundamental is exactly twice the fundamental frequency. The next overtone is three times the fundamental frequency, and so on. This is fine for sounds with timbres that fall into this pattern, but there are

MUSIC TECHNOLOGY

plenty of sounds for which this is not true, such as bells and drums. Of course, you can always use sampling to reproduce these sounds.

Synthesised waveforms can be assigned to the partial timbres that we discussed in the first instalment of this series (see MT, June '89). As you may recall, up to four partial timbres can be assigned to each user-defined keyboard zone, and these zones can be as small as a single key (but watch out, each partial timbre uses up one synthesiser voice). These waveforms can also be combined with samples in different partial timbre locations and mixed, balanced, detuned and so on. Various modifiers can be applied to each partial, including a volume envelope and several real-time effects such as vibrato, panning and chorus. This allows you to combine different groups of harmonics at different pitch levels to achieve those non-harmonic sounds.

The synthesis process is controlled from the FM Timbre Page (more about FM in a moment). This page has several modes for displaying the sound data for each partial timbre. The Graphic Display shows you a bar graph that indicates the level of each harmonic and the shape of the volume envelope controlling each partial timbre. As you change a parameter on the keyboard, these displays change in real time. The Numeric Display includes the same information in the form of numbers with the addition of partial tuning, volume, and the real-time effects. The Partial Timbre Display shows more detailed information about each partial timbre individually.

The FM (Frequency Modulation) capabilities of the Synclavier are fairly limited. A single sine wave modulator can be applied to each partial timbre. It has its own volume envelope, which is displayed as a dotted line superimposed on the graph of the partial timbre envelope. The frequency of the modulator can be specified only in a ratio with the frequency of the partial timbre. For example, if the ratio is set to 1.000, the frequencies of the modulator and the partial timbre will be the same no matter which key is played.

As you'll know if you've looked into FM programming, you can achieve non-harmonic timbres like those of bells by setting the modulator frequency ratio to something other than a whole number. This is also possible with the Synclavier. With four independent partial timbres per key available, this just about makes up for the limitation of exclusively harmonic overtones. However, the lack of pitch envelopes (or even volume envelopes for each overtone) seems quite limiting in the Synclavier after working with a system like Digidesign's SoftSynth.

Resynthesis

RESYNTHESIS IS ONE area in which the Synclavier excels. Resynthesis is the process whereby a sampled sound is analysed and recreated using synthesis of one form or another. The Synclavier achieves this by dividing a sample into many small time segments called "timbre frames". It then analyses the harmonic

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content of each timbre frame and automatically reconstructs the waveform additively, using as many as 128 harmonics. Upon playback, the Synclavier plays the timbre frames back, each crossfading into the next.

The more timbre frames into which you divide a sample, the more accurate the reproduction. Within the current memory limitations of the system (although it's hard to imagine, there is a limit to the memory in a Synclavier), a sound can be divided into as many as 300 timbre frames. Typically, however, most sounds can be resynthesised quite accurately with only 20 or 30 timbre frames. For example, I heard a speaking voice resynthesised with remarkable accuracy using 25 or so timbre frames.

At the moment, you must manually mark the timbre frames into which you wish to divide the sound. This is a personal process unique to each resynthesist, but generally, the beginning and end of clearly repetitive waveforms within the sound are the best candidates for marking. Once you have done this, the system automatically calculates all the parameter values necessary to reproduce the sound as accurately as possible.

After that, you can edit the sound in a number of ways. The available parameters include crossfade, or "splice" time, delay, shape (linear or logarithmic), peak level (volume of the frame), pitch offset (up or down as many as 48 semitones from the previous frame), and harmonic coefficients (volume levels of all harmonics). You can also copy one timbre frame to other frames within a sound and modify them in any way. Each frame can be looped for evaluation as long as you hold down a key. Timbre frames typically follow each other, but they can be made to occur at the same time. This can be used to achieve non-harmonic tones by applying different pitch offsets to simultaneous frames.

An entire resynthesised sound can be assigned to a partial timbre and treated in the same manner as sampled and additive/FM waveforms. With this you can do some amazing things. For example, the non-harmonic possibilities are greatly enhanced. You could also create the sound of an oboe that ends up as a trumpet, or a plucked marimba.

"What about crossfading samples?" you might ask. Of course, this is also possible, but timbre frame resynthesis provides more opportunity for creativity. You can perform infinitesimal modifications on individual harmonics and frames, and each frame can be at a different pitch (this provides the only "pitch envelope" in the system). You can also apply a randomiser to the pitch of each frame and adjust the pitch range in which it will be active. This adds the human touch of imperfection to resynthesised sounds. An additional advantage over sampling is that the sound does not distort or exhibit aliasing anywhere on the keyboard.

Direct-to-Disk

I MUST SAY that I was quite impressed with the direct-to-disk system (or D-to-D

as New England Digital call it). As you would expect, the D-to-D software is standard on the Synclavier Post Pro model, but can also be used with the 3200 and 9600 systems. The standard configuration includes eight tracks that can each record up to 25 minutes of sound at a sampling rate of 50kHz. This rate can actually be set to any value from 1kHz to 100kHz, which will also determine the maximum recording time per track.

Four 320Mb hard disk drives are required to support this configuration, each recording two tracks of digital audio. You can use fewer hard disks to record fewer tracks if your budget is tight. Standard configurations also include streaming tape drives for backing up that all-important data. Because each tape cartridge backs up about 18 minutes per track from each hard disk, you need eight tape cartridges to completely back up an eight-track system. A parallel interface between the hard disks and tape drives means that backing up takes less than real time.

By installing a software and hardware upgrade called MaxTrax, the system can record 12.5 minutes on each of 16 tracks

"Synthesis on the Synclavier is additive - you construct waveforms by specifying the relative strength or volume of up to 24 sine wave harmonics."

at 50kHz. You could also add four more hard disks and record 25 minutes on 16 tracks. Other expansion options include additional hard disk drives that can boost the maximum recording time to 100 minutes on each of eight tracks at 50kHz. Keep in mind that each track is played by a Synclavier voice, so you must have as many voices installed as you have tracks.

The D-to-D system supports all the standard digital I/O (input/output) formats including PRODIGI, AES/EBU and SDIF (Sony Digital Interface Format) at 44.1kHz, 48kHz and 96kHz. If you intend to use these formats to transfer the digital information directly to or from the Synclavier, you must set your sample rate accordingly. It can also run concurrently with the 200-track sequencer described in last month's instalment.

Software Pages

THE D-TO-D SYSTEM is organised into three software pages: the Project Directory, Track Display, and Audio Event Editor. Typically, you start a new project from the Project Directory. This is where you can specify the start and end times for all tracks, set the sampling rate, and view various status parameters and recording time for each track in a project. You can manage up to 50 projects from this page, depending on their size. In a standard configuration, 50 30-second commercial spots are equivalent to 25 total minutes. The Project Directory also provides the means of retrieving and backing up projects to tape cartridge.

The Track Display simulates a normal



► eight-track tape deck, providing linear recording. There are several Track parameters including Title, Status, and Record mode. With these modes, you can monitor the playback from the disk or the signal coming into the system. You can also record several versions of a cue and play them in any order. This is used for sound effects, flying in vocals and so on.

The majority of the D-to-D system can be controlled from the Audio Event Editor. In fact, you can do everything of which the system is capable except tape backup. Unlike the rest of the current Synclavier software, this page is completely mouse-driven.

When you first enter this page, most of the screen is blank. But not for long. At the top of the page are several "buttons". When you click on one of these buttons, a "panel" appears on the screen that provides a specific set of controls. For example, the Project Manager panel provides many of the same controls that are found on the other two software

"Resynthesis: the process whereby a sound is analysed and recreated—the Synclavier achieves this by dividing a sample into small time segments called 'timbre frames'."

pages. In fact, you can display several panels at once, all of which are active simultaneously. There are also four user-definable buttons that can each be used to call up a series of panels that you use most often.

Recording

THERE ARE THREE basic steps in producing a finished project: recording, editing, and assembling. Each panel addresses one of these steps. For example, the Sync panel provides time

controls for the D-to-D system. With it, you can specify the time reference in minutes and seconds, measures and beats, feet and frames, or SMPTE time. You can also set the SMPTE format and offset as well as compute event times, generate SMPTE, and display the offset.

The Record Control panel allows you to record cues directly. There are three record modes that allow you to record on the next available free disk space, punch in to a selected cue without affecting adjacent cues on the disk, or take full manual control of a recording. This panel also allows you to start and stop recording on a disk track at a specified time, compress or expand the time of a cue without affecting its pitch, and transfer a Synclavier sample directly to a disk track.

A list of the cues in a project can be displayed in the Cue Directory panel. Not only that, each cue can be heard by simply clicking on it. This is particularly useful for recording and auditioning several versions of a voice-over. For example, suppose that you're given a radio commercial for a car company that is to play around the country. While most of the spot will be identical for all areas, you must insert a different tag indicating the specific car dealer that local listeners should see to buy that new car. By recording the tags and listing them in the Cue Directory panel, you can play the spot over and over, each time triggering a different tag.

Another application of the Audio Event Editor panels is automatic dialogue replacement (ADR). As you may already know, much of the dialogue you hear in a film or TV show isn't recorded during the filming of the scene. It's dubbed in afterwards in order to have greater control over the acoustics and ambience of the dialogue in the soundtrack. As you watch the film or video, you find the moment at which you wish to begin recording. You can then trigger the system to record the dialogue onto a disk track at a specific start time. After

recording several versions, you can trigger each one to play at the appropriate moment and then select the best one.

Editing

ONE OF THE primary advantages of disk-based editing is that it is non-destructive. Unlike tape, the raw material is never destroyed. If you don't like what you've done, you can always go back and start again. Also, the quality of the recorded sound doesn't degrade as you manipulate it, and it's much faster than tape editing.

In the D-to-D system, most of the editing is done from the Cue Editor panel in the Audio Event Editor. This panel includes a standard Macintosh horizontal scroll bar that allows you to "jog" through the contents of a disk track. The recorded material can also be displayed as a waveform. You select edit points by positioning the scroll box and clicking on the Edit button. This places a scissors icon in the edit window at the selected point. These edit points can be dragged to new positions with the mouse as well. After selecting a section of the material, you can perform all the usual edits including (but not limited to) cut, copy, paste, delete, fill, and slide (which allows you to move parts of the cue around). All this is accomplished without losing the synchronisation or length of the cue.

The Cue Editor panel also allows you to make microscopic edits, such as removing lip smacks or shortening pauses that are too long. You can even use it to transfer a portion of a disk track to the Synclavier sample memory. This is extremely useful for correcting the pitch of an out-of-tune solo or vocal line. The corrected portion can then be transferred back into the disk track.

Assembly

ONCE THE CUES have been recorded and edited, they must be assembled into a finished spot. This is done in the Event List panel, which gives you access to the Synclavier sequencer tracks. The cues can be mixed with sequenced parts and are triggered to play at a specified SMPTE time directly from the disk.

Cues can be placed in a sequencer track any number of times in one of several ways. You can manually select a cue from the Cue Directory in real time as you watch the picture. You can also trigger a cue automatically by specifying its start time, end time, or any marked time within the cue. For example, if you need to place the sound of a plane that appears on the screen after its engine sound is to be heard, you can trigger it to play at the correct moment by marking and referring to the time at which it appears on the screen, rather than guessing at its position. Cues that are already synchronised can be placed automatically with their sync time as well.

Once a cue is placed in a sequencer track, you can slide its position by ►

Capture your inspiration

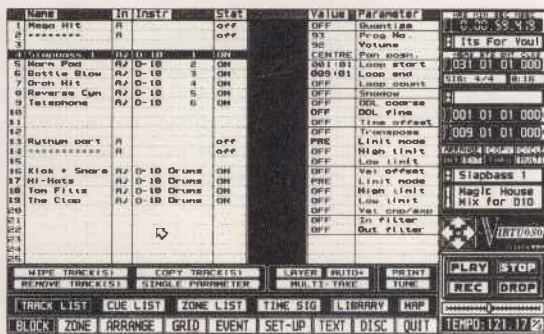


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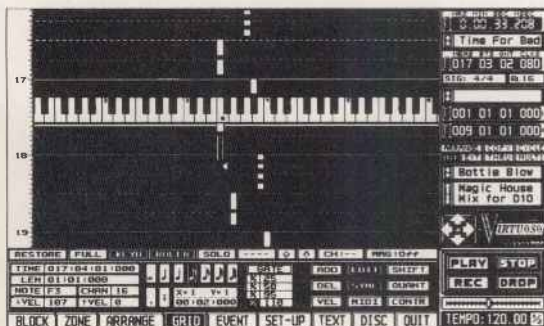


The Block Page display of the tracks in the current block giving output routing and extensive non-destructive real time processing for up to 99 tracks.

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The real-time scrolling Grid Page offers the most musician friendly interface yet seen on a sequencer for editing the fine details of your music.



The Zone Page offers complex conditional processing of tracks. Here the quantize facility is ready to operate on the chosen tracks.

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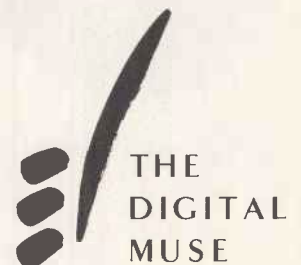


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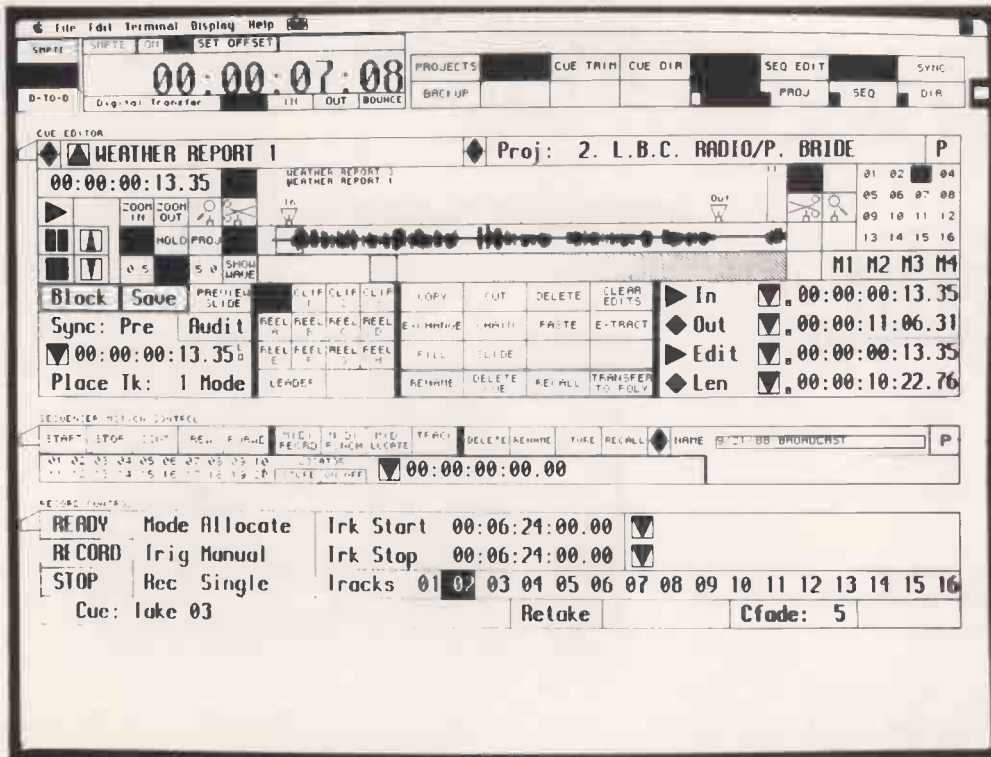


Figure 1. The Audio Event Editor displaying the Cue Editor, Sequencer Motion Control, and Record Control panels.

- specifying a new SMPTE time or you can globally move groups of events. Once you're happy with the spot, you save it to a separate system disk with other sequences and system software. That way, you don't have to take up space on the D-to-D disks.

The DESC

NED HAVE DEVELOPED an alternative hardware controller for the D-to-D system called the DESC (you might expect a cute acronym, but NED inform

us that there is none - it's just a distinctive way of spelling the name of the furniture at which you work). This device provides a user-interface that's already familiar to audio professionals. Included on the DESC are "transport" and other dedicated buttons, as well as a jogger wheel. This provides complete control over the Post Pro system, including track assignments, muting, soloing, and full editing. Actions on the DESC are reflected on the Mac screen in real time.

Finally...

AS WE ARRIVE at the end of our tour, it seems clear that the Synclavier lives in the stratosphere of computer music systems. However, as technology continues to increase in power and decrease in cost, other systems will begin to challenge the Synclavier in one way or another.

Of course, it will be a while before these other systems are likely to provide the same level of integration between so many varied functions. And the quality of anything produced on the Synclavier is undeniably excellent. With improvements to the user interface and more reliance on the Macintosh itself, the Synclavier will maintain its place in the heavens as the ultimate musical tool for some time to come.

The author wishes to extend his thanks to Sean Callery and Ted Pine of New England Digital for their help and patience during the research for this series of articles.

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“RECORD COMPANIES KEEP telling us musicians that the people who buy records go from 15-20 years of age, so if you want to be a great musician you have to play only for those people. I find that really terrible, because we’re talking about culture; music is not only fun and big money. Does that mean our culture is ruled today by our children? In Africa it’s not like that. Yes, we have music for kids, but that doesn’t mean those young people are going to rule the tribe. No way.”

At 43 years of age, Zairean-born musician Ray Lema, who is probably best known in the UK for his work on Stewart Copeland’s 1985 album *The Rhythmist*, has had a long and eventful career in music. Don’t think, however, that he is simply content to rest on his laurels and recycle past musical glories. Resident in Paris since mid-1982, he is one of the leading figures in that city’s “African hi-tech” musical scene, and as well as being a singer, keyboard player, guitarist, percussionist and composer, he is much in demand there as a producer and arranger.

His own music is an eclectic but natural mix of African, Caribbean and American musical styles – in the latter case, the funk and fusion music he was exposed to while staying in America in the early ’80s. Discussing musical influences can be a tricky business, however. For instance, the zouk influence in Lema’s music: zouk is an infectious hi-tech dance music from the French Antilles which grew out of cadence music, which in turn was influenced by the Orchestra Rico Jazz from Zaire (who spent several years in the French Antilles during the seventies) and by Antillean musicians who spent time in Paris and Brussels. And nowadays zouk, in the hands of its leading exponents Kassav, is popular in Paris.

The French capital has had a thriving African music scene for the past ten years, ever since harsh economic conditions in Africa prompted an influx of Africans into Paris from such former French colonies as Zaire and Senegal. Today a constant interchange of musicians between Paris and Africa (and in particular Zaire) ensures that close cultural links are maintained. Similar connections exist between France and its former Caribbean colonies Martinique and Guadeloupe, helping to make Paris, with its eclectic mix of soukous, rai, zouk and many other musics, one of the most cosmopolitan cities in the world. As such it’s naturally attractive to African musicians like Lema who feel constricted by the parochial musical outlook of their own countries, while a base in Paris is a must for any African musician wishing to establish an international career.

But, perhaps most importantly, the sophisticated hi-tech instrumentation and recording techniques available to African musicians in Paris have allowed them to forge a dynamic new



popular music which is attuned to the dancefloor and to modern sonic sensibilities while retaining all the melodic, rhythmic and textural brilliance of African music.

Yet with this wealth of music just across the Channel, in the UK we stubbornly cling to our close relationship with America while maintaining an island outlook on the rest of Europe. Perhaps it’s hardly surprising, then, that on the day of my interview with Lema, a concert he was due to play supporting Manu Dibango at London’s Royal Festival Hall had to be cancelled when the saxophonist (a long-time Paris resident) was refused an entry visa. This despite the fact that he has played to packed houses in the UK before, and happens to be one of the most respected and best-known of African musicians.

The musical love affair between Britain and the United States has been long and sordid, and it’s left other musics out in the cold – until now. Ray Lema is one musician bringing African hi-tech to the world. Interview by Simon Trask.

WORLD SYS



Photography James Cimpsty

WITH THE SUBJECT of European unity very much on our minds as we sat in the offices of Island Records (the irony of it), I wondered what a rather disappointed Ray Lema thought about the British attitude to the music of the continent.

"We feel more and more on the continent that the British people have to open up quickly, because when you live in Paris today and you hear all the pop music coming from England and America, you know that for 20 years these two countries have been feeding the whole world. Showbusiness is an Anglo-Saxon structure. So you were in the position of givers, but after 20 years you're not left with much to give, you know. We've been learning and receiving, and suddenly sometimes it's so boring to listen to that music."

This isn't sour grapes. Lema is far too

gracious and perceptive a man for such pettiness. In fact, he is surprised that we should have such a cultural fixation on America at the expense of our European musical heritage.

"It's crazy that today you panic in front of America. Musically I feel that America has been fed a lot by Africa and a lot by England. For many years I had two big books of Anglican church music that were given to me by one of my uncles. When you check the pop market today, it's incredible how that music has influenced pop music in terms of melody. England has produced the greatest melodies in pop music; that's how we feel in Africa, and that's why England is very important, because you have created extraordinary melodies that anybody in the world can relate to. A guy from Zaire can sing a melody from Great Britain and just receive it as a melody. That's the greatness of England: you are fantastic melodists."

Lema began his musical life at the age of 11 when he started training for the priesthood. After it had been decided that he displayed musical talent, he found himself playing a Hammond B3 organ in church every day for the next five years. It's an instrument he remembers with great affection.

"At that time I was famous in all the churches around Kinshasa, because they said I had the touch to make people pray. I would like to finish my life like that. In fact, although I don't go ▶

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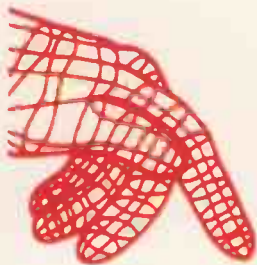
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IN TOUCH WITH TIME

► around screaming in the name of God, my music is still religious music.”

His time spent as church organist taught him the art of harmonisation, as he learnt to harmonise the Gregorian chants that were an essential part of the religious services. But playing the organ wasn't the only musical training he received at the Seminary. He was also educated in the European classical music tradition, and made his concert debut playing Beethoven's 'Moonlight Sonata'.

Lema eventually left the Seminary to take a chemistry degree at the University of Lovanium in Kinshasa, but found himself tempted into a musical career by the Zairean capital's club nightlife, playing guitar in numerous *soukous* bands from the end of 1969 until 1973. At the time his musical heroes were guitarists like Jimi Hendrix, Jimmy Page and Eric Clapton, all of whose playing he studied closely.

Unfortunately, his liking for Western music led to him being called "black white" by his fellow Zaireans. Eventually this got on his nerves so much that he decided to stop playing Western music and try to find out what it meant to be a black Zairean. Armed with a small tape recorder, he began to wander around Zaire recording traditional music, and because of this he was noticed by the Zairean government. The result was his appointment in 1974 to the prestigious post of Musical Director of the National Ballet of Zaire. This was at the time of President Mobutu's "authenticity" campaign, and the musician found himself with all the resources he needed to trek around Zaire researching some 250 different ethnic groups, each of which had its own variation on traditional Zairean music. If there was one big lesson he learnt from this experience, it was the concept of music as a social energy which could be used to bind a community together.

In 1978 Lema became the first Zairean to receive the prestigious French Maracas d'Or award, for his work with his group Ya Tupas, and in the following year he was invited by the Rockefeller Foundation to tour America with his band. He ended up staying in Washington DC for several years, playing keyboards in a couple of local funk bands as well as working as a session musician and performing his own music with American musicians. In 1982 he left for Paris - out of frustration with the inability of those musicians to play African music - and has lived there ever since.

"The musicians in America are great musicians", he admits, "but they're too American, they're just not open enough to the world."

Now where have I heard that before? Lema's reasons for not returning to Zaire were twofold, as he explains.

"First, I didn't see what more I could learn there. Everybody was considering me a genius, and that's very dangerous. I preferred to be a student somewhere else. Second, in Zaire today they really only go for rumba, their own music, and I think that they have enough musicians to play that music. You hear Zairean music everywhere in Africa, it's very strong, so the Zaireans feel: why should they change anything?"

Lema subsequently returned Stateside in 1983 to tour with his own band, and while there went into the studio with legendary New Orleans

musician and producer Allen Toussaint, to record the first album under his own name, *Koteja-Koluto*.

"It was really a live thing with my band", he recalls. "I played a Yamaha CP80 and a Hammond B3 on that."

However, it was his next album, the appropriately-titled *Kinshasa-Washington DC-Paris*, recorded in Paris in 1984, which really broke his name in the French capital.

"That record was like a business card I made for musicians in Paris. I made it mostly with Zairean friends, because when I arrived there nobody really knew about Ray Lema. But after that record I was fine, the Paris musicians knew about me; they'd say 'That guy is pretty crazy!'"

If you leave your business cards lying around, you never know who might pick them up and get in touch with you. One musician who got in touch with Lema was ex-Police drummer and Fairlight enthusiast Stewart Copeland, and the result was that the Zairean musician composed and played on three of the ten tracks on Copeland's *The Rhythmattest* album (see interview with Stewart Copeland, E&MM, August '85). At the same time he was working on his own album *Medecin* with respected French producer Martin Meissonier at London's Paradise studios. It was a deliberate move on his part to see what two very different producers could draw out of him. And which album did he prefer in the end?

"To tell you the truth, maybe it's because I worked more as friends with Stewart Copeland, but I feel closer to the sound we got on his record. *Medecin* was more a discovery of technology. You know, technology is really a temptation, especially when you don't own the machines. I didn't know all the toys in Paradise studios, and it was hard to resist; they looked so flashy in the studio."

More recently he has produced and played on *Ray Lema Presents: Bwana Zoulou Gang* in 1987, a brilliant showcase of Parisian-African talent, and now his latest album *Nangadeef* (the title is Wolof for 'Hello, how are you?'), which he regards as a kind of "message" welcoming his fellow Zaireans and other African musicians to Paris, but reminding them that ultimately they must return to Africa with what they have learnt.

