

MUSIC TECHNOLOGY

May 1988
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JOHN ABERCROMBIE

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PROGRAMMER ROUNDTABLE

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Multitasking Explained

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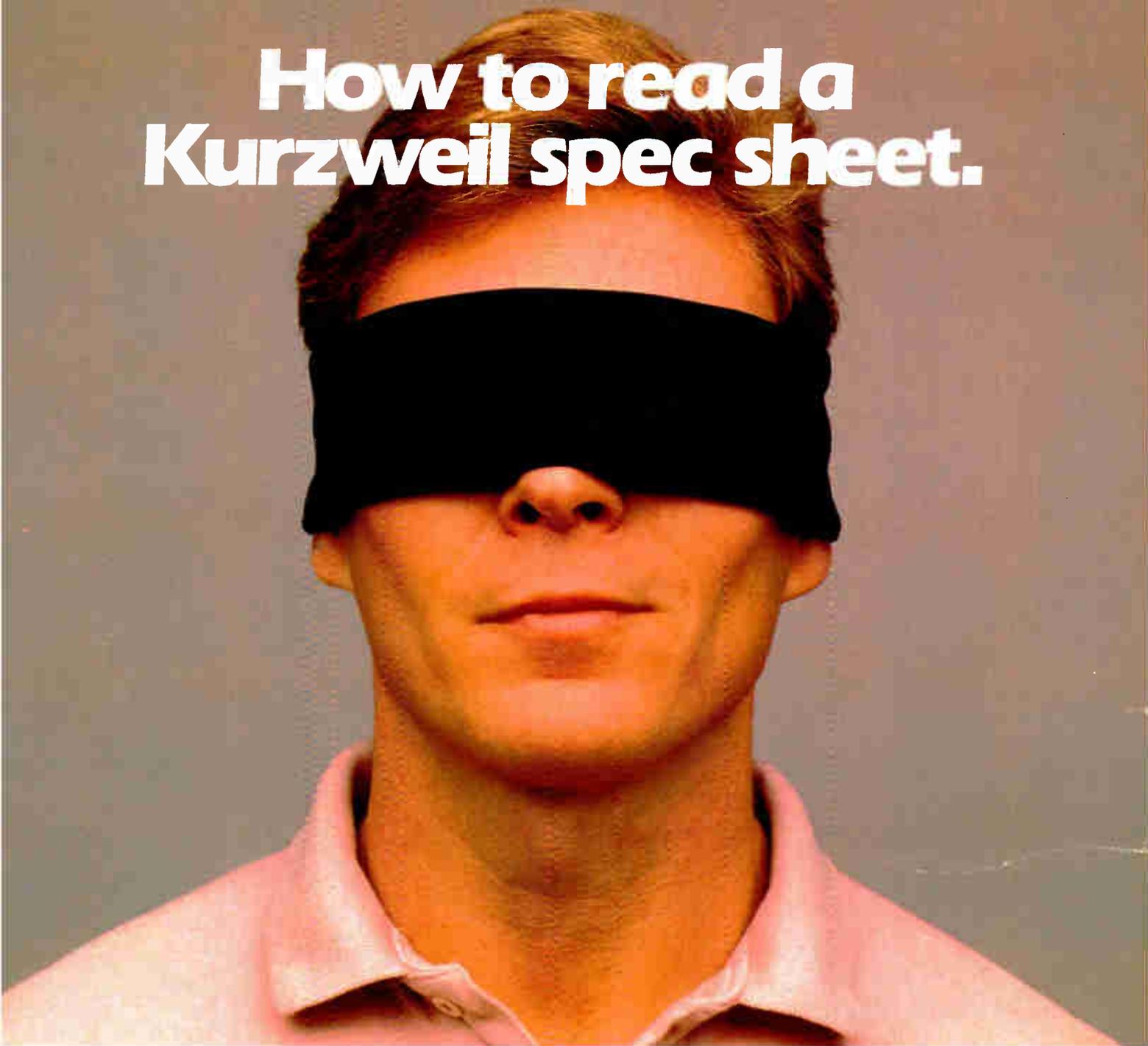
Axxess Mapper 2.0

LEE RITENOUR

From Speed to Sound



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Music Systems

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EDITORIAL

A Challenge

TO COMPOSE BETTER, more interesting music, therein lies the task. It's a challenge we can all relate to and one which I think is particularly appropriate at this point in time. The reason for the timeliness is that, as far as I'm concerned, most of the music I've been hearing lately is *boring*. There seems to be a general blandness and lack of direction evident in all genres of music.

I find this particularly odd considering that so many incredible new instruments are getting into the hands of so many people. Where's all the interesting music that these instruments make possible? Is the growth of synth and MIDI technology simply democratizing unimaginative music? I certainly hope not. With the type of tools now available and the prices at which they are selling, nearly anyone can create their own music - whether they have the necessary musical skills or not. It seems to me that one of the benefits of this "MIDI Revolution" should be the availability and popularization of a wider choice of good, challenging music. So where are all these individual voices?

Now some may argue that music's purpose is not to challenge but to entertain, and I'll grant that, in certain circumstances, that's true. But the two are not mutually exclusive, and I'll argue that the best and most lasting music - be it pop, dance, jazz, new age, avant garde, or whatever - manages to successfully do both. The trick is being able to properly integrate the two, so that the challenge is an entertaining one.

The challenge to you as a musician/composer is to write or play music which takes a chance. Just as an experiment, try to compose music that challenges you; maybe something that you don't even like initially. If an idea comes to you, take it a step further than you normally would to see what

happens. And don't give up on what you create right away; let a phrase or an idea sit with you a while. You may be amazed at how creative and individual you and your music can be.

If you need inspiration, listen to music you normally wouldn't - again, listen to something a few times to give it a chance. There may turn out to be a good reason why you didn't want to listen to it before; but you may also hear something you haven't heard before that makes you listen to other music in a completely different way. It's worth a chance. Thankfully, a few of you are taking chances and creating some thought-provoking music, as evidenced by some of our Readers' Tapes, but it's not a very large percentage, and that's no excuse for the rest of you.

I extend the challenge to ourselves here at MT. Every month we try to put out a magazine that will entertain you, inform you and perhaps even challenge you. But to be sure we're doing it right, we need to hear from you. This month we're making it easy: our second annual Readers' Survey is included in the center of the magazine and I ask that you please spend a few minutes to fill it out and send it back to us. As an incentive (to those few of you who need such a thing), we're giving away three hot new products to three people who will be drawn at random from the surveys we receive. It's a great way for us to find out who you are and what you're doing, and to see if MT is meeting your needs and living up to its potential. As it does for you and your music, so does the challenge remain for us. ■ Bob O'Donnell

WE'VE MOVED AND EXPANDED! As of April 1, our new address is: Music Technology, 22024 Lassen Blvd, Suite 118, Chatsworth, CA 91311.

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NO PATIENCE REQUIRED



Patience is not necessarily a desirable trait for a musician. When musical ideas are running through your head you need equipment that won't slow down the creative process. Make you wait. While you risk losing a great idea. Or the feel. Or the moment.

Instead your equipment must perform, document, and help you produce results. As fast as you can work. As fast as you can create.

Alesis didn't invent the drum machine and MIDI sequencer/recorder. We *reinvented* them. We think a drum machine

should sound *exactly* like real drums. And a MIDI sequencer should be a powerful, flexible computer, yet work as simply as a multi track recorder.

With the Alesis HR-16 High Sample Rate 16 Bit Digital Drum Machine and the MMT-8 Multi Track MIDI Recorder you can work like a musician. Think like a musician. Create like a musician. And sound like a great engineer. They'll let you exercise your musical muscle, instead of your patience.

The drum machine and sequencer have arrived. The real thing. At last.



LOS ANGELES: Alesis Corp., P.O. Box 3908, Los Angeles, CA 90078

LONDON: 8, Letchworth Business Center, Avenue One, Letchworth, Hertfordshire SG6 2 HR

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We're told this is an information society, so we'd like to exchange some equipment for some information about you. We present our Second Annual Readers' Survey.

MUSIC

The Fents 22

Play Loud, Don't Take Yourself Seriously, The Sound Man is the Enemy, and other laws of jazz/rock from these fusion terrorists.

Readers' Tapes 34

Yung moves to LA, forgets who he works for, pats MOR on the back and behind, and embraces a '60s surf band.

On Stage 86

Allan Holdsworth is perhaps the only person alive to have mastered the SynthAxe. Our Readers' Tapes reviewer Yung Dragen drags himself, a cold, and a notepad to a gig to get blown away.

John Abercrombie 94

Continuing the guitar theme of this issue, another straight jazzier visits the electronic playland via the Photon controller.

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Taking off from his series on MIDI processors, Matt Isaacson invokes Lewis Carroll and tackles the most complex and bewitching of the lot.

Lync LN4 40

The trend is growing in spurts, as more and more keyboardists strap up and join the front line with guitarists. We pick up the one most stars are being photographed with - the Lync LN4.

Yamaha TXI6W 42

Samplers have come a long way in the past few years, and Yamaha's first entry into the market furthers this evolution with multiple digital filters and stereo. Did they get the basics right?

E! Board for the DX7II 60

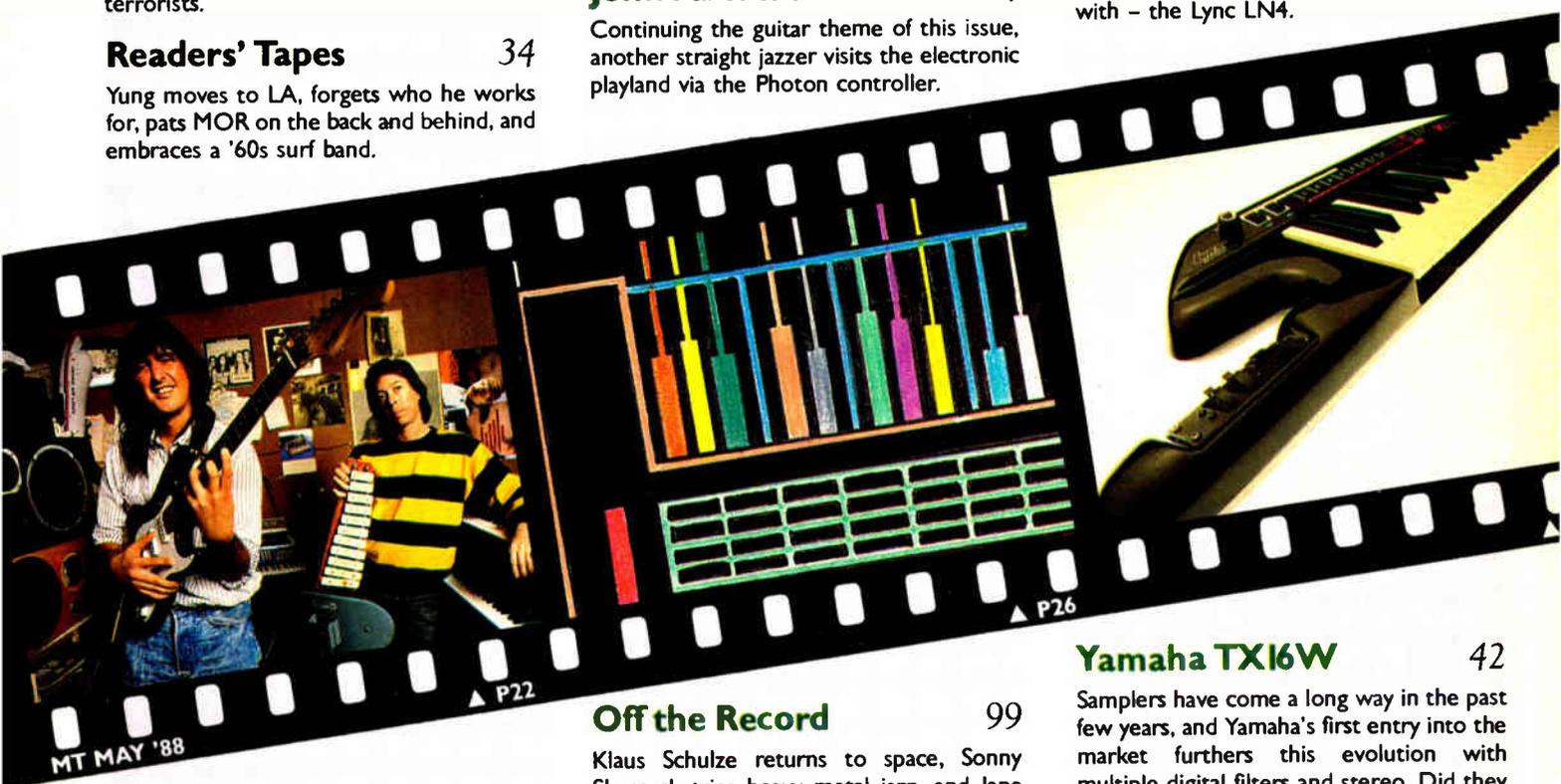
Grey Matter response's E! for the original DX7 practically made it into what became the DX7II. Now, imagine that taken a quantum leap forward for Yamaha's new FM instrument . . .

Off the Record 99

Klaus Schulze returns to space, Sony Sharrock tries heavy metal jazz, and Jane Siberry simply is in this month's record reviews.

Lee Ritenour 54

Captain Fingers rides again - with a new album and a great deal of national touring. His approach to technology is both refreshing and challenging: Just when does the music take over?



Simmons SDX 88

The champions of electronic drumming have created a Fairlight for the skin bashers. We get a chance to beat it up.

Korg 707 100

Billed as a performance instrument, this new synth offers velocity and aftertouch sensitivity, split, layering, zones and multi combinations in one affordable (and cool-looking) package.

COMPUTER NOTES

Computer Newsdesk 64

This month is heavy on sampling, with new announcements on sample editors, hard disk recorders, and a DSP card (along with our normal stock of goods).

Passport Score 77

Transcribing music is so tedious that more and more musicians are skipping it altogether. This piece of software makes it possible to deal in music's international language again.

Opcode Cue 2.0 83

More and more computer and MIDI tools are making life easier for those scoring to film and video. Cue, one of the first programs to address this on the Mac, just got a major facelift. Chris Many re-evaluates this versatile program from scratch.

Frankfurt Trade Show 14

It's that time of year when the music fraternity descend on a frozen Frankfurt. We bring you news of what was just rumors at NAMM . . .

All About Additive II 26

The final part of our additive synthesis series defines some terms on what the different levels of additive synthesis are, and mini-reviews over a dozen machines that have sported the "additive" label so far.



Micro Reviews 70

We take a pop-up look at a genetic D50 librarian/editor for the Atari ST, a TX802 librarian/editor for the IBM, and pitch-to-MIDI program for the Apple II.

Multitasking 72

Ever yell at somebody "I can't do two things at once!?" So did computers - until now. We explain what is meant by multitasking, why it's so hard to do, and cover a few current multitasking music systems.

TECHNOLOGY

Newsdesk 7

Christmas comes every month at MT, as manufacturers continue to roll out their new toys. We drool and turn up our noses where appropriate.

The Programmers 36

MT's editorial staff gets a chance to interview four of the hottest people in the art of The Music of Sound - programming. Read about their trials, tribulations, love of music, and warnings why you'd be crazy to want this as a living too.

Patchwork 97

If you're looking for sounds, you've come to the right place! This month's Patchware review covers a new CD library, ripe for the sampling.



And now, the other side of the Electro-Voice ER™ speaker story

You could have dismissed as “parental pride” the things we were saying about EV Extended Range™ speaker systems when we introduced them, a few months ago. Back then, you had only our word for their upper-range clarity and detail, their distortion-free sound, and their ability to penetrate through ambient crowd noise.

But now it's time you heard from your fellow pros—the musicians who have listened to the SH-1502ER or SH-1512ER systems. Do their comments bear out what we've been telling you? Judge for yourself:

Shawn E. Jennings, rock keyboards, Wellington, KS:
“Surprisingly crisp—loved the range.”

Tom Buckley, sound engineer, Phoenix, AZ:
“Smooth response. Excellent through the vocal range.”

Brady Schwartz, jazz/fusion synth and vocals, Omaha, NE:
“They blew away JBLs . . .”

Rich Meadows, country/gospel monitor mix, Ferrndale, CA:
“No muddiness in low end, crisp high end.”

Dave Parsons, heavy metal vocalist, Carmichael, CA:
“A top of the line speaker, at an affordable price!”

Tim Henson, bluegrass band musician, Boynton Beach, FL:
“Wish I had bought them *much* earlier . . . Super sound!”

Convincing, we hope. But *there's still room for one more opinion: yours*. Plan now to stop by your EV dealer's and audition a pair of SH-1502ER or SH-1512ER speakers. Let your own ears make the final decision.



600 Cecil Street, Buchanan, MI 49107 Phone: 616-695-6831

In Canada: Electro-Voice, Division of Gulton Industries (Canada) Ltd., P.O. Box 520, Cananoque, Ontario K7G2V1, Phone: 613-382-2141

NEWS DESK

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WORKING IN STATIONS

Digital Audio Workstation is already a well-established buzz-phrase, with more and more manufacturers rising to the call for an integrated, inexpensive system which can sample, synthesize, store, mix, and add signal processing to musical efforts. Entering the fray is Computer Music Supply with the DAW (an obvious acronym), for mere pennies less than \$20,000.

The system offers processing through three channels – two audio and one MIDI – for mixing, crossfading, layering, etc. According to CMS, the system provides 32-bit data processing with true 16-bit input/output, analog-to-digital and digital-to-analog. Sampling is independent of the host computer, allowing use of an IBM XT or compatible to run its own software.

Each audio channel can be operated simultaneously at a 50kHz sampling rate, and anti-aliasing filters on the inputs and outputs as well as up to 2Mbytes of buffer memory help keep the system operating smoothly and cleanly. Expansion slots allow the addition of processing and other functional boards, and multiple hard disk and tape back-up drives (including SCSI).

The basic unit takes up four rack spaces and the host computer can be either an 80286 or 80386 AT compatible. The accompanying PC Sampler software package offers control over digital audio effects, audio loop editing, waveform synthesizing and program development.

The price of the basic DAW is \$19,995. Options and expansion possibilities mean more bucks.

MORE FROM Computer Music Supply, 382 Lemon Avenue, Walnut, CA 9789. Tel: (714) 594-5051 or (800) 322-MIDI.

ERRATA

Well, it looks like yet another company has managed to trademark a phrase we thought was in the general domain. It seems the phrase "Dynamic MIDI," which we used in the MIDI Mixification article in our March issue, is a registered trademark of Lexicon. Sorry. Also in that issue, we referred to Marcus Miller's manager as Ramon Hervey. In fact, Miller's manager is Patrick Rains; Hervey is his publicist. We apologize for the confusion.

MT MAY 1988

PLAY AND BE HEARD

Here's a chance to have your home recordings played for the masses! Radio Free America, a 60-minute radio program being produced for National Public Radio and independent radio distribution, is asking for tapes from musicians who write, produce and record their original compositions at home, whether on a two-track or 24-track machine. They will consider any

style of music for the program, as long as the tape is not currently available in commercial release. There are a few guidelines and rules, of course – including the waiving of royalties and signing a release – so do request a copy of their forms before submitting any tapes. Even if you don't make any money on it, you never know who might be listening . . .

MORE FROM Radio Free America, PO Box 34005, Louisville, KY 40232-4005. Tel: (502) 968-9062.

FOOT CONTROL

If you'd like to control your setup with your toes instead of your fingers, check out the MIDI Mitigator RFCI Remote Foot Controller. Eight rubber-covered foot-switches are provided, five for triggering the transmission of programmable MIDI patch strings, one each for increment/decrement song select, and one for selecting one of three user-defined set lists. 128 settings may be stored for each of the triggering switches, for a total of 640 unique strings. A 32-key membrane key-

board is used for editing command strings.

Data entered into the RFCI can be uploaded to a MIDI sequencer, for saving permanent records of MIDI configurations. Handily, uploaded data can also be downloaded back into the unit. Hexadecimal Mode is included for those who are intimately familiar with the MIDI Spec.

The suggested retail price is \$395.

MORE FROM Lake Butler Sound Company, 5331 W. Lake Butler Road, Windermere, FL 32786. Tel: (305) 656-5515.



MANAGING MIDI

AMR has announced availability of the MIDI Manager, a slick little box with one MIDI In and four MIDI Outs which allows program change command re-mapping and re-routing, with either hexadecimal programming or program numbers. The system may be programmed to respond to real-time data (eg. Song Select) for triggering MIDI chains, etc.

In addition, eight programmable logic outputs are available to be incorporated in any of the presets, so that your non-MIDI gear will turn off and on when you so desire. A 40-character X 2-line LCD display and battery back-up are included. Suggested list price is \$399.50.

Also available from AMR is the MIDI Director, a hand-held, wired MIDI remote. The unit allows selection of 128 MIDI program change commands, or 128 songs. Other command functions include MIDI Start, Stop and Continue. A three-digit



LED display lets you know where you are, and either a 9V battery or external power supply can provide the voltage. Suggested list price is \$99.50.

MORE FROM AMR, PO Box 1230, Meridian, MS 39301. Tel: (601) 483-5372.

T E C H N I C A L E

The Console

Inbuilt hi-resolution 9" screen.
Composite video out for external monitor.
Hierarchal menu driven software structure programmable at kit, drum, drum head or sample level.
Software containing some 2,000,000 characters of code.
Icon driven for easy comprehension at all levels.
Load/Save kits, drums, samples from/to floppy or hard disks.
Disk drives:-
Floppy
Sony 2 meg 3.5" drive
2 meg/1 meg disks automatically selected.
Load times System = 50 sec. Library 2 meg disk = 88 sec.
SCSI.
Optional built-in 20 meg 3.5" Winchester
Additional 6 hard disks can be connected via 50 way SCSI port.
Load times System = 45 sec. Library 2 meg disk = 27 sec. 10 sec sample = 6.5 sec.
Naming of kits, drums, samples etc. by on-screen qwerty keyboard.
Upper/lower case, insert, delete, use last name.
Up to 8 meg of memory expandable in 2 meg blocks.
Sample time - up to 88 secs @ 44.1 khz
176 secs @ 22 khz
352 secs @ 11 khz
Multi tasking system comprising 1 x 32 bit, 3 x 16 bit and 2 x 8 bit micro processors.
System processor - 68000

The Controls

Tracker ball for moving on-screen cursor - no mouse to lose.
Two select buttons for selecting menus, icons etc. Also special functions e.g. double click short cuts, select, copy and paste, etc.
Sixteen 'tap in' pads. Programmable to fixed/variable dynamics, centre, inner, outer drum position, one drum at 16 dynamics or one drum at 16 positions.
Tap in buttons which also double as 'kit select' instantly selecting one of sixteen kits.

The Auto Trigger

Custom one bar auto trigger accessed at all levels.
Easy visual display of pattern.
Speed set 40 - 180 BPM
Program individual drums for dynamic level and position.
Selection of built in useful patterns, eg single drum, all 16 drums in succession, bass/snare alternate, etc.
Functions - stop, start, clear.

The Kit Select

Maximum 16 x 16 drum kits. (Each drum can have 9 samples [Bass + Rim = 3] - i.e. each kit can access 132 different samples).
Footswitch select kit left/right.
Play and load kits simultaneously from memory or disk.

The Kit Mixer

On screen, 96 function, 16 into 2 mixer.
Individual channel controls for length, tune, pan l/r, volume, mute and solo.
All functions operated by grabbing knobs or sliders and rolling tracker ball.
Special functions:-
Set all mutes/solos off.
Pots and slider ranges use definable - fine, medium, coarse, very coarse, extremely coarse.
Single keystroke to initialise mixer to 'normal settings' for length, tune, pan, level, mute and solo.
Forms the basis for automated mixing in the sequencer.

The Kit Configuration

8 pad types (icons) bass, snare, rim, tom, cymbal, hi hat, pitched.
Individual inbuilt voice robbing modes for cymbals, toms and snares for natural playability.
MIDI note/channel individually assigned in each kit for all pads.
MIDI note range for pitched pads - 16 pitched pads = 16 splits, all sixteen voice polyphonic (or assignable as required).
16 voice outputs. Voices assigned as required on a kit by kit basis.
Special functions:-
Pads as default (normal kit).
All pads pitched.
Default voice assign - (1 voice bass, 3 voice snare, 1 voice rim, 4 voice toms, 7 voice cymbals/hi hat).
Assign all voices to all drums.
Assign voices - one voice to one drum.
Six pole low distortion low pass filter for each voice.

The Sample Assign

Icon representation of drum pad in a 3 x 3 position/dynamic matrix.
Maximum 9 samples per pad.
Zone (position) and dynamic sample switching.
Individual pitch and level control for all samples for perfect matching of samples within a drum.
Sample loading from memory or disk.
Visual display of sample selected.
Movable 'dynamic bar' for programming of sample dynamic switch point.
Special function:-
Sets all samples the same. ('soft outer').

The Sampler

16 bit linear sampling at 44.1 khz, 22 khz, 11 khz.
Programmable sample length.
Maximum 88 seconds available at 44.1 khz.
View, edit, truncate, reverse sample.
Maximize sample amplitude 0 + 10 db to control clipping.
4 function looping screen features forwards, forwards/backwards and x-fade looping.
Automatic or user selection of loop points.
Zero crossing loop points.
Automatic loop gain and x-fade adjust for glitch free looping.
Preview input gain function for clip free samples.
User definable sample trigger threshold.
Bar graph display of maximum sample amplitude.
Review sample 'raw' or with envelope processing.
Automatic saving of sample to second loop point if required.

The Drum head

Controls how a drum plays and is constructed from the following elements:-
6x5 stage dynamic and positional performance envelopes for pitch, brightness, resonance, noise, level and pan.
Palette of 4 preset envelopes - or user definable, drawn with tracker ball.
Flip envelope.
Variable sample start by dynamics.
Dynamics and position control envelope length if required.
8 blank drums, (bass, snare, rim, tom, ride cymbal, crash cymbal, hi hat, pitched), for easy starting point.
7 stage dynamic curve programmable for each drum.
7 stage position curve programmable for each drum.



L.T.G.H.P.

S T A S Y

The Help

Choose info available at all levels.
16 'multi page' Help menus loaded from 1 meg Help disk.
200 pages containing some 15,000 words of Help.

The Sound Library

Ever expanding
Created by some of the world's leading producers and drummers.
Two formats available:
Drum Kit format—
e.g. Broadkits Disk 1. (Contains 5 complete 16 drum kits recorded by
Graham Broad and Steve Levine).
Drum format—
e.g. Snare Drums 2. (Contains 30 pre-programmed snare drums—not just raw
samples).



The Keyboard Functions

Pitched 'drum' for 16 splits (can be overlapping).
Voice assignment programmable for use with outboard EQ etc.
Tracking filters.
Sustain looping.
Transpose.
Pitch bend.
Modulation LFOs.



The Multitrack Sequencer - Available June '88

32 tracks—16 internal, 16 external MIDI.
Tape transport format for easy visual operation.
Typically ¼ million events per floppy disk.
SMPTE
MIDI.



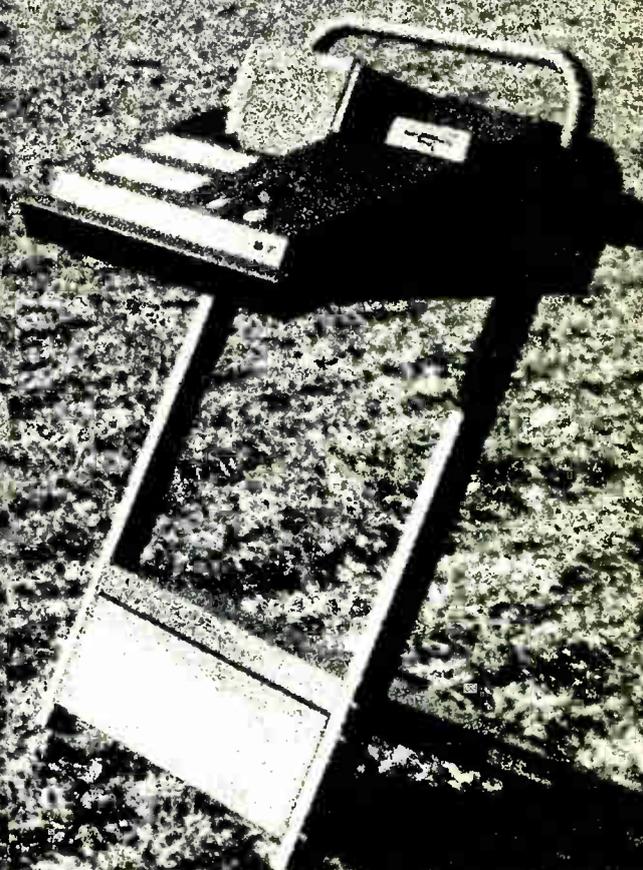
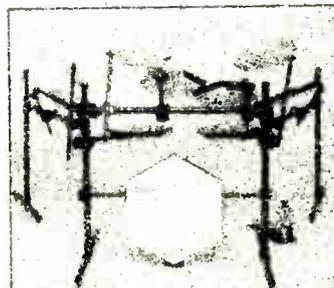
The Inputs/Outputs

14 Z1 pad inputs
2 Piezo inputs for bass and snare rim (or second bass).
16 voice outputs.
3 voice snare output.
Mixer left/right outputs.
MIDI in/out/thru.
SMPTE in/out.
SCSI buss in/out.
Video out.
Hi hat pedal input.
Modulation pedal input.