LEMA DEVELOPED A fascination for the recording process when he was living in America. He bought himself a Teac A8 eight-track tape machine, then whenever he did a studio session and saw some new tricks he would run back home and try them out on the A8. Now that his home studio is well established in Paris, his most recent move has been to invest in a Tascam MSR16 16-track tape machine, while he's currently looking for a second-hand professional desk.

"I would like to have 32 inputs so that I could feed all my MIDI stuff through it and still have the tape inputs. If I can get that setup then you're going to notice the difference. As for effects, I have some Boss mini effects and a Roland reverb at the moment, but now that I'm going for a good mixing board I'm checking for some much better stuff; I'd like to have a Lexicon and a REVS."

At present, monitoring in the Lema studio is taken care of by a pair of Yamaha NS10s, but he's not happy with the bass end on them (it's not

"Stewart Copeland understands the essence of African music - he understands everything - he's not black, he's not white, he's a new breed."



I was using a Fender Rhodes but it was getting too much for me. There was really no point in carrying a Rhodes all the time just to feel that it was my own; I was getting tired! Almost all the studios in Washington had one, anyway."

Today, Lema is a confirmed Sequential fan, and still owns the Prophet 5 (long since MIDI'd) that he bought in Washington DC. He also talks enthusiastically about the Prophet T8 (in particular the merits of its keyboard for "real musicians") and the Prophet VS, neither of which he owns at present. It seems that both instruments are in common use in Paris studios, where their very popularity has made them hard to find secondhand. When I showed Lema some copies of MT (in fact he already knew the magazine from previous visits to the UK) it wasn't long before he was scouring the Free Ads in search of aforesaid elusive instruments. Anyone out there want to sell a T8 or a VS?

Following on from the Prophet 5, Lema bought a Korg Delta and a Roland Juno 6, both of which he subsequently sold, and a Yamaha DX7II. Nowadays, in addition to the Prophet 5 and the DX7II, the Lema home studio contains a Korg EX800 synth expander, E-mu Emax and Akai S700 samplers, Yamaha RX5 drum machine, two Yamaha TX81Zs and a Moog Source. For sequencing he uses an Atari 1040ST running C-Lab's Notator software ("I think it's software that can appeal to all real musicians; it's just fantastic") and records everything in real time, sometimes recording a whole song into a single pattern, at other times using the sequencer's Song Arrange mode to organise a series of shorter patterns.

And what about the samplers? Somehow I didn't think Lema was into sampling rhythm loops or the speeches of Francois Mitterand.

"I use the Emax and the S700 mostly for drum sounds, together with the RX5. The advantage with the RX5 is that you can really twist the sound. Once you've done that you can sample it into the Emax, then with the Emax you can twist it some more, and come up with something that sounds like nothing else."

'Orchestra of the Forest', a duet for programmed RX5 drum machine and live percussionist on *Nangadeef*, came about as a sort of prelude to a project that Lema has in mind.

"I'm intending to produce my percussionist, and that track was just a tryout I gave to him. In that direction I have a lot of traditional rhythms that I'm programming on the RX5, but it takes time because the software inside has been made for Western timing, and it's very hard to find ways around that."

While Lema generally prefers to program rhythms into Notator from the DX7II's keyboard, for some things the RX5's onboard programming is a necessary evil.

"There are some tricks you can do when you're programming straight onto the RX5, like playing a series of notes from one pad hit, that you can't use if you're programming rhythms from the computer. So I have to program straight onto the rhythm box to get those effects and then drive the whole thing from the Atari."

Many musicians retreat into a self-imposed isolation once they've surrounded themselves with hi-tech gear. For Lema, however, there's no such danger.

"Since I'm a musician I like to play. I like to compose with all this technology, but I've been a ▶

"When you check the pop market today, it's incredible how Anglican church music has influenced pop music in terms of melody." ▶

powerful enough) and is currently considering replacing them with Electro-Voice Sentries. One consideration he's bearing in mind is the need to master at low volume.

"That's one thing I checked when I came to the West: people here listen to music quietly, whereas in Africa we blast everything out. So I use low volume just to check for Westerners!"

Lema's encounter with synth technology began with a Sequential Circuits Prophet 5 in Washington DC in 1980.

"I like spending a lot of time in music stores", he explains, "and at that time I kept hearing the Prophet. It sounded dirtier than the Roland and Yamaha synths, and that was what appealed to me. One day I felt that I should buy one, because

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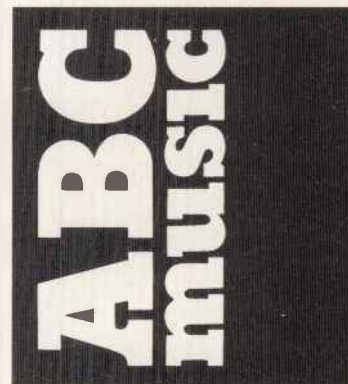
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- ▶ bandleader for almost 20 years and I love good musicians. After I compose a line I always think 'Who can play this line live?'. I never work in isolation, never. There are always a lot of musicians passing through my place, and they comment on what I'm doing. It's not good to be by yourself, because you start feeding yourself with yourself."

LEMA SEES A new breed of musician emerging around the world, who feels equally at home with a wide range of musics.

"Take the example of Stewart Copeland. That guy really understands the essence of African music. When we played together he showed me that he understands everything. He's no longer a white guy. He's not black, he's not white, he's just a new . . . let's call it a new breed of people. They can understand anything, you just have to explain it to them.

"But beside these people you have what I call 'traditional' musicians. These people specialise in one kind of music only, and they're not able to play anything else. They're boring to us, the new breed. Musicians should be able to mix up classical and jazz inside themselves first, then Beethoven can go along with Miles Davis. That makes us really happy now in Paris, that kind of mix."

Nowadays Lema is still attracting unfavourable attention for his musical eclecticism, but now it's from those Western music critics who wish to safeguard the "purity" of African music. The musician is impatient with such a blinkered outlook.

"I had an article here in England where a guy said 'that Ray Lema is pretty strange because if we take away his voice from his album, the music sounds like Western music'. You know, that is so silly I just laughed. Nobody's giving up anything, or exploiting anything. We're just moving, because I feel today that music is just one, it's rhythm and harmony. That means that those two things should meet seriously, and people should stop talking nonsense about African fashion and pop fashion. As soon as white musicians touch that rhythmic culture they're playing black, and we don't complain as black people, we don't say 'Wow! White people now are trying to . . .' No, it's just normal. You need this ingredient as we need that ingredient, so we should be fair and shut up, and just play.

"My feeling is that we're waiting for a meeting of the different musical systems. It's impossible to get rid of classical music, because it's a system, not a fashion. Classical music is a system, African music is a system, jazz music is a system . . . and somewhere these three things are looking for each other. Classical and African are the two parent systems and jazz is the child."

Lema defines the most essential distinction between African and classical systems as the linear, melodic conception of the former and the vertical, harmonic conception of the latter. But he also singles out the Baroque composer JS Bach as "the first white guy that made a jump to the black conception. He had a way of organising his melody lines so that the chord was no longer a frozen instant but was in the dynamic of melody. But you could freeze any moment in Bach's music and analyse it and it was solid harmonically. So I would say that Bach is really important to all of us."

"YOU KNOW, I started with classical music so I recognise that I have that in me. But now I'm just trying to find a balance between what I feel is African and all the loves that I have, because I love classical music, I love jazz music, I love reggae music . . . I don't see why I should deny all those loves. I want to keep them in me, but find a line where I feel I'm still African but my friend can feel that I like him too, because today I have friends all over the world, in reggae music, in zouk music, in pop music . . . Why should I play something that can't appeal to my friend who's a pop star, for example? Just to prove to him that I'm African? I find that silly. I have to speak a language that he can understand, that's how I feel now."

Which is not to say that Lema is forsaking the musical past of his home country. Far from it.

"I'm the only active musician who had a chance to know about those traditional musics. Zaire is five times the size of France, so it's a huge country, and there aren't the roads like here. So really, to know about Zaire, my God, it's not a piece of cake. But I was paid by the government to do that, and I just tell myself that I've got to use what I learnt, because many of the musicians that I met out in the country, they're all dying, fast. Someday that music is just going to vanish, and I really don't want that."

Lema is insistent that African musicians working in the West must ultimately put back into Africa whatever skills and knowledge they have learnt abroad. But for the present his own priority is to address what he calls his "problems with Zaireans", and it is only through living and working in Paris, with its cosmopolitan atmosphere, sophisticated technical resources and thriving African musical scene that he has been able to pursue this aim. He is trying to reconcile the old and the new, tradition and technology, through trying to preserve traditional music not by capitulating to it but by bringing it into the present.

When the European nations colonised and enslaved the African people they set in motion forces which are still reverberating through the Western world today. We are all slaves of the past, of the forces of world history, and to break the shackles which bind us we must understand and come to terms with that history. The past and the future are inextricably linked.

For Lema, music is a means of reconciling the past with the future. Yet he is concerned that in trying to speak a language all his friends can understand, he should not ignore the language of his family.

"I would like to produce towards Africa, and for that type of production I'm going to pay attention only to remarks coming from Africa. That's one thing I would like to start this year. I'm always having to make my music a little less sophisticated rhythmically for Europeans, otherwise they get confused. But for Africa I'm just going to go full-range, because it's their stuff.

"It's still going to be hi-tech, though. Hi-tech traditional music."

Well, here's one European who can't wait to hear it. ■

Two articles worth reading on African hi-tech and Zairean music respectively are: 'The Soul of Africa' in ID, June 89 and 'Zairean Music' in Folk Roots, July '89.

"Classical music is a system, African music is a system, jazz music is a system . . . and somewhere these three things are looking for each other."

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ROLAND GR50

Guitar Synthesiser



Photography Melodie Gimple

Roland's latest guitar synthesiser offers multitimbral L/A synthesis and sophisticated MIDI control of your studio. It may also be the best MIDI guitar controller currently available.

Review by Aaron Hallas.

ROLAND'S NEW GUITAR synthesiser system, the GR50, takes the form of a unit that combines an L/A synthesiser module and a guitar-to-MIDI converter in a 1U-high 19" rack unit. And to put it into perspective with the other guitar synth systems currently available, I think that the GR50, accompanied by the GK2 Synthesiser Driver, mounted on your favourite guitar, is a contender for the Ultimate Guitar Synth title.

The GR50's internal sounds can be triggered directly from a GK2-equipped guitar, any MIDI controller, or a sequencer. If you already have a GK1 or any of the Roland G-series guitar controllers, an optional BCI3 converter will put you in the driver's seat of the GR50. The 128 preset Tones (more about these later) cover a wide variety of instruments and are, with a few exceptions, very good. There are enough drum and percussion sounds to cover just about any kit you can imagine, and there's room for an additional 64 user-programmable Tones. The GR50 can also make use of the D10/20/110 ROM card Sound Library for additional sounds and optional RAM cards for storing your own creations.

Two different sounds can be assigned to each string. These sounds can be played in Dual, Velocity Switch, Velocity Mix, or Velocity Crossfade modes, so up to 12 sounds can be triggered from the guitar. Sixty-four Patch memory locations and five Patch Chains are available. A Patch stores information about the internal sound assignment, control settings for external MIDI instruments, settings for the GR50's built-in digital reverb, volume, fine tune, mode, bend on/off, and stereo panning for each string. Patches can be recalled via the GR50's front panel, an optional FCI00 foot controller, or external MIDI program changes. If you are using the GR50 and the GK2 for live performances, 25 patches can be stored in each of the five Patch Chains and can be accessed in sequence using the up/down switches on the GK2.

It almost goes without saying that the GR50 is multitimbral - allowing you to assign different sounds to each string and hence play several parts or instruments at a time. It wasn't until I started using the system with a sequencer that I discovered its immense power and flexibility. While using it in this way, I had the sequencer playing rhythm instruments such as drums, bass and keys, while I played a solo instrument with the guitar/GK2. I was able to get a full sound - and that was before I hooked-up any other MIDI instruments.

I was a little disappointed that the GR50 doesn't have eight individual audio outputs (like the D110), but the stereo outputs it does have should be sufficient for most live performance work. In the studio the GR50 functions well both as a guitar controller and as an extra MIDI module. I still prefer using my DX7 for playing string pads and keyboard-type sounds such as piano and organ, but I found the GR50/GK2 to be better suited to playing solo lines and brass parts.

Tracking

AS A MIDI sound module, the GR50 is little short of spectacular. I didn't have a chance to try it in a live performance situation, but I would love to find a permanent place in my rack for it. When playing the internal sounds, the GR50/GK2 is one of the fastest and most accurate systems I have used. When used as a controller for external MIDI instruments, it proved to be slightly faster than the earlier G-series controllers. It is not, however, immune to the problems inherent in pitch-to-MIDI conversion, such as slightly slower response on the low strings, occasional mistracking, and the inability to handle string damping well. Apparently, the GR50 bypasses

the MIDI scheme for triggering the internal sounds to avoid these problems. In tuning mode I was unable to outplay the note display. In other words, it was fast enough to accurately show every note played.

Although the GR50 can be triggered from the GK1 or other G-series Guitar Controllers, Roland recommend the GK2 Synthesiser Driver be used. The GK2 allows you to control the GR50 and route the guitar's own audio output to a guitar amp by way of a jack on the back panel of the GR50. The GK2 can be permanently mounted on your guitar using screws or temporarily mounted with adhesive pads.

As mentioned earlier, a pair of buttons on the GK2 allows you to step through the Patches that are stored in the GR50's Patch Chains. If you don't need the Patch Chain function, these two buttons can be programmed independently to control sustain, modulation or octave up

"The GR50, accompanied by the GK2 Synthesiser Driver mounted on your favourite guitar, is a contender for the Ultimate Guitar Synth title."

transposition. Adjustments to the string sensitivity and tuning are made on the GR50, so the only other controls on the GK2 are a volume control for the synth sounds and a switch for selecting the guitar, synthesiser or both. Additionally, an optional Roland FCI00 pedal and an EV5 pedal can be connected to the GR50. This would give you control over program changes, modulation, volume, and pitchbend in a more familiar pedalboard configuration.

L/A Law

ROLAND RELEASED THE first L/A (Linear Arithmetic) synthesiser over two years ago with the flagship D50. Since then, L/A synthesis has gone through a number of incarnations, ranging from the MT32 to the D550, D10, D20, D110 and most recently the D5 and GR50 Guitar Synthesiser. With every new development there seems to come a new set of terms. If you're not already familiar with L/A, a brief resumé is in order.

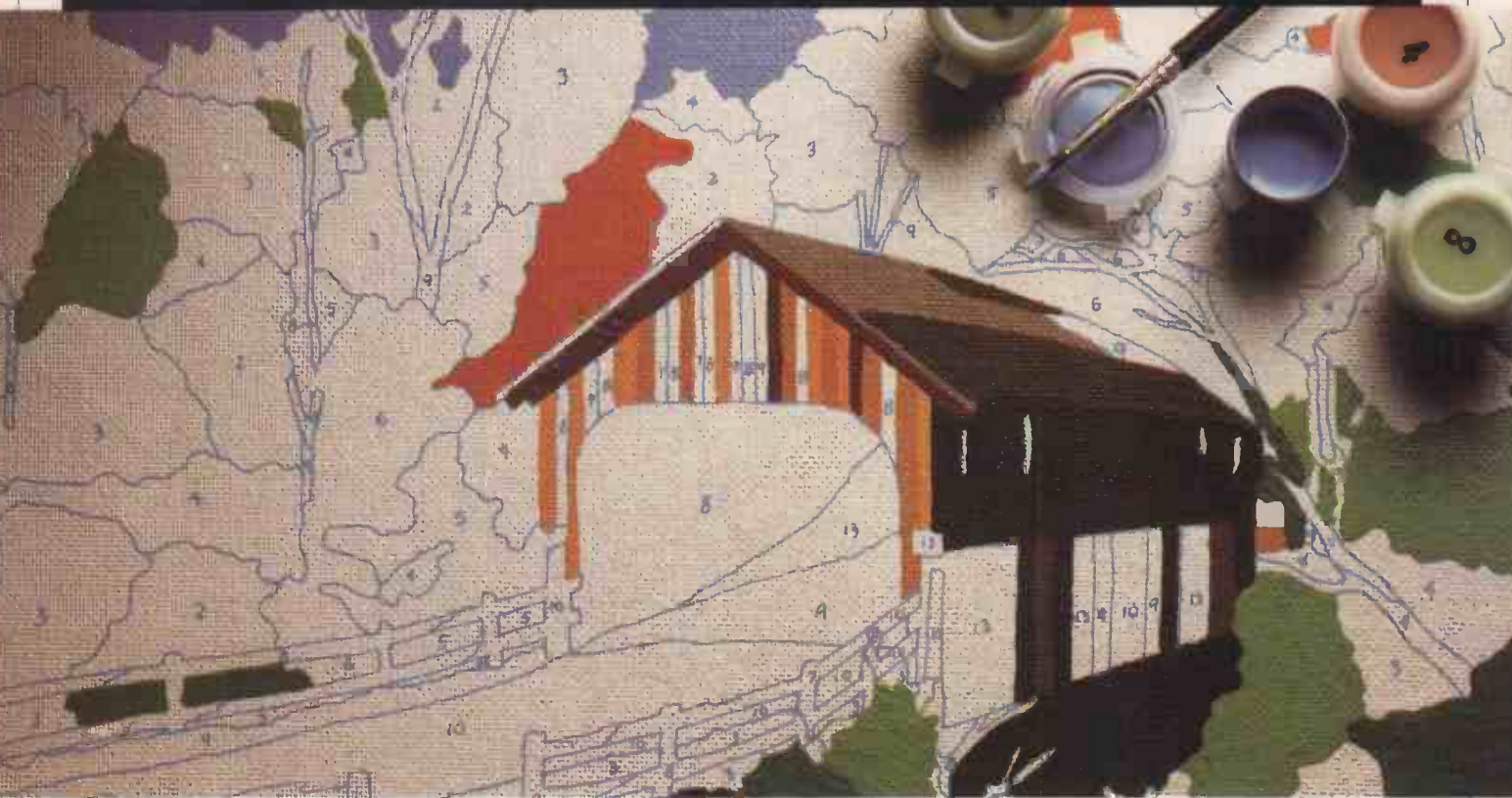
L/A Synthesis is a component system using two different types of voices, or Partial. Members of the first type are called PCM (Pulse Code Modulation) Partial. These are 16-bit samples of acoustic instruments. Some are looped while others are just the attack portion of the sound. Some special effects are included in this category along with 64 different drum and percussion Partial.

The second type are called Synthesiser Partial. These are digital waveforms that include parameters for pitch, amplifier and filter envelopes, as well as LFO and waveform type. Partial are the building blocks used in creating Tones.

A Tone is comprised of up to four Partial (two in a D50) and includes all the parameters for fine-tuning the Partial. The number of Partial being used in a Tone determines the polyphony of the system. In other words, if four Partial are being used per Tone, then the maximum number of simultaneous notes would be eight. Partial always come in pairs called Structures. These are similar to the algorithms found in Yamaha's FM synthesisers. Structures combine the partials in various ways. Two Structures can be combined per Tone. A Partial mute function allows you to turn off Partial that are not needed so unwanted ones are not using up some of the available notes (eating away at your available polyphony).

Timbres form the next level of the system. A Timbre is simply a Tone combined with several additional parameters that affect all four of the Partial (the whole Tone). ▶

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Once you get the hang of these levels, you are ready to create a Patch. This is where the parameters for the built-in reverb are set (reverb type, level and time). The reverb only affects Timbres that have their reverb turned on. This is where the GR50 differs from D-series instruments. Whereas D-series instruments can have eight different Parts and a Rhythm Setup per Patch, the GR50 can have only two Parts and a Rhythm Setup per Patch. Since the GR50 is designed for use with guitar controllers, it doesn't have the Key Range parameter, but it does allow you to assign two Timbres to each string. A lot of button-pushing is required to get to the Tone level, and having this many levels can be rather confusing and somewhat frustrating to deal with at times. However, the flexibility offered by the system can open up new areas of creativity to anyone willing to take the time to master it.

Programming

THERE ARE FOUR levels of programming available on the GR50. The first is Tone level where you can slice, dice, mix, blend, whip and combine up to four of the basic sounds. These basic sounds are called Partials and come in two flavours. They are either 16-bit PCM samples (which include acoustic instruments, drum and percussion sounds, and sound effects), or they are synthesiser waveforms. Creating a Tone involves combining Partials, adjusting envelopes, amplifiers, filters and LFOs, selecting waveforms, and so on. All familiar ground to anyone conversant with Roland's L/A synthesis.

The next level involves setting the Bender range, Keyshift (transposition), Assign mode and Fine Tune to create a Timbre. You can store up to 128 Timbres for use at the Part level. To create a Part, you modify a Timbre by setting the Output Level, Panning and MIDI channel. This may seem like a lot to go through, but the fact is that you will probably be programming at the Patch level a lot more often than at the first three levels.

The Patch level is where it all comes together. A Patch is created by combining two Parts, then selecting the reverb type, setting the reverb level and time, and giving the Patch a name. If you are content to use the factory preset Tones, then you may never have to do more than program Parts and Patches. However, if you want to experiment with creating your own sounds, then you'll find all the power and flexibility of L/A synthesis you can handle at the other levels.

Verdict

AFTER WORKING WITH the GR50/GK2, I must say that, from a performance standpoint, this is definitely a winning combination. Not only does it sound great by itself, it works well enough with other MIDI gear to be used as a master controller. If you're a guitarist in search of a capable guitar synthesiser, check out the GR50/GK2 package. You shouldn't be disappointed. ■

Prices GR50, £825; GK2, £115; BC13, £69; FC100 MK II, £220; PG10, £248. All prices include VAT and apply from 23rd July.

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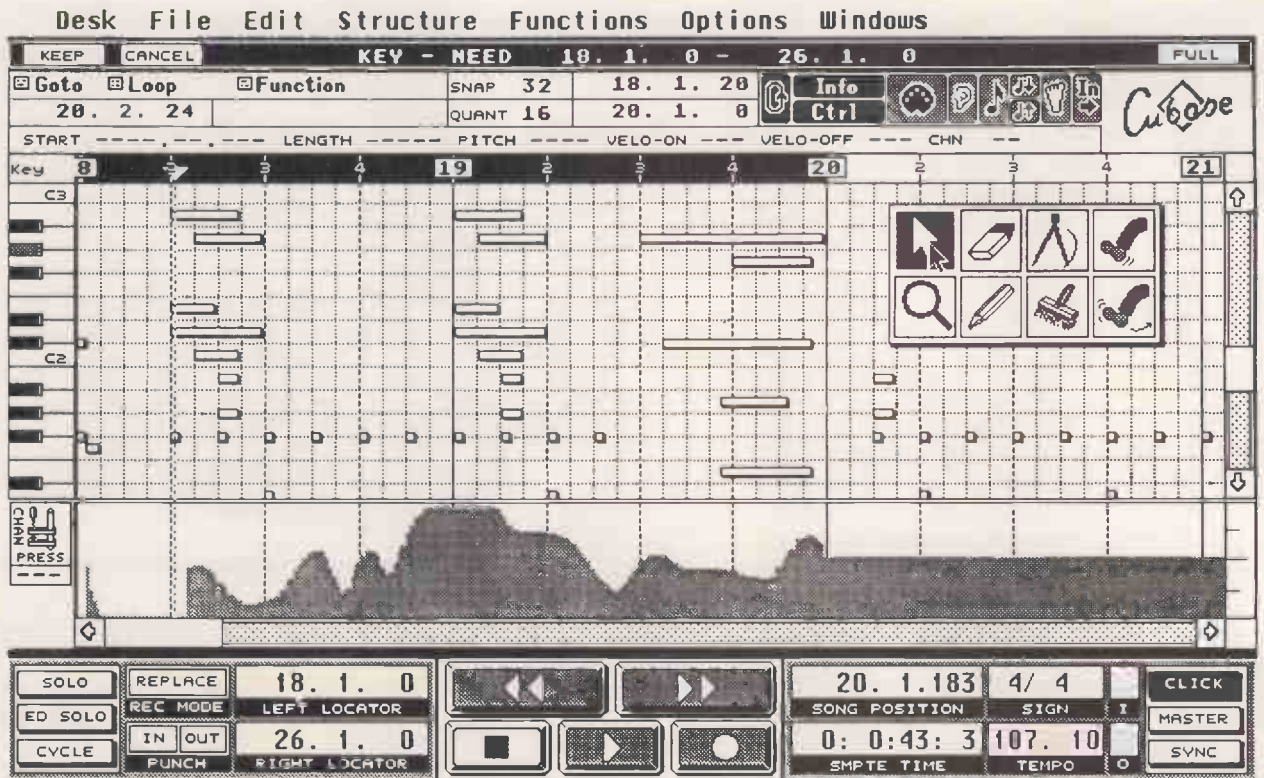
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glasses; welcome to
the wacky world of
music technology
1989 – and to the
first of a two-part
exploration of
Steinberg's latest
sequencer. Review
by Nigel Lord.*

AS WE RUSH headlong toward the second millenium, the high technology roller coaster on which we ride still has us gripping the safety rail, white knuckled and grim faced, yet compelled by our own fascination. Our greatest problem seems to lie in our suspicion of technology as an end in itself. Just like the fairground ride, we don't actually need to climb aboard. So we constantly seek to interpret our involvement with technology as a means to an end. Few people these days, particularly in areas such as music and recording, will admit to a liking of gadgetry for gadgetry's sake, and most are only too happy to express a healthy disregard for anything which cannot be readily catagorised as a tool.

This rather self-conscious relationship we have with technology is beginning to have some quite significant ramifications in terms of equipment design. Transparency (the expression so beloved by audio buffs) goes a long way to describing that quality which we are increasingly demanding of the machines with which we surround ourselves. More and more, the onus is on the machine to come to terms with the often capricious temperament of its human operator rather than vice versa. And as each successive generation of equipment reaches the market place, its ultimate acceptance by the public seems increasingly dependant on its user-friendliness – and its ability to provide us with at least the *impression* of keeping one foot on the ground.

Hence the snapping mice, scissors and glue and so on – all real-world, non-technical expressions and (not entirely coincidentally), all operating tools for Cubase, Steinberg's

new music software program. To date, quite probably the ultimate expression of the programmer's art.

As if to bear out my comments about the changing face of equipment design, the most significant aspect of Cubase's emergence lies not in what it is, or even what it is capable of doing (as immense a step forward as this represents). Where Cubase cuts a swathe through previous sequencing software and actually leaves you feeling slightly breathless is in its ability to see things – quite literally – your way. It can lay before you reams of fiendishly complex data in an astonishingly accessible – and above all, human form.

Given the enormous success of Steinberg's Pro24 sequencing software over the past couple of years, it's perhaps not suprising that it should be Steinberg who are behind the development of Cubase. And indeed, users of Pro24 should find many cross-over points and a definite feeling of oneness with Cubase. However, it doesn't take long before you begin to realise that conceptually, this is a very different beast indeed.

Primarily, this can be ascribed to the extensive multitasking facilities of which Cubase is capable – a product, it seems, of the M.ROS (MIDI Realtime Operating System) software foundation on which it is based. In its most simplest form this means not having to switch off playback or record in order to institute any other commands (which may include procedures as potentially "distracting" as saving and loading). However, providing you have sufficient RAM onboard the host computer (we're talking multi-Megabytes here), the M.ROS Switcher utility

supplied on the main disk allows you to run up to ten programs simultaneously – and this includes synth editors, mixer automation programs et al. Serious multitasking.

Of course, owners of the humble (humble?) 1040 ST aren't exactly left out in the cold by the limitations imposed on them by memory deficiency. Even on its own, Cubase is immense in scope and could never be accused of short-changing anyone – as expensive as it might first appear. Having said that, as an owner of an ST with a medium resolution colour monitor, I cannot help feeling disappointed that Cubase doesn't support it. Of course, the sheer quantity of screen information has necessitated some pretty finely-detailed graphics, and these simply wouldn't be legible in medium-res (a problem which Steinberg have confronted on previous software). But I have to say, shelling out another hundred quid for a monochrome set on top of the price of Cubase itself isn't going to sit too squarely with owners of colour monitors. Perhaps a colour version will materialise in the coming months.

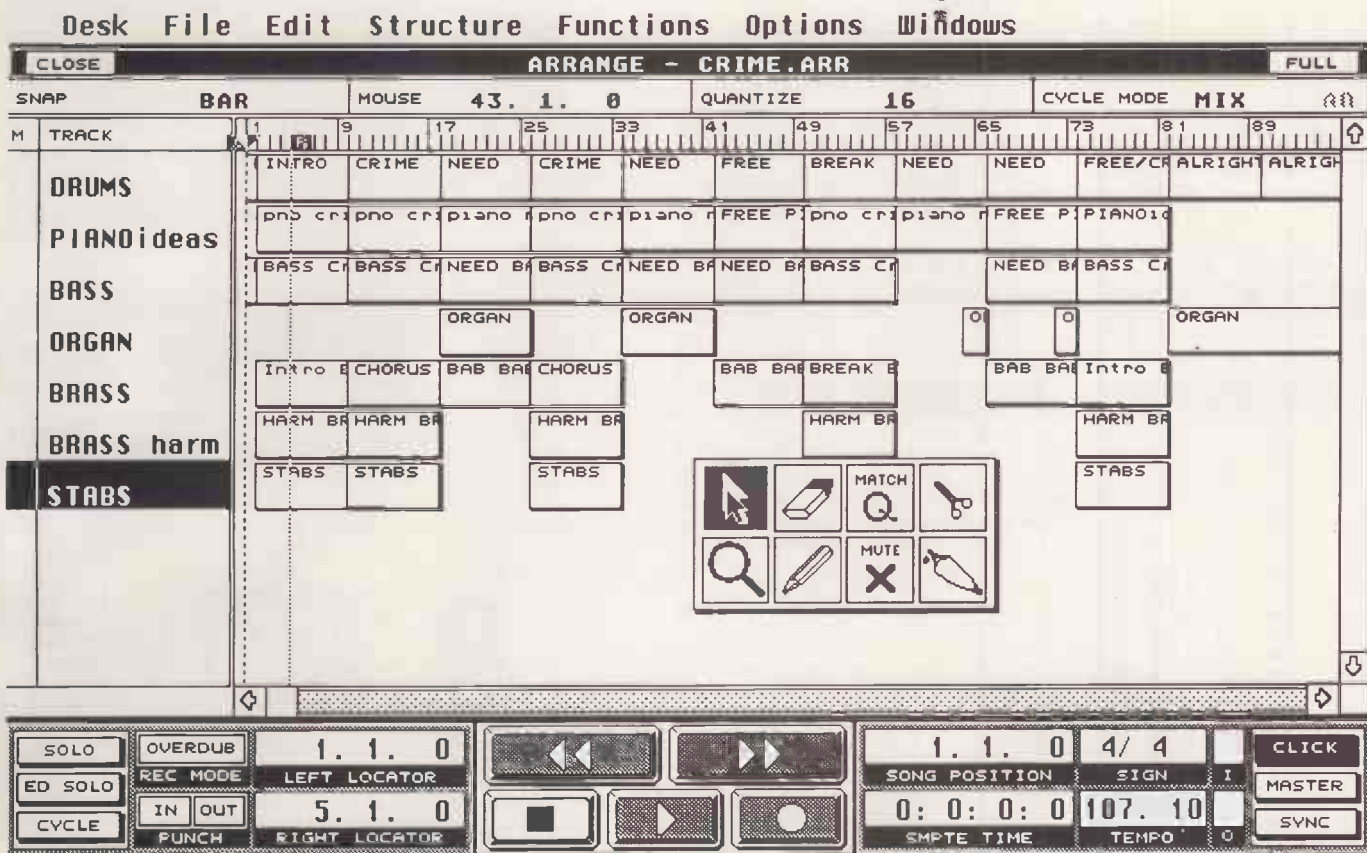
The Arrangement

CUBASE IS CONCEPTUALLY a very different program from Pro24, and nowhere is this more apparent than in terms of song arrangement. The whole emphasis has been shifted towards arrangement and manipulation of the individual sections which go to make up a song or piece of music.

1.0 of the software, copying was an incredibly convoluted procedure by comparison with note editing functions, and though things improved somewhat with the advent of the Arrange Song page (v2.0, if my memory serves me well), you always had the feeling it had been added as an afterthought.

Cubase blitzes Pro24 (and all other ST sequencing software) in this respect. If you can click and drag the mouse (and if you can't, you can't use an Atari), you can arrange a song. There are no conditions. The individually recorded sections – known as Parts – can be picked up and moved anywhere within an arrangement. They can be duplicated, deleted, overlapped, merged, pasted in or cut out, split, joined, extended, attenuated, delayed or muted. You can move them freely from Track to Track, select them singly or in combination and group them together to form individual passages (for choruses, verses and so on) or instrument sections (for brass or percussion, perhaps). I tried in vain to discover a musically useful manoeuvre which couldn't be carried out on the Arrangement page, and couldn't even find one which could be reasonably described as long-winded.

Those of you familiar with MIDI recording systems will no doubt be wondering exactly how such manipulation of Parts is possible given the conventions of MIDI Note-On/Note-Off information. Surely, by chopping off Parts in their prime (so to speak) and extending or overlapping them more or less at will, we're asking for trouble with notes being cut off or left hanging? Well, if Cubase recorded notes in the conventional way, this would almost certainly be the case. As it is, each note is given a start



Arrange Screen

I used to think I was alone in finding Pro24 quite a difficult program to arrange music on. At the level of individual note editing, there was no problem: you could manipulate sound to a previously unheard of level of sophistication – particularly when the score and drum edit pages were added. However, when it came to shifting round whole sections of music – copying and inserting patterns – things started to get rather unwieldy. In version

position and a length, and so enters the system perfectly formed and knowing exactly what is required of it. So much more elegant than those tiresome note-off messages – and this has facilitated the kind of advanced programming architecture which makes Cubase such a flexible musical tool.

As I said earlier, I used to think I was the only person who found Pro24 a difficult program to arrange music on. ►

► The advent of Cubase convinces me that Steinberg themselves were aware of the limitations and decided a complete rethink was called for. If this was the case, it has worked . . . beautifully.

Little Boxes

LIKE MOST MUSIC software programs these days, Cubase is structured around a series of pages or windows, access to which is gained via the Edit pull-down menu. Unlike most other programs, however, Cubase can support up to seven windows at a time and permit work on several different sections of a song – or even several different songs – simultaneously. Just how much information it would be possible to discern, with windows for seven different songs spread across the screen of an Atari monitor, I'll have to leave to your imagination – but the capability is there.

As we've seen, the main work environment is the Arrange window and within this lie the Part display and the Track list (where up to 64 tracks can be accommodated). Within the Track listing can be found mute buttons for each Track, an instrument title column, the MIDI send channel selector and a MIDI output port selector which can be used to direct MIDI Out information to specific MIDI ports on equipment connected to the Atari. So, with Steinberg's SMP24 for example, you can select exactly which of the four MIDI out sockets sends the data from a particular Track. And with 16 channels of MIDI available for each socket, you have up to 64 MIDI paths down which to send information.

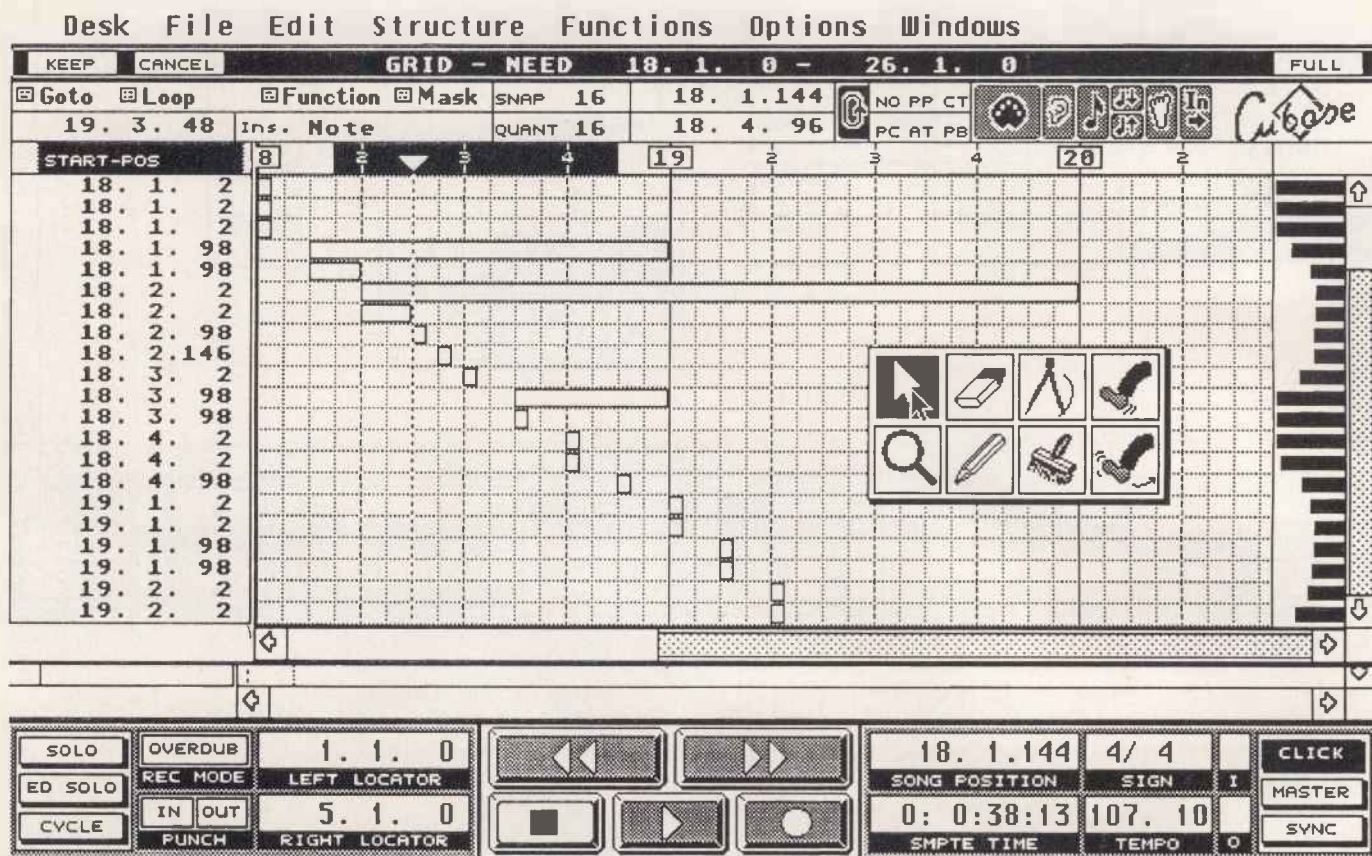
Immediately below the window is the Transport Bar, which is actually common to all the main editing windows, and features – in addition to the Play, Record, Fast Forward, Fast Rewind and Stop controls – the Left/Right Locators used for determining Part lengths when recording (amongst other things), the Cycle on/off button (for use during recording or playback), the Solo buttons (which

work in a similar way to those on a conventional mixing desk), the Record Mode buttons (for replacing a previously recorded Part or overdubbing a Part), the Song position and SMPTE position counters, the Tempo and Time Signature indicators, MIDI In/Out data indicators and the selector buttons for the Metronome, Internal/External Sync and Master Track (about which more later).

Combined with the Fast Forward control is a cueing facility, which like its counterpart on a cassette player, allows you to hear the music whilst in fast forward mode. Curiously, the system necessitates first stopping playback and then selecting Fast Forward – unlike most cassette cueing systems where Fast Forward is pressed during playback. Also somewhat difficult to explain is the absence of a cueing facility linked to the Fast Rewind control; I would have thought this an operation every bit as useful as in the forward direction, but anyway... To make up for this, perhaps, is a rather neat feature which allows you to increase or decrease the cueing speed by moving the mouse to the left or right of the Fast Forward icon – so making it quicker and easier to pinpoint a particular section of a song.

Immediately above the Part display and Track list is the Function Field, wherein may be found the Snap To value box (used for determining the nearest beat or fraction of a beat to which Parts are pulled or "snapped" when released by the mouse), the Mouse position indicator, the Quantise value selector box, and the Cycle recording selector box. This latter function is used to select either Mix, Punch or Normal recording modes. Mix, as you might imagine, allows you to add more notes during each successive recording cycle; Punch automatically drops you into Record mode the moment you play anything during a cycle (and continues until the end of that cycle); Normal record mode (when selected during cycled recording), preserves the notes from a previous cycle unless you start to play on the current cycle, in which case the earlier cycle is erased.

The Parts used in arrangements form the basic building bricks within Cubase. Each one has a start and an end



Grid Edit Window

point, and in addition to note information, also carries any MIDI messages entered during (or after) recording as well as a whole series of playback parameters which may be called up for editing by double clicking the mouse over the relevant Part box. These include Transpose, Velocity, Delay, Note Length, Compression (of Velocity), Program Change and Volume. In addition, there are extensive MIDI data filter options, and a Drum Map selector switch which directs Part information to the Drum Map in the Drum Edit Window (more on this later too).

Of course, the most important thing about the playback parameters is that they are individually set for each Part, and given the flexibility of Part arrangement outlined earlier, you should get some indication of just how much power this puts in your hands.

The Tracks, which comprise the list down the left-hand side of the Arrange window, are also pretty manoeuvrable and can be re-arranged simply by dragging them to a new position in the list (a process which results in the Parts associated with them also being shifted to the new position). Once defined, the Track columns containing the Track titles, instrument names, MIDI channel numbers etc, can be overlaid by extending the Part display to the left, thus giving you a greater area to work in.

The grouping facility mentioned earlier is achieved, simply enough, by clicking the mouse in a blank area near the Part display, and drawing out a square (DTP style) which covers the Parts you wish to include. These then turn from white to black to indicate they are "active", and can be arranged within a special Group Track created from the Structure menu.

Songs, the largest entities within Cubase's architecture comprise a set of Arrange Windows (along with any Groups that may have been defined), a Drum Map and a Set-up. The Drum Map we'll be looking at in the context of the Drum Edit window later on. The Set-up, on the other hand, is a file containing a whole series of parameters - such as the instrument list, tempo, MIDI processor settings and so on - which are applicable to a particular Song and which are saved/loaded along with it.

Some Songs may be composed entirely within the Part display (there's certainly enough room here to create all but the most complex arrangement), and this gives you the option of using Cubase's conventional Song structure to install several different Songs or perhaps several different arrangements of the same Song.

Recording

RECORDING MAKES EXTENSIVE use of the Left and Right Locators which determine the start and end points of a recorded section. Convenient Locator pairs - such as bars 1-4, 4-8, 8-16 - may be memorised and stored under the Atari's Function keys (F1-F10) and used to instantly reset the Locator positions prior to recording or playback. A further aid to recording is the provision of a Preroll facility which, when laying down additional tracks to a piece of music allows you to roll through a number of bars of an existing Track before recording starts.

The precise number of bars is linked to a conventional Precount facility which counts you in using the metronome. I say conventional, but like most things on Cubase, there is an interesting feature lurking behind it which can potentially make life much easier. In this case, it's the ability to record notes during the Precount, making it much easier to catch those which occur on the upbeat of a bar. And as most musicians will know, a considerable number of musical phrases actually begin on the last beat of the preceding bar - a fact that can make life with a sequencer extremely difficult. Not so with Cubase. This is

not a facility which can be used before position 1.1.0 in the Song, but given the ease with which you can insert another Part with the relevant note(s) into the beginning of an arrangement, even this does not pose a problem.

You can punch in and out of recording either manually or automatically on Cubase - the Left/Right Locators, once again, being instrumental in this function. There is also the choice of replacing the existing recording or overdubbing where each successive recording is added to the existing ones. Thanks, once again, to the system by which notes are given start point and predetermined length (as opposed to simple note on/off information), there is no danger of notes sounding at the punch-in point being cut off. So clean, glitch-free recordings present no problem at all.

Needless to say, Cubase records all relevant MIDI information (with the exception of System Common and System Real Time messages), but equally important is its ability to filter out certain types of MIDI data. In the playback mode this is achieved by calling up the Play Parameter box as detailed earlier; in record mode however, this is achieved using the MIDI definition box within the Options Menu.

The Old & The New

IN THE TIME-HONOURED way of ST software, most of Cubase's functions are selected using the six pull-down menus (seven if you include the Desk). The first of these, the File menu, comprises all the loading and saving operations, the disk formatting and file deletion functions and the Close window, New window and program Quit commands. Loading is instigated using the Open command and reveals a dialogue box giving you the option of Song or Arrange files, Drum Map, MIDI or Set-Up files - or Pro24 files.

This last facility is likely to be the one which Pro24 users have been waiting with bated breath to see included (sorry to prolong the agony). Yes, Cubase does support Pro24 song files, but there are a few conditions. Songs stored in Sequence mode on Pro24 are transferred to a Group Track on Cubase, and all Tracks played in Sequence mode are muted. In addition, the following parameters cannot be transferred: Fixed Velocity and Quantise values set in the Track Info box, Quantise values set in Score Edit, MIDI Mode/Note Off settings, Multi Out SMP24 assignments, MIDI Definition settings, Cue Points for SMP24/TimeLock, the preprogrammed Mute settings, Drum Maps 2 & 3 and the Text Input. Also, Cubase will not play in sync with Pro24 songs recorded using TimeLock or SMP24. There may be a chance of salvaging the Track using Cubase's Human Sync function (which we'll get around to), but it looks like being a tricky business.

For conventional files, however, there should be no trouble (I certainly experienced very few problems). What changes do occur during transfer can soon be put right on Cubase - and of course you can then get cracking on a complete rearrangement of the song and wonder how you ever put up with the more laborious aspects of Pro24's programming system. Incidentally, the MIDI file loading option applies only to Standard MIDI files created on Atari ST sequencer software. In other words, you can transfer files from another ST sequencer program, but not from those written on another computer (or, I presume, a dedicated sequencer). Great idea this MIDI "standard", isn't it?

Next along is the Edit menu, and in many ways this is perhaps the most important as it is from here the other four editing windows are accessed. Key, Score, Grid and Drum, as well as the Logical Edit function. Like the manual, however, I will refrain from describing these here as they ▶

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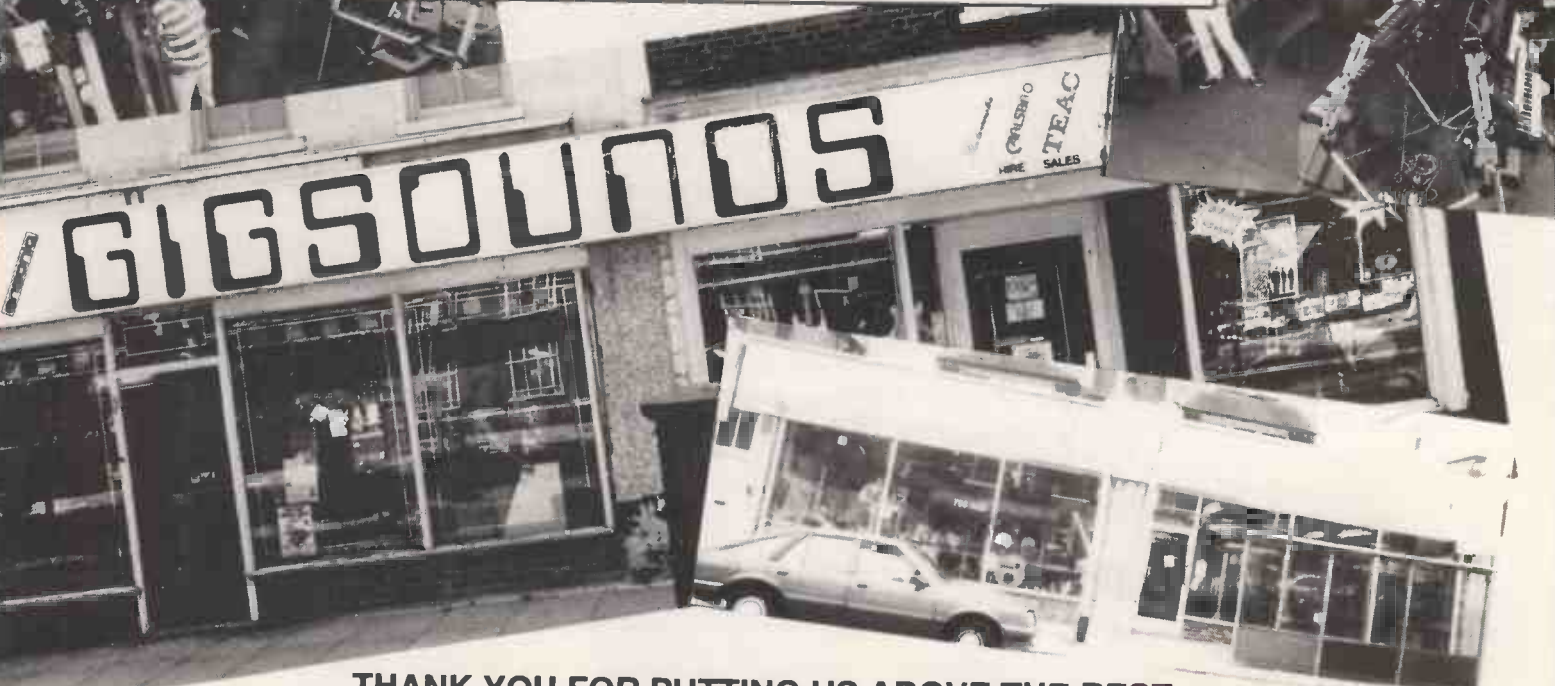
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► clearly warrant individual attention, and indeed, will be given such later on.

One of the most important aspects of good sequencer design lies not only in how easy it is to do things within a recording or an arrangement, but how easy it is to undo them, and as you might imagine, Cubase is well equipped in this respect. Not only is it nearly always possible to delete your last action, but the Undo facility in the Edit menu actually tells you what it is that will be undone if you take this option. In addition, the program lets you undo an Undo and therefore effectively allows you to toggle between the two actions. And in any of the Edit windows you have the option of undoing everything you've done since entering the window by simply clicking on the Cancel box in the Window Title bar.

The Master Track concept is another feature inherited from Pro24 and takes the form of an extra track (the 65th) which is programmed with timing information. The idea is that the song or arrangement runs parallel with the Master Track and uses it as a guide track for tempo and time signature changes. In its simplest form, this can be used to speed up a song slightly as it nears its end (in much the same way as live musicians would), but it can also be extended to include changes in time signature for more complex arrangements.

The Cut command allows you to take Notes, Parts or MIDI events from a window and put them in an imaginary clipboard within the memory. It's a way of storing something you don't want to lose, but don't need at a particular time. The Copy command has a similar function, but puts copies into the clipboard rather than the Notes or the Parts themselves. Conversely, Paste is used to take an item from the clipboard and put it back into the Arrange or one of the Edit windows – the only proviso being that it must be returned to the same kind of window it was cut or copied from.

Deleting will, in all probability, be most often performed using the Delete key on the computer, but if you prefer to do it by mouse, you can use the Delete command included here. You also have the option of accessing the Play Parameters (for a selected part) from the Edit menu using the Info command – whilst Select All simply allows you to activate all the Parts or Events in a particular window.

Finally, the Note Pad utility gives you a facility for inputting text to accompany a specific Arrangement, and this is saved along with the rest of the data when a file is dumped to disk. So there should be no more head-scratching when going back to an arrangement after 12 months, wondering just which reverb preset you used and how you got the cat to make that peculiar whining noise on one of the percussion samples.

Structural Survey

IN THE STRUCTURE menu, as its name suggests, you'll find the commands principally used in assembling a song. Create Track and Create Part are used to establish new Tracks or Parts. Global Cut and Insert removes or inserts sections of music or blank space across all Tracks, and Copy Range copies a section of music from all selected Tracks to another position in the Song. Remix Track allows you to split up into new Parts (each with its own MIDI channel) pieces of music with events recorded across several different MIDI channels. So, for example, a Track recorded on another sequencer and comprised of notes spread across a number of MIDI channels, can, by recording it into Cubase, be "sorted" into its component parts.