The Instrument

SDX



READERS' LETTERS

Send any questions or comments that you may have to: Readers' Letters,
Music Technology, 22024 Lassen Blvd, Suite 118, Chatsworth, CA 91311.

Dear Music Technology,

I recently picked up a copy of your February '88 issue and was very impressed with your format and content. I had a few general questions I was hoping you could help me with.

Is there a good source of information for the (very) beginning MIDI composer? I would be especially interested in material that would include sample equipment configurations including model numbers and pricing. Specifications are nice, but extended technical analysis tends to leave me behind.

Also, is there some reason why a complete system that would enable you to play a song on a keyboard, edit on a PC, and then play the edited version back has not been developed. I'm fairly computer literate, but as you can probably guess am not that familiar with music software.

I started my research recently as I play a little blues guitar and was primarily interested in something that could keep a basic beat and maybe a little bass.

As I have looked at the available electronics I have become more interested in the field but also more confused. In the article *Ad Lib*, Chris Many mentioned that for a "little more money" a four-operator synth could be acquired. I was wondering how much is "a little more?" What product and model number he would recommend? And down to basics, what is a four-operator synth?

Matt Reuner
San Francisco, CA

Thanks for the feedback, Matt. There are a number of excellent information sources for people like yourself who are just getting into the technology. For one, we'd humbly submit that we're a good source - both in back issues, and upcoming features we've got planned. Some of it does tend to get a

bit technical, but if you stick with it, you should be able to learn quite a bit.

A number of excellent books are also available, including Michael Boom's *Music through MIDI* and Jeff Rona's *MIDI: The Ins, Outs and Thrus*, both of which were reviewed in *MT* November '87. As for the computer software you were wondering about, plenty of packages do exist: they're referred to as MIDI sequencers. They allow you to record MIDI data that is sent from a MIDI keyboard to the computer (which must have some sort of MIDI interface), edit it (to varying degrees), and then play it back through the connected keyboard. Of course I'm simplifying a bit, but hopefully you should get the idea.

Finally, the four-operator FM synthesizer referred to in the *Ad Lib* article is Yamaha's FB01, which sells for about \$350. A four-operator FM synth is an instrument which makes use of four sine wave oscillators which can be configured in various ways, referred to as algorithms. Generally, the more operators available in an instrument, the more complex and interesting sounds you can create. To give you a frame of reference, Yamaha's famous DX7 synth has six operators.

Dear Music Technology,

Thank you for your recent review of our sequencer Forte I. While we were glad to see it discussed in your Computer Notes section, the reviewer (Michael Stone) committed several errors of fact and implication, which we would like to try to set straight.

Chief was his confusion of two of Forte's screens: the Step Sequencer and the (single-track) Editor. The Step Sequencer is for entry of

notes in precise rhythmic patterns, and the Editor for changes to tracks, whether created by recording, Step Sequencer entry, or measure-by-measure editing on the "Global Editor" screens. Mr Stone's account jumbles the features of these very different screens: perhaps this is due to the common use of the term "Step Editor" for functions like those of the Notes section of our Editor. In addition to this misrepresentation, he simply ignores much of the rest of what he describes several times as a "full-featured" program.

Mr Stone also claims that Forte is protected by a "key-disk" scheme. In fact, a user only needs to use the distribution diskette once, to install Forte on a hard disk or another floppy. And if this working copy is destroyed by the kind of disk disaster he describes, a Forte user is not "out of luck": the diskette will be replaced free of charge.

It is implied that LTA Productions does not sell the hardware required for the operation of Forte: in fact, the Music Quest MSS1 is available through us for \$175, with Forte I or II. Further, our commitment to the MIDI File Standard and file-compatibility extends well beyond "expressing support." Forte II writes MIDI files, and a separate utility (for Forte I and II) reads MIDI files and writes Dr. T's Copyist stream files.

We are grateful for publicity, but in this case the reviewer should have taken much more time to explore our program. His confusion is unhelpful to us, and even more so to the reader.

Vance Maverick & David Hicks
LTA Productions

Michael Stone replies: Yes, Forte does have different editing screens for step sequencing and track editing, as I pointed out in the review. I said they were 'truly impressive' in their functionality.

LTA and Voyetra use the same protection scheme, which creates funny little hidden files on your hard disk such as "EHPII.SKY" that never, ever go away. If the hard disk gets munged, it's your word against that of the manufacturer; plaudits to LTA for their replacement policy.

Finally, it's nice to hear that LTA sells MIDI interfaces but I don't think the lack of a "bundle" would hurt anybody - most of us already bought MPU-401s.

Dear Music Technology,

Alas, just when I thought I had bought enough equipment, I read your review of the Yamaha REX50 and went out and got one. All of a



sudden, I love being in stereo.

Could you put together an article on low-cost, light-weight, compact stereo PA setups? It would be nice to know about approaches to this need. I saw an EV Entertainer setup that looked neat, as a suggestion. There must be a lot of us just discovering stereo performance. An article would really help.

Roman Orest Starbuck, MN

Well, Roman, as a matter of fact, we are planning on doing an article on sound systems for synths which will include the problems involved with stereo setups. Look for it in the near future.



Dear Music Technology,

Thanks for the best music magazine on the stands. Kudos and accolades to the editors and John Diliberto for the candid article on Steve Reich. As one of the major late 20th century composers, Reich has developed a compositional approach which is unique. His rhythmic structure has influenced much of today's music. Thanks to Mr Diliberto for those pointed questions which stimulated those sharp candid responses, which in turn confirmed many of the suspicions some of us had. The interview also showed that wonderful, warm, self-effacing humor that Reich reveals so readily. Thanks to Reich for maintaining that honest approach, which acknowledges that jazz and taxi cabs are a major influence in his cultural milieu, not the ballrooms of Vienna.

Finally, thanks to MT for realizing that technology supports the creative process, not replaces it.

John Wesley Kirkland, WA

Dear Music Technology,

Would you list several sources for notation software for the IBM PC? I'm not asking you to make recommendations, but a place to start would be helpful.

Since I arrange for several different idioms, a notation program would make my job much easier, especially given my penmanship!

Thanks in advance for your help, and keep up the great work with Music Technology magazine.

Sam Simcoe Norfolk, VA

To the best of our knowledge, the only currently available notation programs for
MT MAY 1988

the IBM are Dr. T's Copyist (see MT review June '87), Oberon Music Publishing System (see MT November '87), Passport Designs Score (reviewed elsewhere this issue), Jim Miller's Personal Composer, and Roland's M.E.S.A. (reviewed MT August '87); the latter two are both integrated sequencer/notation packages.

Dear Music Technology,

I'm finding it difficult to believe that Adam Ward Seligman, in February's "Off The Record," refers to Rush lyricist/drummer Neil Peart as an "Ayn Rand-inspired technofascist." First of all, for humor's sake, what exactly does Mr Seligman define an "Ayn Rand-inspired technofascist" as? This appears to be quite a contradiction in terms. Secondly, I don't really believe Mr Seligman can find any hard-core

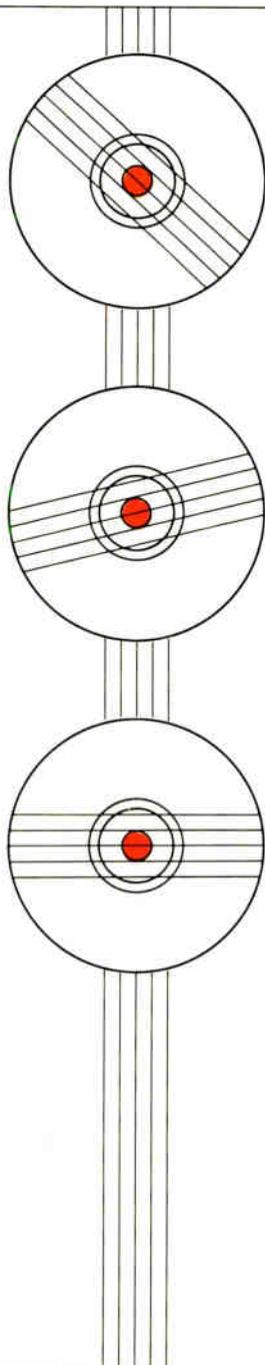
evidence to serve as a testimonial to his "futility/elitism" theory. As for his overall confusion with Rush lyrics, would Mr Seligman find more enjoyment and comprehension in listening to mindless babble? I suggest to Mr Seligman that he sit back, relax . . . and not try to analyze Rush any more.

By the way, I found Deborah Parisi's article, "Fire in the Hold," very enjoyable and much more perceptive.

**Anthony Saccoccia
Daytona Beach, FL**

Adam Ward Seligman responds: Thank you for your letter. As a matter of fact, yes, I would rather listen to mindless babble!

Deborah Parisi responds: It's nice to get letters from such intelligent, perceptive readers.



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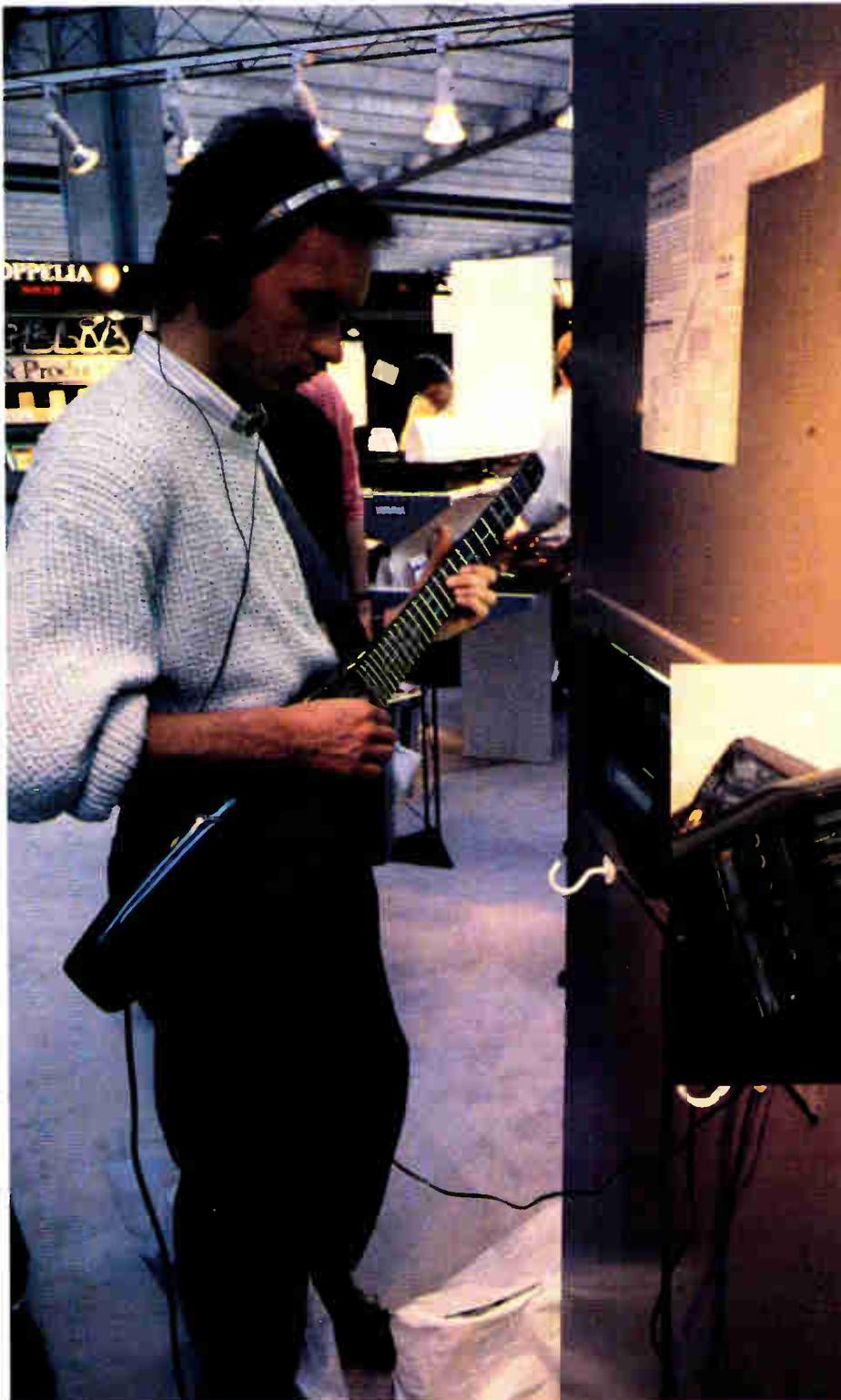
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TRADING PLACES

Frankfurt Musikmesse 1988

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Yamaha's MIDI guitar controller gets a good thrashing.

MUSIC TRADE SHOWS the world over have certain things in common – and 1988's Frankfurt Musikmesse was no exception. It had its quota of leather miniskirts and trousers, would-be rock stars and over-priced, tasteless food. A nice change for this year's Frankfurt show, however, was that there was quite a few new goods on display. What follows is a quick sketch of some of these new products. It's by no means a complete list, but it does get into a number of things that were *not* at NAMM.

"Futuristic" turned out to be a very apt term for some of the many MIDI controllers which appeared at this year's show, including EMS's Soundbeam, and Digigram's MIDImic MIDI Microphone. The Soundbeam is an ultrasonic echosounder which detects the presence and range of any object (the human body, for instance) entering its beam, and converts this information into MIDI data which can then be used to control MIDI synths and samplers. EMS's intention is to extend the use of MIDI instruments to dancers,



choreographers and performance artists. Laurie Anderson would love it.

Courtesy of French company Digigram's MIDImic, even singers can now claim membership of the MIDI club. This compact device features a built-in microphone, and employs pitch-to-MIDI conversion to allow any singer or acoustic instrumentalist to control MIDI equipment. Not content with allowing you to hum your musical ideas into a MIDI sequencer, Digigram has also developed software which composes an accompaniment for your melodies. Big Band runs on the Atari ST together with the company's own Studio 24 MIDI sequencing package, and will generate chords, riffs, contrapuntal lines and a bass-and-drum rhythm section.

Photography Tim Goodyer

If the theme of the recent NAMM show was one of variations on established equipment, the Frankfurt show had a surprising amount of new gear in store. Report by Simon Trask and Tim Goodyer.

Does this mean anyone can now compose a song? We're not so sure.

The mighty **Yamaha** chose Frankfurt to debut their long-awaited MIDI guitar. The G10, which comes with its own G10C rack-mount processor unit, sends ultrasonic waves along the length of each string to detect where the string is fretted, while picking and string motion (for bends) are detected by separate pickups. It's a system which successfully avoids the delay problems inherent in pitch-to-MIDI conversion, and which, on first inspection, appears to work remarkably well for guitar technique, handling string-bends, hammer-ons, snaps and glissandos with equal facility. Its only inherent limitation appears to be an inability to play harmonics (because a string has to be fretted in order to reflect the ultrasonic beam).

Although the G10 both plays and (more or less) looks like a real guitar, in truth it's a dedicated MIDI controller. Neither price nor availability are fixed yet, but it's expected to sell for a "professional" price.

NOW THAT YOU can use just about anything to control your MIDI setup, what about developments in the instruments that actually make the sounds? Coming so soon after NAMM, Frankfurt produced relatively few surprises in this department. The pressure to introduce new instruments at trade shows was evident on



Visions of the future on the Ensoniq stand.

the **Akai** stand, however, where several new instruments which won't be available for several months were on display but rather short on sounds. Included in this bunch were the S1000 16-bit Digital MultiSampler, ME35T Drum-to-MIDI interface and XE8 16-bit expandable drum module, together with the MX76 and MWS76 master keyboards.

Also not available 'til the Summer is the VX600 Programmable Matrix Synthesizer, a six-voice analog synth with Oberheim-style matrix modulation capabilities and a 37-note keyboard. This has an input for the company's EW1 and EV1 instruments and is also, claims Akai, intended for MIDI guitarists. Does this mean Akai has their own MIDI guitar on the way? This was one product Akai wasn't letting on about.

Also debuting at the show was Akai's HSI000 Harmonic Synthesizer, essentially a dedicated additive synthesizer which allows you to create sounds of up to 32 harmonics, with control over both the amplitude and pitch of each harmonic. Apparently Akai will be making the HSI000 to order, so don't expect to find too many down at your local music store.

The PF2000 FM electronic piano represented **Yamaha's** only new sound-generating instrument since NAMM. The 2000 boasts a futuristic (some might say peculiar) design and offers three acoustic

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▶ pianos, four of the electric variety, two harpsichords, vibes, clav and marimba. There's also an on-board two-track sequencer capable of storing about 2600 notes – but, best of all, the PF2000 will accept DX7II voice cartridges and comes complete with 64 ROM voices specially programmed for it.

Oberheim was displaying the first two MIDI signal processors in their PerF/X MIDI Performance Effects series: the Arpeggiator and the Zoner. The former allows you to set up short basslines, riffs and rhythms which can be triggered and transposed from a MIDI keyboard, while the latter makes the keyboard zoning features which Oberheim introduced on their Xpander available for any MIDI keyboard. You'll have to wait 'til Summer for these boxes to become available, though.

The same situation applies to German company Hitec, who were displaying a range of very competent MIDI equipment, including a controller keyboard, a MIDI mapper, a MIDI Time Code synchronizer and an interactive sequencer which allows sequences to be started and "played" from the keyboard.

Software companies were at Frankfurt in full force, with stands taken out by, among others, Dr. T's, Hybrid Arts, Intelligent Music, Passport Designs, C-Lab and Steinberg.

C-Lab was demonstrating Notator II, their new combined sequencer/notation program for the Atari ST which adds extensive scorewriting facilities to the Creator sequencing package. One benefit of this integrated approach is the provision of a real-time (well, almost) display of your music as you play it into the sequencer, but Notator also adds new sequencing features such as the ability to superimpose "grooves" (ie. feel) on all or individual tracks, and a fader-style method of inputting MIDI controller data for each

channel of each output port. All in all, Notator looks to be a very impressive package. The company was also showing an ST-based editing package for Roland's MT32 expander, together with the X-Alyzer combined DX Editor/Librarian and DX-to-Sample Transformer software.

The Steinberg stand was positively buzzing with new products, as the company takes a significant leap into the world of automated mixing. The DMP7 Desktop Mixing software is the result of collaboration between Steinberg and the Yamaha Corporation of Europe. Running on the ST (surprise surprise), the software can control up to four DMP7s at a time, and allows the user to program mix changes and various types of parameter changes while synchronizing to SMPTE or MIDI Time Code. Steinberg claims their DMP7 software will set new standards in automation technology for mixer systems. We shall see.

Steinberg's DTMI28 Desktop Mixing software and hardware has been designed specifically to work with TAC desks, with top-quality DBX VCAs, fader-level automation and switch control for up to 128 channels and their associated mute, solo and solo-defeat switches, 16 "software" VCA subgroups, four cue lists and eight snapshots.

In contrast, Mimix is an automated mixing system designed to work with any mixer that has insert points for each channel, with ST software and a basic eight-channel VCA system upgradable to 32 channels. The new TCI computer-aided tape controller and autolocator, meanwhile, allows remote control of a tape recorder from a computer. The TCI is designed so that the software can be adjusted to suit a variety of tape machines, with all the functions of a professional SMPTE-based autolocator; currently it is capable of controlling all functions of the Fostex A and B series except the built-in

autolocator, while the user software currently runs on the ST in combination with Pro24 version III.

Speaking of Pro24, Steinberg isn't neglecting the "traditional" side of their business. Pro24's latest version III software includes the ability to record on up to four tracks simultaneously, and implements Standard MIDI Files format for saving songs to disk. Other new software from Steinberg includes a Soundworks editor for the E-mu Emax, the X-Synth multi-synth editor and a switcher program which will allow switching between up to 10 programs in the ST.

Moving further into the area of studio equipment, this year's show had something for all sizes of budget. Akai's 12-track PCM recording system, ADAM, weighed in at a substantial \$30,000 for the basic setup of the DRI200 Digital Multi Track Recorder, DLI200 Programmable Auto Locator and DMI200 Digital Level Meter bridge. ADAM (that's Akai Digital Audio Multi-track format) uses an 8mm tape cassette for storing up to 17 minutes of PCM-encoded audio data and includes an additional analog track for recording sync codes. The system is also expandable up to 36 tracks by slaving two more DRI200s off the Auto Locator.

On a more modest level, Yamaha's new MT100 multitracker will record four tracks onto audio cassettes at 3¼ips, or 1½ips if you're prepared to trade quality for recording time. The MT100 has a stablemate in the RI00 Reverb Processor, a 16-bit reverb with 60 preset (but editable) settings, four user-programmable settings and facilities for MIDI control over patch changing. The PLSI is a 32-input/8-output programmable line selector designed to take some of the drudgery out of repatching audio signal paths. Ninety-nine combinations of paths from inputs to outputs can be stored and called up over MIDI. Yamaha suggests the PLSI would make a good partner for the DMP7 automated mixer for more fully-automated mixing. Building on the success of the popular SPX90 and REX50, the SPX50D is a rack-mounting multi-effects processor featuring a comparable range of effects to the REX (reverb, chorus, distortion and so on) and should find favor with guitarists who like racking up their gear.

At every show you hear it in the canteen, in the press bar, in the toilet, even in the local red light district. The burning question is: "What's the hit of the show?" Last year's Frankfurt show was easy – Roland's D50 and Akai's EWI/EVI stood head and shoulders above the rest in terms of sheer innovation. This year it was much harder to single out anything for particular praise, as there was so much going on, especially following a subdued NAMM show. Perhaps this year the star of the Frankfurt show was the show itself. ■

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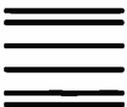
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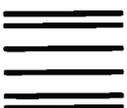
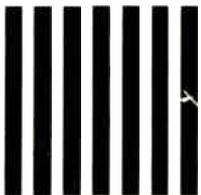


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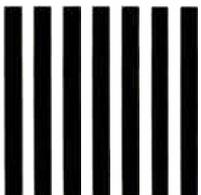


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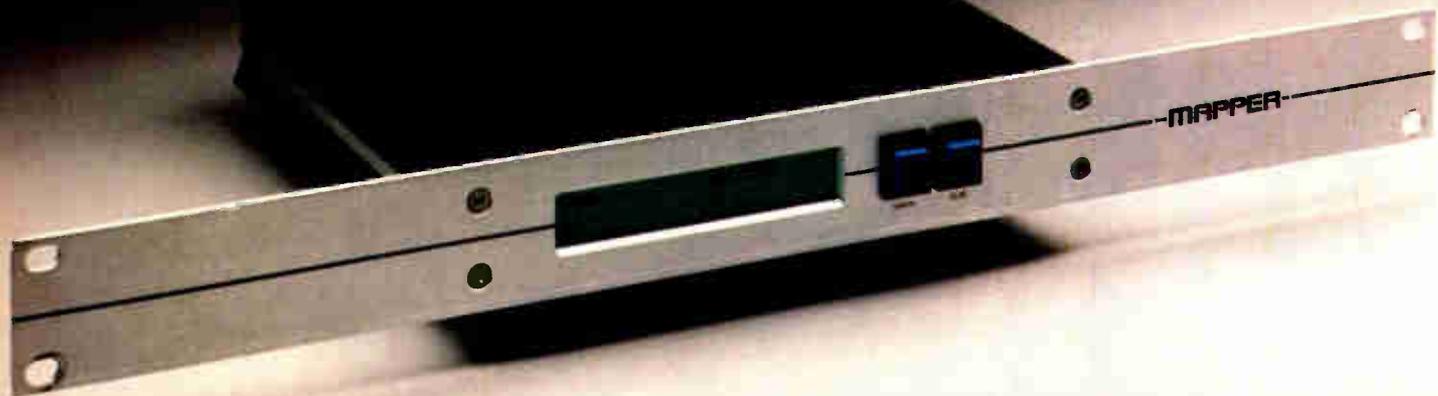
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Axxess Mapper 2.0

MIDI Processor

Take MIDI processing to its ultimate extreme and what do you end up with? A confusing but exhilarating box that can take any MIDI message and map, or convert it to any other.

Text by Matt Isaacson.

THE MAPPER, A recently upgraded MIDI processing device developed by Axxess, could be considered as one of the most powerful MIDI tools yet to appear on the scene, or as an incredible MIDI labyrinth designed to inspire a sense of humility if not outright bewilderment in synth programmers everywhere. To some extent it's both of these, but one thing is for certain: it's not for the faint-of-heart. However, it offers great rewards for those who are able to meet its challenge. Allow me to quote from the manual: "The Mapper takes virtually any MIDI message, interprets it as virtually any other MIDI message, and then sends the interpreted MIDI message to any combination of the sixteen MIDI channels. A map is an interpretation and MIDI-channelization template for notes, switch and control information, patch changes, and system exclusive messages." Which pretty much covers all of MIDI.

Physical

FOR ALL THAT, the Mapper is singularly unimposing in appearance. Behind its IU rack-mount front panel is a black box scarcely half as wide as the panel itself.

Predictably, an AC-adaptor type power supply plugs into the back of this box. The front panel sports only a 2x24 LCD and two pushbutton switches labeled Main and Sub. On the rear panel are two MIDI inputs, two MIDI outputs, a footswitch jack and an RS232 computer interface port.

A typical setup using the Mapper involves sending the output of a master keyboard into MIDI input 1, and connecting slave synths to one or both of its MIDI outputs. If the Mapper is being used to its full potential - ie. several slave synths - it will be necessary to either daisy-chain the slaves or drive them from a MIDI thru box connected to the Mapper's MIDI output (or two thru boxes if both of the

Mapper's MIDI outputs are to be used). The default output configuration is such that all messages intended for MIDI channels 1-8 are routed through output 1, while messages for channels 9-16 emerge via output 2. A rather bizarre procedure allows you to change this so that messages for all 16 channels appear at both outputs.

The two MIDI inputs operate permanently in MIDI-merge mode, with but a few exceptions. One such exception is that input 1 rejects all system real time and system exclusive messages, while input 2 immediately forwards all such messages to both MIDI outputs. The Mapper's internal memory runs on battery backup, so it remembers all that you tell it. In addition, memory contents can be saved to and reloaded from an external computer via MIDI system exclusive dumps or text-file dumps via the RS232 port (which unfortunately uses a completely non-standard connector).

Getting Onto The Map

THE MAPPER ACCOMMODATES up to 127 maps. In operation, maps are called up by sending correspondingly-numbered MIDI program change messages to the Mapper. Each map is built by means of a series of operations which define separate but interacting aspects of a map. In general the steps can be done in any order and there is virtually no facet of the Mapper's programmability which cannot be specified uniquely for each map. This extends even to the feature which allows you to decide on a channel-by-channel basis, with respect to incoming MIDI data, whether the Mapper will perform its mapping magic, block the data altogether, or pass it through to the outputs unchanged (useful if a sequencer is being used as one of the MIDI sources). As nice as this capability is, it's somewhat frustrated by the fact that there seems to be no way to copy part of a map to other maps - in this particular case, one is likely to use the same setup in many maps. But let's move on to creating maps and discovering exactly what the Mapper can do.

Key Assignment

FOR EACH OF the MIDI channels being used - that is, for each channel on which a slave synth is receiving - a key assignment map is built. This map determines, for each key of the master keyboard, the MIDI channel or channels on which that key will transmit. For the most part, the channel number of note or other messages coming from your master keyboard is tossed aside by the Mapper and replaced on a case-by-case basis with the MIDI channels given in the key assignment of the currently selected map. So, for example, you can do things like create multi-zone keyboards in which each zone plays on a different MIDI channel, or perhaps set up the simplest assignment of all, namely the one in which all keys play on a single MIDI channel.

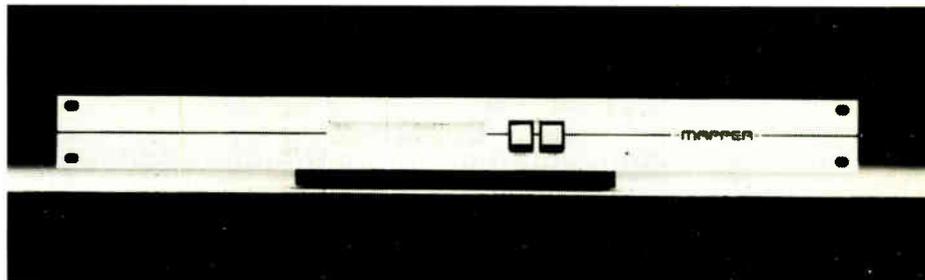
You're allowed to specify more than one zone for each MIDI channel, each of which can be any size - one zone can cover the entire key range, or there can be several zones which include as few as one key. It's possible, for example, to use key assignments to do a multi-channel key-by-key interleave across an entire keyboard. In fact, there do not appear to be any limitations upon the way in which keys can be assigned to a MIDI channel, although if you get beyond five multi-key zones or eight single-key zones, the Mapper will display only those at the bottom end of the range. It seems to me that there should have been a way to scroll through the entire list, but if there was, I didn't manage to find it. The zones assigned for a particular MIDI channel cannot overlap, but zones assigned for different channels can overlap in any desired fashion, allowing

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easy creation of MIDI layers of arbitrary depth and juxtaposition.