Mixdown allows you to merge all the Parts on selected Tracks into one composite Part, whereas Repeat copies a selected Part and repeats it a specified number of times

after the original. The Grouping facility mentioned earlier also has its commands in the Structure menu, and from here you can set up Groups, insert and delete parts in them, create the special Group Track in which the Groups are arranged, and disassemble a Group back into its component parts.

Quantise Fits All

IT IS, PERHAPS, an indication of the level of sophistication of most sequencing software (and hardware) these days that what was originally included as a means of correcting timing errors when inputting music, has become a creative process in its own right. I refer to quantisation, and as if to reflect its state of the art status, Cubase goes to town in this department. Most of the commands connected with quantising notes (for it is only notes that are quantised) are contained within the Functions menu. The actual quantise value is selected from a pop-up menu accessed from the Function Field immediately above the Arrange window.

In addition to Automatic Quantise, which allows you to quantise notes as they are recorded, there are no less than five different manual quantising methods available on Cubase, each with its own characteristics. Note On Quantise provides the sort of auto correct function most people are familiar with – it moves notes to the nearest beat (or division thereof) whilst preserving their original length. Over Quantise is perhaps the most useful musically: though moving notes to the nearest quantised position, it has the ability to detect notes being played consistently ahead or behind the beat and takes this into consideration in deference to your playing style.

Iterative Quantise allows you to move notes toward the quantise position, repeatedly, by a defined amount, until you achieve the kind of feel you require. And it has the option of excluding certain notes, so you have precise control over the whole process. Match Quantise enables you to match the feel of one part with that of another. So you could take a specific drum groove, for instance, and match a bass line to it in order to tighten up a rhythm section. Clearly, the possibilities opened up by this kind of timing manipulation go well beyond the strict corrective function of quantisation as it was originally conceived.

Groove Quantise takes us even further down this road. In simple terms, it allows you to take a Part and impose a feel upon it – either selected from a menu under Edit Quantise, or from a Groove Map created yourself. It's a complex arrangement to describe, and clearly rather subjective in nature, but it's certainly the type of feature which extends Cubase's role from that of a straightforward MIDI tape recorder to a creative instrument in its own right.

Before going any further, it's worth pointing out that as far as Cubase and quantisation are concerned, nothing is irreversible; everything that is done can be undone – unless you select the Freeze Quantise command. It's that simple.

Two other quantise-related functions which are probably worth mentioning are Length Size, where the length of all notes is adjusted to the nearest quantise value, and Fixed Length, where all notes are adjusted to the same length, and this is determined by the Quantise value.

Details

AS A MEASURE of the innovation contained within Cubase, you need look no further than the Options Menu; here you get a real impression of the sort of care and understanding Steinberg have invested in the program. For ►

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► example, if a song begins with a Program Change command to a synth and is followed by a second command for a different voice later in the song, what happens if you start playback somewhere between the two? On any other sequencer, the answer is simple: having had no command to re-select the first program, the sequencer would start playing back the first part of the song with the voice from the second part. On Cubase, however, you select Chase Events, and the program looks back to see what commands had been recorded before the point at which you start, and automatically sets the synth to the correct program.

And how about a metronome which allows you to individually set the pitch of the downbeat and that of the other beats? With Cubase, the problem of metronome "bleeps" being masked out by the music you play becomes a thing of the past.

Throughout the Options menu (and the program generally), this is the kind of utility that crops up time and again and makes life much easier for the harried musician

Studios should benefit from it; a lot of musicians experience the utmost difficulty playing alone what they have previously only played together. And the chances of getting a good take are improved enormously if all the musicians can be recorded at every run through.

MIDI, Sync & Processing

THE MIDI DEFINITION command is used to access the main MIDI data control functions, and these appear in the form of a menu with Record, Thru, Control and Channel filter boxes, a Controller number remapping area, MIDI Thru and Running Status selection boxes (the latter being a special function for compression of MIDI data), and a Thru Off Channel box which I'm quite happy to let the instruction manual explain to you.

Synchronisation facilities are comprehensive to say the least. The Sync dialogue box contains all the options, and these fall into two main categories – SMPTE based and Tempo based. SMPTE sync includes the internal M.ROS time code, SMP24 time code, Steinberg TimeLock time code, MIDI time code and Tape Controller time code. Tempo sync, on the other hand, includes the internal tempo (as determined by the value set on the Transport Bar or on the Master Track), MIDI clock tempo (with Start/Stop, Continue and Song Pointer messages) and Human Sync.

MT readers are likely to be familiar with the concept of human synchronisation; units such as the Kahler Human Clock have been around for some time now. However, it's probably worth checking up on the price of such a unit if the cost of Cubase still seems prohibitive. And then consider this is but one feature in Cubase's arsenal.

For those not familiar with the concept, let's say it's a system whereby a sequencer synchronises itself to the timing of a musician – so reversing the convention of you having to stay in time with the machine. It can also be used to synchronise with old recordings that are not striped with time code (or indeed any piece of music), by generating MIDI information in some way (tapping a key on a synth for example). The options open to the Cubase user in this respect are quite extensive, and with the system correctly set up – and a little practice – the results are extremely impressive.

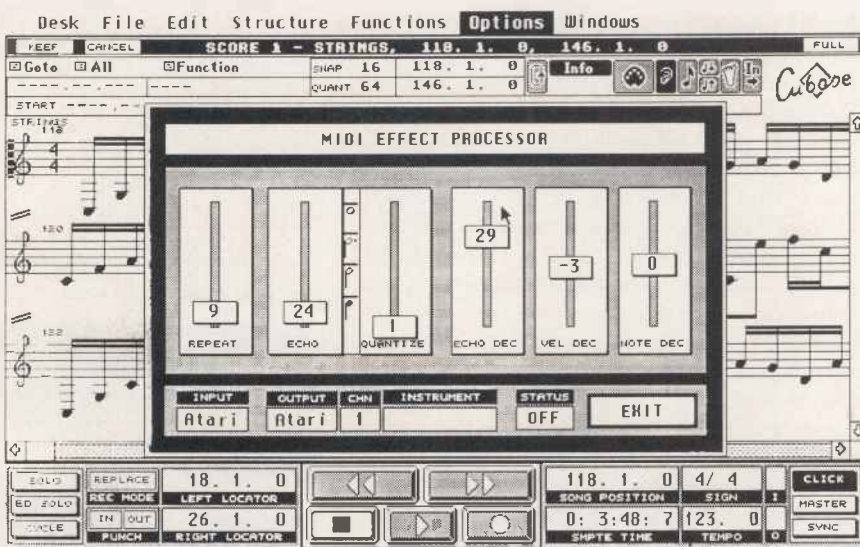
Finally we come to the MIDI Processor, further proof, if it were needed, that Cubase is no simple MIDI recording system. It takes the concept of MIDI echo into the realms of full signal processing, giving you the ability to produce echo, chorus and pitch-shifting effects – all from the manipulation of MIDI data. Yes, I was a little astonished too. Sadly, the limitations of time prevented me from getting to grips with facilities on offer here in anything but the most casual way. However, the results I did manage to produce messing around with echo loops were quite compelling, particularly on rhythm tracks.

It has to be said that there's an inherent difference in the sound quality to the audio signal processors we're all used to – but it's a fascinating concept for all that, and could easily mean an external processor is freed for other duties. That £500 asking price keeps looking smaller and smaller...

And so to the last of the pull-down menus – the Windows menu. A simple little utility, it allows you to size and align all the open Arrange and Edit windows as well as listing automatically all open Arrange windows and those closed using the Keep option. Right, that's it. Can I move onto the Edit windows now? Perhaps next month... ■

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Follow Song initiates the automatic scrolling facility in the Arrange and Edit windows. Reset On Stop automatically zeroes MIDI Pitchbend, Modulation and Channel Pressure values so that nothing is left hanging; it also sends out All Notes Off and Reset All Controllers messages where these might be needed. A secondary Tempo Recording function (in addition to the Master Track facility) is provided in the Options menu, and so too is a neat little utility which allows you to choose what type of information appears in the Part boxes within the Arrange window. You can display simply the Part name, or visually reveal the density of information which occurs in each Part – this being represented by parallel vertical lines similar to Hybrid Arts' MIDITrack approach. The greater the density, the closer the spacing between the lines.

The Multi Recording facility which first made an appearance on v3.0 of Pro24 has been included in Cubase in an expanded, and more accessible form. Basically, it allows you to record on up to four tracks at once; so, if you play two separate keyboards simultaneously (or have a multitimbral synth transmitting on two or more channels), or if you are recording a band with two or more musicians playing together, this is going to make life a lot easier.

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Microtonal usings



Illustration Andrew Kingham

Interested in alternative tunings and scales, but unsure about how to use them? Read on to discover the practical applications of microtonality. Text by Scott Wilkinson.

IF YOU'VE BEEN reading MT over the past couple of years, you'll be aware of the growing interest in microtonality – the ability to play the notes “in between” the standard 12-tone scale. Microtonality offers the promise of new musical dimensions for composers, performers and listeners alike.

I know what you're thinking: “isn't it mainly for making weird, *avant garde* music? What exactly can I use it for?” Well, lend an ear (or rather, an eyelash) and I'll tell you about the wide range of microtonal applications that any musician can use to enhance the quality of his or her music.

Background Music

MANY PEOPLE BELIEVE microtonality is about scales that consist of very small musical intervals. In fact, these scales comprise only a part of the world of microtonality. A more accurate assessment would be that microtonality is concerned with any interval, particularly those intervals not found in 12-tone equal temperament. Many of these intervals differ from those in equal temperament by very small amounts, hence the term microtonality.

When you stop and think about it,

there is an infinite number of musical pitches available to composers and performers. Trombonists, fretless string players (such as violinists) and singers know this instinctively because they can produce any pitch of any frequency with equal ease (as long as it's within their range). And yet, virtually all of the music composed and performed in the Western world during the last 200 years has been created using only 12 distinct pitches that are repeated in all of the octaves audible by human ears. The reasons for this 12-tone limit are found in the history of Western scientific and musical development.

As a musician, you probably know that the distance between any two notes is called an interval. One of the most common and easily recognised intervals is the octave. In this interval, the frequency of the higher note is exactly twice the frequency of the lower note. As a result, the two notes are said to be in a ratio of 2/1. In a perfect fifth (such as C up to G), the frequency of the higher note is exactly 1½ times the frequency of the lower note. This interval is described by the ratio 3/2 (or 1½). The comforting thing about ratios is that they can be used to describe intervals without regard to the actual notes that make them up. Any two notes that form an octave will always be in the ratio of 2/1.

The ratios of various intervals can be found in the harmonic series. The intervals between consecutive harmonics become gradually narrower as you ascend the series. The first interval in the series is the octave, followed by the perfect fifth, perfect fourth, major third, minor third and so on. The first 12 members of the harmonic series and the intervals that they form with the fundamental (C in this example) as well as between consecutive harmonics are shown in Figure 1.

As you can see, the harmonics in one octave are repeated in all higher octaves with the addition of new harmonics. The intervals in the harmonic series are known as "pure" intervals because the ratios that describe them are composed of two whole numbers. An entire diatonic scale can be constructed from the members of the harmonic series. This is one form of "pure" or "just" intonation.

In the days of ancient Greece, the famous scientist Pythagoras constructed scales in a different way by generating consecutive perfect fifths. For example, he might have started on C, moved up to G, then to D, A, E, B and so on around the "Circle of Fifths" that music students study to this day. If you are or were such a student, you probably remember that the Circle of Fifths closes on itself, returning to the starting point of C (actually, to its enharmonic equivalent B#) after 12 perfect fifths (and the appropriate octave adjustments).

However, Pythagoras discovered a problem with this procedure. If the fifths used are truly in tune (that is, exactly in the ratio of 3/2), the Circle of Fifths does not close on itself. By the time he got to B#, it was almost a quarter tone sharp with respect to the starting note C. When using truly in tune (or "pure") perfect fifths, the Circle of Fifths becomes the Spiral of Fifths.

This error in the Circle of Fifths when using pure fifths, known as the Pythagorean Comma, is one of the main reasons why pure intonation does not allow the performance of diatonic music in any key. In order for any of the 12 key signatures to be available, the circle must close on itself. The octave must be preserved. This means that the Pythagorean Comma must be placed somewhere else in the scale.

One way to close the Circle of Fifths is to divide the Pythagorean Comma into 12

equal parts and subtract this very small interval from each of the pure fifths in the Circle. This results in 12-tone "equal temperament" that we have grown to know and accept as the only alternative. You can also derive 12-tone equal temperament by dividing the octave into 12 equal intervals (called semitones). The fifths in this tuning are slightly flat and the major thirds are noticeably sharp (not to mention that all the other intervals except the octave are also impure).

As you might imagine at this point, there are many other ways to divide the octave into a scale. By exploring these other alternatives, the intervals that are important to Western music can be made more pure and harmonious to the ear.

Improved Intonation

ONE OF THE most important but least understood applications of microtonality is improved intonation for "normal" Western music of any style including (but not limited to) pop, rock, jazz and classical. Today's musicians and listeners alike have come to accept the imperfect intonation of 12-tone equal temperament

was that only a small number of key signatures sounded good in any particular tuning (although it's important to remember that these keys sounded much better in fact than in equal temperament). This is due to the fact that each note performs different functions in different harmonic contexts. For example, C acts as the third in the key of Ab major and the dominant seventh in the key of D. In order to maintain pure intonation in both harmonic contexts, two slightly different Cs must be used. The difficulty of retuning an instrument for a piece in a different key (not to mention the increasingly popular modulations within a single piece) made the compromise of equal temperament more and more attractive. How would you like to retune the grand piano on stage between each piece at a gig?

Equal temperament, however, is a double-edged sword. While all key signatures sound equally good, they also sound equally bad. Except for the octave, no interval played in equal temperament is purely in tune. This is the price we have paid for musical flexibility.

One solution to this problem is to divide the octave into many more than 12 equal parts. It turns out that other equal divisions of the octave produce the

Harmonic Number	Note Name	Ratio with Fundamental	Interval with Fundamental	Consecutive Ratio
12	G4	3 / 2	Perfect 5th	12 / 11
11	F#4	11 / 8	Augmented 4th	11 / 10
10	E4	5 / 4	Major 3rd	10 / 9
9	D4	9 / 8	Major 2nd	9 / 8
8	C4	2 / 1	Octave	8 / 7
7	Bb3	7 / 4	Minor 7th	7 / 6
6	G3	3 / 2	Perfect 5th	6 / 5
5	E3	5 / 4	Major 3rd	5 / 4
4	C3	2 / 1	Octave	4 / 3
3	G2	3 / 2	Perfect 5th	3 / 2
2	C2	2 / 1	Octave	2 / 1
1	C1	1 / 1	Fundamental	

Figure 1. The harmonic series based on the fundamental C. The intervals and ratios have been adjusted to compensate for the different octaves in which they occur. Notice the interesting pattern in the ratios describing the consecutive intervals.

because it has been used almost exclusively for the last two centuries. Our ears have become culturally accustomed to the imperfect fifths and sharp major thirds that are inherent in our standard scale.

Pure tunings such as just intonation derived from the harmonic series provide the opportunity to create music with greatly improved intonation. Perfect fifths are indeed perfect, and major thirds are noticeably lower than their equal tempered counterparts. More to the point, these and the other intervals used in Western music are truly in tune when played in a pure tuning. Music performed with pure intervals and chords has a shimmering quality and a conspicuous absence of the "beating" given by imperfectly tuned notes.

Of course, the reason that pure tunings such as just intonation were abandoned

important intervals (such as the perfect fifth and fourth as well as the major and minor third) with greater purity than 12-tone equal temperament. Such divisions include 31, 53, 65 and 118 equal intervals per octave. Within these large scales are hidden the specific intervals that allow performance in any of the 12 keys with improved intonation over 12-tone equal temperament.

The problem with these tunings is that they don't map well onto the standard musical keyboard. Instrument designers throughout the ages have come up with a variety of keyboards that are better suited to playing these large tunings, but none have ever enjoyed widespread acceptance. Sort of like the Dvorak typewriter keyboard, eh?

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▶ retuning. If you write a piece for synthesizers that starts in C minor and modulates to A major, and you wish to use just intonation so that the intervals and chords in both keys are pure, you can change the base key of the tuning with ease. This can be done manually on the front panel of the instrument or, in some cases, by sending a program change message that recalls a preset with an associated tuning.

Another, even more useful, prospect on the horizon is the development of a standard MIDI microtuning file format. Carter Scholz and Robert Rich (two regular contributors to MT's American sister magazine and members of the American body, the Just Intonation Network), have proposed a microtuning file format that codifies the specific characteristics of any tuning into SysEx messages. Similar in principle to the MIDI Sample Dump Standard, this file format will allow synthesizers from different manufacturers and computers to share microtuning data.

With such a file format, you would be able to send entire tuning tables from your sequencer to any compatible synth or sampler. In addition, the proposed format includes provisions for real-time control that will allow you to tune individual notes in any compatible synthesizer on the fly. This has far-reaching implications for improving intonation in any musical style and will revolutionise the way in which tunings are implemented in electronic music.

Things Ethnic

ALTHOUGH IT MAY sometimes be hard to imagine, there's a whole world of music that has little or nothing to do with diatonic scales and 12 key signatures. The indigenous musics of Asia, Africa, Australia, India, the Pacific islands, the Middle East and South America are rich with melodic, harmonic and rhythmic elements not found in the Western musical tradition. These elements are now being incorporated into the music of contemporary American and European composers such as Terry Riley, and Eberhard Schoener.

Wendy Carlos is another composer who uses elements from various ethnic sources in her music. In particular, she has pioneered the use of non-Western tunings and scales with electronic instruments. Her album *Beauty In The Beast* is a stunning example of how these tunings can be incorporated into an electronic setting. Using such instruments as the Synergy, MuLogix Slave 32 and Kurzweil 150FS, Carlos uses imitative synthesis to recreate the sounds of instruments from different parts of the world and plays these sounds with tunings appropriate to the cultures from which they came. She also mixes her metaphors for a wonderful hybrid effect as in one section of 'Poem For Bali', which is a mini-concerto for Gamelan and Symphonic Orchestras.

Another area ripe for the picking (or plucking, banging, bowing or blowing) is

found by reaching into the past. Elements of historical music can be extracted and used in contemporary composition. New age artists are using historical instruments such as recorders and harpsichords to establish a certain elegant feeling. The tunings from these bygone eras can also be used to enhance the historical perspective of this music.

Microtunable synthesizers offer some very attractive possibilities to music educators and early music specialists as well. If you teach music history or keyboard performance, synths and samplers with historical tunings can be used to illustrate the music as it was meant to be heard. Various principles of acoustics can also be demonstrated with these instruments.

Performers of early music can use synthesizers to try out different tunings before they commit their harpsichord or pianoforte to any particular one. Electronic instruments are also much easier to take to rehearsals and hold their tuning perfectly, unlike their acoustic counterparts.

Experimental Music

NOW YOU'RE THINKING: "here comes the weird stuff". Well, some of us like to get outside from time to time. Besides, if no one ever experimented with new musical ideas, we'd all still be listening to bones and skins (apologies to any drumbores out there - your contributions illustrate that music is a cumulative art).

One area of experimental music that has yet to be fully explored involves the use of psychoacoustics. This rather esoteric branch of psychology deals with how we perceive sound. There are several very interesting psychoacoustic effects that can be easily generated with microtonal synths to enhance your music.

One of the most common psychoacoustic effects results in what are known as "combination tones". When pure intervals and chords are played, our brain actually manufactures additional tones that we perceive from the interaction of the primary tones. For example, if you play a C major triad in root position with pure intervals, most people will hear the G a fourth below the root and the Cs one and two octaves below the root in addition to the primary tones (see Figure 2). While this might not seem very



Figure 2. A pure C major triad in root position based on middle C produces several combination tones below the triad.

experimental, it does help to reinforce the purity of intonation. A more experimental application would be to compose a piece in which combination tones are produced to provide the melody by varying the primary tones.

Another interesting effect is known as "binaural beats". You're probably aware of the regular beats that occur when two slightly out-of-tune notes are played together. In fact, this phenomenon can be used to good effect in experimental composition. However, binaural beats

"Microtunable synthesizers provide a facility never before available in the history of keyboard instruments: instant retuning."

provide even more interesting possibilities. They arise when two tones of slightly different frequencies are played separately into the two sides of a set of headphones without interacting electronically or acoustically. Under these conditions, you might expect to hear the two tones as separate and distinct. Surprisingly, you don't. Binaural beats are perceived as a single tone that circles around inside your head with an almost chorus-like effect. This is quite startling; it also suggests an entire genre of music intended solely for headphone listening that makes extensive use of binaural beats and other binaural effects.

So...

IF YOU INTEND to experiment with some of the ideas presented in this article and you use a Macintosh computer, I'd highly recommend you contact Robert Rich at Soundscape Productions, P.O. Box 8891, Stanford, CA 94309, USA. Aside from working on the MIDI Tuning Dump Standard, he has also developed a HyperCard stack called JI (Just Intonation) Calculator that facilitates the design of any tuning with up to 48 notes per scale (and scales need not be octave repeating). The Mac's sound chip can be used to hear the results of different tunings and the stack even sends its tuning tables to the Yamaha DX7II, TX802 and TX81Z over MIDI. The best part is, it only costs \$10.

Another product of interest to microtonal explorers is the Tune Up tuning library for the TX81Z from American company Antelope Engineering. This program is available for IBM PC and Macintosh computers and includes 100 historical, ethnic and contemporary tunings that can be downloaded into the TX via MIDI. Tune Up is available for \$49 from Antelope Engineering, 1048 Neilson St, Albany, CA 94706, USA.

There you have it: a brief introduction to the applications of microtonality. Perhaps your curiosity has been aroused and you'll even consider using these ideas in your own music. Perhaps we'll even get some microtonal demos sometime. Happy tuning. ■



Miles Davis

Amandla

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With albums like *Bitches Brew* and *On The Corner*, Miles Davis cut an iconoclastic musical figure back in the late '60s/early '70s. Yet after those intensely creative years he disappeared from the scene, and the freewheeling amalgam of jazz and rock that he fashioned gave way to a more accessible, commercially-inspired jazz-rock in the hands of groups like Weather Report, Return to Forever and the Mahavishnu Orchestra (all of which were led by former Davis sidemen). His return to the scene in 1981 with *The Man With the Horn* was both a triumphant and a timely one, putting a sense of jazz freedom back into jazz-rock, with music that was at once intense and spontaneous, yet disciplined.

Since 1981 he has put out an album almost every year, the only break being between 1986's *Tutu* and this year's *Amandla*, the seventh album of the decade under his own name (he also played trumpet on Marcus Miller's soundtrack album *Siesta*).

The early albums of the decade (*The Man With the Horn*, the live double album *We Want Miles* and *Star People*) were all produced by Davis' old producer Teo Macero, and *Decoy* and *You're Under Arrest* from '84 and '85 respectively saw Davis himself taking on the producer's mantle. But with *Tutu* and now the new album, he has passed the production chores over to Marcus Miller, who played bass for the trumpeter in the early '80s.

Amandla is dedicated to the late Gil Evans, the arranger who collaborated with Davis in the late '50s and early '60s on such classic albums as *Porgy and Bess* and *Sketches of Spain*, and it's somehow fitting that, in function at least, Miller has emerged as a latter-day Gil Evans – yet on *Amandla* he has a degree of control which goes beyond the individual role of a Gil Evans or a Teo Macero. Not only has he written and arranged most of the tracks on *Amandla* and produced the album alongside Tommy LiPuma and (on 'Cobra') George Duke, he also plays on every track, contributing in various measure bass, drums, guitar, bass clarinet and soprano saxophone. Can this degree of control be healthy?

In fact, Davis is down as executive producer on the album, and indeed it would be hard to imagine him relinquishing all control. But the sidemen he has chosen during his long career have always been an integral part of his sound at any given time. For instance, the contributions of keyboardist Robert Irving III and guitarist John Scofield were integral to the success of *Decoy* (the brilliant uncompromising invention of which Davis has yet to equal). Davis' own synthesiser playing, of which he has said "I simply play what's needed, no more – just the essentials", was also an essential part of *Decoy*'s character, but sadly it's absent on *Amandla*. Instead it is Miller who provides much of the keyboard work on the album, with the tasteful, strangely aqueous synth programming provided, as on *Tutu*, by Jason Miles.

In a sense, *Amandla* is a return to the cool style of Davis' pre-electric albums, but musically (with some irony) it also has many echoes of Weather Report, whose founding members Joe Zawinul and Wayne Shorter had previously played in Davis' early electric bands. The title track in particular has a Zawinul



ballad feel to it, while 'Jilli' recalls a more uptempo Weather Report feel, circa *Procession*. Meanwhile, tracks like 'Cobra' and, again, the title track tap a vein of mournful lyricism which is well suited to Davis' trumpet playing. But it's only on the closing track, 'Mr Pastorius', a homage to the late great Weather Report bassist, that Davis gets to stretch out. Accompanied only by long-time cohort Al Foster on drums and Miller on bass, keyboards and bass clarinet, he spins out those uniquely mournful melodic trumpet lines, and demonstrates that (still) nobody understands better than him the value of musical space. Elsewhere on the album his presence lifts rather than commands the music, slotting neatly into Miller's intricately-constructed patchwork quilt of sound.

Of the other players who appear on the album, saxophonist Kenny Garret's gutsy playing singles him out as a name to watch, while the supple, bouncy go-go beat supplied by Chuck Brown's drummer Ricky Wellman on 'Big Time' is a treat. But on the whole, *Amandla* is characterised by restrained playing – even the guitar work, which has always set the sparks flying in Davis' music, never really takes off. There is much of interest on the album, with many intriguing

and subtle melodic and harmonic twists and a finely-tuned sense of arrangement on Miller's part, but somehow everything's too polite, too restrained, too glossy. Everything is neatly in its place, nothing clashes.

Put *Amandla* up against the exciting spontaneity and rough edges of, say, *The Man With the Horn*, or the striking invention and fiery playing of *Decoy*, and it's clear that there's too much studio-bound control being exerted. *Amandla* is a sign that our modern technological times are perhaps not as healthy as they should be. The result comes across as a kind of superior hi-tech fuzak for the CD generation – pleasant in a soporific way. Perhaps now that, at 63 years of age, Davis is an elder statesman of jazz it should be left to younger musicians to pick up the gauntlet thrown down by his early '80s albums. In this connection, Steve Coleman and the Five Elements' 1986 album *On the Edge of Tomorrow* is well worth checking out.

The studio has never been Davis' sole domain, however, and as he's still treading the boards after all these years, perhaps it's about time he sidestepped all the studio trickery and produced another live album. ■ S

demoT·A·K·E·S

This looks promising – a chap with a name like **Glyn Lloyd-Jones** who comes from Scotland, with a demo cassette with the tantalisingly brief title of 'Ri'. A tad enigmatic, *n'est pas*? Well, no, actually, it isn't – not the music anyway. But let Glyn explain: "It is best described as melodic new age." And as if that weren't warning enough: "but in the best possible sense . . .".

Now, quite what "the best possible sense" of a term like melodic new age is I'm not entirely sure, but I do believe people should have the courage of their convictions, and if they choose to align themselves with a particular musical genre, they should not seek to write this kind of escape clause into a description of their work. Presumably Glyn would not wish us to brand him as some type of stereotypical new age muso, but on the strength of this 12-minute opus, I cannot in all honesty think of a more appropriate category in which to put him. Swirling analogue synths, glockenspiels, choirs, chugging sequencer lines – 'Ri' has them all. It's the kind of music the BBC puts out with those "science for the masses" documentaries or uses to fill in the two-minute slots between schools programmes. It's all flawlessly executed and quite seamlessly produced and arranged, but to my ears it's vacuous and dull.

In terms of equipment, Glyn can only be regarded as the archetypal MT reader: D50, DX21, Juno, MT32, MID1verb, SPX90, Atari ST, Pro24, Seck desk, Tascam 32 . . . Yep, it has to be said, Glyn is precisely the sort of chap we write the magazine for. So why aren't I being kinder to him? Well, I'm afraid it's that new age tag again. Perhaps someone can explain to me just why it is that a piece of music written in/for "the new age" should be built around one of the most predictable chord progressions known to Western music. Or why the analogue lead line (heavy on the pitchbend) came in exactly when I expected it to. And

of course, you could put my anticipation of the Giorgio Zamfir pan pipes down to sixth sense, but it's the first indication I've had of such power . . .

Enough of the polemic, let's set the record straight. 'Ri' is a meticulously-crafted piece of music, broad in scope and beautifully realised even in its abridged form (the full piece lasts some 50 minutes). Recording quality is impressive to say the least, and the packaging and presentation are well above the usual demo standards. It's not my cup of meat, but lovers of new age music could do well to check it out. (Copies may be obtained from C & D Services, 140 Seagate, Dundee.)

Andy Ce has a unique writing talent and once helped out in a soup kitchen in California – of that he's certain. So certain, in fact, he's gone to the trouble of sending us four photocopied pieces of paper emblazoned with these and other fascinating snapshots from his life. Here, we are entreated to help him and his band – A.CLAN.C – "BRING EXCITEMENT AND REAL RAW character back into the Music Business" and asked, "Who will have the Courage to take this Style into orbit?". The "Style", apparently, being "NU-Beat, YOUR Beat. Fast Beat. This is BRIT Style . . . This is NOW and Tomorrow . . . This is ROK, Dance, Classical, Jazz Folk . . .". I never realised there were so many capital letters in a typewriter.

Sadly, Andy seems unwilling to disclose such basic details about the band as who is in it or, even, whether it's a solo venture. But there are two drawings here of a witch flying over a tree with a gate and a ladder nailed to it. (You got me on that one, Andy – I spent half an hour trying to spot the difference between the pictures before I realised it wasn't a puzzle.)

In the words of the song, "music is a universal language . . .", so perhaps the four tracks here speak in a tongue we can

all understand. And this proves to be the case – but here's where the real disappointment lies. With Andy's introductory spiel (however indecipherable) I was expecting something a little more off-the-wall than the four rather lightweight pop outings on offer here.

Neither was I expecting anything so obviously derivative – Depeche and Pet Shop influences seem to surface and resurface throughout. And there's nothing more than a passing nod in the direction of Cured Banshee Robert Smith in the vocal of the second track, 'Gold/Red Sky'. That said, this is perhaps the most immediate track, with a hook in the chorus and (despite the naff recording quality and dismal stereo imaging), a pleasantly insistent arrangement which stays in your head long after the track has ended.

The third song, 'Dance Survival' – with its polite chamber music groove (groove?), underpinned by a tinkling "harpichord" – goes somewhat further than the rest in throwing convention to the wind, but is still some way from being unorthodox (in the strictest sense of the word). Even so, I couldn't tell you what it's about – despite an up-front vocal I still couldn't get a line on what's going down (as we hep-cats say). And the same goes for the other tracks; though obviously the product of a fertile imagination, the vocal lines are pretty obscure.

And really, this sums up the whole tape. Convention maintains its grip in terms of overall song structure, though elements constantly emerge which defy orthodox thinking. The problem is that the whole concept of A.CLAN.C is still fairly amorphous and unfocused. And though I've a sneaking suspicion that's how he/they would like to keep it, I'm not sure the rest of the world will have the patience to accept it on its own terms. ■ *Nigel Lord*.

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 numbers or addresses will be printed on request.

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ANATEK POCKET FILTER, PEDAL & MERGE

Take all the little problems with MIDI that frustrate you, package the solutions in small boxes and you've got the Anatek Pocket philosophy.

Review by
Vic Lennard.

HOW MANY STUDIOS use a master keyboard with MIDI modules to save on space? How many of these are lacking in certain facilities that the studio would like? The answer to both questions must be "plenty". Roland's MKB1000 is one of the best wooden weighted keyboards of all time, yet it has no volume controls; Yamaha's older PF series have no pitchbend facilities. One solution to the problem is offered by Yamaha's MCS2 MIDI Control Station add-on, which allows access to most MIDI controllers. The trouble here is that, from past experiences, the MCS2 is unhappy working with non-Yamaha equipment – it is also now discontinued.

Another common studio problem is the filling-up of sequencer memory with unwanted data such as all-notes-off and aftertouch. Most small hardware sequencers lack the input filters that would allow this unwanted data to be filtered out during recording. Some MIDI patchbays, such as Digital Music Corporation's MX8 have a filter section built in, but are an expensive option if the filtering is the only facility required.

Visual editing of sound modules via computer, controlling a system via an external drum machine clock, and jamming with two keyboards into the same module are all situations requiring a MIDI merge unit.

As we can see, there are quite a variety of problems facing the MIDI user. Fortunately for the frustrated technophile, Anatek, a Canadian company, have just released a range of MIDI accessories called Pocket Products. And, conveniently, three of these units are just what's required to deal with each of the above situations.

Description

THE THREE UNITS in question are called the Pocket Pedal, Filter and Merge respectively. They are all very small, measuring approximately 3" x 2" x 1", and weigh in at around 70 grams, being cased in black plastic. No batteries or mains power supplies are required as they derive their power from the 5V present in any MIDI In port.

The Filter and Pedal each have eight micro rocker switches, which are used to assign the functions that they control. In the case of the Filter these are: aftertouch; all controllers; pitchbend; program change; all data containing a MIDI channel number (which will exclude the likes of MIDI clock/start/stop); notes on/off; system exclusive/common (which includes song select/position pointer); and system real time. The Pedal has two ¼" jack sockets, one for a continuous controller selected from volume (MIDI controller No. 7), modulation (No. 1), pitchbend and portamento time (No. 6), and the other for an on/off foot switch chosen from sustain (No. 64), sostenuto (No. 66), portamento (No. 65) and system real time start/stop, which is used for drum machines. The Merger simply has MIDI In 1, 2 and MIDI Out with input 1 providing the

power. All three units have an LED which is on when there is no MIDI data present, but goes out when data is being passed through.

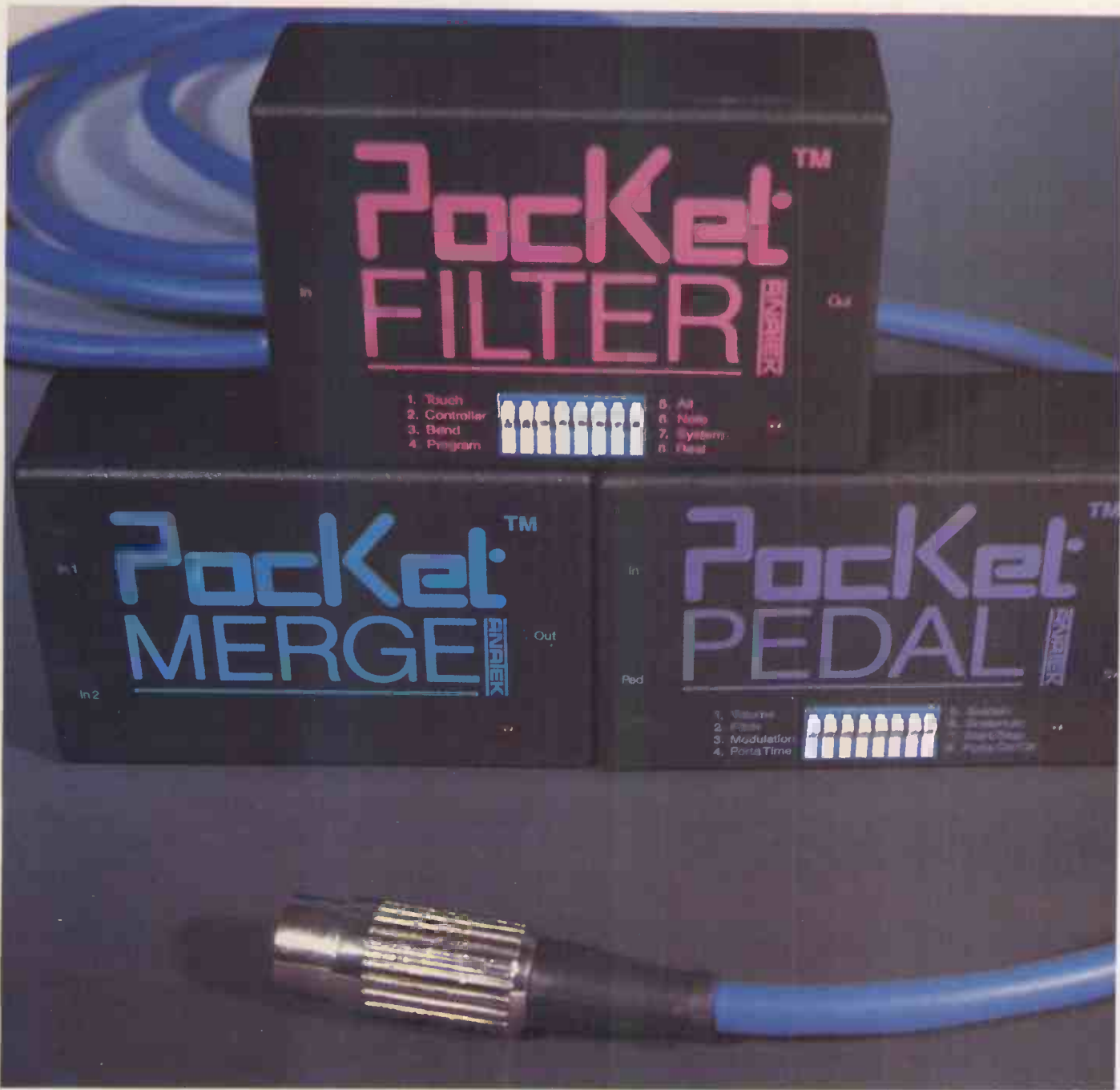
Pocket Pedal & Filter

BY PUTTING EITHER the Pedal or Filter into Setup mode, individual MIDI channels can be chosen for each of the foot controllers and for any of the filters, by selecting the function and then pressing a white key on the keyboard between C3 and E5, according to the chart drawn on the information sheet provided. If more than one MIDI channel is selected for a foot controller, then multiple messages will be sent out, one for each selected channel. For instance, using a volume pedal on channels 1, 2 and 4 will send out three times as much data, and as MIDI is serial this will take three times as long – so care needs to be taken to ensure that what you intend the pocket pedal to do is what is actually occurring.

In Use

THE POCKET PEDAL has to be one of the most welcome MIDI devices to have appeared on the market in a long time. As mentioned in the introduction, there are few master keyboards (and even fewer synths and samplers) around with full MIDI control facilities. The Pedal was tested with a Roland MKB300, which has the same MIDI spec as the MKB1000: pitchbend wheel and modulation control with sustain and soft pedals, not a MIDI volume slider in sight. Having connected the pocket pedal in line, I wondered what type of footpedal to use for the continuous controllers. All that should be required is one that sends a variable resistance when the pedal is moved – an old Schaller volume pedal was found to function perfectly with its output connected to the Pedal input. To begin with, the pedal appeared to be working in reverse, with zero volume when fully depressed, but this appears to depend on the position of the pedal when the micro switch is turned. This, of course, means that you can choose to have the pedal working in either direction. Two pedal functions can be selected to operate simultaneously, for example, modulation and volume, which can be effective on a swell-in.

The pitchbend filter has a special function built in. Depending on what position the pedal is in when pitchbend is selected, one of three ranges are available; downwards gives bend only if the pedal is fully up, upwards gives bend only if fully depressed and full bi-directional bend is given if the pedal is set anywhere in between. In fact, the initial position is taken to be the centre point, so that you can have more control over the bend in one direction than the other (although re-centring is an effort



and can cause distinctly unsociable noises if unsuccessfully attempted). The pitch wheel function has 7-bit resolution, which gives 128 positions from one extreme to the other – quite acceptable.

It is a shame that channel pressure (aftertouch) wasn't one of the chosen functions, perhaps in place of portamento time. Older synths used aftertouch simply as another modulation trigger but the likes of the Korg M1 and Roland D50 can have various performance aspects mapped to aftertouch. In practice this means that playing one of the modular versions from a non pressure-sensitive keyboard does not allow you to use aftertouch.

One use to which the Pocket Pedal will most certainly be put is the control of MIDI assignable functions on the current crop of effects units. For instance, the Quadraverb can have the Leslie effect motor on/off and speed controlled by selected MIDI functions; using one of the footswitch choices and, perhaps, soft pedal on the keyboard, can get you some way towards the feel and sound of a real Hammond organ from something like a TX7 module.

The Pocket Filter is a little less immediate in its applications. The obvious use is on the input to a hardware sequencer which has limited MIDI filter capabilities – the

problem is that the cost of the pocket filter is probably half the cost of the sequencer. Also, there are problems filtering two of the worst offenders for MIDI errors: all-notes-off and active sensing. The former can only be filtered along with all other controller information, while the latter is categorised as system real time. However, system real time includes MIDI clock, start and stop, so you can't filter out active sensing without losing your clock information. One possible solution is to use a system with

“Most small hardware sequencers lack the input filters that would allow this unwanted data to be filtered out during recording – cue the Pocket Filter.”

a multitimbral source (such as the Roland D110) which recognises patch changes on all its allocated MIDI channels as a signal to change the timbre of that channel, but requires a patch change on the channel one less than its lowest to actually change to another patch. The Pocket Filter can be used on the input to filter out program changes on certain channels, but this effectively ties up nine MIDI channels and can lead to problems when running other synths – like running out of MIDI channels.

The Pocket Merge behaved itself perfectly when

combining the MIDI signals from two keyboards and when visually editing a Matrix 1000, but it was far from happy dealing with SysEx one-way bulk dumps over 16 Kbytes or so. Here it corrupted data, and with handshaking dumps of any length it actually locked up due to buffer overflow. As it's unlikely the unit has a very large buffer, and SysEx

"The advantages of the Pocket units include the lack of mains leads (to fall over), batteries (to run out in the middle of a gig), and their very small size."

dumps are a continuous stream of MIDI data, this isn't too surprising. It's just a limitation of the unit. More happily, I couldn't get The Merger to misbehave no matter how many MIDI channels of data were passed through it from a sequencer, which is more likely to be its true position in life.

Reliability

THE LACK OF an external power unit demands a short explanation. In much the same way as a guitar effect pedal requires a 9V battery in order to operate, MIDI needs a 5V supply to create the necessary 5mA loop. This is usually provided within a device and sent through the MIDI Out or Thru cable to the next unit, where a similar process takes place. In the case of the Pocket range, there is no "refreshing" of the power rail, and so there is a consequent drop in supply voltage across these units of about 0.5V. As the microprocessors in the Pocket series probably run on 3V, there should be no problems in linking together two or three of them. If you feel that this method of obtaining power is dubious, I can report that in ten days of having

these devices wired into a busy 16-track studio, with the Pedal on the output of a master keyboard and the Filter on the input to a computer sequencer which had its own internal filtering turned off, I had no problems at all.

The one concern I do have concerns the miniature rocker switches on both the Pedal and Filter, which are of the dual, in-line package type. These are awkward to work with, being so small, and bearing in mind that the setup procedure requires you to turn all eight of them on, then off, their longevity, and consequently that of the unit may be short.

Verdict

WHEN I FIRST heard about the Pocket series my reaction was "what a good idea". The fly in the ointment is their price - £99 per box. While the Pedal is an excellent proposition and without competition, the Filter is less useful and the Merge is much more expensive than the Philip Rees 2M, with fewer facilities - only one merge Out, no MIDI Thrus, and problems handling system exclusive. The advantages include the lack of mains leads (to fall over), batteries (to run out in the middle of a gig), and their very small size - a couple of double-sided sticky pads on the back of a synth job. The applications of the Pocket series are not limited to studio use as they make useful, convenient live MIDI management units. Whether their advantages are sufficient to justify their cost rests with you.

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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?

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

KORG M1 Big Piano T Huitson, Brighton



PROGRAM PARAMETER PAGE. POSITION - OFFSET TABLE (TABLE 5)

PAGE		PARAMETER	POSITION							
SGL	DBL		A	B	C	D	E	F	G	H
PROGRAM MODE										
(0)	(0)	(PERFORMANCE EDIT)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
EDIT PROGRAM MODE										
(0)	(0)	0-1 OSC BASIC	Double	-	Poly	-	Hold	off	-	-
(1)	(1)	2 OSC 1 (MULTISOUND)	00	Piano	-	L35	16'	-	-	-
(2)	(2)	3 OSC 2 (MULTISOUND)	00	Piano	-	L35	4'	00	00	03
(2)	(3)	1-1 OSC 1 PITCH EG	00	00	00	00	00	00	00	00
(4)	(4)	2 OSC 2 PITCH EG	00	00	00	00	00	00	00	00
(3)	(5)	2-1 VDF 1 (CUTOFF/EG INT)	-	67	-	-	-	-	99	-
(4)	(6)	2 VDF 1 EG	00	00	39	+14	09	+19	99	00
(5)	(7)	3 VDF 1 VELOCITY SENSE	-	+99	-	99	+	0	0	0
(6)	(8)	4 VDF 1 KBD TRACK	69	-99	00	0	0	0	0	-
(9)	(3)	1-1 VDF 2 (CUTOFF/EG INT)	-	95	-	-	-	62	-	-
(10)	(2)	2 VDF 2 EG	00	+02	42	-16	01	00	00	00
(11)	(3)	3 VDF 2 VELOCITY SENSE	+65	-	-	00	0	0	0	0
(12)	(4)	4 VDF 2 KBD TRACK	99	-46	-	00	0	0	0	0
(7)	(13)	4-1 VDA 1 EG	00	+99	94	+00	00	+00	20	-
(8)	(14)	2 VDA 1 VELOCITY SENSE	-	+40	-	27	0	0	0	0
(9)	(15)	3 VDA 1 KBD TRACK	69	+00	-	00	0	0	0	0
(16)	(5)	1-1 VDA 2 EG	00	+99	00	+99	00	+42	18	-
(17)	(2)	2 VDA 2 VELOCITY SENSE	-	+40	-	00	0	0	0	0
(18)	(3)	3 VDA 2 KBD TRACK	61	+00	-	0	0	0	0	0
(10)	(19)	6-1 PITCH MG	TR1	-	F68	00	100	BOTH	-	OFF
(11)	(20)	2 VDF MG	TR1	-	68	00	100	BOTH	-	OFF
(12)	(21)	7-1 AFTER TOUCH	-12	00	-	-99	00	-	-15	-
(13)	(22)	2 JOY STICK	+02	00	-	05	0	-	17	0
(14)	(23)	8-1 EFFECT 1 (TYPE)	24	Symph	ENS	-	-	0n	-	-
(15)	(24)	2 EFFECT 1 PARAMETER	99	-	-	-	00	00	33	67
(16)	(25)	3 EFFECT 2 (TYPE)	05	Lg	ROOM	-	-	0n	-	-
(17)	(26)	4 EFFECT 2 PARAMETER	1.5	30	76	30	02	04	60	40
(18)	(27)	5 EFFECT PLACEMENT	-	-	-	-	P3	OFF	P4	OFF

This patch has fallen out of a real time-warp - a genuine tinkling bar-room joanna, lacking only the chink of pint pots and the murmur of inebriated punters to complete the atmosphere. A bizarre detail is in the aftertouch, which "makes it sound like a gramophone record slowed to a halt, then allowed to speed up again". Try it for a laugh. ■

CASIO CZ101 Piponette Alexander Deliyannis, Greece



LINE SELECT 1+1' (1,2+2,1-1)	MODULATION RING NOISE OFF OFF (ON/OFF)	DETUNE +/- OCTAVE NOTE FINE - 1 0 13 (-1-1) (0-3) (0-11) (0-60)	VIBRATO WAVE DELAY RATE DEPTH 1 07 63 06 (1-4) (0-99) (0-99) (0-99)	OCTAVE +/- RANGE 0 (-1-1) (0-1)
------------------------------------	---	--	--	--

1

DC0 1

WAVE FORM	
FIRST	0
SECOND	0
(1-8)	(0-8)

	E N V (PITCH)							
STEP	1	2	3	4	5	6	7	8
RATE	0							
LEVEL	0							
SUS/END	SUS	END						

DCW 1

KEY FOLLOW	0
(0-9)	

	E N V (WAVE)							
STEP	1	2	3	4	5	6	7	8
RATE	82	0						
LEVEL	60	0						
SUS/END	SUS	END						

DCA 1

KEY FOLLOW	0
(0-9)	

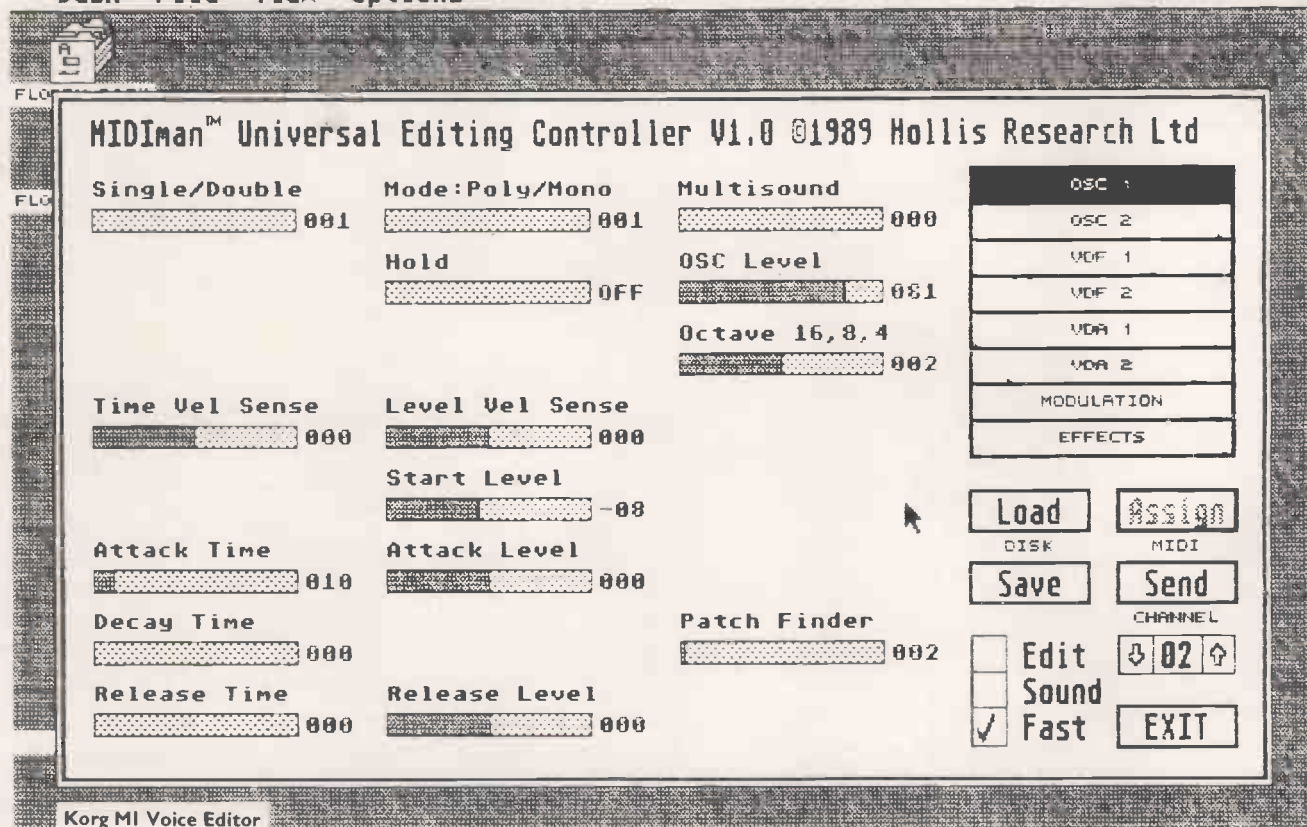
	E N V (AMP)							
STEP	1	2	3	4	5	6	7	8
RATE	76	44	36					
LEVEL	76	91	0					
SUS/END	SUS	END						

Imagine a pipe organ mixed with a clarinet, with a couple of cellos thrown in for good measure, and you've got 'Piponette'. It would make an excellent, mournful lead sound for a weepie in the classic vein, and Alexander suggests "it could be put to good use when you compose your next Requiem (Greeks, they are such cheerful people!)". OK, Alexander, free sub on the way, and no more treks to tedious sunny Athens to get your copy of MT. These Greeks, they don't know what side their bread's buttered. ■

HOLLIS RESEARCH MIDIMAN

Universal Patch Editor for Atari ST

Desk File View Options



Korg M1 Voice Editor

Making life with MIDI easy, part one: use a patch editor that will work with any synth and run at the same time as your software sequencer – an editor like MIDIman. Review by Ian Waugh.