Note Redefinition

YOU CAN LEAVE it at that, in which case you'll be playing unmodified scales, possibly layered or interleaved on multiple MIDI channels, from your keyboard, or you can go on to specify *note redefinitions*. This is done in terms of *slave notes*. For each key, there can be up to sixteen slave notes



which are triggered along with the master note when it is played. The master note is simply the note that normally goes with the key, for example C3 for the C3 key, while the slave notes are simply a list of specific other note names associated with the master note. Slave notes can be used to define chords which will be played by hitting a single key, or simply to redefine a key to play some note other than its usual one.

The slave note definitions for a single key can be copied to any other single key or range of keys with the interval relationships preserved, which is a big labor-saver in many editing situations. For example, if you specify for key C1 that its

Mapping *"By mapping controller messages you can change mod wheel settings instantaneously in response to the velocity of each note, or conversely, the mod wheel can be used to determine the velocity of the notes you are playing."*

slave note #1 should be C2, an octave higher, and then copy this note redefinition to keys C#1 through B2, then you have quickly created an octave-doubling zone on keys C1 through B2. On the other hand, if you're prepared to make the effort, you can specify a completely unique set of slave notes for every key on the keyboard, subject to the none-too-limiting restriction that there can be no more than 880 note redefinitions in any one map. This amounts to fourteen slave notes for each key of a 61-key keyboard (with a few extras floating around), or an even ten slave notes for each key of an 88-key keyboard. It's one of the keys (if you'll pardon the expression) to the power of the Mapper.

Channelization of Note Redefinitions

THE PERMUTATIONS (Watch out! math-talk!) made possible by the key assignment and note redefinition functions described above are multiplied significantly

by the Mapper's ability to *channelize* the note redefinitions. In other words, for each MIDI channel, you can tell the Mapper which slave note numbers are active, and whether the master note is active. Normal mode allows any combination of slave notes per channel (in fact the default is that all sixteen slave notes plus the master note are active on all channels). Channel mode associates each slave note with the MIDI channel of the same number - slave

note #1 goes out on MIDI channel 1, slave note #2 goes out on channel 2, and so on.

This mode is sort of a subset of normal mode which is provided because it is bound to be used quite often, and thus saves you some programming work.

Two other modes, cryptically labeled SIM2 and MIS2, draw a dividing line between the master note and the slave notes, allowing the master notes to be played by MIDI input 1 and the slave notes by MIDI input 2, or vice versa. These modes seem to superimpose themselves upon the channelization specified for normal mode, allowing for interesting interaction between two separate MIDI

controllers driving the same set of slave synths.

If all of this sounds enticing but still vaguely incomprehensible, don't feel bad. The great thing about a device like the Mapper is that even when you've come to understand how it works and have developed a few techniques for conceiving and setting up interesting maps, there are still some pleasant surprises in store for you when the programming is done and you actually start playing. Phrases like "black magic" and "programming as an art form" come to mind. But I digress - there's still a healthy list of features I haven't even mentioned.

Other Mapping Functions

ON TOP OF all of the stuff mentioned above, the Mapper lets you specify an active velocity range for each MIDI channel. The "transparent" default is that all channels respond to the full 1-127 range. You can alter this so that each channel has

► its own private range of velocities, which means any note you play is sounded by only one of your several slaves, depending upon how hard you played it. Optionally, you could have sixteen velocity zones under each key. As with the note mapping functions, you are free to overlap the velocity ranges of each channel in any desired fashion.

R A full complement of functions relating to the transformation of control messages such as pitch-bend, mod wheel, aftertouch and the like also exists. These functions can be used to convert any of these messages into any other type of message, with complete options for sensitivity trimming and reversing the action of the destination control message, with respect to the source. By mapping a controller to itself, you can use these options to alter the behavior of a controller *without* changing it to a different controller (for example, compressing the range of the pitch wheel). Interestingly, velocity is included as both a control source and a destination, so that you can, for example, change mod wheel settings instantaneously in response to the velocity of each note, or conversely, the mod wheel or some other continuous controller can be used to determine the velocity of the notes you are playing. Controllers can also be routed to specific positions in a message buffer, which I'll explain shortly.

MIDI switches can also be transformed very flexibly. In addition to the predictable hold and sustain switches and the numbered MIDI switch messages, the Mapper can also interpret keyboard keys as switches. Switches can be translated into any kind of MIDI message, including continuous controllers, note messages and of course, other switches. An example of using note messages in this way (lifted from the manual, I must admit) is that of sending a slightly different pitch-bend value along with every note message as a method of simulating microtonal tunings. Alternatively, within a map you could dedicate a range of keys to selecting different mod wheel settings, or even sending program change messages not normally available from your keyboard.

What about those message buffers? Each map allows you to custom-build up to eight messages of as many as sixteen bytes each. The messages are built either by "capturing" incoming MIDI data or by explicitly hand-entering the desired hexadecimal codes. The main intention of this feature is to put system exclusive messages such as parameter edits into each buffer. When you select one of these message buffers as a destination for one of the control sources, you are also allowed to indicate a specific byte *within* the message as the actual target of the control. When the control source sends a message to the Mapper, the value of this byte is modified by the incoming control value in

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the way which you specify, and then the entire contents of the modified message buffer is transmitted.

This opens up possibilities which are limited only by your patience and the system exclusive implementation of your slave synths. The obvious use is that of patch edits – for example, using the mod wheel to edit the algorithm number of your current DX7 patch on the fly. However, the message buffers are not restricted to system exclusive messages. Any kind of MIDI data is allowable – you can use aftertouch to trigger streams of note messages or even program changes (if that sort of thing turns you on . . .)

Jumping Around

CLOSELY RELATED TO message buffers are the *begin* and *end* buffers, of which there are a pair per map. When a map is called up, the contents of the begin buffer (if any) are transmitted. When a map is exited (ie. when another map has been called up), the contents of the end buffer are transmitted before going to the new map (and possibly transmitting its begin buffer). Again, these buffers can contain any type of MIDI data which can represent any number of separate messages, subject to a buffer limit of 300 bytes.

The most basic use for this capability is that of sending program changes to each of your slave synths to accompany selection of a map. You can also set the volume for each slave, set initial positions for continuous and switch controllers, turn on a bunch of drone notes, or even send a system exclusive patch dump. The end buffer lets you undo the damage in the specific ways necessary (eg. turning off the droning notes or zeroing all of your

wheels), so that you can freely move to any other map without leaving things hanging in an undesirable way, or needing to take care of this in the begin messages of other maps. This is a unique and very important feature of the Mapper.

By way of keeping things under control, the Mapper also provides an option which automatically holds off a requested map change until you have released all keys on the keyboard, thereby avoiding stuck notes. There is also the capability for creating songs consisting of a predefined sequence of map numbers which can be stepped through in performance using the footswitch.

Practically the only thing which I've seen on other MIDI processors that is entirely absent from the Mapper is any sort of simple time-delay feature such as might be used to create MIDI echoes. The Mapper does allow for setting up delays between individual messages in a message buffer, which is handy for accommodating sluggish MIDI gear.

By now it should be fairly obvious that the Mapper is just as valuable to MIDI percussionists as it is to MIDI keyboardists (though, as explained below, you'll need a MIDI keyboard to program it). The possibilities which it provides should be easy to envision – velocity switching and crossfading, layered sounds, etc. Given the power which is contained in each map, and the fact that there are 128 of them, it would appear that the Mapper can turn even the relatively simple-minded Octapad into a monster percussion controller.

But . . . There's A Catch . . .

THE FACT IS that using the Mapper is not easy – it's a process somewhat akin to

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programming a computer or doing matrix algebra. The Mapper calls upon you to deal mentally with a much larger amount of information than can be seen on its display at any one time. That which *can* be seen usually bears more resemblance to computer machine language than to anything intended for human consumption. You're required to grasp an often complicated set of interactions between several independently programmable sub-systems, and to manipulate all of this by means of a set of procedures which are generally non-intuitive, require you to remember an assortment of obscure details and modes, and provide you with no assistance if you get stuck.

Doesn't sound like rock 'n' roll? Well, as I said, the Mapper is not for everybody. I've deliberately avoided any discussion of how the user programs the Mapper, and some of you may have been wondering about that, given the presence of only two front-panel buttons. Enter the other half of The Challenge: your MIDI keyboard is also your data-entry keypad! Sixty-one switches you didn't know you had! What's that? You're a drummer and you don't have a MIDI keyboard? Looks like you're just plain out of luck, son. The Mapper's nearly unusable without one - your MIDI drum pads won't get you very far into programming, I'm afraid. Next! You can't play a map while you're programming it. Gotta jump out into Run mode to hear what you've created - but no big deal, really. Next! How do you know which keys do what? Just refer to the pictures in the manual on pages 2-5, 10-1, 10-3, 12-2, 14-3 . . .

This last remark is a bit of an off-handed swipe at the manual, which is long on detail, but rather poorly structured. From start to finish, it provides a fairly homogeneous mixture of step-by-step button-pushing instructions and explanation of features at the most thorough and advanced level, making it confusing as an introductory tutorial, tedious as a description of the principles of operation, and cumbersome as a reference manual. The many pictures of the LCD as it appears during various functions are great for following the step-by-step stuff, but there are precious few diagrams that might help one understand just what it is that the Mapper is *doing*.

The shortcomings of the manual are all the more regrettable in light of the extreme user-unfriendliness of the Mapper, which forces you to be dependent upon the manual until, by means of sufficient repetition, you begin to commit operating procedures to memory. Speaking of which - if your memory is very good you may be able to remember what all of those keys on your keyboard mean to the Mapper. If not, you'd better draw up a template and stick it on your keyboard

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(odd that the manual does not suggest this): white keys C3 through D5 specify MIDI channels 1-16; white keys B2 through C5 are for hexadecimal digits 0-F; alphanumeric A-Z and 0-9 are on white and black keys C3 through B5; plus assorted other keys for Yes, No, Insert, Delete, Cursor Left and Cursor Right. If you try to operate the Mapper without such a template on your keyboard, you're a fool, or worse.

Which Means . . .

I'LL RESIST THE urge to speculate as to how this and other more bizarre aspects of the Mapper's user interface came into existence, or whether there might have been better ways to do certain things, and come to the point: none of this is any

reason to stay away from the Mapper. It works, it does a lot of wonderful things, and if you stick with it through the difficult learning phase, you get paid back in spades. Furthermore (although I personally don't like to bank much on promises of this sort), the manual claims that software packages for on-screen editing of maps is in the works. The difficulty is simply the price which must be paid in exchange for access to the absurd amount of processing power provided by the Mapper in a very small and portable package and at a none-too-unreasonable price. After all - no one's forcing you to use it . . .

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YOU ENTER THE driveway of Adam Holzman's house in Eagle Rock, California, expecting to see a modern musician's studio. Instead you see an old car, parked in front of a

dilapidated old garage, with instrument cases stacked in front labelled "Holzman - Miles Davis," and a collection of junk - a television set, an empty beer bottle. Inside the garage, chaos reigns: posters of the Dregs, Zawinul, Ronald Reagan, Miles Davis, huge plastic airplanes, toy instruments on top of ancient Minimoogs. You are in the original "garage band" garage, but the switch is - these guys can improvise.

I spoke to keyboardist Adam Holzman, just back from a tour with Miles Davis; guitarist Ted Hall, who was doing long shifts at a recording studio; and drummer Moyes Lucas, on a break from the George Michael tour. Missing was fretless five-string bass player Laurence Cottle, who was in England working with the Alan Parsons Project and Eric Clapton. Collectively they are the Fents, either a rock band who can blow or a jazz band who can groove, depending on who you talk to.

The Fents were born out of a chance meeting between Holzman and Hall at Occidental College in the late 1970's. "We just bumped into each other," Hall explains, laughing and playing abstract melodic figures on one of Holzman's synthesizers. "I was a music major, going through the freshman music major syndrome, trying to find out who I was, where I was, and bumped into Adam."

"We ended up having a jam," Holzman recalls.

The Fents first gig was in 1978. Not expecting to stay together long, they picked a name from a Kliban cartoon which showed a collective fents (sic) and then a single fent (yes, it's really that bad . . .). Their debut was a benefit concert for the Democratic Socialist Alliance, performed beneath a huge poster of Karl Marx which the band wanted to keep for future gigs. They began playing the Los Angeles club scene a few months after that, going through eight drummers and bass players before settling onto the dynamically powerful rhythm section which plays on their current release, *The Other Side*, on Passport Jazz.

The band's first two recording projects in 1983 were a taste of two very different musical worlds. Their debut record, *First Offence* (released on their own label, Not Yachting Records), was a quickly recorded date produced by Paul A. Rothchild. A month later they were in the studio playing on Ray Manzarek's rock version of Carl Orff's *Carmina Burana*, produced by Philip Glass. Both records display a frenzied energy in Hall's guitar playing and an up-to-date synthesizer sound from Holzman.

In 1985, an interview quoted Holzman as

the other side of THE GARAGE

Though they're not exactly a household name, The Fents are well known by most fans of jazz/rock fusion. Here they discuss categorizing music and their rather unusual reaction to technology. Interview by Adam Ward Seligman.

saying, "We are basically a rock band that improvises - most of the music was written out, but there are blowing sections." Since their set that year included 'Freedom Jazz Dance' and 'All Blues,' two jazz standards associated with Miles Davis, I wondered if they still felt the same way.

"We're kind of a rock band. We might have an extra bridge here or there, but still

it's the same thing. You have your melody, your chorus or whatever, with a groove, and then we solo," Hall says vaguely.

"I think it's a lot better to keep it in perspective," Holzman observes. "We're all learning how to try to play jazz and other styles of music. I would consider myself a good rock musician, a real good one. But as far as jazz . . . I don't know, I don't like to

The Seven Principles of Jazz/Rock As Seen by Adam Holzman.

- 1. Never Bore the Audience:** The audience's potential boredom is always foremost on your mind. It's a good idea never to let any given phrase or melody last more than twenty seconds. Also, never repeat sections unless you add more licks to each repetition.
- 2. Make It Hard to Play:** Why play something that is simple and tasteful when you can make it complicated? If a part is comfortable and in the groove, forget it. The most important thing to remember is to overplay whenever possible.
- 3. Play Loud:** Incorporate anything that will contribute to the overall volume. Synthesizers, percussion racks and tri/amp guitar switching systems are excellent for this purpose. Miking drums at practice is also a good idea. It's nearly impossible to convey emotion unless you are cranked up to a decent volume.
- 4. Be Unpredictable:** Never pass up the chance to modulate or change grooves entirely. Don't hesitate to throw in all your ideas. If certain parts don't fit, just stick 'em together. Make sure it's weird and confusing.
- 5. Be Active not Passive:** The music should be as fast and abrasive as possible. Our quest is to activate people, not soothe them. Whereas punk battered people into a frenzy with sheer

force, jazz/rock combines the energy of punk with musical ability, and the effect is even more irritating.

6. Play Inspired: Everyone must know that jazz/rock, when it's bad, is easily the worst form of music. Intense and inspirational playing are essential even to bland, mediocre Los Angeles lawn party fusion. When inspiration is lacking, Taster's Choice Maragor Bold will do the trick.

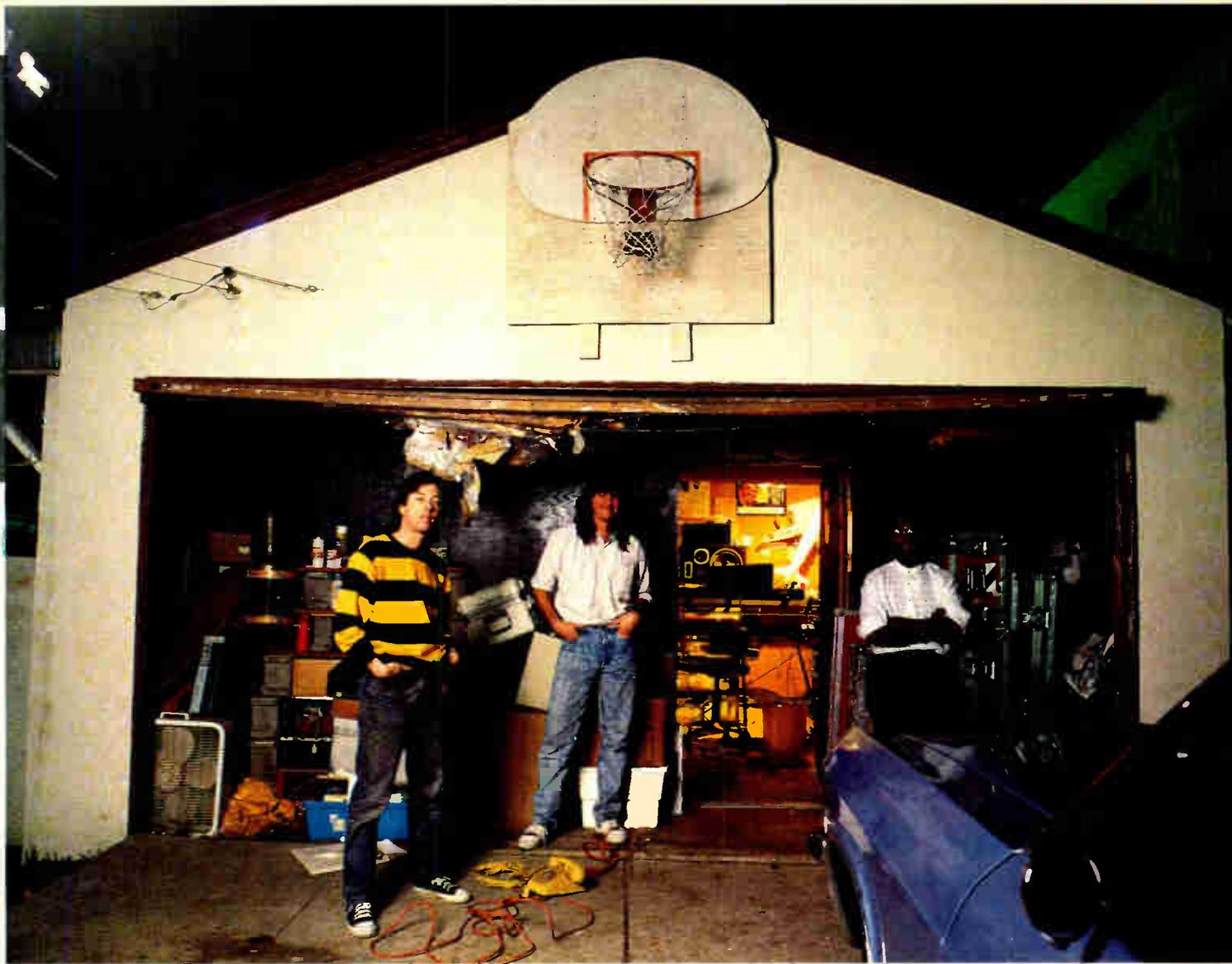
7. Don't Take Yourself Seriously: Don't dance around and look like you're whipping up a wine sauce. Don't dress alike. Just stand there. If possible, make it seem as if you just wandered on stage while looking for your cup of coffee.

Appendix to the Seven Principles of Jazz/Rock

The Soundman is the Enemy: It's unhip to be nice to the soundman. Whatever the soundman suggests, do the opposite. He is doing whatever he can to destroy your set and make himself look good.

Other Bands are the Enemy: Everyone knows this, but it's much better to show your true feelings.

As a final comment, Adam Holzman adds, "These principles were conceived a few years ago and some of them no longer apply, specifically #4. It is now, and I say this with mature reflection, better to keep one groove going."



categorize it, but I feel much more at home with rock styles."

"If somebody says 'Hey, I hear you're a jazz player,' and you sit in on a standards session and you can't really play . . . I wouldn't like that situation," Hall says. "If it were a rock session, it would be great."

Holzman and Hall demonstrate a competitive style of speech, often breaking each other off in mid-sentence. This, coupled with their past tendency to overlap, has resulted in some very exciting compositions, with a far more mellow feel from Holzman, as he learns from the master Miles Davis about the use of space (check out Holzman's solo on 'Splateh' on Davis' Tutu album), and a more passionate "out" technique from Hall as he grows more comfortable with a bluesier tinge in his playing.

Holzman says that he wishes the band would some day be compared to Led Zeppelin. Hall laughs. "Well, apparently we're going to get deep into that," nominating Aerosmith as his primal influence. The two musicians argue for several minutes over the two bands, Hall

calling the discussion "The controversy between the two of us these days."

"There's a lot to be applied to jazz-rock from Zeppelin, the grooves, listen to those grooves - those grooves are deep. Even Branford (Marsalis) likes Zeppelin. He's always talking about Led Zeppelin in all of his interviews," Holzman says passionately.

"Really?" Hall asks.

"He doesn't talk about Aerosmith, he

just basically gives us a chance to play. We don't have a singer, you can call it fusion or jazz or jazz-rock or instrumental rock or whatever you want to call it, but it's too hard to put . . . it's not worth trying to put a label on it."

Hall leaps in. "And the only label we would ever talk about is what other people would say. Fusion for something like the Yellowjackets, jazz-rock would be Jeff Beck

Hall *"The keyboard player in the band is already playing DX's and Prophets. What's the point of having the guitar player triggering more synthesizers so he sounds like a keyboard player?"*

talks about Led Zeppelin," Holzman says.

"Well, he's just out," replies Hall, grinning. "He doesn't know what's in."

At last, Holzman becomes serious. "I don't think that's really too important this year, defining jazz, defining rock." Then, to my astonishment (and even pleasure), he proceeds to do just that. "Ted and I are a couple of guys who grew up playing rock and listening to rock, but we also like jazz and we ended up playing in a band that

and Jan Hammer. Or Mahavishnu."

"We called it jazz-rock," says Holzman, "but that's a terrible word, because that's a hyphenated word. And it is as opposed to fusion, which implies a lighter form and more pop elements. Our music doesn't have any pop in it at all."

"I think the distortion on the guitar is a key thing, and that's something I would always want to have, in any situation working with guitar. To me, distortion on ▶

▶ guitar is much more expressive than a real clean sound.”

“I’ve always liked Larry Carlton-type players,” says Hall, “They float. They have a clean tone with a little edge and great sound. They would start out mellow, but all of a sudden they would start going and you’d realize, ‘Hey this could be a jazz-rock band.’ But I don’t know if it’s just guitar; that seems a selfish thing to say.”

“It’s also the drums,” Holzman notes. “the way you approach the drums. The role of the keyboard would be pretty much the same, except that keyboards don’t have quite as much space for all of the textures and timbres in a jazz-rock setting as they do in a softer situation. I took up the slack there by trying the lead synth trip. That’s the role I try going for more with The Fents.”

“The sad part for keyboard players,” Hall says, “is that you have to keep up with the technology, at least with guitars there’s *that* sound.”

But what about guitar technology? “I hate it,” Hall answers simply, clutching his guitar to his breast tightly.

“You’re talking about guitar synths?” Holzman asks. “Everyone knows they don’t track good.”

“It’s not even that,” Hall adds. “Even when they track good, you say ‘Hey, wow, that’s a neat sound. Where did you get it? DX7?’ And you have to say, ‘Oh, well, yeah



it was a DX7.’ I don’t know, unless I was a great programmer, and could just hear it. At the same time, if I hear sounds in my head, I’m not going to be able to program them into a synthesizer.” Hall proves his point musically, first plucking a note on the guitar and then playing the same note on a synthesizer.”

“The guitar player ends up playing the

same sounds as the keyboard player already has.” Holzman says. “The keyboard player in the band is already playing DX’s and Prophets and stuff like that. What’s the point of having the guitar player triggering some more synthesizers so he sounds like a keyboard player? A guitar sound is still a more interesting sound. With keyboards it is very hard to get an individual sound, getting a sound that really has . . . like Lyle Mays or someone like that who really has his own sound. The second you hear it, you know which band it is. You’ve got their voice in the electronics.”

“The whole thing is in a little chip that you have here.” Hall plays a chord on the synthesizer, demonstrating to me something rather obvious. “You can have all these different sounds, but you have to sit around and program it all. With guitar, man, you just get one tube and stick it in an amp, play a little weird on the guitar, and you get the same effect plus thousands of others. To turn around and make a guitar a synthesizer is going backwards.”

“They should figure out a way to make synthesizers trigger a real guitar,” Holzman suggests, cracking up. “That’s what they should figure out how to do.”

Hall looks anguished. “I won’t talk about that because . . . that’s a good idea . . . you can’t write this . . .”

DRUMMER MOYES LUCAS joined us a bit late, wearing an elegant shirt from London that all of us envied. After a few minutes of horsing around, we sat down to discuss the vital role of drums in the Fents’ music.

“The question of using electronic drums on *The Other Side* never came up. The whole time we were thinking about the sound we were going to use in recording, it

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was like, 'Let's get a big room sound - let's get a big acoustic drum room sound.' No one ever said anything about electronics. The funny thing about it is that so many of those sounds you can get from the board anyway. If you want to get electronic sounds you can use a digital delay. Just trim and get a little modulation there. Maybe for the next record we'll try out some electronics."

According to Lucas, the music itself is

Holzman *"There's a lot to be applied to jazz-rock from Led Zeppelin. Listen to those grooves - those grooves are deep."*

becoming more compatible with technology. "The band is getting a little more electronic - there is more space in the arrangements and room for more textures," he says. "When I first became acquainted with the band, they were known for incredibly fast licks. With that kind of playing, you're going to play the head, the head is going to be hard chops stuff, and everybody's going to play a hard choppy line. Then there will be some soloing, and some more incredible chops, and then it's going to be over."

Holzman leaps in to defend the band's reputation. "Let me say that we never had the kind of chops some of those bands had, and we have always relied more on songwriting than a lot of chops. We might have fallen into the category of bands with that reputation, but we always survived on songwriting."

"Sure," Lucas draws. "I agree with you, but that's what people would say to me. Now I think the music is more open, more like, 'Let's get a certain kind of feeling,' and grow from that. There's a lot of room for that. I like to use electronics as colorings on an acoustic set, so it would be like another texture."

Lucas thinks for a moment, trying to pull it all together. "It's like cats who grew up playing keyboards really like piano keyboards that are weighted instead of plastic synths. They can't play piano, they can't relate to it, but it's neither good or bad. It's a different instrument. That's what electronic drums are like for me. I don't think they're a bad thing, they're just another cool sound, but they are not the be-all of drums. The thing that's cool about electronic drums and having an electronic setup is that you can get a studio sound live."

Holzman, in response to a question about his gear, wanders over to his keyboards, listing them off in a quiet frenzy. "With the Fents, a Korg SG1 sampled grand, - the old one, I like the way the old one sounds - a DX7, and a PPG. They came out with a new software version of the Korg that changed the piano sound, but I like the old clunky sound. I also like the old Fender Rhodes sound they had. With keyboards, 'new' is a matter of weeks! The

PPG is an old synthesizer, built all the way back in 1983. It's cool.

"I have a little MIDI switchbox that Chris Danley, the guy that works for Miles Davis, built for me. I switch back and forth with the switchbox, driving a TX7 module and the PPG and sometimes an Oberheim." Holzman also has a variety of old Minimoogs sitting around that he has been collecting for both himself and saxophonist Kenny Garrett.

Holzman's role with Miles Davis is both to provide atmospheric and orchestrated lines, and the occasional solo. In those gigs, he uses a DX7, the PPG, an Oberheim Xpander, a TX7 and the Akai S900 and S612.

"What does the future hold?" Hall asks

dramatically.

"We're doing another record for Passport Jazz," Holzman interjects in response to Hall's question. "We're not going to be able to gig a whole lot the next few months because Moyes is going to be gone with George Michael, and I'll be working with Miles. As soon as we can, we're going to record the next record and possibly we'll tour with the band when we have two records out. It's hard to fit all of our schedules together and to get enough high-paying gigs to fly us back East."

"We might be doing a tune by Miles Davis called 'Maze,' which has not been recorded by anyone yet. It's a great tune."

"The last album was a bunch of jams strung together," he says. "And the next album might be more jams. What is the point of having all that structure if you're not having fun?"