SOMEONE – I DON'T know who – once said the computer is a solution looking for a problem. Nowhere does that ring a greater bell of truth than in the world of music software. I'm sure there's a little guy – or gal – somewhere who does nothing else but dream up new computer music applications. And long may he continue!

One of his/her latest ideas is the software equivalent of Dr Good's Universal Panacea – a program which is all things to all musicians. And so the word generic (*adj.* applicable or referring to a whole class or group) entered music software vocabulary and the Generic Editor was born.

The idea is not brand new and devoted readers may recall a review of Hybrid Arts' Genpatch in our April '88 issue. But whereas Genpatch helps you store and organise synth patches, MIDIman lets you edit the voices themselves. In other words, Genpatch is a librarian and MIDIman is a patch editor. However, it's more (and also less in some respects) than a patch editor: it's also a performance tool, too. Intrigued? Then read on.

Das

MIDIMAN WAS DEVELOPED by John Hollis of Hollis Research and follows hot on the heels of Trackman (reviewed MT, March '89) which has now been updated to version 1.5 – updates are free, too. MIDIman will work

with any ST from a 520 up to a Mega ST4 and runs in high or medium resolution. It operates as a desk accessory and it should be compatible with any legally-written GEM-based software.

Desk accessories are special programs which load automatically when the computer is switched on and which can be entered from the Desk menu while the computer is running another program. Although you could run MIDIman with your word-processor, you'll probably want to use it with a sequencer. If you use it with Trackman (version 1.4 or above), extra features become available, which we'll look at in a moment.

MIDIman in Control

SO HOW IS one program able to edit the patches in any synthesiser? Simple. It loads in control files from disk, each of which is configured for a particular synth. There are currently 20 control files supporting over 30 instruments and more are being developed and will be issued free of charge (there's that lovely phrase again) to MIDIman owners.

A consequence of the universality of the program is that all the control file screens look basically the same – and there are no graphics. Each control file can use up to six Pages or screens and each Page can hold up to 24 parameter controls. Pages are selected from a list on the right of the screen.

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- ▶ The program and control files aren't protected, so you can freely copy the ones you require to work disks. However, when you first access MIDIman, you are asked to enter a word from the manual which is on a certain page, paragraph and line. It's a minor nuisance but worth it to help keep the software pirates at bay.

With a control file loaded, you click on a control with the left button to decrease the value and click on it with the right to increase it. The controls are labelled so you know what parameters they effect, and the current values are shown next to each control.

This highlights one area in which MIDIman differs from dedicated patch editors, as the control values on screen will not necessarily be the same as the parameters of the voice in the synth: they are simply the values which were set when the file was saved.

Say a parameter in the synth has a value of ten and the control shows 20, a right click will instantly set both synth and control to 21. Communication between MIDIman and synth, then, is one way – from MIDIman to the synth. In this respect, MIDIman operates rather like a hardware programmer such as Roland's PG10 for the D10, D20 and D110 synths, and if you look upon it as such then its method of operation and its role in the musical scheme of things becomes clear.

There is another consideration, too: MIDIman was designed to be used in conjunction with a sequencer – in real time – and with more than one synth. To establish handshaking with several synths would require their Outs to be connected to the computer's MIDI In. As you'd also probably want an input device such as a master keyboard to plug in here, too, you'd need some pretty fancy routing equipment to be able to flick from application to application.

Making Changes

LET'S HAVE A closer look at the control files and how they operate. As there is no handshaking, no names (of patches and so on) appear on screen. However, some synths are very helpful and when you alter a parameter, they show you what is happening on their LCD. The TX81Z is superb in this respect. Others, such as the D110, have to be in a particular mode in order to show certain changes.

The control files offer access to most of the parameters of the synths supported, although several instruments have two files: one for voice editing and one for multitimbral setups.

After altering control parameters, you can save the file to disk (although you must make sure to add the correct file extension). You can transmit all the settings on a page to the synth which allows you to set up a sound – or a subset of parameters of a sound – save it, and call it up again at will. If your sequencer can load and save system exclusive messages (Trackman can) you may be able to do this anyway. If it can't, MIDIman offers an alternative.

Given the lack of graphic displays (of envelopes and so on) and the necessarily restricted amount of information which can be shown alongside each control, you will find editing far easier if you have a working knowledge of how your synths operate. This isn't essential – you can have fun just pressing buttons to see what happens – but it helps.

Multitimbral Mixes

SUPPOSE YOU ONLY use presets and aren't really interested in programming your own sounds. OK, but you still have to organise them into patches, performance memories, configurations, parameter memories or what-

ever in order to play your music. You can do this by fiddling with the front panel controls or from within a dedicated voice editor. If you use an editor and have more than one synth you'll have to load more than one editor and then load your sequencer in order to hear what it sounds like when applied to your music – not an ideal state of affairs.

The multitimbral control files, however, give you access to the performance setups of the synths and let you flick through the banks and voices and set volume levels, tuning, output routing, MIDI channels, pan setting, note ranges and so on, all without leaving the comfort of your sequencer.

Without a doubt this is one of the most useful – and downright fun – applications of MIDIman. It beats front button panel beating any day. And having settled upon a mix, you can save it to disk along with your sequencer's music file.

If you want to create multitimbral setups and edit voices too, to save loading and saving two files, you can have two or more copies of MIDIman resident as desk accessories. This would give you instant access to both voice edit and multitimbral setups or even control panels for two different synths. There's no reason why you couldn't assign different pages to different synths, each holding a setup for a particular song.

MIDIman and Trackman

IF YOU RUN MIDIman from within Trackman you can perform edits on the fly. Just to spell it out, what this means is that you can change voices, volume levels, MIDI channels and so on as a sequence is playing.

And what's more, with Trackman you can assign any MIDI controller to an edit control. For example, you could make the modulation wheel control a filter or the data entry slider control pan position. Or both. You can also assign note velocity or note pitch as the controller.

The range of the MIDIman control is spread evenly over the range of the MIDI controller. For example, if a control is ranged 0-10 and you assign it to a pitchbend wheel, the value would be five when the wheel is centred, ten when it is at maximum and 0 when it is at minimum.

You can connect MIDIman to Trackman at its Input or Output stage. Input connects MIDIman to Trackman's input and allows control changes and edits to be recorded in Trackman. You can change the channel of incoming MIDI data from MIDIman's display. This is useful – and essential – as SysEx messages cannot be rechanneled.

Selecting Output places MIDIman between Trackman's output and your synths, and this lets you select different processing for each track. This will save memory (as control messages take up less space than system exclusive blocks) although you will have to keep a separate MIDIman file for each song.

Before you rush off to experiment, you should be aware of the fact that some synths may not take too kindly to having certain parameters altered while they are trying to play music.

Editing the Editor

YOU CAN USE MIDIman with the control files supplied, but if you are of an inquisitive nature, or if there are a couple of parameters on your synth you'd like to alter but which are not catered for in the control panels, you can have a go at creating your own. This means getting your hands dirty with SysEx messages. Lost any readers, have I?

SysEx is a pig. Its claim to porcine infamy is enhanced by the fact that while the format of MIDI Implementation Charts bear a degree of similarity to one another – and you ▶

► thought they were difficult – there is no universally agreed method of presenting MIDI message content and format details. Plus you need a nodding acquaintance with binary and hexadecimal numbering systems, and a rudimentary knowledge of logical operators and masks wouldn't go amiss. And just to rub salt into the bacon slice – some information given in some manufacturer's system exclusive tables is wrong. Computer buffs will love it.

Musicians, I'm afraid, will probably stick with the supplied control files. But it's amazing what a little time and application will do, and it's well worth having a go before you dismiss the idea out of hand. Working with system exclusive sure makes you feel like a pioneer.

Clicking on Edit on the MIDIman screen reveals all the 24 controls which fit onto a page. If a control has not been defined to do anything, then it doesn't normally show on the screen.

In edit mode when you click on a control a list of the MIDI bytes which are transmitted appears at the top of the screen. Double clicking on a control calls up the Control Editor. Here you discover how the program works.

You're probably familiar with the concept of MIDI note messages. When you press a key on a keyboard it transmits a message consisting of the MIDI note number (pitch), MIDI channel and velocity value, along with an all-important instruction which says "turn this note on". All instruments should respond to this message, but as voice parameters vary from synth to synth, special messages are required for each instrument. These come under the heading of system exclusive and, as the title suggests, are exclusive to a particular manufacturer and synthesiser.

The basic format is something like this: SysEx start,

problems in creating controls to perform simple operations like changing master volume and making a dump request.

One file on disk is a general-purpose editor for MIDI mixing and remote control. The volume, patch change and MIDI controller controls will work with most synths. The first page lets you set up a mix on channels one to eight. You could copy this to the other pages and set up different mixes, any of which could be sent to your synth by clicking on the Send button.

I discovered one or two anomalies in some of the control files. For example, in one the data for a control ran 0-7 but the synth showed this as values 1-8: a possible source of confusion. However, it's quite easy to add an offset so the correct value is shown on the control page. In another file the offset was incorrect, resulting in a setting of 0 applying a +12 semitone offset. Also, some functions (changing banks, for example) may require two messages. In one file, the new bank was not activated until a different voice in that bank was selected.

Such errors, while hardly disastrous, could prove confusing, especially if the synth doesn't show you what it's doing. Hollis Research, however, are keen to increase the number of control files (and correct any errors) and will issue new files free to MIDIman owners.

Verdict

MIDIMAN IS NOT really a substitute for a dedicated patch editor, although if you have a reasonable knowledge of how your synths work, it can well be used to create new voices. Also, it has no library facilities for storing banks of voices, although individual voices – or their control files – can be saved and loaded.

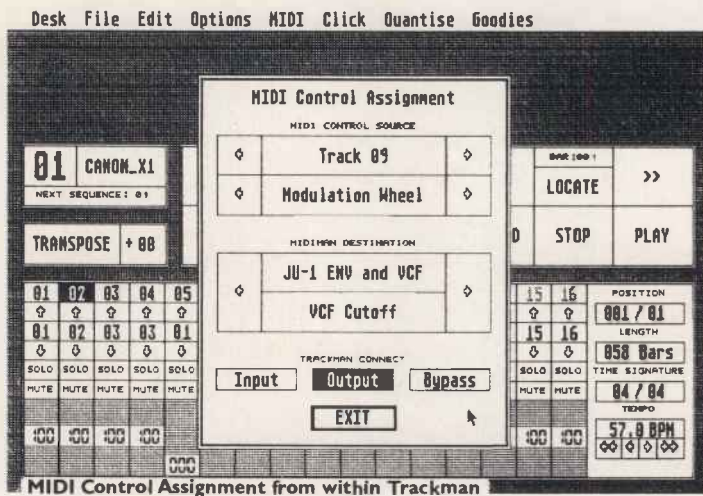
However, if you ever get the urge to tweak a sound while playing a sequence – and who doesn't? – MIDIman will let you tweak until your fingers are sore. And you can flick between any number of synths without having to leave the sequencer or reconfigure the system.

The real excitement MIDIman holds for me, however, is its ability to create and balance multitimbral setups. If you use multitimbral synths but don't like flicking through loads of LCD screens to change parameters, then this will put a smile on your face. It's far easier, quicker and more friendly than punching buttons on an expander, although it does help enormously if the expander shows you what is happening in its LCD (I know I said this before but it bears repeating). The ability to recall pages of setups and send them to synths is useful in both home and professional studios.

If you also have the Trackman sequencer then many more creative opportunities open up. The ability to control any synth parameter from any MIDI controller is liberating, and although some other sequencers have a limited form of controller mapping, none offers anything like MIDIman's facilities. And, of course, you can record changes made in real time into Trackman along with your music.

Then there's the open-endedness of the system. With a little effort – and a more detailed programming tutorial – you can create your own controls.

If you're using Trackman and a multitimbral synth, I'd go as far as to say that MIDIman is an essential accessory. Even if you're not using Trackman, if you use a GEM-based sequencer, you'll find it far easier and far more fun using MIDIman to create multitimbral mixes than fiddling about on the front panels of your synths. ■



MIDI Control Assignment from within Trackman

manufacturer's ID number, basic receive channel, group and subgroup number, parameter number, data, end of SysEx. It's the items in the middle which are tricky to work out and this is where you need to refer to the manufacturer's SysEx data tables.

Keeping a Low Profile

THE CONTROL EDITOR lets you put together a string of such messages to be transmitted when you click on the control. To assist in this, MIDIman uses a set of about 20 instructions which form a simple low-level language called Profile.

The manual includes a simple example of how to make a program change and if you study the control definitions in conjunction with the SysEx tables of your synth, you'll be able to work out what many of the definitions do. However, to use the facilities to the full, a more detailed tutorial section on the use of the language is needed (this is already being considered). I didn't have too many

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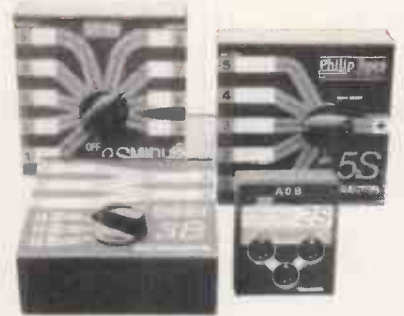


Philip Rees

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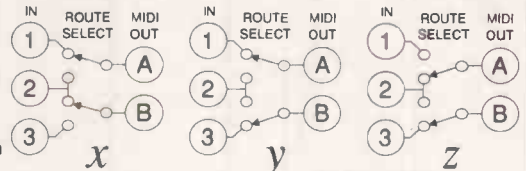
9S The new 9S has a ten position rotary switch to link the 'hub' to any one of the nine other ports or an off position. The 9S, which costs just £35.95, is housed in a sturdy 109mm x 109mm x 40mm box.

5S In the same size enclosure as the 9S is our popular 5S for only £25.95. This five-into-one unit also features a rotary selector switch with an off position.

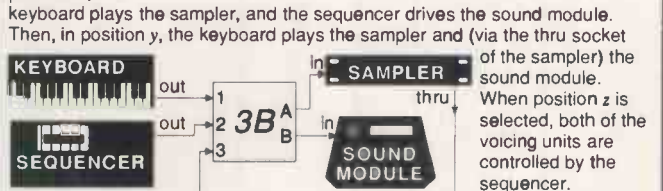
2S For just £12.95, our new 2S is a handy little two-into-one unit - just 69mm x 58mm x 23mm. It has a three position slide switch to select between two ports or an off position.

3B This ingenious new MIDI junction box is the same size as the 9S. It requires no external power and costs only £25.95. The 3B has three MIDI inputs (marked 1, 2 and 3) and two outputs (A and B). The rotary changeover switch has three positions (x, y and z).

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MUSICSOFT

SYNCRMAN

SMPTE/FSK Synchroniser



Photography James Cumpsty

The combination of tape recording and MIDI sequencing is now the basis of bedroom studios and professional studios alike. At the heart of the system is a synchroniser – perhaps *Syncman*. Review by *Vic Lennard*.

AS ANY STUDIO engineer will tell you, if you're going to make music by building up layers of sequences, you have to ensure that each take will be in perfect sync with the previous ones – if you are to remain in control and the music is to sound anything like you intended it to.

With older synchronisation systems there is also the problem of having to start the song from the beginning every time – a minor irritation, you might think, but after the 20th take, it's sometimes hard to tell which is wearing out faster, your nerves or the tape. Not only that but you inevitably end up asking yourself "Will it still be in sync by the 53rd bar?"

Of course, over the past two years or so, tape sync devices have appeared which "chase" the song and lock in at any position. Generally speaking, these have been split into two categories – SMPTE and 'intelligent' FSK. We'll discuss the differences later, but for now let me introduce you to the latest addition to the latter group – the Syncman, from Musicsoft in the good ol' US of A.

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Description

- AT LAST - A piece of gear which isn't in a black box. Instead, Syncman takes the form of a small grey box (*well that must have really brightened up your day - Features Ed*) with In/Out sockets for MIDI and Tape (each with its own red LED indicator), a Write button and a block with six DIP switches for various applications. A quick peek inside revealed Syncman to be constructed to the same high quality as its sister (brother?) unit, MIDIMan (reviewed last month), and like its stable mate, it too is powered via an external 9V supply.

Clocks and Positions

IN SIMPLE TERMS, Syncman takes the MIDI timing and position data provided by a sequencer or drum machine, and encodes it onto tape. Standard FSK (Frequency Shift Keying) code takes MIDI timing clocks and creates a two-tone signal which can be regenerated on playback. Syncman, however, goes one step further and encodes MIDI Song Position Pointer (SPP) into this signal. The signal is sent out every 16th note and keeps track of how many semiquavers have passed since the start of the song. Consequently, when the tape code is replayed from any position, the SPP directs the sequencer to the next 16th note and playback then commences with MIDI timing clocks (every 96th note), keeping the machines permanently in sync.

Setting up is quite straightforward; in fact, the connections of MIDI Out from the sequencer to MIDI In on Syncman and Tape in/out to the recorder can be left permanently connected. DIP switch 3 (Song Pointer) has to be set to On and generally, it is best to avoid passing the code through a mixing desk. But, of course, this will depend on the level showing on the recorder when directly connected; some attenuation of the signal may well be necessary (though it is unlikely to need boosting). On a Fostex E16, the meter registered 0dB, which is fine, but if there is a problem you could try using a simple potentiometer to cut down the signal level.

To record, first check that the sequencer is set to output MIDI clock and SPP. Then, set the tape recorder to Record, hit the Write button (which turns on the Tape LED), start the sequencer, and check that the MIDI LED

"Nothing untoward occurred with the review unit, so I can only assume that the 'Jam' sync facility works well - or I've stumbled across a batch of perfect 1/2" magnetic tape."

flashes to indicate that Syncman is receiving timing information. If possible, turn off all tracks with MIDI note and performance data to ensure that there are no delays in the sending out of MIDI clocks.

To sync up on playback, simply set the tape to Play, the Tape LED lights up and the MIDI Led starts to flash, at which point the sequencer locks up - locks in sync that is, not locks up like a computer going into an electronic sulk.

MIDI Time Code

ONE PROBLEM OF working with MIDI clocks is their inherent inaccuracy during tempo changes. Let's say that the piece you are recording is at 120 beats per minute and

decreasing in tempo. A MIDI clock occurs each 5.2 milliseconds at 120bpm; as the piece slows, the gap between pulses increases leaving the sync unit waiting to be told what to do. This situation can give rise to audible fluctuations in tempo. And the slower the tempi involved in a tempo change, the more noticeable the problem. On the other hand, SMPTE is an absolute timing reference which has no dependence on Tempo or the relative position in a song. Each SMPTE timing "Frame" is unique.

You could, of course, try recording MIDI information directly to tape but as MIDI operates at a rate of 31,250 bits per second, the necessary audio bandwidth is outside that obtainable from analogue tape. So what is the solution?

Well, without delving too far into the theory, MIDI Time Code (MTC) is a non-tempo based timing protocol which can be merged with other MIDI information (which SMPTE cannot). Syncman can record SMPTE to tape in any of the four main formats (these are set using DIP switches 1 and 2), and will then convert this to MTC. Additionally, DIP switch 4 allows for SMPTE to be converted to Direct Time Lock (DTL) which is used by the Performer sequencer package on the Apple Macintosh. The problem I had was in locating a device that will read MTC - there are currently very few around - so unfortunately I did not get the opportunity to check this out.

In Use

SYNCMAN'S LOCK-UP TIME is less than one second but depends on the speed of the piece of music (because the next 16th note is that much further away at slower tempos). Syncman is very flexible in terms of recording level on tape - anything upwards of -20dB seems quite satisfactory and while too high a level will often cause code distortion, I found I could run it beyond the range of a Fostex E16 which is +8dB.

It would take a major tape flaw to make the Tape LED flicker, and Musicsoft claim to have included an automatic "Jam" sync facility where Syncman will continue to run even if small dropouts occur. In the course of three days recording and usage, nothing untoward occurred with the review unit, so I can only assume that the "Jam" sync facility works well - either that or I've stumbled across a batch of perfect 1/2" magnetic tape.

Throughout the review, Dolby C on the E16 was left switched in. Care has to be taken with some FSK generators, as the higher of the sync tones can be above 1kHz - the area in which Dolby B and C act (SMPTE does not usually venture anywhere near this frequency). Syncman, however, appears to be flexible enough to cope with this, and I encountered none of the traditional problems associated with time code and noise reduction systems.

If a MIDI keyboard is connected to the MIDI In on Syncman and DIP switch 6 (Merge) is turned on, you can continue to record onto the sequencer while still locked up to tape - incoming MIDI data is added to the MIDI clocks being created and then sent to the sequencer. As the sequencer will have to output MIDI clock and then be set to receive it, it is conceivable that a loop could occur, with MIDI clocks from the sequencer being merged with those being generated within Syncman. With the merge switch turned off, however, this situation cannot arise.

Concluding our tour of Syncman's DIP switches, DIP switch 5 is for duplicating a SMPTE or Tape Sync code either from one machine to another or from one track to another on the same recorder. ►

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SMPTE or FSK?

► PROVIDED THAT CARE is taken with the time code track, there should be little to choose between either FSK and SMPTE code in terms of reliability. The main difference lies in the treatment of tempo changes. As SMPTE is completely independent of tempo, any changes have to be input in the form of a table. Cheap units generally cater for few changes - typically less than 20 - but these can be input without re-recording the time code. FSK records MIDI clocks, with tempo changes being indicated in the gaps between them. This means that any number of changes can be accommodated, but that once recorded, any subsequent alterations will involve re-recording of the entire time code track. You pay your money...

Incidentally, it's usually a good idea to leave an unrecorded track between the track carrying the sync code and the next recorded track. Some engineers even advise recording two sync tracks simultaneously, but the number of tape tracks you have available is obviously going to be a determining factor here.

The Alternatives

ON THE SMPTE front, the only unit that comes close to Syncman in terms of price (£180) is XRI's XR03, retailing at £189.95. FSK converters include Tascam's MTS30, which has no merge facility, takes three to four seconds to lock up and costs £150, and the Kabanda TS9 which retails at a mere £195 but is difficult to obtain.

The obvious competition for Syncman comes from the JL Cooper PPSI which is similar to Syncman (if a touch

more expensive at £199) but features an automatic merge facility so that all incoming data is mixed with the MIDI clocks being created. However, in the case of a MIDI loop occurring with the PPSI, the MIDI In lead has to be disconnected - not as convenient as the option of turning off Syncman's merge facility. Also, the PPSI does not have the ability to regenerate a tape code and can only function with 30 frame SMPTE code when being used to output MIDI Time Code. On the other hand, it does have two MIDI outputs and can place a small waiting period between the SPP and the MIDI clock for those machines which are unhappy without this. By the way, Syncman will read the PPSI code quite happily, but the opposite does not appear to be true. Perhaps Syncman is a little more forgiving in the range of frequencies it's prepared to accept.

There are also software alternatives - C-Lab's Unitor and Steinberg's Timelock, for example - but these are not SPP converters. They inject SMPTE into the programming code and so are likely to be more accurate, but can only be used in conjunction with the related software.

Verdict

A TAPE SYNC box is an important addition to any recording setup and Syncman appears to function flawlessly. Quick to chase and easy to use, I can think of no particular reason not to buy one.

The problem for Musicsoft lies in the fact that the PPSI has had chance to become well established over the past two years and it has certainly shown itself to be reliable. Against this, Syncman is cheaper, offers more functions, and does its job with the minimum of fuss. If you are in the market for a tape sync box, you've got to check it out. ■

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Vesta MR1 Super Rack Porta Studio	£399
Fostex 450 8 Track Desk	£499
Seck 104	£399
Teac 8:2 VU	£199
Yamaha CX5 music computer	£250
Fostex M80	£899
Ensoniq EPS	£999
Akai S950	£999
Lexicon PSM (mint)	£1299
Casio F21 Sampler (new)	£750
Yamaha SPX 50D	£225
Bel 8 track noise reduction	£199
Tascam ATR 60 1/2 2 track (inc. trolley)	£2999
Yamaha RX8 (loads of sound plus 4 outs)	£250
Akai X7000 Sampler inc. library	£499
Akai S7000 Rack Sampler inc. library	£399
Tascam 24:4 Mixer	£699
Casio R21 drum machine	£99
Akai ME30P MIDI Patchbay	£75
Tascam DX40 noise reduction	£199
Roland TR505 (separate outs)	£99
Yamaha REX50 multi processor	£99
XRI XR300 SMPTE box	£175
Korg Poly 800 MkII	£250
Simmons SDS7 plus prommer	£199
Simmons SDS 1000	£199
Casio PG510 MIDI Guitar	£299

We have a certain number of ex-demo Fostex E16s available all in mint condition with boxes - Give us a call (All prices exclude VAT)

NEW PRODUCTS

CASIO DA2 - Brand new updated DAT - Still Only £650 + VAT, including Free Rack Kit.
TASCAM TSR8 - Large Spools 1/2", Noise Reduction Plus Autolocate, The Ultimate 8 Track RSD Proline - 16:8:16 Plus MIDI Muting at an Amazing Price

TASCAM 1" 24 Track revolutionary at well under 10K inc VAT!!! Send for details
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DIGIDESIGN Sound Tools hard disk recording - On demo

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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!!

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Keyboards

A SERIOUS CLEAR-OUT: ARP Odyssey, £225; Chase CBP2 bass pedals, £99; Hohner Pianet T, £99; Korg EX800, £140; Mellotron MK2, offers; Roland Juno 6, £150. Tel: (0223) 464117 days, (0638) 720090 eves.

AND NOT BEFORE time. Ed **AKAI AX73** master keyboard/synthesiser, 6-oct velocity keyboard, MIDI split, sampler input, immac, boxed, £399. Tel: (0384) 410853 (West Midlands).