Indeed. ■



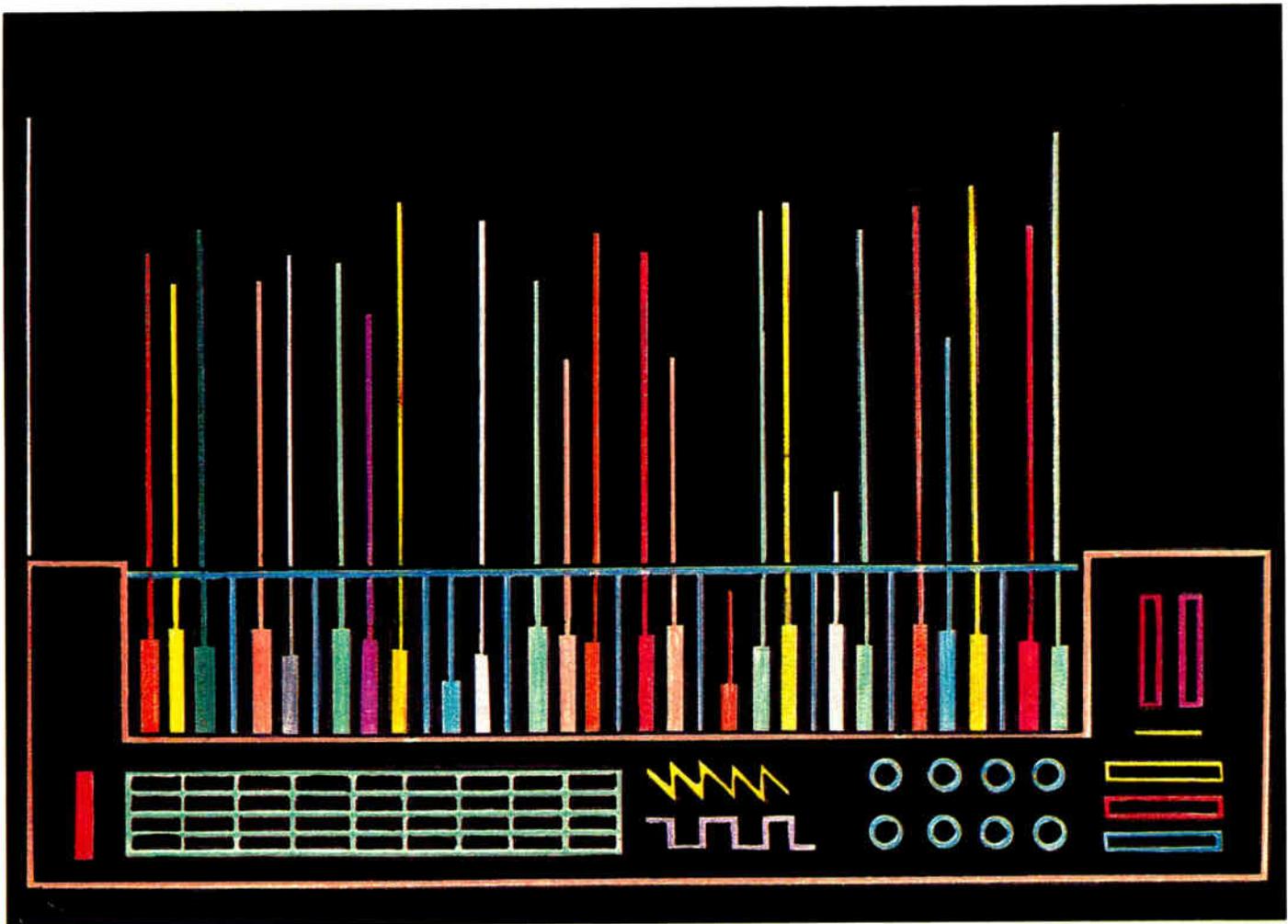


Illustration Toby Goodyer

ALL ABOUT ADDITIVE

part two

We conclude our series on additive synthesis and resynthesis by defining some terms and surveying current “additive” machines. Text by Chris Meyer.

LAST MONTH WAS devoted to trying to explain additive synthesis and resynthesis in something akin to musician’s terms. This month will be dedicated to surveying a number of the machines in the market that implement additive synthesis in some form. The list is not a complete one; it includes machines I’ve had direct or vicarious experiences with (immediate apologies to those who get slighted).

Buzzwords

DEFINING EXACTLY WHAT an “additive synthesis machine” is, is a bit tricky. Since *additive* is indeed a buzzword

these days, many manufacturers would like you to believe that theirs is an additive machine, when in fact there are many different levels of implementation. Additive synthesis can be explained as any synthesis method where more than one harmonic spectrum is added together to create a new one, so really anything with more than one oscillator could apply. We’re no better off defining it as a system where the user has control over the harmonic spectrum – again, almost any form of synthesis (beyond the most mundane) can qualify.

Instead, I’m going to define three basic classes of “additive” machines, and continue to apply the caveat that machines will

vary within these classes with respect to the thoroughness of implementation. The one common denominator among these machines is allowing the user to build the timbre or harmonic spectrum of the final sound by specifying the harmonics and their relative strengths. Where they vary is in how many harmonics you can control, how much control you have over them (pitch and amplitude envelopes along with frequency ratios and detuning), whether you can control the harmonic content in real time (via velocity, etc), and if you can start with a real sample to derive a synthesized sound.

We’ll refer to the first class as *additive*

wavetable synthesizers. These are essentially wavetable synths (or samplers run in wavetable synth mode) that give the user the ability to build the initial waveforms by picking the relative strengths of the harmonics in that wave. A subclass of these are *advanced additive wavetable machines* – they are defined as allowing some form of fading between these waves, resulting in programming predictable harmonic movements. (For more background on wavetable synthesizers, refer to the article *A Deeper Wave Than This*, MT August '87.)

The second class is *additive sample machines*. These allow the user to define the harmonic content *and* movement (i.e. relative strengths of harmonics, their detunings, etc) of the final sound. The end result is computed ("crunched") into a sample which is then played back by a sampler. The user has no further control over the harmonic content or movement of the sound (aside from subtractive filtering, etc). Software packages that



create samples also qualify (we'll refer to these tools as *additive sample software*).

The third and "purest" class contains machines that allow the user control over the harmonic content and movement in the creation of the sound *and* in real time while the sound is playing back. These are *true additive synthesizers* – no qualifying remarks necessary. The most common implementation of these are synthesizers that actually have an oscillator per harmonic, so that they can each be manipulated in real time.

In all of the above classes, the user creates the sound from scratch. *Resynthesizers* give the user a starting point by taking a real sound and breaking it down into a set of parameters that one of the above class of machines can take. To truly be resynthesizers (as opposed to just samplers), they have to give the user some ability to alter the captured sound – this

means either being a class three machine, or also allowing the user to alter the harmonic content of the wavetable or contour of the sample after the breaking down has taken place.

Below is a quick summary of fifteen of these machines (and their relatives), in a roughly chronological order of their release:

• Crumar GDS and Synergy

These were perhaps the first commercially available *true additive synthesizers*. They actually let the user define the pitches and amplitude envelopes of the sounds. The 32 partial oscillators were set up in a row – each one could either feed the output or frequency modulate (FM) the next oscillator in the row ("FM'ing" adds complexity to the sound). The GDS was the big near-prototype beast (used early on by the likes of Klaus Schulze); the Synergy was the consumer production version. Later in their life, Synergys were available with a Kaypro computer and editing software.

• Fairlight CMI

Known primarily for their sampling, the Fairlights also have additive synthesis "pages" (their parlance for modes, or screens). The Series II machine in particular tried to marry sampling and additive synthesis as closely as possible. The user was supposed to select a sample rate based on the pitch of the sound so that one wave would fit into 128 samples.



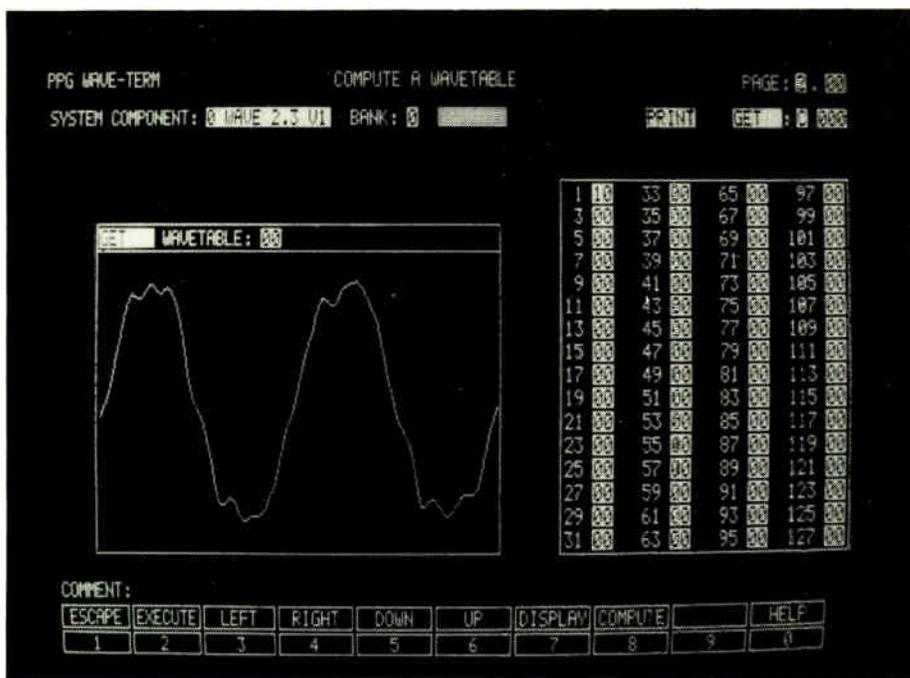
Then, it could apply Fourier analysis to each waveform and give its harmonic spectrum. The user could alter this harmonic spectrum, or create one from scratch by drawing a wave-to-wave amplitude envelope for each harmonic (up to 64) of the sound. The sound was then crunched into a sample (or back into one, if that's how it started). This made it an early *additive sample machine*, and, in that it could start with a sample and let the user edit its spectrum, a *resynthesis sampler*.

• Yamaha DX Series

Believe it or not, Yamaha's FM series of synthesizers can actually be used as *true additive synthesizers*. Of course, they're a bit limited in this regard. In a six operator synth (DX1, 5, 7, 7II, TX7, 8I6, 802), you have six sine waves with control over their harmonic tunings (ratios) and amplitude envelopes (the four operator machines give you, of course, four). Use the upper algorithms that have most or all the operators wired directly to the output (the "organ algorithms," as they're sometimes called). Restrictions do exist – for example, you have far fewer partials than normally desired and only one pitch envelope – but they are enough to get ▶

MTI, who distributed Crumar, is now out of business, but the engineers who developed the Synergy have formed a company called MuLogix that makes an updated rack-mounted version of the Synergy called the Slave 32. Unfortunately, these are not widely available. Additive champion Wendy Carlos uses a GDS and two Synergys, and was demonstrating the MuLogix at the AES Technical Conference last May.





started if you want to try out some of the principles discussed last month.

• PPG Wave and Waveterm

The PPG Wave was one of the first wavetable synthesizers. A number of waveforms were set end to end, and envelopes, LFOs, velocity, pressure, etc. decided which waveform got played at any

given moment. The waves could have smooth progressions from one shape to another, or sudden jumps. The Waveterm, which was a sampling and editing terminal for the Wave, allowed the user to create his or her own waveforms (using additive synthesis) and design progressions. This qualifies it as an *advanced additive wavetable synthesizer*.

• Kawai K3

This was a wavetable synthesizer that allowed the user to create two waveforms with additive techniques (ie. the user could



define the harmonics and their relative strengths), thus making it an *additive wavetable synthesizer*. It represented a start at letting the user define his/her own spectrums.

• Kurzweil K150FS

A lot of confusion existed about this piece of equipment when it was first released. Many thought it was supposed to be a rack-mounted K250, which its early advertising and manual did little to dispel. Comparing it to the realism of the sample-based 250, many were disappointed. In actuality, this is one of the more impressive *true additive synthesizers* around, and Kurzweil put a lot into modeling natural sounds as closely as possible. Finally, the 150 came out of the closet by adding the title "FS" (Fourier Synthesizer, named

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after Fourier, the man who did the pioneering work on additive analysis) to its name. A sound modeling program that Hal Chamberlin developed on the Apple II is given away with the box.

The 150 actually has 240 oscillators inside that can produce a sine wave or noise. The 150 dynamically assigns these oscillators to voices as needed (with a maximum of 64 oscillators, or harmonics, per voice). Harmonics can be tagged as being of less importance, and these get stolen first if another voice is needed. Harmonics may be tuned, and may have up to 2400 point amplitude envelopes (talk about a lot of detail . . .) with some very interesting looping features. Several functions may be edited from the front panel, such as MIDI assignments, chorusing, which

sound models get assigned or played, etc. The sound modeling program allows the user to actually get in and create sounds. This is a powerful machine, unfortunately hampered by a difficult user interface and initial confusion over exactly what it was.

• Korg DSSI

Korg's first sampler took a deviation from the path being blazed by other samplers before it, in that it combined a lot of synthesizer-type features with its normal sampling function. One of these was encouraging people to also use it as a wavetable synthesizer, and along these lines it let owners create waveforms by drawing them or selecting harmonics. Thus, it could also function as an *additive wavetable* instrument.



• Sequential Prophet VS

This is another wavetable synthesizer. Its voice structure contained four oscillators per voice which could be mixed in real time (via envelopes, aftertouch, a joystick, etc) to create its sound. Users could create new waveforms by mixing four existing waveforms (including sine waves) together. In that the user could create waveforms (and later dynamically mix them), harmonic progressions could be set up, making this an *advanced additive wavetable* synthesizer. Each wave can be treated as four "groups" of harmonics that can be faded against each other — this overgeneralizes the harmonic progression of a real sound a bit, but is still useful. Waveforms may also be sent to the VS via the MIDI Sample Dump Standard. (See *Using the Sample Dump Standard, Part 2*, MT June '87, for details on how to do this.)

• Wersi MK1 and EX20

The Wersi is a little-known but powerful wavetable machine from a German manufacturer known primarily for their advanced organs. Reflecting that, it is a cross between organ ideas (Leslie, key-click, and distortion effects, the volume



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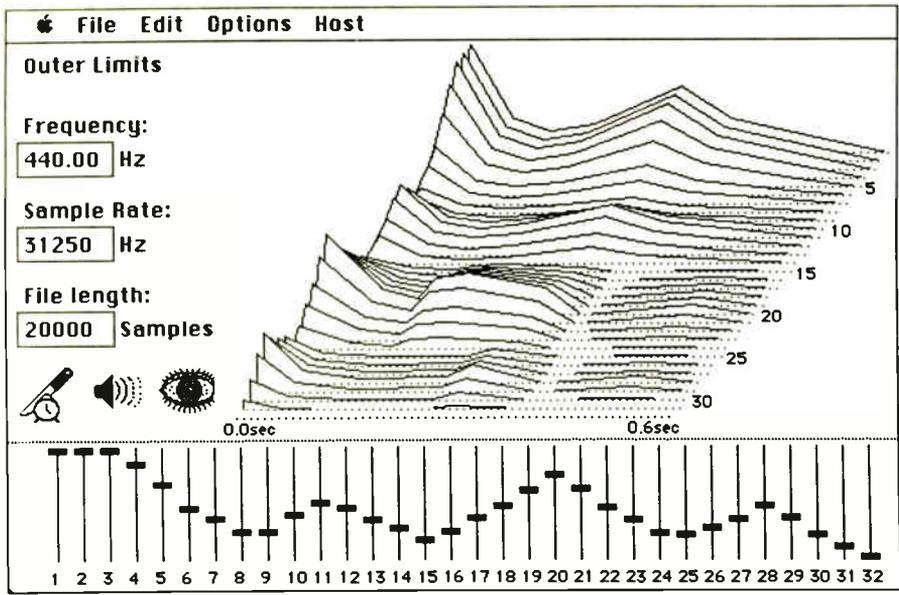
The superb musicians in the Michael Jackson Band have a new tool to help them provide the musical framework for Michael Jackson's unique artistry. Music director Greg Phillinganes, Rory Kaplan, chief designer of keyboard systems and Chris Currell, guitarist and synclavier specialist, all have BBE 802's in their rack's for the tour. They love the marvelous clarity, definition and sheer musicality BBE provides.

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pedal's called the "swell-shoe," etc) and some very advanced synthesizer concepts (zones, very complex envelopes, multi-timbral operation). It also qualifies as an *additive wavetable synthesizer*. The user may create his or her own waveshapes by selecting and mixing harmonics (up to 32) using an organ "drawbar" analogy. There are 16 sliders on the front panel akin to a graphic equalizer (a nice, intuitive system) that may be moved in real time with immediate results.

• **Digidesign Softsynth**

One of the first commercial synthesis programs, Softsynth is an *additive sample software package* that runs on either the Apple Macintosh or Atari ST. It allows the user to set the frequency ratio, amplitude envelope, and pitch envelope of up to 32 harmonics in two different fashions (a harmonic graph and a time slice mode) with a good graphic interface. The

harmonic partials may have sine, triangle, square, or noise waveshapes, and may also be "FM'ed." The resulting sound may be previewed on the computer's speaker and crunched into a sample for downloading into virtually any currently available sampling instrument.

• **Casio FZI**

Like (but not quite as fervently as) the DSSI, this is another sampler that encouraged the user to turn it into a wavetable synthesizer. It has a section where the user can define the harmonic content of a wave, thus qualifying it as an *additive wavetable machine* when used in this mode.

• **Kawai K5**

The voice structure of Kawai's additive machine is related to that of the Prophet VS, in that it has four oscillators per voice. But whereas the VS mixed the four waveforms through, in essence, a quad panner, each oscillator in the K5 has its own envelope, modulation, etc. (The user can define the waves produced by these oscillators by picking the relative strengths of up to 63 harmonics. Kawai tries to present this system in a different fashion: as 63 harmonics that can be fed through one of four envelopes.) This ends up being a nice simplification of a full additive machine – as opposed to having to construct an envelope for each harmonic, there are only four to deal with. No, this doesn't give the "full" power of additive (and this is still technically an *advanced additive wavetable machine*); but as mentioned last month, sometimes all that power can be too tedious to deal with. Like the VS, the K5 may also receive waveforms as samples over MIDI (via a Kawai system exclusive message, not a MIDI Sample Dump), making it possible to take snapshots of a



sample, modify them, and transfer them to the Kawai – a crude form of resynthesis.

• **E-mu Systems Emax SE**

E-mu has just freshened up their popular sampling keyboard with a software update that includes a "spectrum interpolation synthesis" module. In essence, this is an additive synthesis software package that resides inside the Emax. Sounds may have up to 24 harmonics, and are divided into 24 time slices (which unfortunately seem to be fixed as to their position in time). The amplitude and pitch of envelope of each harmonic may be created by either editing its status per time slice or by "drawing" its profile with the data entry slider while the Emax clicks off time. The transitions from time slice to time slice may be told to be smooth or abrupt.

The harmonic content of the sound at each time slice is called a "spectrum," and these may be copied to other spectrum locations. Frequency ratios of the harmonic partials may also be defined (although they must be integers at the slice if you intend to copy it as a spectrum to another location – as described last month, having something like 3½ sine waves per wavelength ends up a bit on the distorted side). The user may also draw the amplitude of each harmonic at a given time splice. The result may then be crunched into a sample that the Emax will play back, which qualifies it as an *additive sample machine*. Having controls over all the parameters that additive synthesis requires is difficult for any interface; the Emax SE does a notable job in making it relatively easy.

• **Technos Acxel**

Whereas the Fairlight is a sampler that borrowed additive techniques (and eventually resolved things back down to samples), the Technos is a *true additive synthesizer* that can use samples for its start (yes, it is also a *resynthesizer*). It has a large number of oscillators that can have any of 32 different preset waveshapes (including the traditional sine), or the user can draw his or her own. These may have their frequency ratio set, and multistage (up to 1024 point) envelopes for pitch and amplitude may be constructed. The number of harmonics per voice is adjustable from eight to 128 (32 is the default). Lots of processing is available besides simple additive construction, such as digital filtering, FM, modulation, etc. Since all of these parameters are being executed in real time, full real-time control over the sound is available. Aside from all that, a highlight of the Acxel is The Grapher – a visual interface of envelopes, spectra, etc, that the user can touch and trace out new curves on. We previewed the Acxel in MT March '88, and will be featuring a full review in the near future.



• Lyre FDSS Studio/FDSOft

The Lyre is also a *true additive synthesizer* (oddly enough, Technos and Lyre are located within about ten minutes of each other near Quebec) that has a large number of individual oscillators (ie. harmonics it can generate). The base unit has 128 of these, which can be spread across one to eight voices (the Lyre may be expanded out to 1024 harmonics and 64 voices). Each oscillator produces a sine wave that may be noise-modulated to produce hazier frequency "bands" centered around the harmonic's pitch (sort of like pitch noise, for breaths and scrapes). Multistage (up to 128 segment) envelopes control pitch and amplitude, and the harmonics can be detuned to whatever ratio desired. Editing and control software runs on either an IBM PC or Apple Macintosh. A stand-alone version of the sound modeling software - FDSOft (see review, MT April '88) - is an *additive synthesis software* package that performs many of the same functions and converts a resultant sound that can be downloaded to sampling keyboards for playback. Samples for resynthesis may be input via the MIDI Sample Dump Standard and crunched into parameters that FDSOft uses (thus also making the Lyre or a FDSOft/sampler combination a *resynthesizer*).

Back to Reality

ADDITIVE SYNTHESIS IS a tricky thing. It is ultimately very powerful, but it gives you that power at a price of many, many parameters to deal with. Implementing all this power (and giving access to it) is also a difficult and expensive proposition in both hardware and software. Therefore, a lot of machines are going to wave "additive" and "resynthesis" banners when in fact they are only implementing a small subset of all the details of a sound that additive can make available. Remember, however, that pigeon-holing a machine into a particular class or restricting a few features doesn't diminish its musical *usefulness*; such definitions are just attempts to clarify what's really going on (despite what the glossy brochures might say). They're specifically for those looking for a particular degree of control - or who just want to know what's really going on inside, period.

So now that you know what the magic of additive synthesis really is, it's time for you to put it to use. Have fun. ■

MT MAY 1988

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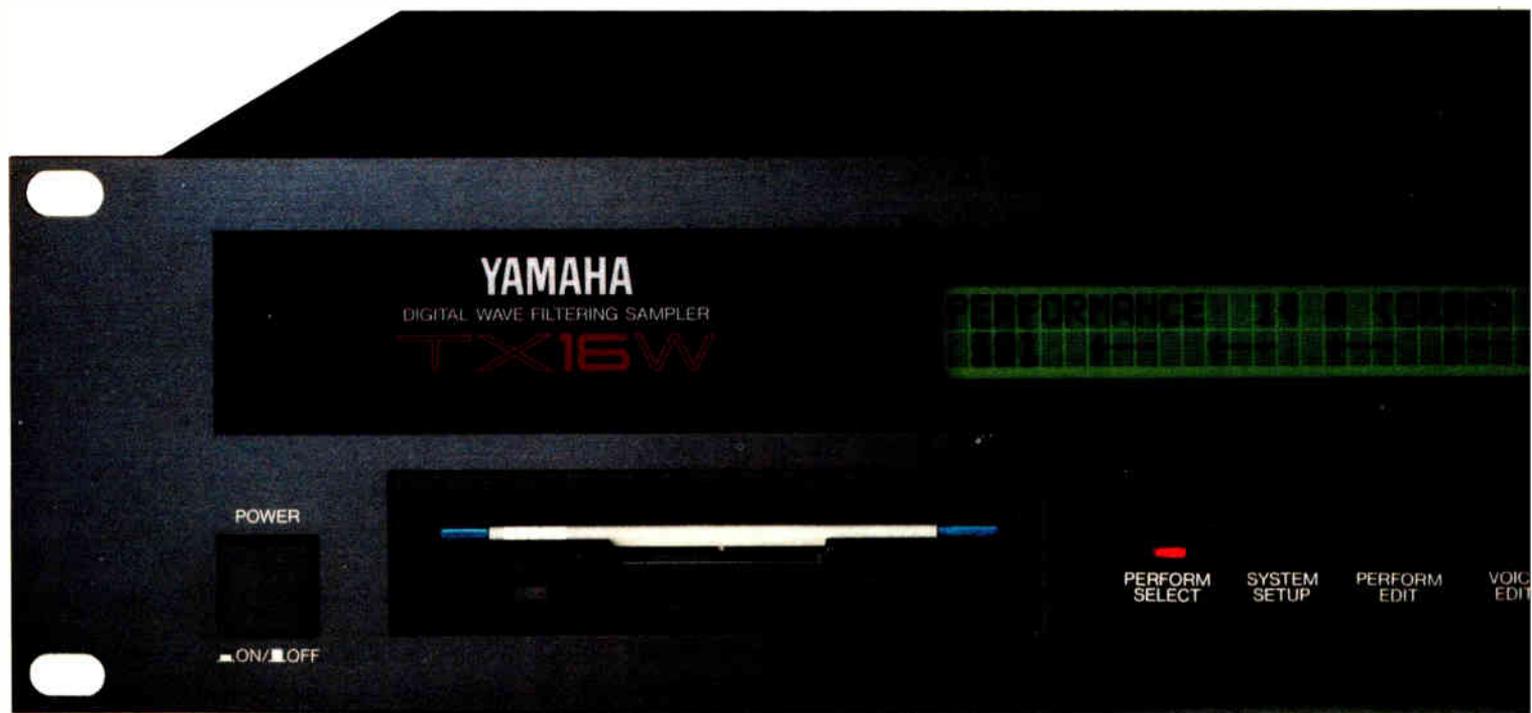
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READERS' TAPES

Reviewed by Yung Dragen.

AND NOW, I'M here. Here in LA. The land of Big Hair and MOR (Morphine Oriented Rock), of smog and style. Tons of '70s revival stations, along with a few Brits spinning "new music" on the radio and in the clothing stores (no joking). Why I'm here doesn't need discussing - let's just say it wasn't a planned turn on my Path. In the meantime, we'll just have to see what effect this all has on my objectivity and karma.

First up is *Visions!* by David Bell. Ensoniq's ESQ1 has a unique sound to it - a gritty, hazy cross between stereotypical "digital" and

an ambient, "wallpapery" feel. I kept getting the impression that this music should be backing something on TV - like those "Weekend Magazine" travelogue pieces or whatever. For what it is, *Visions!* is very well crafted and executed.

Second up are this month's pretty boys, *Vital Signs*. John Gainfort and Shragah Lubovitz have been collaborating for five years, working their way "from their heavy metal inception through disco-style lounge work to a handful of studio dates for local (to New York) musicians." Their current three-song demo is a confused attempt at modernistic power pop. The opening track, 'Hey! I'm Talking to You,' was cut at a 24-track studio with the help of a Synclavier, DX modules, RX5, Mirage, TX8Z, and Matrix 6R. It's a song that could reach out and grab you viciously by the throat if it wasn't wallowing in so much digital reverb; what a shame. 'Just a Little of Your Heart' and 'If You Remember Me' were cut under more modest means, with a Yamaha MT44, ubiquitous CZ101, DX100, RX15, Poly 800, and Akai S612 (sequencing thanks to Hybrid Arts SMPTE-Track). Their production ideals of too much reverb and too little space hold up here, with the exception of even less

clarity - a gated reverb sans snare unsuccessfully serves as a breakdown in 'Little,' and the drums are processed into mere blobs on 'Remember.' There's a lot of energy here, and the first two songs are actually pretty good, but John and Shragah over-achieve in execution and production. It is almost like they've been so busy flailing at everything they can, that the debris has ended up blocking progress on their path. Calm down, friends - and drop about a third to half the sound mass while you're at it.

Another over-achiever is Joe Modifica of Kensington, Connecticut. Having played music for over 15 years, five of those ago he "quit the bar band scene and devoted my time to writing and recording my own music." He plays virtually all the instruments (Pete Rickard helps on bass) and emphasizes the first or second take in the name of feel. His style sounds like a guitar hero battling with writing high-energy pop songs. This would almost be hard rock if some things weren't missing, such as a crunchy rhythm guitar and stronger drum sounds (instead of the latter, we get a TR707 and muted Simmons toms). The lead guitar riffs all the way through these tunes, distracting from the vocals. The vocals themselves are heavily processed with multitap delay and reverb, giving the feeling, but not the clarity, of early fascinations with artificially induced spaces (à la 'Whole Lotta Shakin' Going On'). If you're going to insist on this feel, Joe, push the vocals way forward. And finally, watch your tape dubbing! One channel was mucho hotter than the other, and overall the tape was saturated to the point of breaking up. My criticisms here are the same as above for *Vital Signs* - calm down, and clear away some space. Whereas a spiritual cleansing may not be for everyone, a sonic one is indeed in order.

One person who does have a sense of



"analog" sounds. *Visions!* is very much an ESQ1 tape, with some help from a Mirage, Drumtraks, Micro and Midiverbs, and a Fostex 260. David has chosen an upbeat instrumental style that qualifies it as an intelligent, rock-oriented Muzak. I always listen to at least the first song of any tape intently, and this one had me dismissing it as boring wallpaper music. However, as soon as I turned most of my attention circuits off, I found my toes tapping and my head nodding. Despite being heavily sequenced (using the ESQ1's sequencer to drive even the Drumtraks), the feel is swiny and loose. David gets positive points for the basswork and negative points for the stiff drum parts (snare rolls aren't that monodynamic, and please back off that hi-hat!). All sounds are heavily reverbed, which adds to the hazy quality of the voicings to create even more of



space is **Burt Teague**. Burt confesses hesitation at submitting his demo-tape, because it's "commercial to the max!" and I've been known to slag off overtly commercial efforts in the past (what I'd like to think is that I've slagged off *bad* overtly commercial acts in the past, but anyway ...). His six-song demo (split between uptempo numbers and ballads, and essentially all love or "personal" tunes) would be right at home stylistically on VH-1 (MTV's alternative channel for, ahem, "adult" audiences). Teague's voice occasionally sways close to Randy Newman's in phrasing and timbre, and he sounds overall to me like an effective crooner to the 40ish set. But what impressed me the most about his tape was the tasteful lack of over-orchestration - even the hi-hat work was tastefully moderated (with some slick bass drum work giving the rhythm track a nice kick in the pants). A few of the synth patches selected sounded questionable at first to me, but they were given so much space that they sat in comfortably. Even though I'm already sprouting gray hairs, I don't exactly qualify as an "adult" (and hopefully I never will) audience, and therefore won't listen to this very often. However, Burt says he's "close to a major record Deal (sic the cap) with a couple of the big boys," and I wish him well - he's got a nice balance going.

Rumor has it that this magazine is devoted to technology in music. I'll leave this month by suggesting you leave all that silly technology behind and pick up a copy of the

tape by **Daughter Judy**. Reportedly recorded mostly "in the bedroom of a small apartment during nights, weekends, and lunch hours. . . for a total of \$23.78," this gem wonderfully recreates '60s go-go and surf music down to the cheesy organ and cheeky dialog. DJ is comprised of **Julie Schmitter** and **Greg Bernarducci** on vocals, **Don Kenny** on "mostly guitar,"



Michael Kenny on drums, **Tom Priester** on Casio organ, and **Michael Van Duser** on "mostly bass." As the inner sleeve relates, "Daughter Judy is the fruition of laziness. The origins of DJ go back almost two years, but no one ever got around to giving up the remote control long enough to bring it together." Nearest modern reference is the B-52's, but with more authenticity to their '60s roots. Songs include 'Back to Bedrock' (an homage to the values of life extolled in The Flintstones), a remake of the theme 'rom 'The Blob,' and the wonderfully sick 'My Baby' (you've got to hear it to believe the

story line). The band's sound is great and lively, with special kudos to the live drumming and drum sound (particularly the snare) and Julie's singing. **Stig O'Hara** (who they claim has done work for *Lives of the Rich and Famous*) directed and produced a "state of the ark" video released in conjunction with their "Pay The Rent" tour at an estimated cost of "roughly two six-packs and some wine coolers." Casioist Tom Priester comments. "I think we've managed to come close to equalling the artistic genius of a Journey or REO Speedwagon video." Form follows function; results follow heart and mind. Daughter Judy obviously has fun, and the result sounds great.

May we all have as much fun. ■

Contact addresses:

David Bell c/o System One Productions, 109 Yaupon Drive, Morehead City, NC 28557

Vital Signs c/o Shragah Lubovitz, 6 Burns Street, Forest Hills, NY 11375

Joe Modifica c/o Ragged Ridge Music, 60 Reservoir Road, Kensington, CT 06037

Burt Teague PO Box 101, East Granby, CT 06026

Daughter Judy c/o Garageland, 322 Fourth Street, Box 3, Jersey City, NJ 07302 (tape costs \$3.99, video costs \$7)

One Nation was incorrectly listed a few months back as being at 1454 West 72nd Place, Chicago, IL. The correct number is 1464.

Send your demo-tape, along with some biography/equipment details and a recent photo if you have one, to: **Readers' Tapes, Music Technology, 22024 Lassen Blvd., Suite 118, Chatsworth, CA 91311.**

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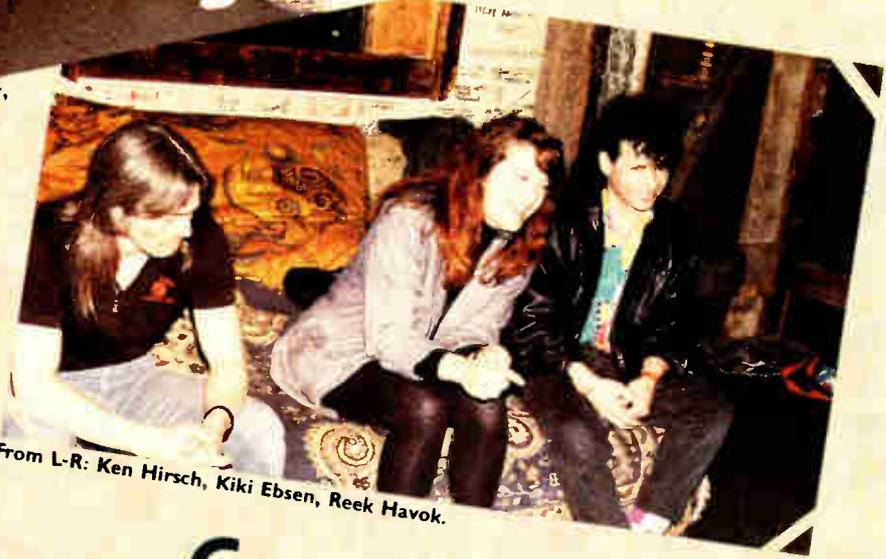
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From L-R: Deborah Parisi, Chris Meyer, Bob O'Donnell (MT), Larry Williams, Ken Hirsch, Kiki Ebsen, Reek Havok.



From L-R: Chris Meyer, Bob O'Donnell, Larry Williams.



From L-R: Ken Hirsch, Kiki Ebsen, Reek Havok.

a love of SOUND

After you've gotten pretty good at programming your own array of synths, you may have the inclination to make some money doing it for someone else. Here's some advice - and warnings - for your consideration, offered by some of today's hottest studio programmers. Interviews by Deborah Parisi, Bob O'Donnell and Chris Meyer. Text by Deborah Parisi.

GETTING THEM ALL together in one place at one time was probably the most difficult part. Either one of them was going on the road, or into the studio, or had a club date, or ... fill in the blank. Once it was set up, though, they went out of their way to arrive on

time. One of the guys showed up after working in the studio 24 hours straight; another drove some 50 miles, leaving home and family behind. And that may be one of the keys to their success. No matter what, you can count on them. It's not surprising, really, that none of

them planned to get into this line of work. It's not an option that your high school guidance counselor offers. And while each of them has ended up with a custom-designed career (Reek Havok specializes in electronic drum setups, while Kiki Ebsen is a software consultant/MIDI technician; Ken Hirsch is something of an electronics specialist, while Larry Williams spends more time performing and song-writing), they all share several common denominators, the most important being a love of music. And that love translates, for them, into a fascination with sound and the desire to create sounds from the bottom up.

When you try to cage any of them into a

Photography Rosemarie Rounsaville

job description, however, the answers become less and less tangible. Because of the nature of the business, as well as the nature of the individuals, not one of them relies entirely on programming for income. Which leads us to the second trait shared by all: versatility.

MT: *What are you usually called in to do?*

Kiki: I'm called in for the band Chicago to teach them individually how to use the gear that they've paid lots of money to have. And, as a general rule, they're all really receptive students. But when it gets down to actually setting up the tour, or going in and doing the album, they let me do what I have to do. But on the side, they're trying to learn how to use it.

Reek: With drummers, it seems, they're interested and they want to know, but after they hear a certain amount, they back off. They'll go, 'Ahhh . . . ahhh . . . I don't want to deal with it. Make me sound good, and make it so I don't have to worry about it.' And, really, if you have to explain to them what you're doing, it does take up more time, and most of it's just bouncing off their heads.

Ken: Primarily what I find myself doing is keeping a keyboard player's rig running. And that's usually a constant battle, considering the new MIDI Hell. But I work in two totally different ends of the spectrum. With someone like Billy Payne, I just walk in and hook up his system. He knows where everything is, he's got his sounds and he's happy. There's virtually nothing I can do for him as far as programming goes. On the other hand, there's T Lavitz. He's so busy with sessions and gigs and writing that he needs help with sounds. And from my knowledge of being his sound engineer as well as his technician, I can edit the things into his rig. But I think it's essential for a musician to know what to do with his own sounds, otherwise he's not going to appreciate what he's getting out of it, and he won't use it.

Larry: That's where you really leave off as a programmer. No matter what you program, it's only going to be as good as the player. When I create something, it's created the way I would play it. With a lot of people, you can have the greatest sound in the world, and they're going to make it sound like . . . need I say what it will sound like? They'll just hammer away on it. If they don't use expression when they play, it's going to be expressionless, no matter how much movement you put on the envelope. It's just going to lay there.

Ken: That's true. I can give the same patch to five different keyboard players, and only one of them will like what they get out of it. And I may think it's a tremendous patch; I may have spent hours on that sucker.

Larry: Application, that's what's important
MT MAY 1988

tant, not brute sound. Brute sound is just that . . . it's like colors on the palette. We hear that a lot, and I don't think you can drive that home enough. When I was working on the *Running Scared* movie soundtrack, the keyboard player for a band called Ready for the World came in with some really cheesy sounds that he played wonderfully. And there was no way that I, at that particular time, could get that sound, but it was perfect for the track. It was a really good lesson on application and wonderful sounds. It's not wonderful until it makes great music.

Ken: Absolutely. That's why some musicians love FM, some love analog, some love digital.

MT: *It sounds as if you have to gear your work specifically for individual musicians.*

Reek: Yeah, for the stuff that I deal with, especially triggering sounds from acoustic drums, you really have to look and see how the guy's going to play and how he's going to deal with the triggers. I try to tell them how to adapt to it, but a lot of guys don't want to have to deal with that and get very frustrated. And then they come back on you. They just don't want to have to change even a little bit to gain what they can achieve from triggering other sounds.

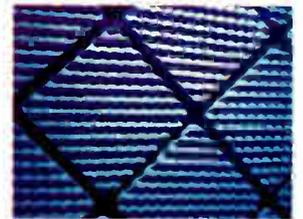
Kiki: It's funny – sometimes you'll work with a client who isn't as good a player as you are, because everybody works with a lot of different people – amateurs, profes-

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► signals – and they can't quite get things to work. You don't want to insult them or offend them, and that's part of the trade, too. To gently assist them, even towards playing better.

Ken: But there's the other side of the coin, too. I've run into players whose talents exceed the latitude of the instruments so far that they're frustrated because it can't move with them.

Reek: Yeah, there are people who come up with problems that nobody else ever has.

MT: *If all of this is true, then what do you*

Kiki "Sometimes you'll work with a client who isn't as good a player as you are, and they can't quite get things to work. You don't want to insult them or offend them, and that's part of the trade, too. To gently assist them, even towards playing better."

think about copying patches? If everyone plays it differently, then it shouldn't make any difference if patches are freely swapped.

Ken: It's really a matter of what the person that originally wrote it values it as.

Reek: Samples are a thing that always get around. When I sell somebody a disk of samples, I know that it's not going to stay

in his little box. It's kind of an unwritten law, where you don't approve of it but there's really no reason to worry about it, because there's nothing you can do.

MT: *Do you feel that you're getting ripped off because you could be making money from it?*

Reek: In a sense I do, but it's just so wide. It isn't going to hold me back from developing samples, though. It's just part of the deal.

MT: *Have you ever sampled anything off a record or a CD?*

Reek: Oh, sure.

sadness there. I know we just have to deal with that and go on . . . I'm not necessarily wishing that it was any different. It's just the reality.

MT: *When you do a session, who owns the new sounds you've developed? The client or you?*

Kiki: You both come to a reasonable agreement. He has his disk, you have yours.

Larry: I don't think they own it in the sense that they can give it to everybody in the world, but I think that there is something that they have.

MT: *It's a point of honor with some programmers not to duplicate sounds between musicians, isn't it?*

Kiki: Well, it depends. I think a lot of people develop their sounds by overlaying . . .

Larry: Here we go back to application again.

Kiki: . . . and if you were to sample just one sound, maybe there would be some question. But usually I'll take the same sounds in and I'll still have totally different results.

Reek: Most people don't care, but if a band doesn't want me to do anything with their sounds, I respect that. With Yes, they were adamant that I did not take samples of their playing out of the studio – even to work on them at home. They were adamant. And that's OK. It's not worth the headache or the bad feel.

Larry: In all this, there are all kinds of gray areas that have yet to really be defined, and each individual has to make decisions that really get down to where your morals are. And that's who you are. They aren't all easy decisions. Everything is not OK.

Ken: If I build up a set of presets for one of my players, I won't give it to another player. I won't say, 'Yeah, I'll give you T Lavitz's entire library.' I've got bunches of stuff that I can just hand out, but not if I've actually built them for a particular player.

Kiki: I agree, and I think it's up to the technician or the programmer who's closest to that player to protect him, because a lot of them don't realize that what they have is a real gold mine to somebody else. With myself, I keep all the band's sounds together and protected, and I don't give them out to anybody else. The band never asked me to do that – it's something I just do.

MT: *Do you have any preferences on specific pieces or gear, or of particular synthesis methods?*

Ken: If they put it in my hands, I like to work with it. It's a new toy! I'll play with anything.

Kiki: I usually work with what's given to me, but for sequences, I work with computers. I use a Macintosh and Performer. But keyboard gear is unlimited. I still have my Minimoog and my Prophet 5, plus I have some of the new Roland stuff,

AT THIS POINT, a minor riot broke out. It seems that everyone was really shocked by the honesty of that response. Once things calmed down, the morality of "borrowing" sounds, and the professional repercussions of doing so, became the focus of discussion.

Kiki: If you maintain the reputation of having great samples, no matter how many get passed around, I think people are going to go back to the source where they originated. There's a real conflict here. As a musician, you want all the good samples you can get. But as a programmer, you can make money selling the samples.

Larry: My head is really split on it. I play horns professionally, and that's what I started out on. If I don't have great horn samples, I don't get called in as a keyboard player. And at the same time, I feel like I'm putting these guys out of work – and they're my guys, the guys I love to stand in a room and play horns with.

MT: *Do you think the result is the same, though?*

Larry: No, I don't. But the bottom line is that there are guys that don't do records any more. I refuse to use horn samples now. I just can't do it. There are real people losing out.

Ken: But it is opening up in all directions. The new wind controllers are giving back horn players the edge that they'd lost. They can go in and play drums on their horns, if they want.

Kiki: Or they could play a horn sample if they wanted to be realistic.

Ken: It's starting to be a give and take thing all over again, and now we're just getting back to the idea of who's stealing whose sounds from whom.

Larry: The reality of that, though, is how many people that have learned the discipline of playing an instrument will really get into the new technology. No matter how you rationalize, the fact is that there are a whole bunch of string players that aren't working any more. There's a

Reek Havok

- Specializes in electronic percussion setups
- Digital sampling, programming, tech work for: Yes, Motley Crue, The Eurythmics, ELP, David Lee Roth Band, The Pointer Sisters, Ratt, Patrick Moraz
- Known for sticking pickups in anything (fruit, dinosaurs, etc)

Kiki Ebsen

- Currently working on new Chicago album
- Computer and keyboard consultant for: Manhattan Transfer, Bill Champlin, Chicago, Chester Thompson (Genesis)
- Winner of 1985 Entertainer of the Year, American Collegiate Talent Showcase

Ken Hirsch

- MIDI and electronic technician
- Personal artist technician for: Billy Payne (Little Feat '88), T Lavitz, Paul Barrere (Bluesbusters), Surf Punks, Scott Page (Pink Floyd, Toto, Supertramp)
- Sound Engineer, Programmer, Studio Builder, Maintenance Tech

Larry Williams

- Composer, synthesist, horn player, programmer, producer
- Programming and/or performance and/or songwriting for: Michael Jackson, Lee Ritenour, Phil Collins, Eric Clapton, Boz Scaggs, The Commodores, What If (founding member), Starship . . . many more
- Co-wrote score to film *Running Scared*, which produced two top 10 hits

and Yamaha, and Akai. I like a variety, and I like to mix them together. It doesn't matter how new the gear is, really, only how creative you are.

MT: *What would you tell someone who would like to get into doing what you're doing?*

Kiki: Go back!

Reek: Don't do it!

Kiki: Really, I'd say do it, but get informed, ask a lot of questions, and don't pretend that you know everything. At this stage of

other people are listening to them.

Larry: The thing I would stress is - beware! Sure, you have to have technical knowledge. You've got to have a good foundation and you have to know your tools. But I also know incredible programmers that don't work and will never work. And players, too. You have to get along with people; that's the entry level requirement right there. And you'd better know whether you have that talent, to be able to be subordinate when that's called

to be, because there's no job security.

MT: *It doesn't sound as if this is an easy job. Is it lucrative?*

Ken: Occasionally.

Reek: It can be.

Kiki: It depends on how hard you want to hustle and work at it.

Reek: It's like almost anyone who's self-employed. It's the feast and famine routine. First you've got too much work, and then you don't have any work. The last thing you do is turn down anything.

Ken: I guess I've been lucky, but I do hedge my bets. There's so much instability that you've got to have at least one additional skill to fall back on.

MT: *Then can you sum it up? If it's such a tough profession to make it in, why do you do it?*

Larry: Sometimes I ask myself why I still do it. It's a real battle for me to keep programming from taking over my musical time. But when I made a serious commitment to get into pop music, and wanted to do quality pop music and work with good people, I realized that synths are just tools of the trade. And the possibilities of sound is what it all comes back to for me. And remember, the more work you put into it, the more it pays off in musical terms. That's the reward.

And that just about sums it up. For all of us.

Reek "When I sell somebody a disk of samples, I know that it's not going to stay in his little box. It's kind of an unwritten law, where you don't approve of it but there's really no reason to worry about it, because there's nothing you can do."

the game. I depend on my communications with other people in the business as much as I do anything else. There's so much information, and there's always something more to be learned. There's always new gear coming out, new specifications, new bugs, new problems.

Ken: Thank God!

Kiki: And don't start spreading misinformation. I can't tell you how many rumors I've had to stop. People who are insistent. And they're walking around saying they're MIDI professionals, whatever that means, and I say *no!* because

for, or to step forward when the timing's right. You have to have a lot of patience and work well with people. If you can't do that, don't even attempt it.

Reek: Patience is a big thing.

Kiki: Number one.

Reek: It's hard to get into, too. You've got to get around and work with enough people so that your name is known.

Larry: It's also a good point to diversify.

Kiki: Well, you can see that everyone here is pretty versatile. I don't think any one person here is relying totally on the idea of samples or programming. You really have

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Lync Systems LN4

Remote MIDI Keyboard Controller

Getting yourself out from behind your rack of keyboards isn't always an easy or fun proposition because of the limited capabilities of many remote keyboards, but the new controller from Lync may change that - if you can afford it.

Review by Glenn Darcey.

SINCE THE DAY Beethoven tried to strap his piano around his neck, keyboard players have been trying to find a way to look as cool as a guitar player without breaking their backs (carrying a 90-pound Rhodes around your neck will undoubtedly lead to frequent trips to the chiropractor's office). During the '70s, many of the richer and bigger name artists had custom keyboards made to interface with their existing synthesizers. People such as Jan Hammer, Roger Powell, and George Duke began the rage to climb out from behind the wall of instruments and to become an active part of the visual performance. At one time it was almost impossible to get a remote keyboard, now every major manufacturer makes one as well as quite a few smaller companies. Lync, one of these smaller companies, has been around for a few years selling a remote (the LNI) with a few less features than the one currently on the

market. Now it's time to look at their latest.

The Package

THE LYNC CONSISTS of a rack-mounted power supply, the keyboard controller, a strap with straplocks, a MIDI cable, and a 30ft interface cord. The power supply looks sturdy enough to take on just about any amount of abuse you would care to

dish out. The keyboard, on the other hand, is made out of a lightweight molded plastic and should be put into a flightcase if you plan to move it from gig to gig. The keyboard is four octaves long and is velocity sensitive. It has eleven buttons that have multiple functions depending on what mode you are currently in.

On the left-hand controller section are two return to center, spring-loaded wheels and two buttons that allow you to increment and decrement through the patch changes. The wheel on the far left is dedicated to pitch-bending. Its unique feature is that it can be programmed to bend like a DX7 (moving the wheel away from you bends up) or like an Oberheim



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(moving the wheel away from you bends down). The wheel on the right can be set to transmit on any one of the MIDI continuous controllers (0-127). This allows you to use the wheel as a pan pot, a timbre control, or as a standard modulation wheel.

The keyboard itself has a stiffer feel than the Yamaha or Roland keyboards, which seems to make fast runs a bit more difficult. This does help to cut out sloppy playing, though, by making it harder to strike two notes at once (don't get me wrong, the keyboard is not sticky, just stiffer).

A unique and very useful feature is that the power module has four MIDI outputs. Each output can transmit on its own MIDI channel, have its own keyboard zone, and transmit its own program change, velocity scaling, and MIDI volume setting. Even though you set up four sets of output information, however, it's important to note that outputs 1 & 3 and 2 & 4 are ganged together, meaning they transmit the same data (ie. the setup for 1 and the setup for 3 both go out of MIDI outputs 1 and 3). If used properly this can be a great feature. For example, by selecting the same MIDI channel for outputs 1 and 3, the responding synth will play two voices in unison. If different transpose amounts were set you could play in fifths, octaves, thirds, etc.

Beware, however, because this can also cause havoc with your system if you were to have your synth responding in omni mode. You might have the wrong patch being recalled with the wrong volume in the wrong key zone (it could lead to much verbal abuse as well as physical torture from your other band members). Be sure your synths are set to respond to the right MIDI channel to avoid all of the aforementioned. On the plus side again, this output scheme allows you to control up to 32 different MIDI modules (outputs 1 & 3, and 2 & 4 each transmitting on channels 1 thru 6). All of this offers a lot of flexibility not found on any of the other controllers around.

Programmable Features

THE KEYBOARD TRANSMIT velocity can be turned off or set to one of eight different scales. The scales are set up to transmit like a normal DX7 (slightly short of full scale), a soft DX, an overdriven DX (like a Roland), a normal piano, a soft piano, a linear scale, a reverse velocity scale (for velocity crossfades) and the velocity scale can be turned off for no dynamics (MIDI Velocity of 64). These can easily bring new life into your existing patches. The LN4 transmits MIDI volume in two ways - via a front-panel knob and by programming a preset (which allow you to store volume settings for recall). One thing to note is that the programmed setting overrides the front panel knob. Keyboard

zones can be set up in two ways also - you can either enter the MIDI note number for the desired split, or you can hit a note on the keyboard.

Each of these above parameters can be set for each output independently. Zones can be overlapped or can be set in their own ranges, different volume mixes between sounds can be stored, and the right controller wheel can bring in LFO modulation on one synth while stereo panning another. The last feature is that program change commands can also be set for each output. Changing one master patch can reconfigure your whole keyboard setup - no more running to your stack and frantically pushing buttons or having to shuffle your programs so that all of them are in the right order. The one major flaw I found with the keyboard was that it does not transmit aftertouch at all. In a master controller (even a remote one), I find this to be very limiting.

A total of 64 programs can be stored, which seems to be more than enough program memory for any set. These programs can be selected either directly by typing in the number via the eight buttons on the front or by stepping through them with the two left-hand controller buttons.

Conclusions

THE FIRST THOUGHT that comes to mind is that this thing is fun to play. It's very lightweight and is comfortable to wear for extended periods. I was, however, shocked to find out that it did not transmit aftertouch, especially because a remote keyboard is mainly used during a solo or featured part. The rest of the MIDI implementation is quite complete and has many features unique to the LN4. I did notice it is a bit hard to see the program number display while wearing the unit. This is not a major concern, though, because you can always lift the keyboard an inch or two with your leg. The wheel controllers are easy to reach and feel very good. If you are used to a DX7's wheels you will have no trouble getting used to these. The program increment and decrement buttons are easy to get to - sometimes too easy (I found myself bumping them and shifting patches on occasion) - but they could be fairly easily adapted to.

Overall, I liked the LN4 and found it a pleasure to play. It looks great, and having the power supply/brain rack-mounted keeps you from littering the stage with little boxes. I personally found the unit to be a bit high-priced for a keyboard controller, though, especially one that doesn't transmit aftertouch. The LN4's other features, however, may make this the perfect unit for you. ■

PRICE \$1325

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Photography Rose Rounseville

Yamaha TX16W

Digital Wave Filtering Sampler

Since budget samplers started appearing almost three years ago, rumours have flown that Yamaha was going to enter the market too. Now that their first entry is here, it's time to investigate. *Review by Chris Meyer.*

OVER THE LAST three years, sampling instruments have evolved beyond the state of being synthesizers with a digital playback section. The Yamaha TX16W is one of this new breed of more elegant machines. It has a wealth of interesting, thoughtful features, but imposes a structure that is based around placing and tailoring individual sounds – at the expense of the immediacy of a synthesizer approach. Like all samplers, however, its sound quality and “musicality” need to be taken account of in equal measure to its features. What follows, then, is exactly

that: an account of my life with the TX16W (soon to be a major motion picture ...).

Structural Overview

THE TX16W IS a 16-voice sampler with one pair of stereo and eight individual outs. It is capable of sampling in stereo or mono, and implements a set of 16 different digital filters that can be applied dynamically to the samples (along with digital “amplifiers”). Sample rates are 16.7kHz, 33.3kHz, and 50kHz (only the middle one is available in stereo), with 1.5Mbytes (1Megaword) of 12-bit sampling memory

available (which may be expanded up to 6Mbytes with optional EMMI expansion boards). The total sampling times are 43 seconds, 21 seconds (in mono), 10 seconds (in stereo), and 5.2 seconds respectively in a standard machine.

The operating system and samples are stored on a standard 3½” double-sided disk. The operating system disk, once loaded, does not need to remain in the machine (unlike, say, the Emax or occasionally the EPS). The MSX-DOS disk format allows a good deal of flexibility in terms of loading individual sounds and sets of parameters, but has a rather sluggish full

load time of 1¼ minutes (typical for other machines is a minute to 40 seconds). The TX16W does feature an RS422 port on its back panel, which may be able to help this problem if a hard disk connection is made available, but nothing to this effect has been announced.

The hardware appears to be all digital – no analog filters, VCAs, or mixers – with a constant clock playback system (à la the S50, Emax, EPS, FZI, etc.). This is a two-edged sword. The good side is that all processing can be in the digital domain, which allows for much fancier signal processing in terms of filtering and output mixing. The side that cuts you is that any amplitude enveloping is done digitally, as opposed to having an analog amplifier to fade the sound down at its end. This means that whenever the sound gets quieter, fewer bits are being used to describe it. Take something down 60dB in a 12-bit system, and there's only two bits left – resulting in lots of quantization noise that can't be hidden any time a sound fades out. Having a constant playback clock means that some distortions also enter whenever a sound is transposed – if you want to play a sample every 19msec when in fact you sampled one every 20msec, you've got to do some fudging. Every constant clock sampler does this; some do it better than others. The plus side of this is that bandwidth stays constant across the keyboard (including low notes), meaning no nasty clock noise creeping in as it will on variable clock samplers (like the Prophet 2000 and S900).

The TX16W has the following hierarchy: there are 64 waves, which are samples with a set of loop points, and 32 filters, which is a module containing one of the 16 different filter types and a set of associated parameters (envelope, velocity response, LFO, etc.). Next up the chain are 64 timbres, which each include any one wave, any one filter, and a number of performance parameters (tuning, keyboard response, pitch and amplitude envelopes, another LFO, and so forth). Note that a wave and filter may be used by more than one timbre (helping stretch memory around a bit). Above that is a voice (which I'm used to referring to as a "keyboard"). It contains up to 32 timbres laid end to end (no overlapping, but individual timbres may fade in and out at their key limits). A timbre may appear in more than one voice, and in fact may appear more than once in the same voice.

At the top of the chain are 32 performances, which contain up to 16 voices. Each voice in a performance gets a MIDI channel (more than one voice can have the same, for layers and the like), an assignment of how many and which playback voices it gets (along with output assignments), transpositions, and so on. As you've guessed by now, a voice can appear

MT MAY 1988

in more than one performance, and may appear in the same one several times. A little complex, but no real problem to work with (I taped a little piece of paper with the food chain drawn on it up on my stand to keep me straight the first several hours), and admirably flexible.

Editing these various functions is divided into several "modes" – *Performance Select*, *System Setup*, *Performance Edit*, *Voice Edit*, *Filter Edit*, *Wave Edit*, *Sample*, and *Utility*. Each has its own dedicated, labeled button under the generous 2×40 character LCD. To the right is a keypad including the common numbers plus a sign key, cursor controls, an "Enter" key, and typical Yamaha "on/yes/plus" and "off/no/minus" keys. The user selects the mode he or she wants by hitting the related button, which brings up a menu of one to 13 "Jobs" (common Yamaha terminology). Hitting the number of the Job enters the selected subfunction (which can take from zero to a couple odd seconds). The Mode keys always take you back to the top of the menu.

Whenever a new Performance is called up, its various parameters are loaded into *edit buffers*. You can tweak and mutilate a sound to your heart's content, and still recall its original sanity. This is a great protection device; the slight cost of this is you have to go into Utilities and copy the edit buffer into the real location (any real location, by the way – not just the one from whence it came) if you want to keep it. A current oversight is that you can't compare edit buffers with original values (maybe in a future update), but you can copy it and switch Voices, Timbres, Filters, and Waves in and out fairly easily. You are always editing the last voice, timbre, filter, or wave you selected on up the food chain; you may also select the one you are playing by holding the Enter key as you play it.

All in all, this is a highly structured system that requires a little thought and button pushing to get around, but as structured systems go, I could use this one faster than any other (EII, Emax, EPS, etc) I've encountered so far. Let's look at each Mode and Job in detail.

Modes and Jobs

– **Performance Select:** This is the simplest of the modes. You select which of the 32 Performances you want to play. The display does the courtesy of showing you which Instruments are in the chosen performance, and which output they're assigned to (left, right, both, or individual). These assignments cannot be edited in this Job, however; this is common of several Jobs in the TX16W – the display shows you some associated information around the parameter you are editing (very handy), but will only let you edit it in its rightful mode and Job (I told you it was highly structured . . .).

– **System Setup:** Seven jobs are available in this Mode – Master Volume, Master Tune, MIDI Switch, Control Number Assign, Program Change, Device Number, and Protect. Master Volume controls the level and balance of the stereo outputs. Fading is smooth, which overcomes my missing a dedicated volume knob. Master Tune allows the whole machine to be tuned sharp or flat a half-step.