ARP ODYSSEY, play it, sample it, but love it. The zingiest monosynth, as featured in MT! £225 ono. Tel: (0223) 464117 days, (0638) 720090.

ARP QUADRA, classic analogue polysynth, needs repairing, £180 ono. Tel: 01-904 3253.

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CASIO CZ101, boxed, case, manuals, etc, as new, £139. Tel: (0732) 356612.

CASIO CZ101, adapter, manuals, £100; Roland TR505, £135, boxed, home use only. Tel: (0222) 624541.

CASIO CZ1000, psu, 64-voice cartridge, manuals, 200+ professional voices, £200. Robin, Tel: (0494) 465283.

CASIO CZ1000 plus S21 sampler, plus stand, £300; Carlsbro Hornet 45W keyboard amp, £120. Tel: (086 732) 8133.

CASIO CZ1000, £220 ono, boxed, vgc; RX21, QX21, quick sell. Jaysen, Tel: (0323) 21274.

CASIO CZ1000, hardly used, with manuals, cover and sound book, £200. Tel: (0590) 45802 (Hampshire).

CASIO CZ1000, £180. Tel: (0492) 75075, after 6pm.

CASIO CZ1000 synthesiser, boxed, with manuals, psu, 64-voice cartridge, £175. Andy, Tel: (0252) 26536.

CASIO CZ3000 and Yamaha RX15 (mine) to swap for Roland S10 (yours). Dean, Tel: Bournemouth (0202) 537177.

CASIO CZ3000, multitimbral, chorus, manuals, RAM cartridge, perfect, £250 or swap Atari 520ST. Tel: Sheffield (0742) 847369.

CASIO CZ5000 synth/sequencer, £375; SH101, £75; TR606, £60 (or £120 both). Tel: Derby (0332) 381209, after 6pm.

CASIO CZ5000, 8-part multitimbral, sequencer, patchbook, manuals, stand, boxed, home use, £450. Greg, Tel: (0624) 823595.

CASIO CZ5000 with RAM cartridge, manuals, patch data, cassette library, £350; Boss DM2 delay, £40. Tel: 01-223 1857.

CASIO HT700 synth plus drum machine, with psu and manual, £135. Barry, Tel: Luton (0582) 576680.

CASIO HT3000 synth/keyboard, MIDI, full size, mod/bend, 3 splits, drums, bass, stereo, ex cond, £340 ono. Tel: (024) 888 383.

CASIO HZ600, programmable synth, 5-oct. full-size, splittable keyboard, MIDI, boxed, £160. Max, Tel: (086 77) 4416.

CASIO VZ1, £399; Yamaha CS80 (inc flightcase), £1099; Yamaha KX1, £299; Casio VZ10M, £249; Tascam 244, £349. Tel: (0782) 723101.

CHASE BIT 99, superb cond, comprehensive master keyboard spec with loads of quality sounds, £399 ono. Tel: (0337) 31172.

CHASE BASS PEDALS, CBP2, self-contained synthesiser bass pedals, very deep. If you can't afford Taurus pedals, have these. Perfect cond, £99 ono. Tel: (0223) 464117 days, (0638) 720090, eves.

CHEETAH MK5 mother keyboard, swap for Akai ME30PII, Aphex C, MIDIVerb, TMI, Microverb, TX7, mint cond. Tel: (0492) 860673.

CHEETAH MS6 multitimbral module, plus Alesis MMT8 sequencer, as new, £400 ono. Chris, Tel: 01-739 5710, eves.

CHEETAH MS6 multitimbral module, exc analogue sounds, 8 months old, vgc, £200 ono. Gordon Tel: (0705) 552508.

ELKA EK44 multitimbral, 8-operator FM synth, as new, £700. Tel: 01-764 4583.

ENSONIQ ESQ1 plus sequencer expander, plus library, boxed, as new, virtually unused, £685. Andy, Tel: (0245) 441976.

ENSONIQ ESQ1, expanded RAM, £500; Mirage keyboard, £500. Andy, Tel: (09252) 4394.

ENSONIQ ESQ1, flightcased, mint, with ROM and expanded memory, £550. Tel: Weymouth (0305) 772391.

ENSONIQ ESQ1, £650; Yamaha QX1, £500; TX7, £200; FB01, £150; Cheetah Mk7, £290; Roland MKS70, £250. Tel: (0270) 665750.

ENSONIQ ESQ1 plus RAM cartridge, leads and manual, mint cond, still boxed, £500. Kenny, Tel: 041-336 8461.

ENSONIQ ESQ1, exc cond, boxed, RAM cartridge, additional voices, £640; Atari software, Dr Ts, £40. Tel: Chelmsford 257210.

ENSONIQ ESQ1, virtually unused, still boxed with voice cartridge, £600. Jim, Tel: (0505) 31629.

ENSONIQ SQ80 plus stand and disks, £910; Roland MT32, £270. Geoff, Tel: 01-499 8281, days, (0428) 723744, eves.

FENDER RHODES Stage 73, MK 5, latest model, rare with stand plus transport assembly system, £500. Tel: 01-440 7510.

HAMMOND B200 portable organ, home use, £850 ono; JX10/MKS70 ST editor wanted. Tel: Lincoln 752458.

HAMMOND B200 portable organ, home use only with 400 Wah Sharma Leslie. £700. Tel: Liverpool 051-260 6675.

Hohner Pianet T, excellent condition throughout, £99 ono. Tel: (0223) 464117, days, (0638) 720090 eves.

KAWAI ELECTRIC GRAND, good cond, superb sound, £800 ono. Tel: (0226) 291253.

KAWAI K1, 4mths old, flightcase, RAM, etc, over £700. Swap with £100 for Roland D10 or with Atari ST, etc for D20. Steven, Tel: Tyneside 091-487 0808.

KAWAI K5 synth, mint, only 2mths old, offers? Tel: (0482) 648846.

KAWAI K5M, £480; Frontline 8:2 rack mixer, £75; Alden EQ, £70. Wanted, Seck 16:2, Atari ST. Tel: (06728) 70473.

KAWAI KSM additive synthesis, original box, quick sale, £500 ono. Tel: Brighton 695336.

KORG C3, Alesis HR16, immac, £300 each, Bob, Tel: (0272) 732211 X2202, days. (0272) 249891 eves.

KORG D58, multitimbral, digital effects, immac, boxed, manuals, flightcased, £475. Tel: Leek 308680 (Staffs).

KORG DW6000, good cond, £250 ono. Rudi, Tel: (0227) 272455, eves and weekends.

KORG EX800 synth module, exc cond with manual and data cassette, £150. Tel: (0685) 875327.

KORG EX800, a Poly 800 in a box, vgc with original manuals and patch data, £140 ono. Tel: (0223) 464117 days, (0638) 720090.

KORG SAMPLED PIANO, C2500, just over 1yr old, 76-note weighted piano-action keyboard, 2 great piano/l harpsichord sound, built-in chorus, MIDI In and Out, makes good master keyboard, immac cond, £800 ono. Tel: (03543) 5239, eves and weekends.

KORG MI, as new, Siel DK80, good cond, offers. Tel: (0462) 51142.

KORG MIR expander, 6 cards, £1050; Emax SE, over 100 disks, £1200. Tel: 051-489 1241, eves.

KORG MONO/POLY, £200; Roland MC202, £100; Casio SK1, £35; Takeharu guitar, £55. Tel: (0271) 65402, eves (North Devon).

KORG POLY 800, boxed, manual, £180 ono. Tel: 01-892 7938.

KORG POLY 800II and sounds, £260; RX21, RX21L drum machines. £170. Swaps? Paul, Tel: (0525) 716577.

KORG SAMPLING GRAND plus stand, £850; Tascam Porta One, £215; Alesis Microverb, £85, home use. Tel: (0474) 365663.

KORG 707 multitimbral, touch-sens synth, boxed, good cond, can deliver, £250. George, Tel: (0935) 77348.

KORG TRIDENT, multitimbral, manual,

Bucks/Northants area, £350. Tel: (0327 33) 378.

MELLOTRON MK2, tapes include 2 choirs, brass, violins, 2 organs, ideal for studio. For strong musicians only, best offer secures. Tel: (0223) 464117 days, (0638) 720090 eves.

MOOG PRODIGY, 2-oscillator monosynth, £100. Tel: 01-689 8372 (Thornton Heath).

MOOG PRODIGY monophonic synthesiser, vgc, £95. Tel: (0621) 868540 or (0621) 860433, eves only.

MULTIVOX MX2000, preset/variable monosynth, 2 real oscillators, aftertouch. MIDI, you must be joking! £95. Brian, Tel: (0663) 47192.

OBERHEIM MATRIX 6, superb analogue sounds, MIDI, local off, immac, boxed, etc, 1000 sounds, £675 ono. Tel: 01-529 5193.

ORIGINAL MOOG 3C with dual sequencers and digital interface, Roland CSQ600, EMS pitch-to-voltage converter. £1000 ono. Prophet 5, can be MIDI'd, £600 ono; Yamaha DX9 with volce controller £360 ono. Tel: 01-603 9596.

PPG WAVE 2.2, good cond, superb instrument with flight case, £850. Tel: 091-460 9674 (Tyneside).

ROLAND ALPHA JUNO 2 synth with cartridge, as new, £470; Alesis MIDIVerb II, £210; Ibanez DM1000 delay, £120. Tel: 051-339 2686.

ROLAND ALPHA JUNO 2, £450; Korg Poly 800, £220; Moog Opus 3, £150. Darren, Tel: 01-848 8713, anytime.

ROLAND D10, amp, speakers, 1040 STFM, monitors, Pro24 V3, 10+ disks. Keith, Tel: (0223) 247980.

ROLAND D10, £660; Roland TR505, £120, both boxed; CBM 64 disk drive, plus 8-track sequencer, £250. Tel: (0734) 478575.

ROLAND D10, Yamaha EMT10, Dr T's KCS 1.6 for Amiga, hardly used, £850, will split. Heath, Tel: (0643) 2335 (Somerset).

ROLAND D110, mint cond, boxed, inc RAM card, £460 ono. Also available, PG10. Duncan, Tel: 01-736 8436.

ROLAND D110 with Atari editor, over 600 sounds, £495, swap U110. Bill, Tel: 061-928 5946.

ROLAND D20 workstation, immac cond, home use only, swaps considered! Bargain at £895. Mark, Tel: (0276) 26292.

ROLAND D20, immac cond, unugged plus disks and stand, etc, £900 (bank demands sale!). Tel: (0332) 840910.

ROLAND D50, £900; Roland D110, £400; Roland S330, £900 or offers. Must sell! Tel: (0709) 815644.

ROLAND D50, near mint cond, home use only, £900 ono. Tel: (0223) 245930, eves only.

ROLAND D50, as new, with stand, ROMs, £850; Roland U110 sample player, £450. Tel: 01-654 7707.

ROLAND D50, £800; K1, £400, boxed, mint cond; Soundbits K1 editor, £40, must sell. David, Tel: (0742) 368709.

ROLAND D550 module, £575 ono; Roland R8 drums, £550; Roland U110, £475 ono; Roland S50, seq software, flightcase, monitor (colour TV). Steve, Tel: (0429) 222517.

ROLAND E10 intelligent keyboard, £650, also MIDI software to swap, why? Tel: 061-928 5946.

ROLAND JUNO 6, vgc, £150 or exchange Roland MKS10/RS09 bass guitar. Tel: (0206) 34541 (Essex).

ROLAND JUNO 6, with stand and case, £210. Tel: (028 14) 2929, after 6pm.

ROLAND JUNO 6, perfect working order, patch sheets available, £150 ono. Tel: (0223) 464117 days, (0638) 720090 eves.

ROLAND JUNO 106, Yamaha RX21 drum machine, Akai S612 sampler/disk drive, Tascam Porta One, vgc, offers. Tel: (0736) 68794, anytime.

ROLAND JUNO 106 MIDI polysynth, superb fat analogue sounds, must sell, hence £300. Tel: (0663) 43388 (Manchester).

ROLAND JUNO 106, £325; Casio CZ101, £150, exc cond. Tel: (0629) 55607.

ROLAND JUPITER 6, £445; Yamaha TX7, £145; Korg VC10 Vocoder/headset, £145. David, Tel: 041-762 0020, eves.

ROLAND JUPITER 8 plus Groove MIDI interface and flight case, £750. Richard, Tel: 01-640 1826.

ROLAND JUPITER 8, TX81Z, CZ1000, EMT10, S612, Fostex X15, BX5, UMI 45, BBC B, must go. Tim, Tel: 01-450 7770.

ROLAND JUPITER 8, MIDI, plus heavy-duty flightcase, custom-built, £525 ono. Tel: H/Pool 265270, after 5pm.

ROLAND JUPITER 8 genuine antique, £550 or swap DI10. Jason, Tel: (0494) 459426, days. Delivery possible.

ROLAND JX3P, manual, flightcase, good cond, £300 ono or swap for Atari 520STFM? Brighton, Tel: (0273) 550716 after 5.30.

ROLAND MK57 Super Quartet, £100. Derek, Tel: (0450) 75081.

ROLAND MT32, £225; Hohner B2V headless bass (5-string, new), £200. Tel: Worthing 202458, days.

ROLAND P330 piano module, £350; Roland DSP2000 presence processor, £225. Jonathan, Tel: 01-603 4907.

ROLAND PLANET 5, MKS30 module with PG200 programmer, soup-thick analogue sounds, 128 memories, £350. Steve Tyson, Tel: Blackburn (0254) 774554.

ROLAND SH101, £90; Roland TR505, £150; Yamaha QX21, £125, offers considered. Neil, Tel: (04862) 62017.

ROLAND SH101, vgc with modulation grip, strap and instruction manual, £95; Casio SK1, £40. Tel: (0252) 519560.

ROLAND SH101 monosynth, £115. Tel: (0332) 32683.

ROLAND SH101, acid machine, unbelievably in-vogue, £85. John, Tel: (0747) 870686.

ROLAND SUPER JX module, brand new, includes 3 ROMs worth £80 each, £500. Tel: (037 881) 2079.

SEQUENTIAL SIXTRAK, Korg Mono/Poly, Korg DDM220, Oberheim 2-voice, offers, swaps. Tel: (0597) 2138, eves/weekends.

TECHNICS K700 top range of home keyboards, stand and case included, £600. Tel: (0279) 639201.

TECHNICS PX7, 88-note digital piano, £900 or swap D20/D10/D110 with keyboard; HR16, £280. Tel: (0225) 859615, eves.

TECHNICS SXK700 workstation (!!!), immac, home use only, £650. Tel: 01-642 9131 (Surrey).

YAMAHA B5CR dual 44-key manuals, 13 bass pedals, 8 rhythm, etc, £275. Tel: Camberley (0276) 20467.

YAMAHA CLP50 PIANO, 7-octave, cost £1499, electronically perfect but worn, flightcase, £650. Tel: (0472) 361725.

YAMAHA CP70B, mint, £1000; Roland JX3P, £250; MT32, £260; Korg RK100 remote, £150. Tel: (0942) 37095, eves and weekends.

YAMAHA CS10, £65; 3-tier stand, £35, both exc cond, ono. Dec., Tel: (0254) 885723.

YAMAHA DX7 synthesiser with case, cartridges and Atari ST editor, 3000 sounds, mint, £700. Tel: (0922) 407967.

YAMAHA DX7, £575; Yamaha RX17, £150; Yamaha QX21 MIDI sequencer, £150; TR808, £175. Guy, Tel: (0761) 32953.

YAMAHA DX7 Super Max plus arpegg. Delay, chase, voice stacking, 512K, breath controller, books, Mega ROMs, offers. Tel: Tring 7593.

YAMAHA DX7 ROMs, home use only, boxed, immac, £575. Tel: (0702) 219723.

YAMAHA DX7, ROMs, mint, could deliver, £599, or swap for FZ1, WHY? Paul, Tel: (0745) 336723.

YAMAHA DX7, 3 ROMs, 960 voices, immac, boxed; Red Planet cartridge, £575. Jim, Tel: (0505) 31629.

YAMAHA DX7 ROM voice cartridges, sustain, woodwind and percussion, £15 each. Tel: Blackburn (0254) 47199.

YAMAHA DX7, vgc, 2 ROMs, £450 ono. Ian, Tel: (0264) 333947.

YAMAHA DX7II, mint cond, still boxed with extras, £850. Rafael, Tel: (0909) 487109.

YAMAHA DX9 with breath controller and library, £350 ono. Tel: 01-603 9596.

YAMAHA DX21, mint cond, boxed, complete with manuals, stand and case, £350. Tel: Swansea (0792) 456482.

YAMAHA DX21, exc cond, extra voices, case, manuals, home use. Tel: (0388) 730512, after 4pm.

YAMAHA DX21, £300; Korg Polysix, £220; Peavey KB100 amp, £210, all good cond. Tel: Weston-Super-Mare (0934) 515472.

YAMAHA DX21, £320; Roland TR909, £299; SH101, £100; MC202, £100. Tel: (073 45) 582199.

YAMAHA DX21, hard case and stand, £300; EX800 expander, £150; Fostex X15, £150. Tel: (0234) 2722885.

YAMAHA DX21, mint cond with manual, £270. Yes, I'm insane. Quazzy Modo, Tel: (0564) 776484.

YAMAHA DX21, split/layer, full-size keys, working order, £250. Pete, Tel: (0978) 365809.

YAMAHA DX21, mint, boxed, manuals, etc, £330 ono or p/x 2-operator analogue (JX3P, etc). Chris, Tel: (0296) 432381.

ANY OWNERS OF 2-OPERATOR ANALOGUE synths out there, please contact MT editor; we're interested in a feature on this rare approach to synthesis.

YAMAHA DX21 plus case and voice tape, £300 ono. John, Tel: (0322) 21545.

YAMAHA DX27, Boss DR220A, Carlsbro 45 keyboard amp, all immac, £475. Tel: 01-959 6477, after 6pm.

YAMAHA DX27 in box, rarely used, 100s extra voices, £275. Steve, Tel: (0509) 853589.

YAMAHA DX27, manuals, immac, £325 ono; Roland TR505, boxed, as new, £175 ono. Tel: Manea 511 (Camps).

YAMAHA DX27 synth, £200; Yamaha RX21 drum machine, £100. Rob, Tel: (0784) 258311 eves, 01-840 1800 weekdays.

YAMAHA DX100, mint, boxed with manuals, £195 ono. Richard, Tel: (0785) 818066, weekends.

YAMAHA DX100, exc cond, boxed, manuals, £200 or offers. Tel: (0203) 414258.

YAMAHA DX100 synth, Yamaha QX21 sequencer; Yamaha TR505; Drumbox, Roland, any reasonable offers accepted. Tel: (0926) 58860.

YAMAHA FB01, £110; Steinberg ST FB01 editor, £75; Dr T's KCS Amiga, £125; PSS480, £100. Tel: (0602) 274369.

YAMAHA FB01 sound generator, never used, £120. Malcolm, Tel: Redhill (0737) 772480.

YAMAHA FB01, immac, £115; Roland TR505 with psu, £125, offers considered. Tel: (0603) 486861.

YAMAHA FB01 sound generator, never used, £120. Malcolm, Tel: Redhill (0737) 772480, after 4pm.

YAMAHA PF70 electric piano, lovely

action, weighted keys, full MIDI, flightcase, exc cond, £530. Tel: 01-659 5566.

YAMAHA PF80, as new, complete with satnd, £550 ono. Wayne, Tel: 061-626 0780.

YAMAHA PF80 piano, ideal weighted keyboard, £475; Kawai K1 rack, £310, both immac. Jon, Tel: (0737) 351794.

YAMAHA PSR70 multi-function keyboard, £395 or swap Atari 1040 plus monitor plus cash. Tel: (0405) 768391 (Yorkshire).

YAMAHA PSR70, immac, boxed, PCM drums, MIDI, £340. Tel: (025 72) 70569.

YAMAHA PSR70, drum machine, sequencer and keyboard all in one, stand and manual. Tel: (0564) 776484.

YAMAHA PSR70, £295; Casio CZ230S, £100. Wanted, CZ1000. Tel: Bournemouth (0202) 512979.

YAMAHA PSR70, stand, flightcase, all MIDI facilities, as new, £375 ono. Tel: (0684) 40220.

YAMAHA PSR90, home use, boxed, manual, swap for DX11 and amp. Tel: (0926) 832454, eves/weekends.

YAMAHA PSS470, exc cond, boxed, psu, £85 ono. Barry, Tel: Luton (0582) 576680, eves.

YAMAHA PSS680, exc cond, hardly used, bargain, £119 ono. Tel: Slough (0753) 586613.

YAMAHA SH510 portable FM MIDI synthesiser, psu, manual, boxed, £50. Ben, Tel: (0977) 87420.

YAMAHA TX7, £200; Roland KX8P, £500, both mint cond and boxed. Andy, Tel: (0902) 723606.

YAMAHA TX7, immac, still boxed, £250. Jim, Tel: (0505) 31629.

YAMAHA TX816, £2500; Prophet 600 plus flightcase, £350, keyboards very good cond, ex-studio. Tel: 01-994 4445, 24hrs.

YAMAHA TX81Z, multitimbral, mint cond, boxed, manual, cassette lead, very useful, £235. Tel: (03543) 5239, eves and weekends.

YAMAHA TX802, £575; Yamaha TX81Z, £195; Roland MC500, £450; E-Mu SP1200, £1195 ono. Tel: 01-462 6261.

Sampling

AKAI S950 sampler, 6mths old, £1100. Tel: 021-704 1944.

AKAI S900, £900 ono. Eric, Tel: Sedgley 73325, eves.

AKAI S700, disks, case, £425; Roland JX3P, £199; Yamaha DX21, £275, immac. Paul, Tel: 01-898 6616.

AKAI S700 plus ST editor, filer, £450; SCI Sixtrak, £250. Tel: (0273) 414786.

AKAI S612 plus 50 blank disks, £295. Tel: Wimborne (0202) 885946 (7-10pm).

AKAI X7000 with expander and disks, as new, £600. Write 10, Brook Lane, Framlingham, Suffolk IP13 9RN.

CASIO FZ1, as new with expansion card and vast professional library, flightcased, offers. Tel: 01-889 6892.

CASIO FZ1, £700; Casio FZ10, £725; VZ8M, £245; CZ230, £70; Atari plus Pro24, £625. Tel: (0860) 558400.

CASIO FZ1, plus extras, swap for Atari 1040 plus extras or sell for £730. Tel: (0562) 751000.

EMAX HD rack plus 30 blank disks, all memories full, £1650. Tel: (0253) 827485, after 6pm.

KORG DSSI sampler synth, great sounds, £850; Image flight case, £50. Tel: (0324) 553625, weekends.

KORG DSSI sampling keyboard, was £2259, free flightcase and disks, £800! Mad! Neil, Tel: (0707) 44427.

KURZWEIL K250 expander with large library, plus Apple Mac computer. Tel: 01-368 7071.

ROLAND S10 sampler plus sample disks, £430. Tel: (0727) 39309.

ROLAND S330 for sale, as new, £900. Tel: (0603) 698355 days, or 611144, eves.

ROLAND U110 sample player, totally unused, boxed, guaranteed, exc sounds, £525 ono. Lee, Tel: (0742) 322156.

ROLAND U110, £449; VP70 pitch-to-MIDI plus 4 pitch shifters, £449; Hi-fi video, £249. Tel: (025) 762609.

SEQUENTIAL PROPHET 2002, rackmount sampler, as new with library, £650, may P/X. Tel: (0706) 50897.

YAMAHA VS530 mini sampler, £45; Boss TM3 line driver/headphone monitor (new), £45. Tel: (0273) 493659 (Sussex).

Sequencers

ACIEED! MC202. Amdek drums plus interface, £100; Sync 24-MIDI, £10; Pro One, £100. Tel: (0223) 311610.

ALESIS MMTB, used once, guarantee, genuine sale, perfect cond. Wanted: U110. Dave Jnr, Tel: (0925) 814385.

ALESIS MMTB 8-track sequencer, manual, boxed, brand new, untouched by human hands, £195. Robert, Tel: 01-204 6876.

CASIO SZ1, £80. Steve, Tel: (0509) 853589.

KORG SQDI ozone-friendly sequencer, disks, 30,000 notes, manual, blows Cubase to shit! (Nearly!) Tel: (0203) 346916.

KORG SQDI, bargain, £175 including disks; Korg KMT60 MIDI Thru box, £40, perfect. Tel: (0543) 373501 (Midlands).

ROLAND MC202, boxed, manuals, £80; Roland Jupiter 4, £120. Rod, Tel: Watford (0923) 677922.

ROLAND MC202, £100 ono; Roland TR909 drum machine, £270 ono, both for £350. Andrew, Tel: (0284) 810524.

ROLAND MC202, manuals, psu, great acid sounds, offers. Tel: (0203) 383447 (swap Casio CZ101!).

ROLAND MC300, as new or swap DPX1, £475. Tel: (0440) 707610.

ROLAND MC500, exc cond, £450. Tel: Watford (0923) 247879.

ROLAND MSQ700, as new, very little home use, £235. Tel: (0895) 678871.

ROLAND TB303 bassline, TR606 Drumatix plus manuals, psus, £160 together. Andy, Tel: Aldershot 26536.

ROLAND TB303 bassline, hardly used £75; TR606 Drumatix, £60. Mike, Tel: 01-215 8404.

YAMAHA QXS plus MDFI data filer, £350 ono or swap Atari 1040. Dr Phillips, Tel: 021-770 4484.

YAMAHA QXS, £165; Boss GE10 10-band guitar graphic, £70. Neil, Tel: 01-268 5229, days (West Ealing).

YAMAHA QX7 sequencer, £100; Korg KPR 77 rhythm, £50. Write to T Winder, 2, Alban Road, Liverpool L16 1JJ.

YAMAHA QX7, £90; Voyetra SPIII, £120; 30Mb hard disk plus controller, £120, swaps. Tel: (0705) 261895.

YAMAHA QX7, £80; Cheetah MD8, £90, exchange for RX17, TR626; MS20, £100; Crumar Stratus, £100. Tel: 061-998 0271.

YAMAHA QX21, £140, absolutely mint, boxed, bargain, also Casio CZ1000 and RX21 to sell. Jaysen, Tel: (0323) 21274.