MIDI Switch covers who the TX16W listens to over MIDI. Program changes may be ignored, listened to on all channels, or listened to on one specific MIDI channel. Continuous controllers (which include control changes, aftertouch, and pitch-bend) may each be set to be ignored, be received per Instrument on that Instrument's channel (more in a bit), or one global channel may be specified to affect all Instruments regardless. This will allow guitar controllers to pick if each string affects one Instrument or all, but it would have been even nicer if they could act normally *and* have a global channel (for individual string bends and global whammy bar). The unit can also be set to respond to all notes, or just the even or odd notes. This is a substitute for the MIDI overflow mode that appears on some instruments, in that two TX16Ws could be run in parallel to give 32-voice polyphony.

Under Control Number Assign, any incoming MIDI controller number may be turned off or assigned to act like the mod wheel, breath controller, foot controller, sustain switch, volume, or inc/dec switches – a very nice system. Likewise, Program Changes can be routed from any of MIDI's 128 to any of the TX16W's 32 Performances. Device Number sets which device it looks like over system exclusive, and Protect allows you to block copying edit buffers into permanent locations.

– **Performance Edit:** Here you're presented with seven possible Jobs – Voice Assign, Receive Channel, Output, Volume, Detune, LFO, Note Shift, External Trigger, and Name (the latter allows a 20-character name to be given to this Performance). All edits here are buffered, and most deal with the individual Voices that make up the current Performance.

The TX16W has an interesting way of assigning its Voices to sound playback voices; 16 are available for playback, and up to 16 Voices may be fitted into a Performance. You choose how many playback voices a "Voice" (keyboard) gets, and precisely which playback voice that is. This becomes more important in the next two Jobs below. I have mixed feelings about this system – you have a good grasp of exactly what's going on (bass gets voice one, strings get two through five, etc), but it's *not* a dynamic allocation system – the string Voice can't get all 16 playback voices one instant, and the bass all 16 the next. Voices and playback voices are interlinked, ▶

► in that every playback voice assigned means one less Voice allotted (ie. you may have only two Voices that use eight playback voices apiece).

The Receive Channel/Alternate Assign Job is where you get to select which MIDI channel drives each Voice. If a Voice has multiple playback voices, the TX16W doesn't let you assign multiple MIDI channels for it (cuts down mistakes, but prevents one Voice in an instrument that may want all 16 playback voices from being driven by more than one MIDI channel – but I admit that's rare, and will now sit down). If adjacent Voices are assigned the same MIDI channel, they may stack, or be set to rotate through the assigned playback voices. Let's say Voices 1 and 2 get one playback voice apiece, and are both on MIDI channel 1. They can both play at the

same time, or alternate 1/2/1/2/1/2 on successive notes – a nice trick.

In the Output Assign Job, you select which output a Voice gets mixed into. It can be the left, right, both, or individual out. There are some nasty restrictions on the individual outs: namely, only the first eight Voices may get an individual out, the Voice must be placed in the position of the output it wants (no assigning the fifth Voice position to output #1), and if one of the first eight Voices goes to an individual output, all of the first eight must go to them. A Voice may not appear in the stereo mix and an individual output, nor may one Voice share an output with or cut off another Voice – severe restrictions for drum programming.

Volume and Detune are obvious – each Voice may have its own volume and detune

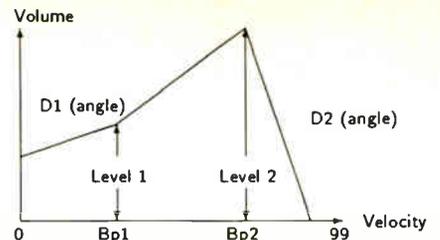
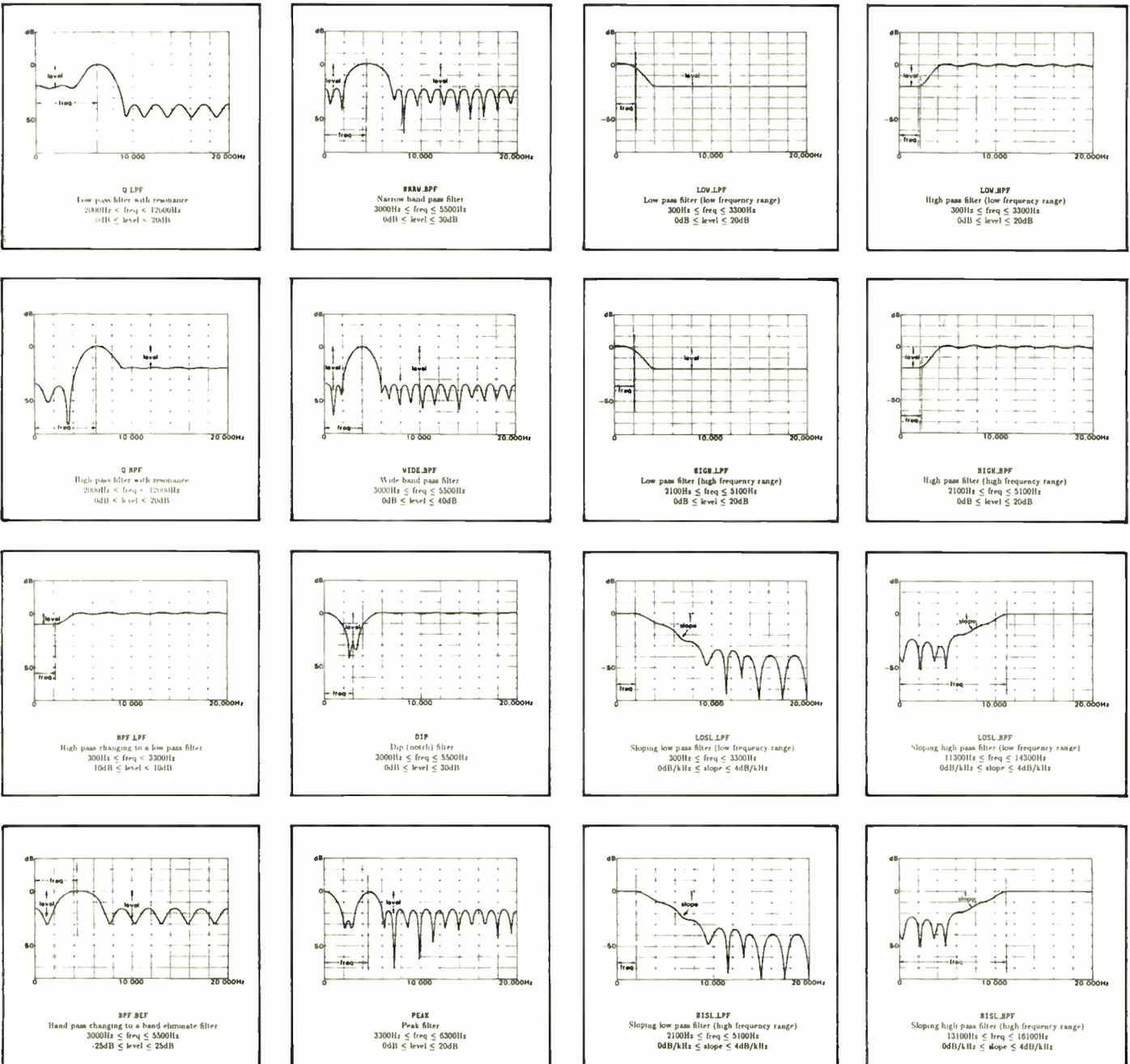


Figure 1. Setting up a user-defined velocity curve.

settings. The detune range is ± 7 and is very subtle; the manual recommends using it for detuning stacked Voices (ones that are on the same MIDI channel). Each Voice may also be individually transposed in the MIDI Note Shift Job ± 24 semitones. Nice and thorough.

The Performance LFO may be a sine, triangle, ramp, sawtooth, or square wave. ►

Figure 2. Graphs of each of the TX16W's filters.



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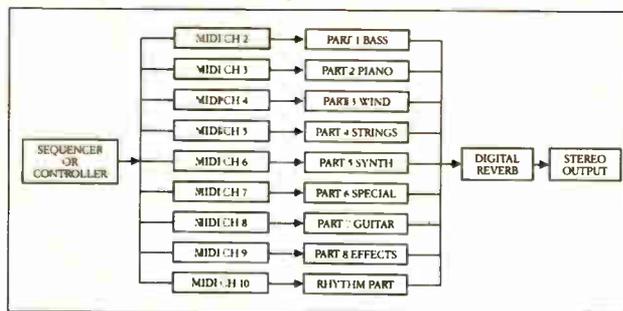
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► Speed is adjustable, and the LFO may be synchronized to restart when a new note is struck. In this Job, a fixed modulation amount may be applied to the amplitude and/or pitch, with a programmable delay before it ramps up. MIDI control of this LFO amount can be set over in the Voice Edit Mode. All controls in this Job have good, usable ranges.

External Trigger allows a MIDI note to be faked by an audio signal (ie. drum hit on tape) plugged into the "Ext Trig" jack on the front panel (the manual claims a footswitch will also work, but mine didn't). Threshold may be set, along with a gate duration (how long the note is held on, and how long until the next trigger is recognized). I found the TX16W to respond pretty quickly, but the gate function was a bit touchy - I would have preferred a finer selection of the shorter values.

- **Voice Edit:** The thirteen jobs here include Slot, Wave, Filter, Pitch, Veloc, AEG, PEG, LFO, AMS, PMS, Veloc Bias, Pitch Bend, and Name (the latter allowing each Timbre to have a 10-character name). All except Slot deal with the individual Timbres that make up the Voice.

As mentioned earlier, there may be up to 32 Timbres per Voice. These are fitted into "Slots." Each Slot has a Timbre, low and high key (in music, not MIDI, terminology), and the number of keys (up to nine) that it fades in and out from at its limits. No positional crossfades may be set up here; they are created by layering two Voices with Timbres that have overlapping fade areas. Yes, cumbersome, but this is a strict machine.

Wave and Filter Assign lets you pick the Wave and Filter used in the currently selected Timbre. It's a little odd to "Slot" an empty Timbre first and then fill it, but you can also change the Waves and Filters in an existing Timbre here. The Pitch Job lets you select the key that the Wave sounds at its root note, and has a fine tune control.

A user may design his or her own Velocity Curve. Two break points and levels may be set, along with slopes from the first point down to minimum velocity and the second point to the maximum velocity (see Figure 1). The manual suggests drawing your desired curve beforehand (helpful with the envelopes too), and will display the curve with a flick of the Enter key. This curve can be turned off, and the overall volume of the Timbre may also be set in this Job.

AEG and PEG stands for Amplitude and Pitch envelope generators, which are just like the four level/four rate ones found in Yamaha's DX series. I found the AEG rates and levels to be a little unbalanced (hopefully they'll be fixed in a future update); on the other hand, the eight-octave range of the PEG was handled very

smoothly.

Each Timbre has its own LFO aside from the Performance LFO. It is a simple triangle, with adjustable speed, pitch amount, and amplitude amount. The ranges are very small and the effects very slight, but they proved to be just the ticket for adding "natural" amounts of vibrato and tremolo to a sound. AMS and PMS stand for Amplitude and Pitch Modulation Sensitivity. How the Performance LFO reacts to mod wheel, foot controller, aftertouch, and breath controller may be set for each Timbre. Velocity Bias Sense gives you the same control over the velocity at which the note was originally struck (sort of a "swell" control). Finally, the Pitch Bend sensitivity may be set from none to 12 semitones, and be smooth or stepped. Very high marks overall to Yamaha for how they've handled the modulation section on the TX16W.

- **Filter Edit:** Herein reside the special digital filters Yamaha touts in the name of the TX16W. There are seven Jobs in this Mode - Table, EG, LFO, Scaling, LFO Sense, Bias Sense, and the ubiquitous Name (ten characters, just like Timbre).

Sixteen filter shapes can be chosen from - low and high pass filters with resonance, narrow and wide bandpasses, two each normal, low and high pass filters (the two have different frequency ranges), a shelving filter that can go from a low pass to a high pass, a filter that can act as a notch or a bandpass, a straight notch filter, a combination notch and bandpass filter with a lot of ripple (called a "peak" filter), plus two each low and high pass filters with variable slopes and a good deal of ripple. (According to the company, even more types will be made available in the future - they are loaded from disk along with the O/S.) Yamaha includes in the back of the TX16W's manual very accurate and detailed graphs of all sixteen currently available (see Figure 2).

Each filter has two parameters - frequency and depth (or slope, in the case of the last four filters). Depths run from 20dB to 50dB ranges (or up to 4dB/kHz, for slopes); frequency variance surprisingly covers only 2kHz to 3kHz (one to five octaves, depending on range) for all but the resonate filters (they have an absolute range of 2kHz to 12kHz). The user gets to pick which one of these parameters remains fixed (and give it a 0-9 setting). The other may be set over a range of 0-99, and can be varied by a Filter EG (just like the PEG in Voice Edit), its own LFO (just like the Performance LFO in Performance Edit), LFO and Bias Sensitivity (as in Voice Edit), and a keyboard scaling (with a selectable breakpoint and end points for tracking the keyboard). The idea of having so many filter shapes ("Tables," in TX16W speak) with so much control is a very exciting concept, and one I hope all ►

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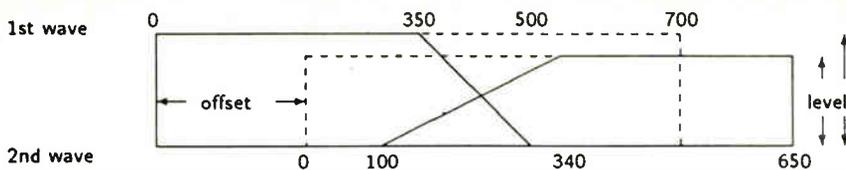


Figure 3. Some of the possibilities of mixing two waves.

other electronic instruments (regardless of sound source) copy.

It is with much sadness in my heart that I break this news – they don't work all that well. Their depths of effect and frequency ranges tend to be too small, and they sound more like gentle equalization than the in-your-face effect of the analog filters in synthesizers that I happen to prefer (for the record, the EPS is the only digital filter I've heard that comes close). Good for subtle colorations, but nothing drastic. But here's the worst part – about a third to half the filters click or downright choke if dynamically varied. That means moving a mod wheel or applying an envelope often has disastrous effects. To move into Californiaspeak for a moment, I was seriously bummed.

Wave Edit: You've got seven Jobs here – Load to Buffer, Trim, Loop, Loop Cross Fade, Reverse, Mix, and Name (eight characters in this case). Waves must be loaded from a location into a buffer to be edited; the nice part of this is if you don't dig the surgery you just performed, you can reload the undamaged original. Waves can be loaded in pairs for dealing with stereo samples.

Trim is pretty straightforward; you can move the start and end points by blocks (a "block" equals 64 samples). Afterwards, you can normalize the sample out to its full dynamic range. Loop points may be set by blocks and individual samples. There is an AutoSearch function that looks for loop points at zero crossings with a similar slope as its partner. Only unidirectional loops are allowed. When done (as with Trim), the TX16W "collects garbage" (reclaims unused sample memory), which it seems to do automatically whenever a wave is altered.

Loops may also be crossfaded, with the length of the crossfade selectable in blocks. Since crossfade looping alters the actual sample, it's nice to be able to "undo" the attempt with the reload function.

The Reverse Job has a few tricks up its sleeve. Not only will it reverse a sample, but it will reverse portions of a sample, and even mirror parts of the wave back on itself (usually a copy, reverse, and append function on most samplers). Mix allows two samples to be appended, mixed, crossfaded, and food-processed in general. A two-screen Job, the level, fade points, fade rates, and amount of overlap can all be set (see Figure 3 for an example). Both of

these are Jobs where you'll want to draw out what you're doing ahead of time on paper.

– **Sample:** Three simple Jobs here – Frequency, Level, and Record. As mentioned earlier, the TX16W has three sampling rates – 16.7kHz, 33.3kHz, and 50kHz (with stereo sampling available at the 33.3kHz rate). Length may be set in the Frequency Job as blocks or milliseconds (nice to have both), and the available memory may be checked here.

The user may select six different ways to start sampling: by crossing a Threshold set in the Level Job (which turns the LCD into a VU meter with peak detector); when the "yes" key is pressed; by stomping on a footswitch (a jack is on the front panel); by a signal hitting the "ext trig" jack (discussed earlier under Performance Edit); by a combination of auto and footswitch, or by a combination of the external trigger and footswitch. The auto threshold works as well as any other sampler – ie. a tiny piece may get chopped off the front of the sample. I really liked using the external trigger – I ran the same signal into it and the sample input, and noticed no chopping.

The VU meter in the Level Job works fairly well. It seemed to miss a few peaks, and when I ran the exact same signal into both inputs in stereo mode, sometimes the left and right meters read differently. A small bug.

The Record Job is, of course, where you sample. After sampling is completed, you may audition the sample at different pitches by hitting the numeric keys – another thoughtful touch, and my favorite of any sampler yet. Sampling a sound again may be initiated immediately from this screen.

How does it sound? I sampled an Alesis HR16 into the TX16W and my trusty Prophet 2002, and actually thought the Yamaha sounded more accurate than the Prophet – only the second machine yet (the Akai/Linn MPC60 being the other). The TX16W does have some problems, though. Transposition causes a little distortion and occasional low-level sidebands. Quantization noise is worse on untreated samples than my 2002, and because the Yamaha is an all-digital system, there is simply *no* way to get rid of it. This quantization noise comes in whenever the sound is reduced in level – by envelope, filter, LFO, or by naturally fading out. Also,

the stereo image of stereo samples was not steady, shifting slightly with each triggering. To be a true stereo sampler, the paired voices must always be started in exact sync. The Yamaha is close, but doesn't pull it off.

– **Utility:** The final seven Jobs are fairly self-explanatory – Store (for saving the contents of your edit buffers, as mentioned above), Disk Load (single items – even Performances – may be loaded), Disk Save (only the whole thing), Format, Init (clears out Performances, Voices, Timbres, Waves, and Filters, individual or in groups), Disk Copy, and MIDI Dump (praise Allah – the TX16W supports the MIDI Sample Dump Standard, which means I immediately have a pair of synthesis programs – Softsynth and X-Alyzer – that work with it).

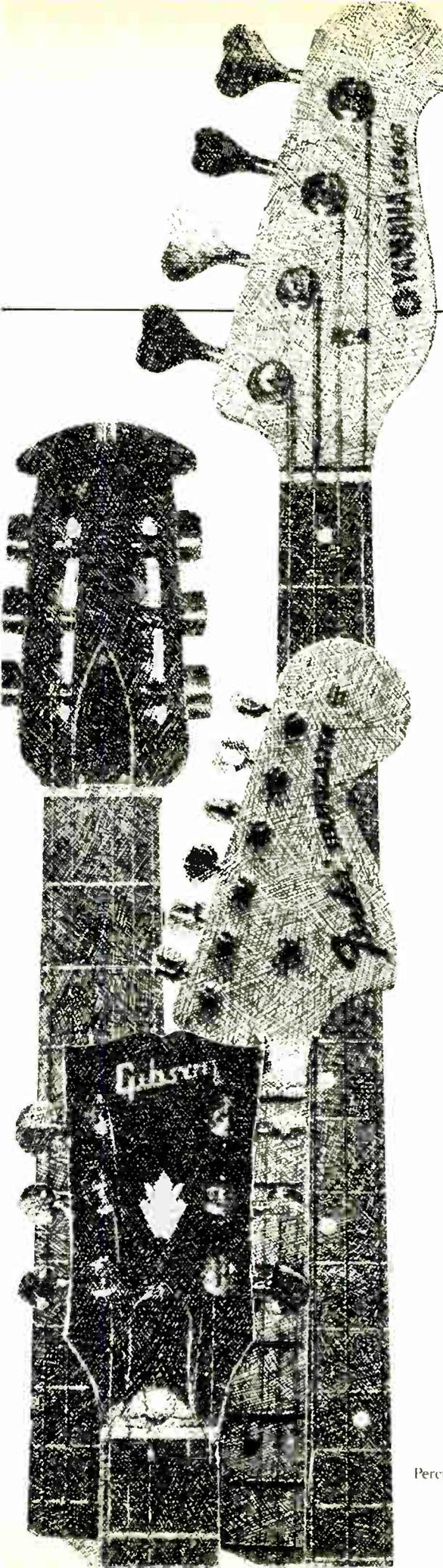
Exhaustive End

BOTTOM LINE TIME – what do I think of the TX16W? Mixed emotions – as far as structure and features go, I think it is a thoroughly thought out, rather elegant machine that's one of the most comprehensive ones yet, with just a few rough spots (like positional and velocity crossfades having to be performed by layering two different Voices). The filters are a *great* idea; they just don't work right yet. And though the sound quality is good in the rough, excessive quantization noise lurks around the corner every time you have to change the sound's level. With slightly better sound quality, I wouldn't hesitate to buy this machine (and admitting that I'm fussy, give it a listen yourself). As it is, I'm waiting for a (hopefully) 16-bit version of this thing with filters that work...



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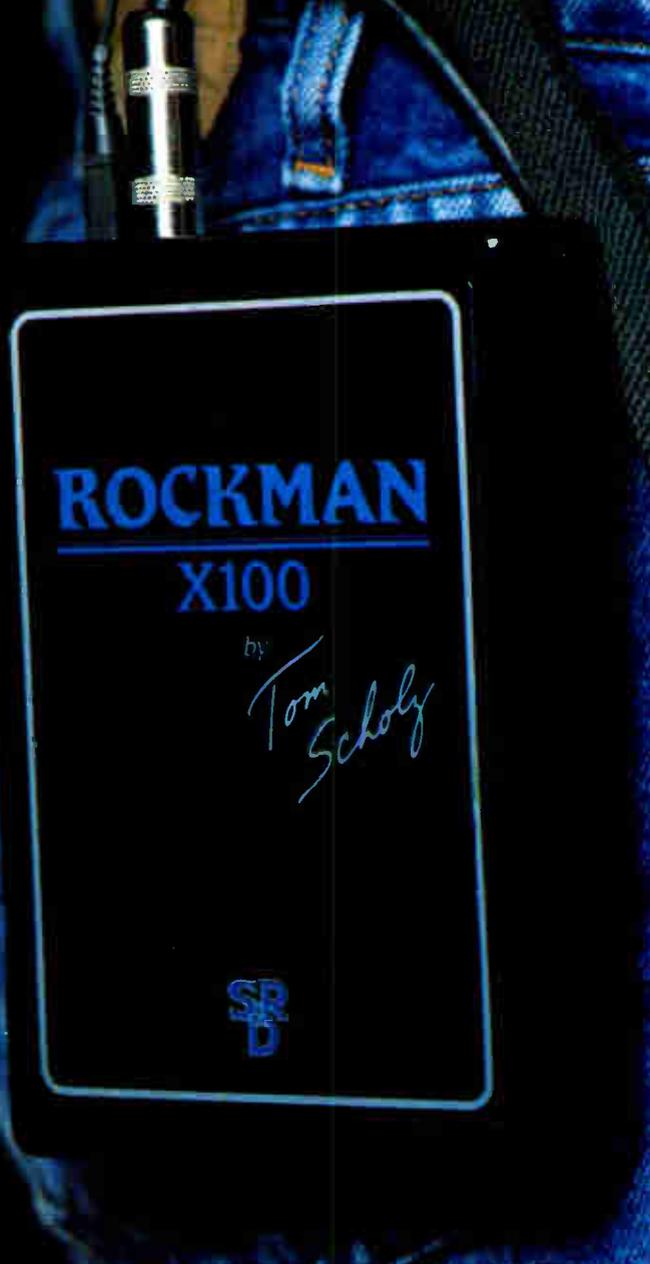


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The Hip Processor



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Photography Peter Figgen

first . . . THE MUSIC

One of the earliest users of guitar synthesizers, Lee Ritenour's lightning fingers and musical sensibility have won him international recognition as one of the world's best players. A new album and frequent live performances help keep him on the cutting edge. *Interview by Deborah Parisi.*

“AS MUCH AS I love the technology, technology's not even close to replacing live musicians.” Thus Spake Lee Ritenour, Captain Fingers to some, at his sprawling Malibu home a few weeks back. Not a surprising sentiment,

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coming from a musician whose rise to solo star status sprung from jamming with every conceivable type of musician during his session days – lending his skills to the likes of Kenny Loggins, Steely Dan, Glen Campbell and Barbara Streisand. And also a worthwhile reminder that what we're

talking about here is music, not technogabble; the gear remains a means to an end . . . period.

“To me, making music is really all about orchestration,” he continues. “It's putting pieces of a puzzle together, blending sounds together for the listener's ear. Synthesizers

by themselves don't have enough depth yet. But," he smiles, "blending acoustic instruments along with synthesizers brings out a wonderful combination of colors."

Blending things together is certainly one of Ritenour's trademarks, whether it be man and machine, form and substance, or speed and sensitivity. His latest album, *Portrait* (GRP Records), could in fact be criticized as a little too ambitious on the blending, even though *Side Two* is a fairly steady compilation of seamlessly performed and produced easy-listening fusion tunes. *Side One*, on the other hand, jumps rather drastically from the fiery rhythmic exuberance of Djavan's 'Asa' to the cool, Michael McDonald-ish 'Turn the Heat Up.' Ritenour's in good company with these criticisms, though; more than a few musicians have been accused of trying to pack too many emotions into one set (including old Wolfgang Amadeus himself!).

Working with a new flock of musicians as writers and players was a conscious decision for *Portrait*. Co-writing with the Yellowjackets, Kelly McNulty, Tim Landers and Kenny G did add a great deal to the substance of the tunes, despite their diversity.

"I actually am a creature of habit," Ritenour says. "If you look at the history of my albums, I generally work a lot with the same people - Don Grusin, Dave Grusin, Harvey Mason, Abraham Laboriel, Larry Williams, Eric Tagg, Phil Perry - there's definitely a clique of people that you'll see bounce up on the albums more often than not. But for *Portrait* I wanted to work with some new people. It's really healthy to push yourself that way because it brings in a lot of freshness in yourself. The important thing is to write with somebody that balances you, you know, that has something to offer that you don't do as well. If you do one thing strong and somebody else does something else strong, chances are you'll make a good writing team."

The prolific guitarist has released some 17 albums as a solo artist in the past ten years, marking him as one of the most successful studio players to ever go out on his own. Making that transition, from playing 20 studio gigs a week to working on one solo project, was not exactly easy.

"I didn't change careers per se," he says, "in the sense that it was still all music. But in another sense it was like a career change. At the time, around 1976, I really felt like I saw signs that the studio business was changing, and the days of the traditional sideman were coming to a close. There are definitely studio musicians still around, but I think the nature of them has changed a lot.

"It was really the end of an era," he continues, "where there were sometimes three or four guitar players on one date, a couple of keyboards, drums and bass - full

rhythm sections, with everybody playing together. And to this day that's still a lot more fun than the guitar player coming in and overdubbing to a drum machine. I feel kind of lucky that I caught that era."

Making the change to solo required a number of practical and psychological adjustments. "I had to push myself into not accepting dates and just concentrating on the career - and of course you make the big discovery that your solo career is not nearly as big as the career you just left, and

"Session work used to include full rhythm sections, with everybody playing together. And to this day that's still a lot more fun than the guitar player coming in and overdubbing to a drum machine."

you've got to start from the beginning. I was also forcing myself to stay home and write music almost by the clock, like I had been working as a studio musician. You really get used to the clock, you know; you get booked for a 2-5 session on Monday, and you have three sessions on Friday, and so on, and you're really more of an everyday working kind of person. When you're a solo artist, there is no clock, there is no timekeeper - you're forced to create your own schedules.

"So I played this game with myself," he recalls, "where I decided to write every day for six or eight hours, and of course it didn't work out that well, because you can't force yourself into that kind of creativity.

"Plus you go through all these changes where you stop seeing the guys you used to associate with, and you're not in the center, knowing what's going on all the time. All of a sudden you're on the other side of the glass, hiring people, trying to keep your budget under control . . . it's really a trip. But I'll tell you, I much prefer my lifestyle now to that of a session player, even though I enjoyed that. The transition really took a number of years. Only since about 1985 have I really felt comfortable being an artist. Once I got my own studio, I really began to feel more comfortable and confident."

The studio he mentions is actually an active 24-track facility tucked into a large corner of his home, complete with all the accoutrements of a professionally-equipped facility. Though the gear has recently been moved to the Malibu location, it has been used by Ritenour and cohort Dave Grusin to score a number of film and television projects, including *Lucas*, *American Flyers*, and a recent Disney movie-of-the-week, *Rock 'n' Roll Mom*, as well as on a number of GRP albums beyond Ritenour's own projects. It has also encouraged him to become his own producer.

"I'm not an executive producer, I'm hands-on all the way," he explains. "When you're starting out, it's impossible to be a good artist and producer at the same time,

especially today when you need so much knowledge in the studio. But over the last few years I've begun to feel confident that I can do both well. I don't really resent the executive-type producer who knows nothing about the studio, knows nothing about music, and only has a sense of the over-all thing. Sometimes those guys aren't bad, because even if he doesn't know how to tell the arranger or artist or musicians or engineer how to do something, he can help in creating the final product. Maybe he has

a strong sense of what a good song is, or a good sense of whether a song is turning out the way people would like to hear it. But there's very few of those guys," he adds, laughing. "Very few. I'm a total hands-on musician, and I'm involved in every aspect of the recording, all the way from the ground up to the finished mastering."