ZYKLUS MIDI Performance system plus accessories, immac, £450. Tel: 01-675 1816.

Drums

ALESIS HR16, boxed, as new, £250 ono. Tel: Colchester (0206) 271071.

BEAUTIFUL OAK CONGAS, set of 3 in cases, £500 or Roland DI10. Simon, Tel: 01-737 2205.

BOSS DR220A drum machine, programmable, £80 ono. George, Tel: (0935) 77348.

E-MU SYSTEMS DRUMULATOR, 64 songs, immac cond, £100. Gary, Tel: (0353) 723320 (Camps).

E-MU DRUMULATOR, inc crash and ride cymbal chips, £100. Tel: Cheltenham (0242) 570261.

E-MU SPI2 sampling drum machine, disk drive and large library, £700 ono. Tel: 01-902 3841.

KAWAI R50 drum machine, vgc with extra chip, sell for £260. Dino Scott, Tel: 01-891 9165 (work).

KAWAI R50, groovy drum machine, exc cond, £250; CX5M, large keyboard, offers? Tel: (0256) 862204, eves.

KAWAI R50E, 24 sounds including basses and orchestral stabs, immac, an absolute bargain, £165. Tel: (0388) 819913.

KORG DDDI (including TR808, 3 orchestral hits and FX soundcards), £395;

ESQ1 Plus, £595, both 1yr old. Wanted: ARP 2600, Roland 100M. Tel: (0994) 2300 91 (S. Wales).

KORG DDM10 digital drums, home use only, psu, only £70. Tel: (0698) 814995 (Glasgow).

KORG DDM10, swap for Korg KMS30 sync. Tel: (0387) 720133.

KORG DDM10 digital drum machine, programmable, 32 patterns, 9 sounds, spiffing cond, £60. Tel: (0656) 50820.

OBERHEIM DX drum machine, MIDI separate outs, £165 including delivery to anywhere in UK. Dean, Tel: (0689) 28055.

ROLAND R8 drum machine, superb sounds, boxed, warranty, call with offers. Tel: (0273) 205768.

ROLAND R8, box, manual, 6 weeks old, £550; Simmons MTX9, box, manual, 3 pads, 2 Pearl double tom stands; Carlsbro 90W keyboard amp, £550. Tel: Oxford (0865) 721643.

ROLAND TR505, exc cond, nice bit of kit and cheapest this issue at £120. Tel: (0353) 666149 (Camps).

ROLAND TR505 seeks polite, teetotal vegan buyer for partnership, failing that, yours for £150 ono. Boxed/manuals. Findlay, Tel: (0294) 63047.

ROLAND TR505, good cond, home use only, £135. Alan, Tel: 01-969 1272, eves.

ROLAND TR505, 16 super percussion sounds, programmable, MIDI, a mere £140. Tel: (0257) 793398.

ROLAND TR626, exc cond, all manuals plus 128-memory card, £295. Martin, Tel: (0952) 460525.

ROLAND TR707, boxed, manual, psu, mint condition, MIDI/DIN/Tape sync, nice colour, brilliant, clean drum samples, £225 ono. Tel: (03543) 5239, eves and weekends.

ROLAND TR727 latin drums, excellent sampled sounds, very trendy, including psu, excellent condition, £175 ono. Tel: (03543) 5239, eves and weekends.

ROLAND TR808 drum machine, exc cond with manuals, £275. Possible delivery. Tel: 091-534 5267.

ROLAND TR909, exc cond, £280; Crumar Performer keyboard, good cond, £180. Tel: (0873) 77014, eves.

SCI DRUMTRAKS drum machine, £200, ex-studio, vgc. Tel: 01-994 4445, 24hrs.

SIMMONS SDE, £100; MD8 drums, £100; FZ1, 40 disks, £95; Gibson Les Paul copy, £70. Barry, Tel: 091-510 8956.

YAMAHA RX5, mint with cartridge, £600. Rob, Tel: (0827) 289309.

YAMAHA RX5 rhythm programmer, exc cond, hard box, 3 cartridges, £550 ono. Maryn, Tel: (0634) 686634, after 6pm.

YAMAHA RX5 plus RAM4, £499. Alan, Tel: (0246) 204291.

YAMAHA RX5, loved but lost to E-Mu SPI200, ROMs, RAM4, £525; Yamaha DX7, f/case, ROMs, £550 inc shipping. Tel: 001-853-5-8450849, leave name/number.

YAMAHA RX5, cartridge, manual, exc cond, home use only, £475. Tel: 01-363 2346.

YAMAHA RX11 plus cartridge, £215; RX21L, £70; Ohm GA150 bass amp and cabinet, £175; Yamaha flying vee, £185. Mike, Tel: 01-642 6397.

YAMAHA RX21 drum machine, £100 ono. Tel: (0535) 664884, 5-7pm.

YAMAHA RX21 drum machine, psu, manual, pattern book, unigigged, perfect, £100. Tel: 051-521 2013.

YAMAHA RX21L Latin drum machine, superb sounds, boxed, manuals, immac, £80 inc p&p. Mark, Tel: (0663) 43388.

Computing

AMIGA KCS 1.6 by Dr T's, 48-track sequencer, unused, £100. Lee, Tel: Sheffield (0742) 322156.

AMSTRAD PCW, DCHP MIDI interface plus 12-track sequencer, £55. Tel: (0592) 774966.

ATARI 520STFM, virtually unused, bargain price, £150. Jim, Tel: 021-445 4380, eves after 6.30.

ATARI 520ST, IMeg, disk drive, £190 ono; Steinberg 12, £60 ono. Tel: (0282) 20856.

ATARI 520 STM with Masterpiece

sequencer, £200. Also, wanted, Kawai K5M. Gary, Tel: 01-272 8436.

ATARI 1040, monitor, C-Lab Creator, Dr T MT32 editor, perfect cond, £680. Stuart, Tel: (0603) 504556.

ATARI 1040STF, mono monitor, £500 or offers, as new, boxed. Tel: (0480) 215815.

ATARI 1040STFM, SM125, Steinberg Pro24 VII, £700; Kawai K1, Desktec 1202, etc. Pete, Tel: (0353) 666757.

ATARI 1040STFM, half-Meg internal drive and half-Meg external drive, plus Acorn Electron, all for £400 ono. Martin, Tel: (0904) 741056.

BBC B PLUS and Acorn Prestel adaptor, £250 or swap Atari 1040 plus cash; Korg EX800, £125. Dr Phillips, Tel: 021-770 4484.

BBC B, EMR MIDI interface plus software, Micro User sampler, £170 ono. Jon, Tel: Runfold 3573.

C-LAB CREATOR version 1.3 (520 or 1040 ST) plus £200 of games software, £285 ono, will split; unused C96 chrome cassettes, 10 for £10 inc p&p. Tel: (0482) 563440.

COMMODORE 64, disk drive, Steinberg interface, Joreth sequencing and other software, £210, will split. Tel: 021-430 8980.

COMMODORE 64, books, games, tape recorder, boxed, £100. Tel: (0732) 356612, eves.

COMMODORE 128/64 plus sampler and expander, full-size 5-octave keyboard and software, manuals, £199. Tel: Blackpool (0253) 695809, eves before 7.

COMMODORE C64, Sonus sequencer, interface, organic disk drive, 60 disks, backup cartridge, £230. Mark, Tel: (0663) 43388 (Manchester).

CZ ANDROID for Atari ST, £30; PD filter with 300+ voices, £7. Steve, Tel: (0652) 52854.

DIGIDESIGN Universal Sound Designer, brand new, hardly been used, ST version, £250 ono. Tel: (0337) 31172.

DR T'S KCS v1.6 for Amiga, 48-track sequencer, £170, no offers. Tel: 01-202 7068.

DR T'S MT32 editor/librarian software for Atari, must sell, £50 ono. Stuart, Tel: (0603) 504556.

DR T'S MT32 editor for Atari, £40 ono. Tel: Bournemouth (0202) 535150.

EMR MUSIC 500 plus BBC B, software, books, accessories, £90 for quick sale, bargain! Liam, Tel: Buxton (0298) 871670.

MACINTOSH SE, 20Mb hard disk with Passport Mastertracks Pro, publishing graphics, soft case, 6mths old. Tel: 01-286 2101.

MIDI STUDIO: Spectrum 48K+, disk-based sequencer, sound sampler and tape sync, £165. Tel: (0761) 221632.

ROLAND D110 editor/librarian (Dr T's) for Atari ST with 256 extra sounds, £70. Tel: (0706) 50897.

SONUS COMMODORE 64 Glasstracks sequencer with interface, powerful versatile software, £40 inc p&p. Mark, Tel: (0663) 43388.

SOUNDScape PRO-MIDI Studio for Amiga, versatile, powerful package, £90 ono; MIDI interface, £25 ono. Tel: Newcastle 091-251 1538.

STEINBERG PRO24, Timelocks SMPTE, unused, boxed, as new, £250. Tel: 01-671 4219.

STEINBERG TWELVE, absolutely brand new, £75 ono. Wanted: K1/D5, similar, U110, reverb, decent amp. Tel: (0924) 469259.

STEINBERG TWELVE, unwanted gift, unused, £50; SCI Pro One, £99. Tel: Cambridge (0223) 311610.

STEINBERG TX81Z EDITOR, new and unused, unwanted gift, £99. Martin, Tel: 01-902 2941, eves.

UMI 2B 16-track sequencer plus BBC B computer and disk drive, micro-editing facilities, DX7 librarian, £310 ono. Geraint, Tel: Battersea 01-223 4210.

UMI 35 16-track sequencer plus micro-editor, inc MIDI interface, £125. Tel: 01-363 2346.

VOYETRA SPIII, £120; Yamaha QX7, £90; 30Mb hard disk plus controller, £120, swaps? Tel: (0705) 261895.

YAMAHA CX5, SFG05, YK01, YRM501, 102, BIT2, VFS05C, 400 voices, £200. Tel: Bristol 714232/Pilton 738.

YAMAHA CX5, new software available, write to Jim Redgewell, 1 Compton Court, Canvey Road, Leigh, Essex.

YAMAHA CX5, good cond with manuals, extra voices, composing and editing software, £100. Tel: (0590) 45802.

YAMAHA CX5M, large keyboard, voicing, composer programs, boxed, mint, bargain, £150. Simon, Tel: 01-841 3956.

YAMAHA CX5M, voicing, composer software, cartridges, 100's of voices, boxed, £110. Tel: (0480) 215815.

YAMAHA CX5M, Composer, Voicing, ROMs and monitor keyboard, £150; Juno 6, £150, all boxed. Tel: (0245) 269261.

YAMAHA CX5MII with Casio CT6000 touch-sens MIDI keyboard, exc composing/sequencing combination, £300. Tel: (0602) 482085, eves.

YAMAHA/SANYO music computer, SFG05, ROMs, exc FM expander, £120 ono. Tel: (0203) 414258.

Recording

AHB MOD 3 16:8:16, vgc, offers, or p/x Atari/Notator/MI/effects. Tel: (0983) 68231.

AKG MICS, Toa, JBL monitors, A77, Tokai bass, Yamaha guitar, 12 channel mixer, PA speakers. Tel: 061-798 7592.

ALESIS MIDIVERB II, as new, boxed, offers. Tel: D/Ton (0325) 286618.

APHEX AURAL EXCITER, Type C, 100% perfect cond, barely used, ideal for Portastudios, £190 ono. David, Tel: 01-346 8138.

BASF ONE INCH tape, once used, bulk erased on precision spool, mint, £10 each. Tel: (037-976) 670, eves.

DENON DRM12HX cassette deck, boxed, as new, £139. Gavin, Tel: 01-305 0152, eves.

DIGITECH DSP128 multi-FX, £250; Roland GR700, GR300, G505 controller, £600 ono. Simon, Tel: (0732) 810287.

FOSTEX I60, hardly used, boxed, manual, plus mic, AKG D80, de-magnetizer, headphones, £350. Tel: Leics (0533) 775148.

FOSTEX 250 4-track. Works fine but needs a dusting, £250; Grotty Fostex X15, £50; four Simmons pads/stands/MIDI interface, £100; Korg SQB sequencer, manuals, psu, £60. Or swap the lot for Kate Bush ono. Nick, Tel: 01-291 3491.

FOSTEX A8, immac, £825 ono; Alice 10:8:2 desk, P&G faders, 18-channel playback, £425. Tel: Worthing (0903) 212294.

FOSTEX A8 quarter-inch 8-track, £890; 250 mixer, £290. Andy, Tel: Camberley (0276) 20514.

FOSTEX A8, good cond, little used, custom flight case, £1100 ono. Tel: (0733) 60045.

FOSTEX B16, £2000; Otari MX7800, £1500; JVC S22 amp plus others. Tel: 01-368 7071.

FOSTEX B16, 3 years old, serviced after first 2 years, £2300. Tel: (074 62) 2971 (Shropshire).

FOSTEX E16, good cond, £2900; Yamaha REV7, £700. Tel: 01-640 7007, eves.

FOSTEX M80, hardly used, £850; 18:16:2 mixer, hardly used, £850. Tel: Brighton (0273) 779664 or 720704.

FOSTEX X26 4-track, 6-channel, 5mths old, never used, £250. Tel: 01-736 5842.

FRONTLINE X8 stereo keyboard mixer, 8 channels plus stereo effects loop, £130 ono. Tel: (0785) 57814.

ITAM ONE INCH 8-track machine, dbx, remote, offers, or p/x Atari 1040STFM/MI/effects, etc. Tel: (0983) 68231.

KOSS ELECTROSTATIC headphones, cased, superb sound for hi-fi or monitoring, £125. Tel: (0742) 645123.

LEXICON LXPI reverb/delay, £320 ono, boxed. Tel: Brighton (0273) 686637.

MCI JH10B stereo tape machine, £795 ono; dbx SNR1 stereo noise reduction, £150. Tel: (0442) 862373 (Berkhamsted/London).

MULTICORE/STAGEBOX, 12 sends, 4

returns, all Neutrik cannons, brand new, unused. Tel: (0438) 720143.

SECK 24:2, £695; Porta One, £295; Q80 Sequencer, £495; RX15, £120; 12:2 desk, £195; 8:2 mixer, EQ, aux, etc. Adam, Tel: (0533) 673815.

SONY PCM 701ES with Betamax, £550; Swap Kawai K3 for Yamaha DX7. Tel: 01-458 7636.

STUDIOMASTER 8:2 powered mixer, £350; Aces 12:8:2 desk, 5-band EQ, 3 aux, £500. Tel: 01-808 0472.

TANTEK digital sampler/delay and MIDI-CV modules, £180 ono, may split. Tel: (0438) 350471.

TASCAM 238, K7 recorder, Seck 12:8:2, Yamaha SPX90, Quad 306, Tannoy DTMB, Commodore SX64, Oberheim DPX1 sample player, Roland JX10, Kawai K5M, much more, home use. Tel: 01-948 8001.

TASCAM 244 plus footswitch, exc nick, £380 or Kawai K1R plus cash. Simon, Tel: 01-737 2205.

TASCAM 244 4-track and Juno 60, would swap for DX7. Tel: 091-430 1179.

TASCAM 244, £400; Revox B77, £550, both exc. Tel: Brighton (0273) 473764.

TASCAM 244 Portastudio, little used, good cond, £400. Tel: Uxbridge (0895) 37261, after 6pm.

TASCAM A3340 plus dbx, new heads, £550. Gary, Tel: (0353) 723320 (Camps).

TASCAM PORTA TWO, 18mths old, immac cond, must sell, £300. Tel: St Albans (0727) 37258.

TEAC A3440 4-track, £450; Studiomaster 8:4, £400, as new, both ono, must sell. Tel: 091-529 4788.

TEAC A3340 4-track recorder with AX20 mixdown panel, £450. Trevor, Tel: (07875) 3450.

UPGRADING BEDROOM! MIDIVerb, £100; SPM 8:2, £150; 32-way patchbay, £20; DD2 digital delay, £50. Tel: (0737) 222957.

VESTAFIRE DIG420 digital sampling delay, exc cond, boxed, manual, £130 or offers. Tel: (0203) 414258.

VESTAFIRE SL200 stereo compressor/Limiter, perfect cond, still under guarantee (10 months left), cost £230, yours for £179. Tel: 01-833 4609.

YAMAHA REX50, £150; Desteck 12:2 mixer, £220; Yamaha RX21L, £80, all immac. Tel: (0737) 351794.

Amps

CARLSBRO COBRA 90 keyboard amp, as new, 3 channels, 6 inputs, EQ and FX, reverb, high-quality sounds, £250. Daniel, Tel: 01-958 7012.

CUSTOM SOUND COLT 100B bass combo, 10-band graphic, cost £380, accept £280, mint. Tel: (0742) 645123.

PRO 100 HH speakers, £125 each, mint cond, home use only. Mr Gordon, Tel: (086 33) 319.

REALISTIC self-powered mini speakers, perfect for Walkmans and reference monitoring, bargain, £50. Tel: (0742) 335354.

SWAP 2-week old Peavey KB300 keyboard combo (the best) for Roland VP70/P330/MKS70, must be good. Tel: (0492) 860673.

TRACE ELLIOT 1X15 150W combo, hardly used, very loud, unwanted, cost £700, £500. Tel: (0702) 335924.

Personnel

GREENGATE DS3 USERS! Is there anyone else out there interested in starting a users group? Chas, Tel: 01-584 6733, days or 01-360 1348, eves.

KEYBOARD PROGRAMMER wanted to join me in the creation of dance music. Clyde, Tel: Wandsworth 01-870 0908.

MUSICIAN plays bass guitar, keys, also into songwriting and programming. John, Tel: 01-977 7125.

PROGRAMMER/ENGINEER/songwriter (CV available) for work in London, video, audio. Ray, Tel: (0582) 505922.

MIDI PROGRAMMER wanted. For more info, write to Promedia, 8189 Vassbo, S-79193, Falun, Sweden.

VOCALIST REQUIRED desperately for partnership with synth player into Mode Numan, Edinburgh-based. Scott, Tel: 031-667 4127.

VOCALIST WANTED urgently for varied funky, rocky band. Dave, Tel: 031-553 6215.

VOCALIST WANTED! Must enjoy Big Fun in the Good Life! SW London area. Al, Tel: 01-942 3063.

VOCALIST WANTED for modern rock band, must be versatile. Tel: (0472) 79264 or (0472) 883753.

Misc

AKAI ME30P MIDI patchbay, £65 ono. Tel: Newport (0633) 266647, after 6pm.

BACK COPIES of E&MM and HSR available cheap; Wanted, manuals or photocopies for Prophet V and Korg MS10. Tel: (0342) 323094.

CHARVEL MODEL 6, metallic burgundy, plush case, a luxury I can't afford, £550 ono. Tel: 01-690 8415.

CLASSIC JUKE BOXES, Rock-ola, Wurlitzer, AMI, private collection, from £350, p/x synthesiser/sampler. Tel: Newcastle 091-251 1538.

CONGA DRUMS, stand, cases, vgc, £135, or exchange for Roland MKS10/RS09, bass guitar. Tel: (0206) 34541 (Essex).

E&MM, every issue except one, collectors items, offers, buyer collects. Tel: Dinnington (0909) 567151 (Sheffield).

ESQ 20,000-note sequencer expansion, boxed, never used, £50. Tel: (0742) 645123.

FAL PROFESSIONAL SERIES disco decks, £320 ono, swaps considered, eg keyboards, drum machines, etc. Tel: (0482) 643484.

FRAMUS 12-STRING acoustic, vgc, £150 ono. David, Tel: 01-521 6501.

IBANEZ MIDI GUITAR system, black headless Vee shape, flightcased, humbuckers, superb, £600. Mike, Tel: (0582) 664377, eves.

JUNO 60/6 FLIGHTCASE, £40; standard case for DX7 or Juno 106, £30; MIDI sequencer, £100. Tel: (0342) 323094.

MIDI STUDIO: 2Meg FZ1, Atari 520STEM, monitor, Fostex 160, massive library and loads of software, £1600 ono. Martin, Tel: (0253) 868874 (will deliver).

PACKHORSE FLIGHTCASE suitable for combo, 25X17X11, on wheels, £45. Tel: (0252) 313589.

QUIKLOK STAND for synth and/pr computer, £30; Yamaha sustain pedal, £10. Tel: 01-736 5842.

RAREISH SOUL, funk, electro, import 12-inch singles for sale, 1978-86, most mint. Chris, Tel: (047 47) 6381.

RC100 PROGRAMMER for S330/550, literally unused, alpha dial, numeric keypad, £175 ono. Tel: 01-958 7801 Sundays.

ROLAND MPU101 Rolls Royce 4-channel MIDI/CV converter, 8mths guarantee remaining, £150. Duncan, Tel: 01-736 8436.

ROLAND VP70 voice processor and voice to MIDI converter, as new, £500. Tel: 061-998 3494.

SHAFESBURY LES PAUL copy, black, gold fittings, vgc including case, £85. Tel: Cheltenham (0242) 570261.

THREE-TIER Ulitimate Support A-frame keyboard stand, black, immac plus bag, just £75. Tel: 01-361 0421.

THREE-TIER A-frame black keyboard stand, immac, £80. Paul, Tel: (0380) 870406, eves.

200 FREE VOICES for Prophet VS; VS users group, details from Pete on (0272) 636385.

XRI 300 SMPTE, rackmount, perfect cond, must sell, £195 ono. Stuart, Tel: (0603) 504556, weekends.

Wanted

ARP ODYSSEY service manual deperately required to mend synth. Please, please help. Tel: (0482) 847125.

BEYER DT100 headphones or similar wanted, also Korg MI, cash offered. Ed, Tel: (0604) 830223.

COMMODORE 64 visual editing system for Ensoniq Mirage DKS, also MASOS. Tel: Cheltenham (0242) 570261.

DESPERATELY SEEKING Atari ST MIDI software. Write or phone Doriano Novasconi, v. Vergani, 9, 20092 Cinisello, Milano, Italy. Tel: 02/6188670.

DISKS FOR PROPHET 2000, must be good quality, good price offered. Neil, Tel: (099 52) 4097.

ENSONIQ MIRAGE keyboard and disks, swap for DX21 and £100 cash. John, Tel: (0322) 21545.

GREENGATE SOFTWARE/CARD/ manuals or any other Apple II musci applications. Kim, Tel: (0793) 612659, eves.

GUITAR SETUPS: AR Kane, Big Black, Firehose, Pere Ubu, Wire, Tackhead. Edi, 106 Havelock Road, Brighton.

IN P ED of anything by Men Without Hats and 12" singles, albums, cassettes, mag ... ies, anything, please help. Jamie, Tel: (0685) 871849.

KAWAI K2, must be vgc, cash waiting. Mike, Tel: (0337) 31172.

KORG SOUND CARDS for the DDDS, especially orch hit and bass varieties, £75 each. Michael, Tel: 01-450 1163, eves.

OBBERHEIM PROMMER MANUAL, short term loan for copying. Tony, Tel: (0533) 376227.

ROLAND MT32, Fostex X26 or similar and Spectrum XRI interface. Tel: 01-977 7125.

ROLAND TR626 drum machine, will pay cash for good price. Greg, Tel: (0624) 823595.

ROLAND TR808/909, Korg MS20 or MS10, reasonable offers. Sean, Tel: 01-902 3841.

SEQUENTIAL SIXTRAK PATCHES desperately wanted for my crashed synth. Steve, Tel: Portsmouth (0705) 595704.

SOUNDTRACS 16:8:16 or 24:8:16 desk (must be Mk 2 version, 1985/6 onwards. Tel: (0404) 42234.

SWAP MY KAWAI KIM and Roland Juno I for Kawai KI synth. Mike, Tel: 01-470 7612.

TELEX AUDIO CASSETTE duplicator, model CD4 (1:1 or 1:3), cash offered, also Korg MI. Ed, Tel: (0604) 830223.

YAMAHA CE20 or CE25 synth, cash waiting. Morris, Tel: 061-980 6140.

YAMAHA DISK DRIVE, suitable for CX5M MSX computer; also data cartridges. Frank, Tel: (040 27) 53873 (Essex).

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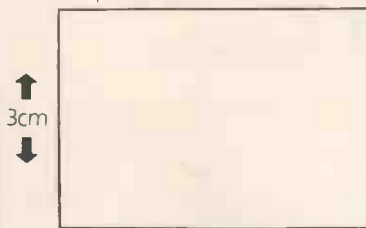
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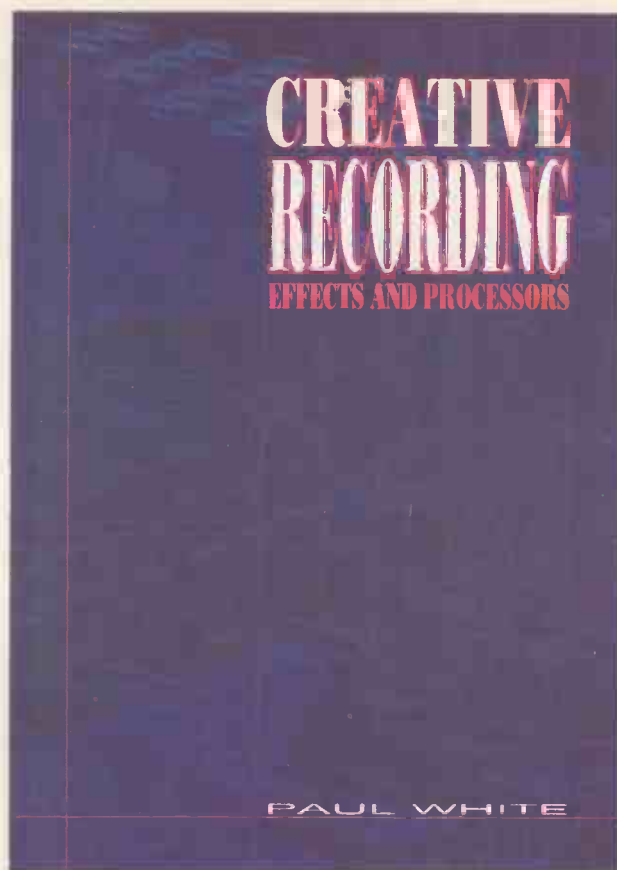
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