No one would argue that his self-produced *Portrait* lacks much on the sound quality or the mix, which Ritenour largely attributes to the efforts of his long-time engineer, Don Murray. "Don's been involved in almost all my projects, going back to my second album in '77." They obviously work well together.

First and foremost, however, Ritenour is a guitarist, despite his production, engineering, songwriting and film scoring credits. "I think I have a great balance now, because in the studio I have all of the technology and use all the technology to its highest, and yet I go out and play live a lot with a bunch of great musicians. I like keeping up my chops as a guitarist, and I'm still really interested in trying to become a better guitar player, exploring the sounds more and becoming more of a voice."

ONCE THE ROLE of technology is put into perspective, Ritenour is more than amenable to discussing the tools he uses in creating his music - tools which characteristically combine the cream of the crop in old and new gear. From his 1954 Strat, which has been updated with EMG pickups, to the Sony 3324 Digital Recorder which was delivered moments before the interview, he looks for equipment which will help him most with his sounds.

"I never look at discarding anything old," he says, "I always look at just adding new things to the arsenal. I love all the new synthesizers and drum samplers, but I also love just about anything acoustic that's well played. I'm one who likes to sum up musical history and use everything.

"Today is interesting because it is so demanding trying to keep up with the ►

▶ technology and still learn your skills as a musician. I was thinking the other day of how I would teach a young musician to grow up now. It's so different now than even when I grew up. Any four- or five-year old, or even a two-year old, can put a cassette in a cassette machine, turn on the VCR, run the compact disc player - and they have these Casio synthesizers, you know, that play a little tune. Sequencers to little kids are commonplace now. So if you

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"I never look at discarding anything old. I always look at just adding new things to the arsenal. I love all the new synthesizers, but I also love just about anything acoustic that's well played."

don't introduce your kids to those kinds of things, you're probably missing the boat as far as the new world of music is concerned. On the other hand," he muses, "how much traditional music education do we give them, or is it a whole new ballgame, or do you let the kids just go and discover the electronics by themselves and give them a basic piano foundation?" He pauses, laughing. "I don't have an answer for it. But I do wonder . . ."

Coming from a more or less traditional musical education, Ritenour has certainly had no problem learning the electronics for himself. He's been involved with guitar synthesis since 1977, when the *Captain*

Fingers album was released. "I used an old 360 Systems, Bob Easton's electronic guitar synthesizer, on that, and it was one of the first ones."

Since then, the sophistication (and cost) of his guitar synths has increased dramatically. "I've just about checked them all out and basically use three now," he says, "and they're all very different. The SynthAxe . . . it's quite an instrument, although I'm honestly not using it as much

as I was. Allan Holdsworth and I were probably using it the most, and Allan has really become almost a new age musician - I don't mean new age musically, I mean new age as a term meaning he's taken up this instrument, and *that* (not the guitar) is his instrument now. I love the guitar too much to give it up and replace it with a SynthAxe. It really is fairly far from a guitar; it's very different. State-of-the-art for the digital controller . . . it's a non-guitar type instrument that can be played by a guitarist.

"I'm also using the Roland GM70, and I think it's the best at that end for electric guitar right now. I use that a lot. And the other one that I love, almost better than

the other two, is the Takamine classical guitar synth. It's strictly a classical guitar with a pitch-to-voltage system that tracks amazingly well, and I find it more musical than the other two. On *Portrait*, it shines most on a song called 'Children's Games,' where I'm playing acoustic guitar and you hear this very air-flute sound on the solo which is actually the synthesizers along with the acoustic guitar. It's all a live performance.

"Between the three," he concludes, "I really feel like I have it covered, but there are always new ones coming out. Yamaha's working on one, and I expect that to be very good. But you know, the interesting thing is that, despite the whole art of synthesis, and guitar synthesizers, the whole thing has changed in the last year and a half, because one new element has entered this whole thing that to me is the most revolutionary part of the whole MIDI world. That's the way computers are being used now."

Ritenour has been using an Atari computer with Hybrid Arts' SMPTE-Track software for not quite two years and is amazed with the results. "These days you're either a Mac user or an Atari user, and you either load Performer or SMPTE-Track," he comments. "It's sort of like buying a Jaguar or a Mercedes, as far as I'm concerned; it just doesn't really matter. I used it on *Portrait* and on the Disney project, and I think it's unbelievable. And I think the synthesizers, the drum machines, the samplers, the guitar synthesizers, all the keyboard stuff . . . I think those are all secondary to this system. To me, the computer is the little god now. He controls everything. I can't see doing it any other way now.

"I won't buy another drum machine," he states, "because I can just improve my drum samples, whether it's 16-bit, 18-bit or on up, and I'll improve my synthesizer samples. I see basically just loading these sounds into the computer and letting it do all the work. I look at using the guitar synthesizer and the keyboard synthesizer or the drum machines as kind of the same thing, and use the terminal as the main beast."

Again, however, the computer is only a tool, allowing technical matters to be carried out expeditiously to make time for creating better music.

"I use it for sequencing, and I use the SMPTE on it. I can lock it up to a movie, I can lock it up to the video machine, or I can lock it up to the 24-track machine, and it controls all those things just incredibly easily. It's so easy to write to a movie using the Hybrid Arts system. When I was working on the Disney score, they would have a SMPTE start time for a particular cue, and you put that start time into the data and your click will start automatically. Your music will start right at that given time at the beginning of that cue, you



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know, right where you plugged in your start time. You can move that around, of course, and you can move your tempo around . . . it's just such a great way to write. And it covers so much ground, it does so many things so well, and it's so user-friendly, it's so fun to work with." Ritenour's enthusiasm is catching, and certainly encouraging to anyone thinking of scoring to picture.

But as excited as he is on computers, he's less than vibrant when it comes to collecting synthesizers. "The ones I own are standard fare these days," he notes. "There's a DX7II downstairs, there's a couple of Oberheim Xpanders, an Akai sampler, and a TX rack. It's funny, but the synthesizers are changing so often so fast with so many that I'd rather hire a synthesizer programmer who comes in with all his gear for a few days. Those I own are good enough for writing into the computer, and when it comes to actually producing the record or the movie, then I'll bring in somebody with a wall of synthesizers that we can improve the sounds on. For drums, I've been using the Sequential Circuits 440 and some very good drum samples on the Akai. For writing, those are fine."

IT'S BEEN SAID that the President is only as effective as the people in his cabinet, and to some extent Ritenour is technologically effective because he hires great people to assist him – for engineering, for programming his synths and computer, as players during tours – in virtually all aspects of his music. Perhaps the most significant of these is Larry Williams, well-known on his own as a sax player and quickly gaining reputation as a programmer. He is credited on *Portrait* for SynthAxe programming, synthesizer programming, keyboards on several of the songs and for sax and synth horn performance.

"Most musicians in the last three or four years have had to make a choice," Ritenour says, "whether they were going to be a programmer or a musician. And the two have become very different. Larry Williams is an example of somebody who's sort of crossed the line and still goes into both areas. He's a great keyboard player – he was on the road with me for a couple of years – and he's gone on to be a great synthesizer programmer. And of course he's a great saxophone player, too. He's one of those valuable guys that can help you on all levels. Some of the programmers are such technoids. They're technically brilliant guys, but they are pretty far away from music. I have a hard time relating to that kind of programmer."

Ritenour also surrounds himself with great players when on tour, working with the Yellowjackets, Kenny G, and Tom Scott, among scores of others. The germ of
MT MAY 1988



new tunes is often conceived during performances, the outgrowth of some appearing on *Portrait*. "On 'G-Rit,' the tune I wrote with Kenny G, we had been out on the road together. He's really a fun R&B jazz sax player, and I think there's something very charming about him musically. When we were on the road together, we had this song of his that we would go out in the audience and jam together on, so I suggested we write something like that for my album so that we could play off of each other."

For live work, Ritenour uses the tried-and-true prerecorded tape to fill in where the players leave off. "As far as sequencers and drum machines go, we don't bring out any of that stuff live. I make four-track tapes in my studio – two tracks that go to the house, two tracks that go to the monitors – and on the monitors we'll have a click, a cowbell or something like that. Certain songs require it – like the song 'White Water' that the Yellowjackets did with me; it has this very sequencer-drum machine orientation that goes through the whole song, so that's on the four-track. I've been using prerecorded tape since about '84, and it's never screwed up once, knock on wood, never had a problem with it."

"That's some advice for groups that can't afford to bring tons of gear on the road,"

he adds. "It's a very good way to get around the problem. And it's no different than bringing out the sequencers and having somebody hit Play. They just hit Play on the tape recorder. I don't find any problem with it, and certainly our audiences don't have any problem. I don't think I've ever had a complaint."

When asked about the future, it's easy to see that Ritenour's only plan is to keep on going. "I have a lot of energy for the studio and for going on the road," he says. "And I really like the balance I have right now, being in the studio part of the year and being on the road part of the year. I haven't gotten into producing further, because the further you go towards becoming a producer, the less of a player you become. Maybe later in life I'll do more of that. I've also enjoyed writing for films, though I haven't done too many yet – a couple of features and a couple of television movies. But it seems like I'll pursue that as another balance. I like writing different kinds of music – that's where versatility comes in."

Remaining flexible – to work with new musicians, to compose for different kinds of projects, and in using equipment – seems to be what Ritenour is all about. No doubt he has more tricks up his sleeve as well, assuring him a place in the music world through the next decade and beyond. ■

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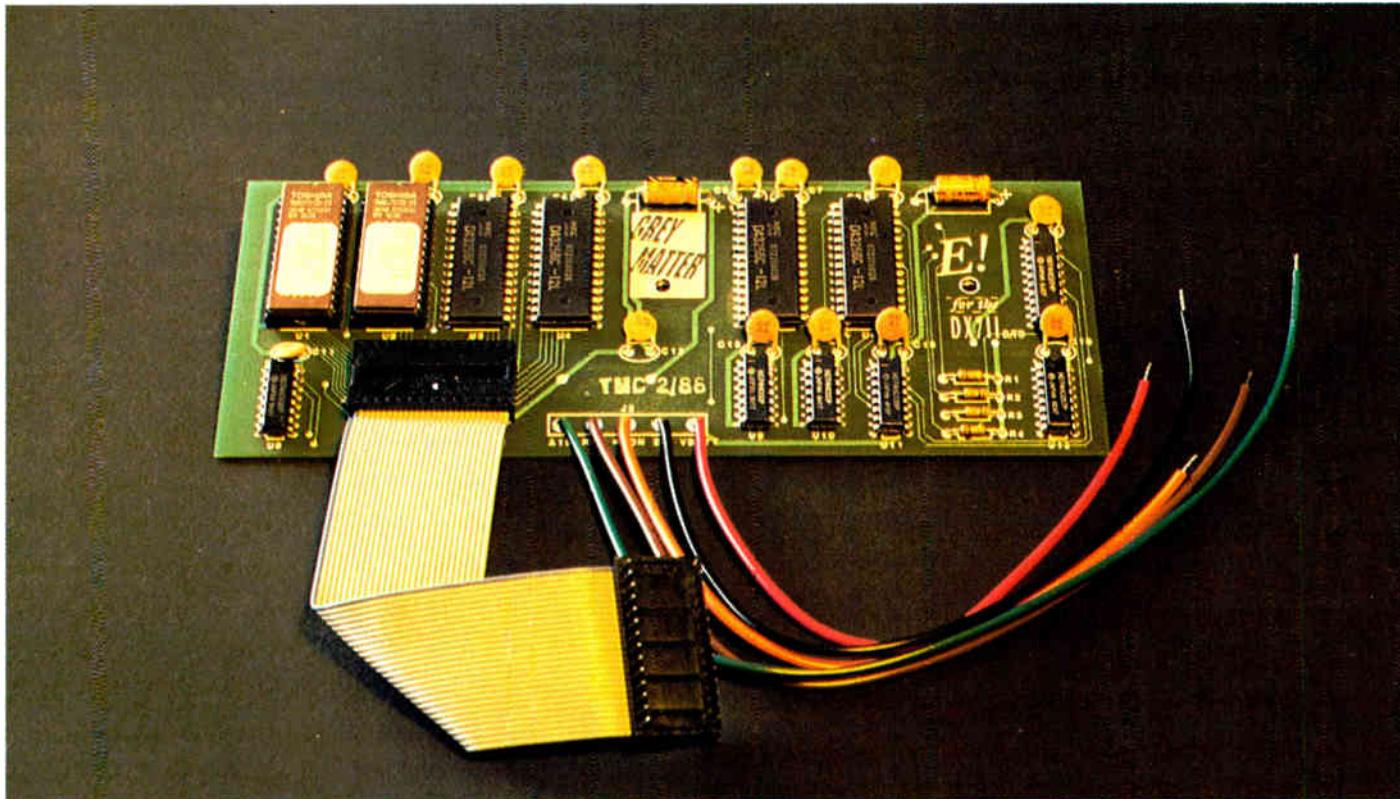
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Grey Matter Response E! Board for the DX7II

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Photography Rose Rounseville

How would you like a multitimbral DX synth with a built-in MIDI sequencer and MIDI event processor, as well as expanded memory? Well, GMR's latest wonder gives your DX7II or DX7S that and more. Review by Chris Many.

YAMAHA'S DX LINE is one of those products that spawned an entire industry of third-party soft and hardware manufacturers. Patches created by professional sound designers, software programs designed to ease the pain of FM programming or allow inexpensive yet powerful librarian functions, and RAM cartridges capable of storing hundreds of sounds are just a few such items on the market. One of the most innovative upgrades for DX7's are boards you install inside the DX itself which provide additional storage capabilities as well as a host of extra features.

The best of these upgrade boards are made by Grey Matter Response. With the advent of the new DX7's, a new E! board specifically for the DX7II family has been created. (The board currently works with the DX7IID and FD, but it will also work with the DX7S once the software has been revised to account for that instrument's smaller LCD display.) Not only does it allow for 256 patches and 128 Performance setups to be stored internally, but it also

makes a single DX7II polytimbral (up to 8 voices), adds a sophisticated MIDI control station capable of generating arpeggios, ostinato patterns and multitimbral chords (all triggered by hitting one key), and includes a 16-track sequencer on board, as well as many other features. Quite an upgrade, really.

Wedge In & Turn On

INSTALLATION IS NOT for the uninitiated. If you don't feel comfortable with a soldering iron, or counting IC pins or know your way around electronic boards, it's highly recommended you take it to your local electronic keyboard repair/installation shop and have someone qualified do it for you. The instructions for installing the board are useful to those who have a working knowledge of circuitry, but not really for the novice. It may cost an extra \$50 or \$60, but unless you are really familiar with this sort of thing, just plan on spending the money. Once back from the shop though, it'll be worth the (hopefully short) wait.

When you turn your DX7II on now, you'll see immediately that your synth has an E! board installed via a readout in the DX screen. There's been no change to the functions of the DX7 as you know them, only additions have been made. Consequently, you won't have to relearn anything you already know about operating your instrument. Most of the E! features are simply accessed through only three buttons.

What You Get

FIRST OFF, THERE are four banks of 64 sounds available to store sounds into, as well as four banks of 32 performance setups. There's no real trick to accessing or storing any of the sounds - by using the data entry buttons, you select the bank you want to be in and select or save patches just as you normally would. You've already recouped over half your investment by this one feature alone; you'd probably spend \$200 on three blank RAM cartridges to hold the sounds you can now store internally in RAM (though obviously the

FD's internal floppy could store patches which could be loaded into RAM).

E! consists of three main modules: *Engine*, a 16-track DX/MIDI event processor; *SE!quencer*, the 16-track built-in sequencer; and *Voyeur*, a MIDI monitor program. Engine is the heart of E! giving your DX7II all the capabilities of a full function keyboard controller.

Engine's features, as with all of those found in E! and the DX7II, are laid out in structured menus displayed on the LCD screen. Adjustment of parameters is done either by using the cursor keys, the entry slider or +/- buttons. There are three main segments to Engine: the Controller menus, the Performance/Voice mode menus and the DX Voice menus. Each group has been assigned its own access button (27, 28 and 29 respectively), and the menus are cycled through by repeatedly pressing the appropriate button.

Setting up your DX as a MIDI controller involves understanding how E! approaches MIDI data management. Engine's main menu is one called the Track Assign menu, where you can assign up to 16 "tracks" of MIDI setups, directing the Engine data to any internal DX voice or MIDI channel - so as to play external synths or MIDI devices. It's easy to get confused because of the selection of the word "tracks" as a MIDI organizing term, but if you think of this as a channelizer feature, and not a sequencing term, you'll get the idea (it'll make more sense once you get into the sequencer, since its 16 tracks correspond with Engine's 16 "tracks").

Each "track" can be assigned a specific MIDI channel, a transposition amount (for either internal DX voices or external synths), velocity response curve setting and a volume/brightness control. You can also change patches from this menu, helpful if you've got an array of synths and you want to select your patch from the DX. Velocity curves can be set to normal, higher than what you play, the reverse of the velocity you play (playing soft will sound loud and vice versa) and set to high/low velocity output (playing anything over a medium velocity will produce high, etc) Once you've got your "track" set up it can be stored in a Performance setting, creating in essence a 16-track MIDI patch map that will transmit patch changes, transposition settings, etc, at the press of a button. Keep in mind however that "track" 1 is pretty much reserved as Engine's live play track, because when you get to the sequencer assignments, this will be important to keep in mind.

Using the controller menus, you can also reassign controller functions to specified tracks. For example, pitch-bends can be set up to affect only those voices on track 5, aftertouch for channel 2, etc. This is true for 17 different controllers, however only

one controller can be routed to one destination; no multiple combinations like breath control assignments to tracks 4, 8, 9 and 13.

New Modes

WITH E! THERE are now four DX Voice modes: Single, Dual, Split and Octal. The first three are identical to the original DX7II Voices modes; Octal mode lets you play up to 8 DX voices at once. E! allows you to adjust each of the eight voices' volume levels with relation to each other (a mini mixer built in), in addition to eight separate transposition and microtuning assignments. Polyphony is selectable as well, although each voice needs a minimum of two notes and you'll need to arrange from high to low assignments in even numbers.

Not only can you use the Octal mode with the sequencer, but E! also permits an 8-way split mode. Splits are easily assigned by selecting the ranges of MIDI note numbers to be used (you can actually assign ranges outside the DX keyboard in this way), meaning you can play up to eight different sounds at once on the keyboard. Although you can preset the polyphony of each voice, there is another method you can use for a greater efficiency of voice distribution - E!'s dynamic voice allocation. This will distribute the voices only when they are actually playing. In other words, if you only use a brass patch during the chorus of a song, and not during the verses, more polyphony can be freed up during those times the brass is not playing. DVA (dynamic voice allocation) can be used in conjunction with manual settings as well.

Patch assignment in Octal mode is painless. When you exit the menu back to the main DX LCD, a letter (A-H) will appear next to the patch name. By pressing the A/B button you will cycle through the 8 available voicings. By selecting your patches as you move through these locations, each one will be automatically stored. There is a slight delay as you select patch numbers, but nothing that creates any problems. You can access each of these voices using an external sequencer as well, providing you're in Direct MIDI mode. Each track assignment (1-8) corresponds with the MIDI channels 1 through 8. Stereo panning as you normally set it up is disabled when you're in Octal mode; however, there is a pseudo pan available. By pressing the pan button while in performance mode, the DX voices that have been allocated the first 8 notes of polyphony will come from one audio channel, while the remaining 8 notes come from the other. This is as close as it gets to stereo panning in Octal, but it will do (and is a small price to pay for making your DX7II polytimbral).

Engine also comes with eight different performance modes. Normal is essentially ▶

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▶ the same as the regular DX7II/DX7 performance mode, with the exception that the active track (the one that is considered the live "track," or the one you're actually hearing when you press the keys) can flip between "tracks" 1 and 2 (remember, we mean the first and second MIDI setups). Track Hi has "track" 1 play all the notes, but the highest current note is also played by "track" 2.

An interesting idea is the Floating Split performance mode. Your left hand plays "track" 1 while your right plays "track" 2. However, there is no fixed split point; the split automatically adjusts itself and moves up and down the keyboard as you play. E! constantly monitors the highest current note (not sustains) and any note within a nine note interval down from the highest

voice split keyboard to a normal single patch is as simple as pressing a key. If you're using the on-board sequencer, you can store and activate the whole setup; patch changes, track assignments, tempo, levels, etc, all within a Performance setting.

MIDI Scratchpads

SE!QUENCER IS A nice 16-track MIDI recorder built in your DX. There's not a lot of frills in it, but it certainly takes your synth to a new level of performance capability. SE!quencer employs a drum machine style of programming: create patterns including up to 16 tracks each (conventional track terminology used now) and string them together into songs. The Engine settings are an important part of utilizing SE!quencer, as whatever you

velocity and duration) or controller events, however you'll need to know what you're looking for before you attempt some changes. You can't hear anything while you're doing this editing, so you'll be relying on the visual readout of events to edit with. It makes correcting things harder as you need to know the note or event and a close approximation of when it occurred to really zoom in on it before you edit. Not that it can't be done, but it would have been nice to allow the user to hear the notes being altered, if just to make it easy to navigate around the pattern.

A rudimentary utility mode is also included, allowing for the copying of patterns and the initializing of patterns, tempos or tracks. SE!quencer stores up to 22,000 events, a respectable amount for this type of product. And keep in mind, not only will this sequencer play the internal DX voices, but any external synths you're MIDI'd to. It also allows for internal and external sync, so it will follow a drum machine's clock pulse or drive one.

The last module, *Voyeur*, is a MIDI monitor program and is included for those already familiar with the more technical aspects of MIDI. It's helpful for those working with large synth setups or if someone just wants to see how MIDI works. *Voyeur* simply displays all incoming MIDI data on the DX7's LCD screen - interesting but not that useful really.

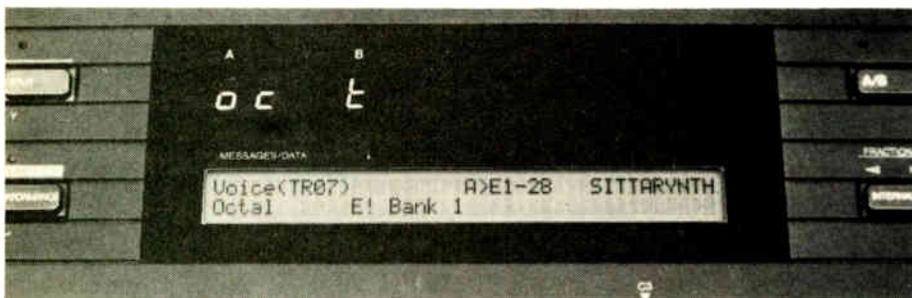
A few other features are available that I've not mentioned: expanded memory for 12-tone microtunings, a 12-tone scale compiler that creates a global scale much faster than by individually tweaking notes, storing E! information to disk (on the DX7IID's internal drive) or via MIDI to a SysEx computer librarian program, and a 4-voice stack mode.

Final E!valuation

AS YOU CAN see, this new E! product expands the versatility of your DX7II quite a bit. The documentation is well prepared and easy to use, although a bit complicated. The main sticking point is realizing that the term "track" means different things depending on what mode you're in. Once you get the grasp of that, E! is actually a breeze. It is excellent value for the money, not only expanding the capacity of Voice and Performance storage by four times, but turning your DX into a sophisticated MIDI controller and throwing in a functional sequencer to boot. And let us not forget the fact that your dual voice DX7II (or single voice DX7S) is now capable of up to eight separate voices at once, making it a multitimbral synth. We need more of these kind of products in the MIDI marketplace. ■

PRICE \$399

MORE FROM Grey Matter Response, 1596 Haven Ave, Tinley Park, IL 60477. Tel: (312) 349-1889



note is considered to be assigned to "track" 2. Although it sounds good in theory, the processing speed is a little slow, so E! doesn't always quite keep up. And if you jump more than a nine note interval, there's no way for E! to know that you meant for the note to be assigned to "track" 2. It takes a little getting used to, but this Floating Split point is a nice touch.

There are also Chord and Player performance modes, whereby you can accompany yourself using one finger to produce chords, or create arpeggios or complex rhythms by pressing a key. You're limited to 10 PlayerSongs/ChordSongs but it's an interesting feature that can be programmed using 16 "track" patterns and something called the Tonal Processor.

The Tonal Processor basically allows you to pre-program chords of your choice to individual notes at the bottom octave of the DX keyboard. Four parameters are available that you can adjust per note - key, scale, pattern, and alternate tonality (which will trigger only when you hit two notes simultaneously). Depending on the mode you are in (Player or Chord), you either have chords or arpeggios/rhythm patterns.

Everything we've talked about so far (in fact just about anything you can do with E! - including sequences and tempos) can be stored as a Performance patch on the DX7II. You've got 128 Performance settings at your disposal now, and this is where they'll really come in handy. Storing MIDI setups that automatically update your synth patches is great for live performances, just as switching from an 8-

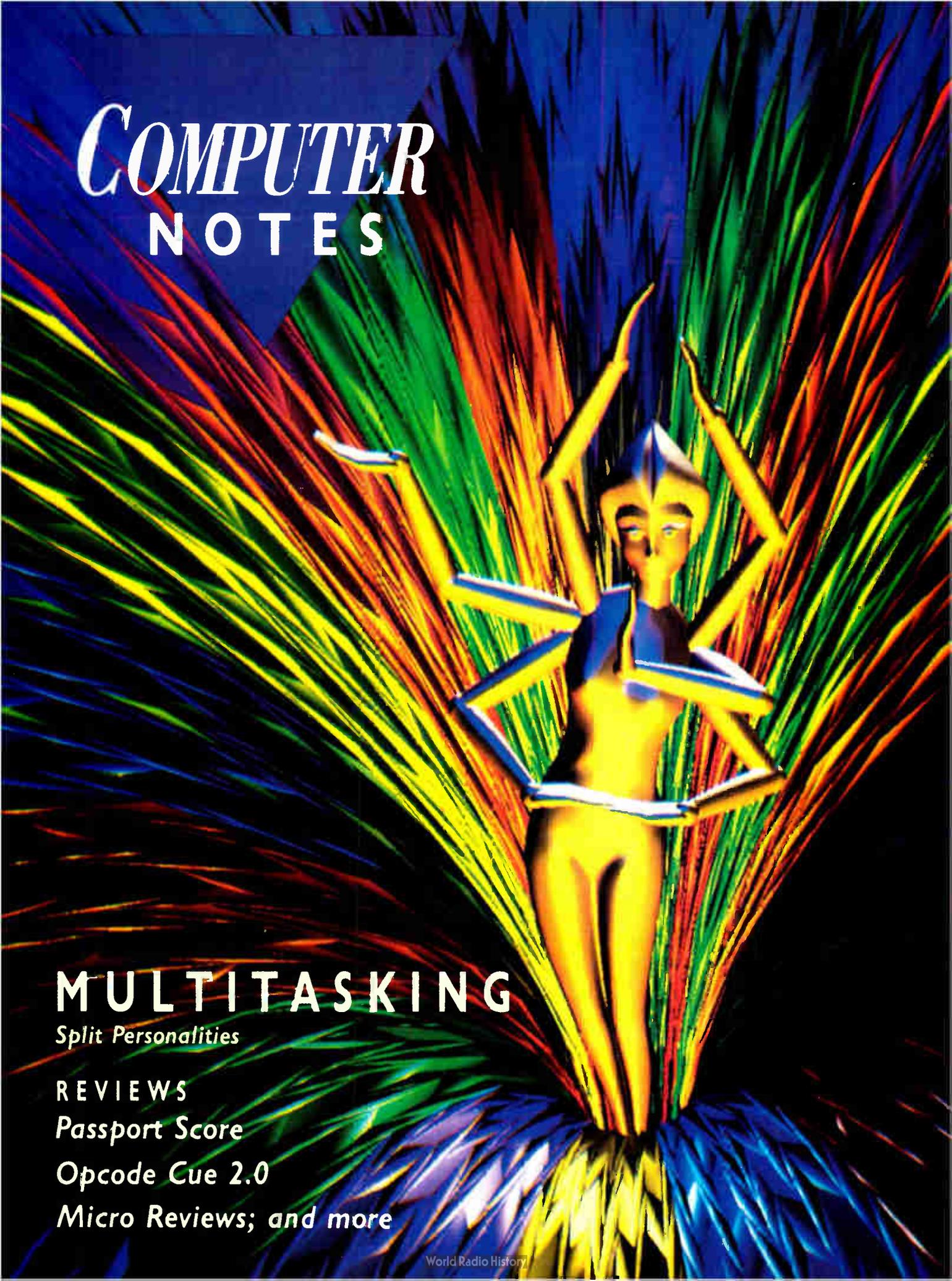
record in the sequencer as tracks 1-16 will be played back by whatever instruments the Engine's destinations are currently set to. It sounds more complicated than it is, but suffice it to say that this is an integrated operation, and it is easy to switch from one mode (SE!quencer) to the other (Engine) and make any necessary adjustments.

A pattern can be up to 64 bars long, and you can adjust the time signature to your liking. You also have the option of lead-in beats. Recording is simple - just put it in record mode and start. When you're finished, you can quantize the track, preview what you played before saving it or strip out any MIDI controller data. When you save the pattern, it automatically advances to the next available track and you can record the next track. Variable tempos can be recorded into the pattern as well. Step recording is also available and works just as you'd expect it to, you play notes and advance the clock forward to determine their length.

Laying out a song is relatively simple, but you'll have to be prepared; you select the patterns in real time while SE!quencer records them into a song. Select record song mode and start the sequencer up - you'll hear the count-off clicks and just begin selecting the patterns in the correct order. If you want a pattern to repeat over, do nothing and it will automatically loop back. That's all there is to it.

Editing is a little tougher and not as friendly as I've grown to expect from MIDI recorders. Basically, you can step through a pattern or a song and adjust events (note,

COMPUTER NOTES



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Passport Score

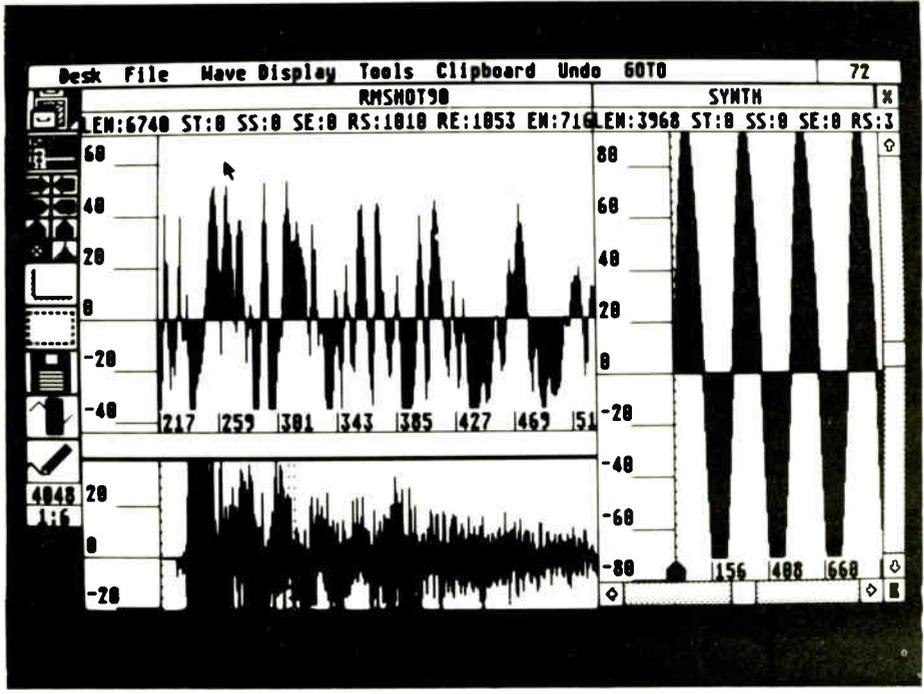
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COMPUTER NEWSDESK



A MATTER OF TIME & SPACE

If you'd like to get your Atari to speak SMPTE, Steinberg/Jones has a new Time-Lock interface for the Pro24 sequencer and ST. The device provides sync-to-tape capabilities to the Pro24 and DMP7 desktop mixer programs, and is capable of reading and writing the four available modes of SMPTE. It also supports drum-clock out that transmits a pulse-tone adjustable between 24, 48, 96 and 192 ppq, as well as MIDI clock and song position pointer. Sixteen cue points may be programmed for start/stop operation of the sequencer and/or tempo changes. Timecode events can also be converted to bars and beats, and SMPTE settings are saved to disk with each song. The suggested retail price is \$375.

The company is also announcing two additions to the Sound Works series of Sampler editors for the ST, one for the E-mu Emax, and the other for the Prophet 2000/2002. Features include the standard cut & paste functions, as well as providing the ability to combine samples, draw wave shapes, crossfade loops, and phase angle rotation. A waveform generator creates FM and AM waveforms with four oscillators and four different basic waveforms. FFT three-dimensional display lets you view the harmonic structure of a sample. Suggested retail price is \$350.

MORE FROM Steinberg/Jones, 17700 Raymer Street, Suite 1001, Northridge, CA 91325. Tel: (888) 993-4091.

DISK RECORDING REVISITED

Hybrid Arts has announced availability of ADAP II, a 16-bit linear, stereo, direct to hard disk digital recording system. Working on the Atari 1040ST or MEGA ST, the unit records in real time and allows mixing an indefinite number of tracks in non-real time. It offers a 44.1kHz sampling rate.

If you're already an ADAP owner, the company claims the new box will "double the processing power of your ADAP I." It is able to read and write SMPTE and an AES/EBU digital interface allows you to send or receive sound data from other digital sources (even DAT!). Transfer resolution is 24-bits (error bits, auxiliary data, user bits, channel status codes and subframe codes).

The suggested retail price is \$2995.

MORE FROM Hybrid Arts Inc., 11920 W. Olympic Blvd, Los Angeles, CA 90064. Tel: (213) 826-3777.

SPEEDING WITH SOUND

A new high-speed digital signal processing card for the Apple Macintosh II and SE is available from Digidesign. Claims are that The Sound

Accelerator provides CD-quality playback of individual sounds directly from the computer, and makes most sound processing synthesis functions real-time. Updates to Sound Designer and Softsynth, two of the company's more popular programs, will coincide with this release to allow both programs to use the new processing capabilities.

With Sound Designer, samples that have been digitally loaded into the Mac from a sampler or CD ROM drive can be previewed directly from the computer with 16-bit linear fidelity. Digital equalization, mixing and merging of sounds can be adjusted in real time, and three-dimensional FFT frequency analyses can appear instantly.

Softsynth synthesis functions will also gain the capability of being processed in real time.

The Sound Accelerator lists for \$995.

MORE FROM Digidesign Inc., 1360 Willow Road, Suite 101, Menlo Park, CA 94025. Tel: (415) 327-8811.

INTELLIGENT SWITCHING

The MSC4 MIDI Switch Controller, for use with small to medium-sized IBM PC-based MIDI systems, is now available from Music Quest. Four MIDI outputs may be independently connected, using included software, to any of the four MIDI inputs.

The hardware includes a control circuit card, a remote junction box, and 6' cable. Software allows quick configuration changes, and an activity monitor provides a visual indication of the MIDI devices transmitting data. Auto-Switch software is also included, allowing automatic reconfiguration when running selected music programs.

The introductory price is \$149.

MORE FROM Music Quest Inc., 1700 Alma Drive, Suite 260, Plano, TX 75075. Tel: (214) 881-7408.

SHAPING YOUR WAVES

Drumware has a new entry in waveform editing software for Atari ST computers, the GenWave/12. Combining waveform editing and digital signal processing in one package, it is compatible with the E-mu Emax and SPI200, Sequential Prophet 2000/2, Akai S900 and Oberheim DPX, as well as other 12-bit samplers conforming to the MIDI Sample Dump Standard.

Featured are a real-time Looping Editor, a variable Crossfade Looping function and a

EXPERIENCE M.E.S.A.: THE POWER OF INTEGRATED MUSIC SOFTWARE



Finally, one single program gives musicians the power to control every aspect of their MIDI environment to create, arrange and produce masterful music compositions. That program is M.E.S.A. (Music Editor Scorer Arranger) from Roland. Integration is the key to M.E.S.A.'s strength as it allows you to move swiftly between its three operating modes (Song, Score and Print) to record, edit and print professional music scores without ever having to change disks or re-boot new modules — operations that could slow down your creativity. By any standards, M.E.S.A. is a breakthrough, for not only does it provide unparalleled power, its mouse-based point-and-click user interface assures that its sophisticated operation isn't complicated. Music can be entered via a MIDI keyboard, the mouse or the PC keyboard to allow even non-keyboard players to express themselves beautifully. M.E.S.A.'s Song Mode contains advanced sequencing functions to record and play back MIDI performances including: 50,000 note capacity, eight tracks, programmable tempo changes, timing offsets, looping function, text function and editing (Delete/Add/Merge/Move) of notes, beats, bars, phrases, or tracks. The Song Mode screen graphically displays the structure of a composition allowing easy cut-and-paste editing and arranging. The Score Mode transfers and displays the recorded MIDI performances in standard musical notation on the screen, automatically placing notes, rests and beams. In Score Mode,

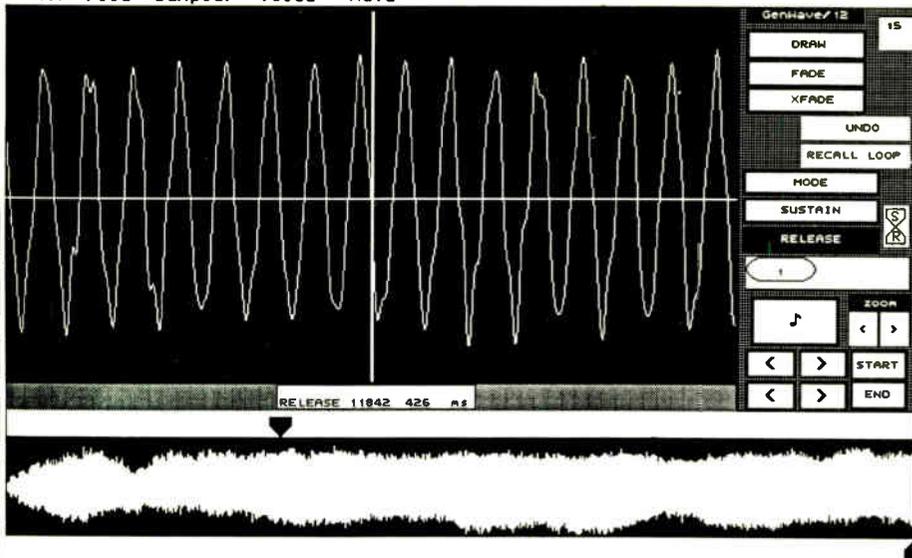
complete compositions can be created and individual notes and MIDI events can be inserted, deleted and modified. Text, phrase marks, triplet brackets, clefs and other musical symbols can be inserted into the score.

The Print Mode screen uses high-resolution graphics to display a page of up to eight staves of music exactly as it will appear when printed. Score layout is user-definable and can consist of up to 16 staves per page. Individual measures can be cut-and-pasted into any order and printed on an IBM compatible dot matrix printer or Laser printer. Spectacular, engraved-quality manuscripts can be created by using a compatible plotter such as Roland's DXY-880, DXY-990 or DPX-2000.

Hardware requirements: IBM PC, XT, AT or full compatible with two floppy disk drives or hard disk (recommended), 512K min RAM (640K recommended), IBM or compatible EGA, CGA, or Hercules monochrome display system, parallel printer port (25 pin D-connector), Microsoft or Mouse Systems Mouse (optional), Roland MPU-401 MIDI Processing Unit, Roland MIF-IPC Interface Card, any MIDI Instruments.

If you're ready to experience the ultimate in control, you're ready to experience M.E.S.A. For the name of a M.E.S.A. dealer near you, contact *RolandCorp US* 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685-5141.





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freehand Waveform Drawing capability. Signal processing elements include a 16-bit digital equalizer with 12dB Butterworth responses, capable of providing Peak, Notch and Bandpass filtering. Digital Enveloping allows freehand creation of new envelope curves, and Clipboard allows cut and paste splicing.

The suggested retail price is \$299.

MORE FROM Drumware, 12077 Wilshire Blvd, Suite 515, Los Angeles, CA 90025. Tel: (213) 478-3956.

TRACKS WITH MAC

Computers and software are now considered essential for scoring to picture, and Passport Designs seems intent on filling the studios with their ideas. Now available are a MIDI/SMPTE interface and the software tool Clicktracks, both for use with Macintosh computers.

The MIDI Transport is a dual MIDI interface which incorporates SMPTE-to-MIDI Time Code conversion, capable of acting as a Mac MIDI Interface or as a stand-alone MIDI/SMPTE synchronizer. Two MIDI ins and five MIDI outs, as well as audio tape in and out, are provided. The Transport is compatible with JL Cooper's PPSI and with existing software that incorporates MIDI Time Code. Suggested retail price is \$459.95.

Clicktracks is a software tool for scoring music to hits on video or film. The hits are expressed as SMPTE numbers or in frames, and the program provides methods for laying out cues, searching for tempos and creating tempo maps by inserting meter, beat and tempo changes. The program requires a Macintosh 512e, Plus, SE or Mac II and is Multifinder compatible. The suggested retail price is \$249.95.

MORE FROM Passport Designs Inc., 625 Miramontes Street, Half Moon Bay, CA 94019. Tel: (415) 726-0280.

DESKTOP MUSIC STUDIO

If you're new to the game of computers and music, and would like to get your IBM to do more than a little word processing, you might

want to check out this package from Roland, billed as containing all the components for a MIDI music studio. Included in the package are the new EASE Song Maker software, the popular MT32 sound module, and the MPU-IPC MIDI Interface Card.

EASE (Editing, Arranging and Sequencing Environment) is a program designed specifically for use with the MT32, but works with any MIDI sound source. Eight tracks can be recorded, played back and edited utilizing the three pages (Arrange, Control, Score) allowing real-time recording, step editing, automated punch in/out, and auto-correction. Automatic scoring lets you see recorded data in musical notation and scrolls through the score while playing back. A built-in screen librarian allows access to the 128 preset sounds in the MT32, and a separate directory is provided for loading and retrieving user-designed sounds.

The sound source communicates with the computer via the MPU-IPC MIDI Interface Card for IBM PC, XT, AT and compatibles, or with the IBM System II, Models 30 and 25. They've hit the price point with this one: \$995, complete.

MORE FROM RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040. Tel: (213) 685-5141.

CAPTURE AND MASTER!

MIDImouse Music is publicizing the addition of four programs to their line of software for the Atari ST. All are GEM-based editor/programmer/librarian packages, supporting four of the more popular synths on the market today.

All four programs basically provide the same features: full librarian functions, including bank and patch copy, two or three active banks for editing, and graphic display of envelopes. Parameters may be edited using the mouse or with direct keyboard entry, and a randomizing function is included for your more adventurous moments. Each program lists for \$99.95.

Oh, yes . . . the synths supported are Roland's MT32 and D50, the Yamaha FB01, and the CZ

series from Casio. The Roland programs are called MT32 and D50 Capture, and the CZ and FB programs are referred to as CZ Voice Master and FB01 Voice Master.

MORE FROM MIDImouse Music, Box 877, Welches, OR 97067. Tel: (503) 622-4034.

MOUNT MACINTOSH

If you want to take your Mac on the road, but don't want it to end up in little teeny pieces, you might wish to investigate Macmount, a rack-mounted computer protection device. Constructed of light gauge steel, this unit replaces the front face of the Mac with an eight-space steel plate, with mouse and keyboard inputs brought to the front, and a detachable tray for the keyboard.

The manufacturers claim that installation "can be done by anyone," but warn that it voids the Apple factory warranty. While the tray will not accommodate a mouse, there is apparently enough room for controlling with a trackball.

Suggested retail price is \$299.

MORE FROM TELE-MIDI, 30 N. Raymond Ave, Suite 601, Pasadena, CA 91103. Tel: (888) 584-5844.

A CARD FOR CAKEWALK

Computer Music Supply is offering a new IBM PC MIDI card (the CMS401) which plugs into a half slot on PCs or compatibles. It is being coupled with Twelve Tone's popular sequencer program, Cakewalk.

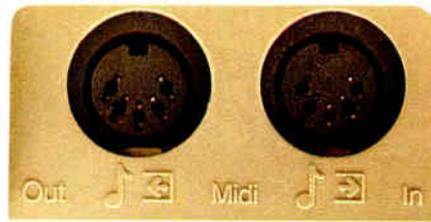
The card provides MIDI in and out and comes complete with the necessary interface cables.



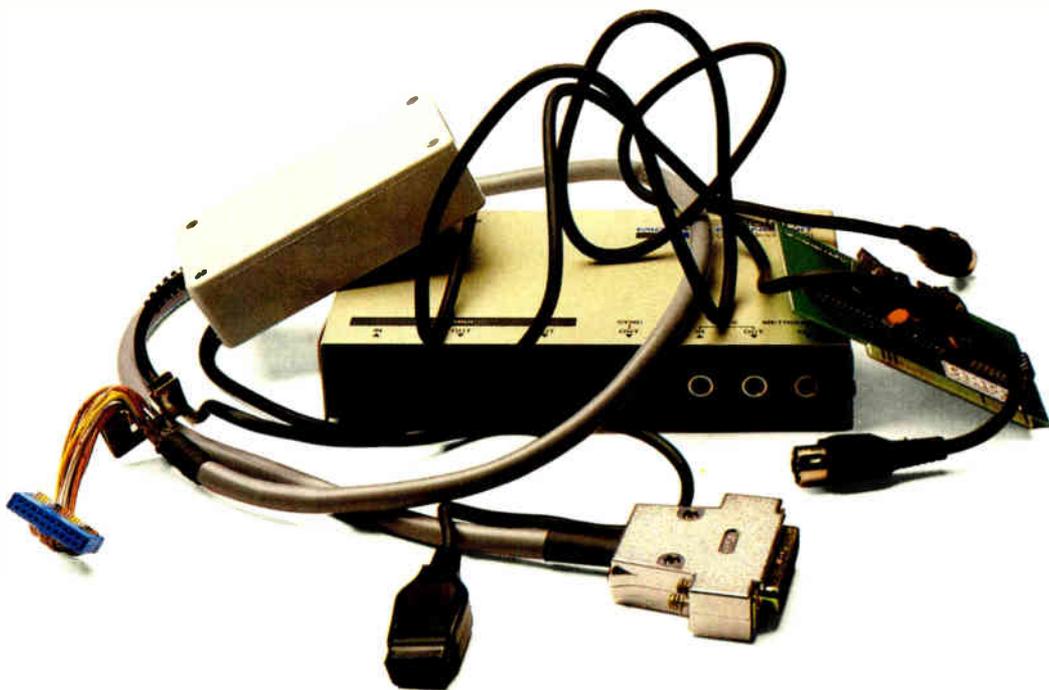
The Cakewalk sequencing program provides 256 tracks plus editing capabilities. The complete system retails for \$299.

A separate sync box, model CMS104S, provides multiple inputs and outputs for use with multitrack tape recorders and is available for \$99.

MORE FROM Computer Music Supply, 382 Lemon Avenue, Walnut, CA 91789. Tel: (714) 594-5051 or (800) 322-MIDI.



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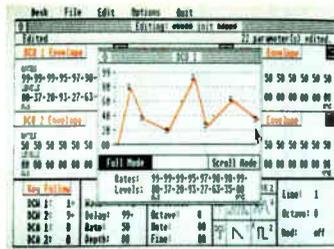
And then you'll have to make sure everything is installed correctly.

What's that like?

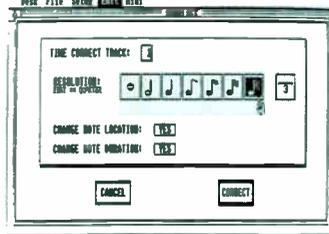
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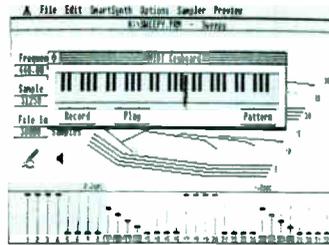
So you can connect all kinds of equipment—synthesizers, samplers, drum machines, SMPTE controllers, pitch-to-MIDI converters—as easily as plugging into an amp.



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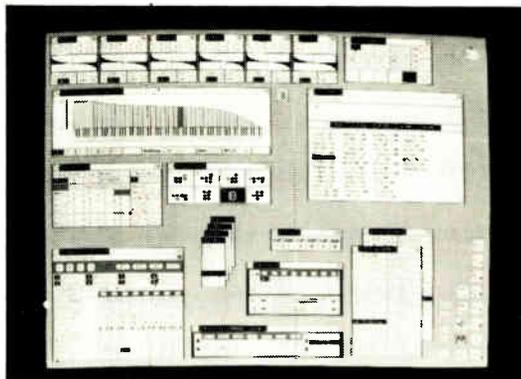
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M I C R O REVIEWS

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Bacchus TX802 Graphic Editing System



An editor/librarian for the IBM PC and compatibles.

Review by Lorenz Rychner.

SOFTWARE ADDRESSING THE new DX7II has been slow in coming, let alone programs that cover the TX802. But if you're an IBM user, your wait is over. Bacchus has done a great job with this package, which works just fine as a DX7II editor/librarian as well as a TX802 editor/librarian.

While that last statement may seem redundant, it's not because the TX802 is much more than a rack-mount version of the DX7II. Its operating system, with eight tone generators acting like eight independent synthesizers, offers endless combinations of Voices, called Performances, not available on a standard DX7II.

With so much organization to worry about, any help from a well-thought-out computer program like this one is most welcome. The program is extremely fast (being written in assembly language), with a flexibility that lets the user personalize screen and window configurations and sizes. Windows and icons don't have to belong to any particular region on any particular screen. Any screen can be sent to a printer, in several modes.

Tedious mouse movement has been avoided. Even shifting "virtual sliders" requires no mouse travel, just pressing and holding of mouse buttons. No screen space is wasted with constantly visible options or menu headers. Any time you need a menu, press the right mouse button. The menu which pops up depends on what you're pointing at. Bacchus calls this "context-sensitive" pop-up menus. It makes sense - having the pointer in a certain work area brings up menus with options for what you're currently working on.

Performances and Voices can be auditioned from the mouse, featuring eight selectable notes with adjustable volume, velocity and duration. This and other courtesy features like mouse

tracking speed, screen shadings, etc. can be saved to disk. 64 Voices can be visible at one time, with economical swap and copy moves available, just as they are in Voice Edit mode where each Operator has its own window. Clever graphics show the envelopes and the level scaling, with a separate window for Fractional Scaling that makes this otherwise tedious task extremely easy. All Performance

parameters are displayed in one window, except for the very detailed Micro Tune window. Files of 63 Micro Tunings can be listed, saved to disk, and sent to a RAM cartridge, as can Banks of Voices (including Fractional Scalings) and Performances.

The somewhat heavy system requirements include an IBM PC/XT/AT/PS2 or true compatible; 640K RAM; mouse (two or three buttons); Hercules/EGA/WY700/MCGA(PS2) graphics; and an MPU401, OP4001, IBM Music Feature or compatible MIDI interface. The program is not copy-protected, and a hard disk is recommended.

The program comes with an excellent owner's manual. Newcomers to FM synthesis, while certain to appreciate the help from this program, still need to go to other sources for their learning experience. Once mastered, FM becomes a joy with a program of this efficiency level. ■

PRICE \$249

MORE FROM Bacchus Software Systems, 220 Wilshire Blvd. #330, Santa Monica, CA 90403. Tel: (213) 820-945.

Command Development D50 Command

A patch editor, librarian, and creator for the Atari ST.

Review by Chris Many.

HERE'S YET ANOTHER Editor/Librarian for the D50 with a twist; it uses a patch generator that produces sounds that, for the most part, are all good. Instead of generating a "jumping off point" for D50 sounds, the patches created by D50 Command come out virtually complete, with little, if any, tweaking necessary.

The method for creating these sounds isn't entirely new, despite the company's claims (Opcode's Editor/Librarian series use essentially the same technique). Command Development calls their method Offspring, comparing it with molecular DNA and genetics. In other words, you use two banks of parent sounds, which then are manipulated to produce 64 different but related sounds. If the two parent banks contain a wide diversity of timbres and patches, your offspring will also be highly

diversified. If, however, you use two banks of similar sounding patches, then the generation process is much more controlled. The analogy of "controlled genetics" is used, and further techniques allow you to chose which aspect(s) of the sound you wish to affect.

Using a general masking method, you can select either all new sounds or 64 versions of a selected sound. Even using the single sound option, the variation is pretty broad, but it does keep things a little closer to home than when you use two complete banks.

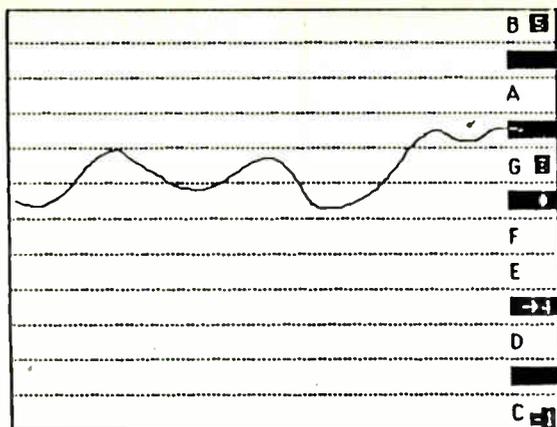
The basic patch editor includes graphics for appropriate envelopes, and all parameters can be adjusted via the screen by increasing or decreasing values. It's not as handy as the hardware editor Roland manufactures, but it is fine for your basic tweaking and editing. Also

Sound, Song & Vision

Pitch Recognition Software

A pitch-to-MIDI conversion program for the Apple II+ or Apple IIe.

Review by Bob O'Donnell.



SING INTO YOUR computer and control your MIDI synthesizer; that's the idea here. Sound interesting? Well, other manufacturers have produced pitch-to-MIDI products (Roland's VP70, Korg's DVPI, Fairlight's Voicetracker, IVL's Pitchrider), but I don't think anyone else has done it with software before - and none of those products are even close to the price of this little gem.

One of the many unique features of Sound, Song & Vision (SS&V) is that it displays the pitch of the note being input on the screen as you sing it. Not only is this fun to watch, but it's very educational as well. There's no better way of finding out how good (or bad, in my case) your pitch is than by seeing a visual display of it in real time on the screen. The program also allows you to record, save and playback up to 30 minutes

worth of singing (or playing), though, unfortunately, there's no way to edit what you've recorded (unless, of course, it's recorded into another MIDI sequencer).

The program has two basic modes of operation: Pitch-bend Mode and Chord Mode. In Pitch-bend mode the computer puts out a single monophonic line of MIDI information which follows the pitch nuances of the input sound. Chord mode, on the other hand, corrects pitches to the closest half-step, but can send out up to four-note, user-defined chords for every note of the scale. The program does not transmit MIDI velocity data, unfortunately, but each note of the different chords can be set to transmit at a different velocity. This becomes useful with the program's Delay arpeggiator feature, which can be changed to one of eight

settings in either Record or Play mode.

SS&V manages its trickery by using the cassette input of the Apple. You simply plug an amplified mic signal into that input and the computer analyzes the pitch and outputs MIDI data through the necessary Passport MIDI interface. The actual conversion process, the crux of any pitch-to-MIDI product, is pretty good. The speed depends upon the pitch of the input, but by setting a range around C3 it can be reduced to around 1/120 of a second in Pitch-bend Mode.

I use the word "range" because SS&V generates MIDI data in a rather unique way. Instead of converting every note, the program generally sends out the same note number (the center of the range) and then sends pitch-bend information to produce the proper pitch. As a result, the program can follow minor pitch variations quite well, but when you attempt to sing (or play) outside the two octave range of most pitch-bends the program will trigger a new note and a glitch may occur. In Chord Mode, the program converts every note and thus is a bit slower. For further tweaking, the program also offers a number of sophisticated options for optimizing its pitch-to-MIDI conversion including determining how accurate the pitch must be before a new note is triggered.

Minor complaints aside, I really like this program. I think it could come in handy for creating more expressive solo lines, as well as many other applications. It's certainly not perfect, but it sure is a lot of fun.

PRICE \$99

MORE FROM Advanced Software, 18520 Vincennes, #31, Northridge, CA 91324. Tel: (888) 349-9334.

included, though, is a copy routine that allows you to take a group of related parameters from one patch and copy it to the voice you're editing. On the downside, you'll have to wait a little longer for a reverb editor, as there is no easy adjustment of room size, delay, echo repeats, etc.

The Librarian includes four banks of 64 sounds, and you can arrange sounds in any order within the banks. A simple point, click and drag interface makes for easy rearrangement of sounds between banks. Single voice loads are simple and done directly by the software, but

bulk loads (of a bank of patches) require physically pressing keys on the D50, due apparently to Roland's design of this synth. D50 Command will also read the formats of other manufacturer's D50 Lib/Editor programs: Dr. T's, Sonus, etc.

All options are available through use of the ST's drop-down menus and require a mouse to access them (no keyboard equivalent, unfortunately). One other small gripe - the software is protected by a keylock system. A hardware key must be inserted in the one ST cartridge port in order for the program to

function. If you've been using this port for some other cartridge (clock, RAM cache, or whatever) you'll have to shuffle cartridges when you want to use D50 Command.

The best part about this package is the sound generation module: the bottom line is it makes great sounds that require virtually no adjustment. The Editor/Librarian functions cover all the bases and for the money, this is one great little program.

PRICE \$159

MORE FROM Compu-Mates, 8621 Wilshire Blvd, #177, Beverly Hills, CA 90211. Tel: (888) 506-1903.

Desk Librarian Editor Options Mute

Upper Common Name: Fantasyynth

MUTE EQUALIZER NONE

Low Freq 105

Low Gain 10

High Freq 2.0

High Q 0.3

High Gain 0

PITCH MODULATION

Depth 8

Filter Mod 22

After Touch 2

TE EQUALIZER NONE

Low Freq 105

Low Gain 0

High Freq 2.0

High Q 0.3

High Gain 0

PITCH MODULATION

LFO Depth 0

Lever Mod 22

After Touch 2

Structure 4

LFO TRI 2

Wave TRI 50

Rate 72

Delay 50

Sync OFF

PITCH ENVELOPE

KF (Time) 0

Velocity 0

Balance 50

Structure 6

LFO TRI 2

Wave TRI 50

Rate 72

Delay 50

Sync OFF

PITCH ENVELOPE

KF (Time) 0

Velocity 0

Balance 50

T1 T2 T3 T4

L1 L2 SusL EndL

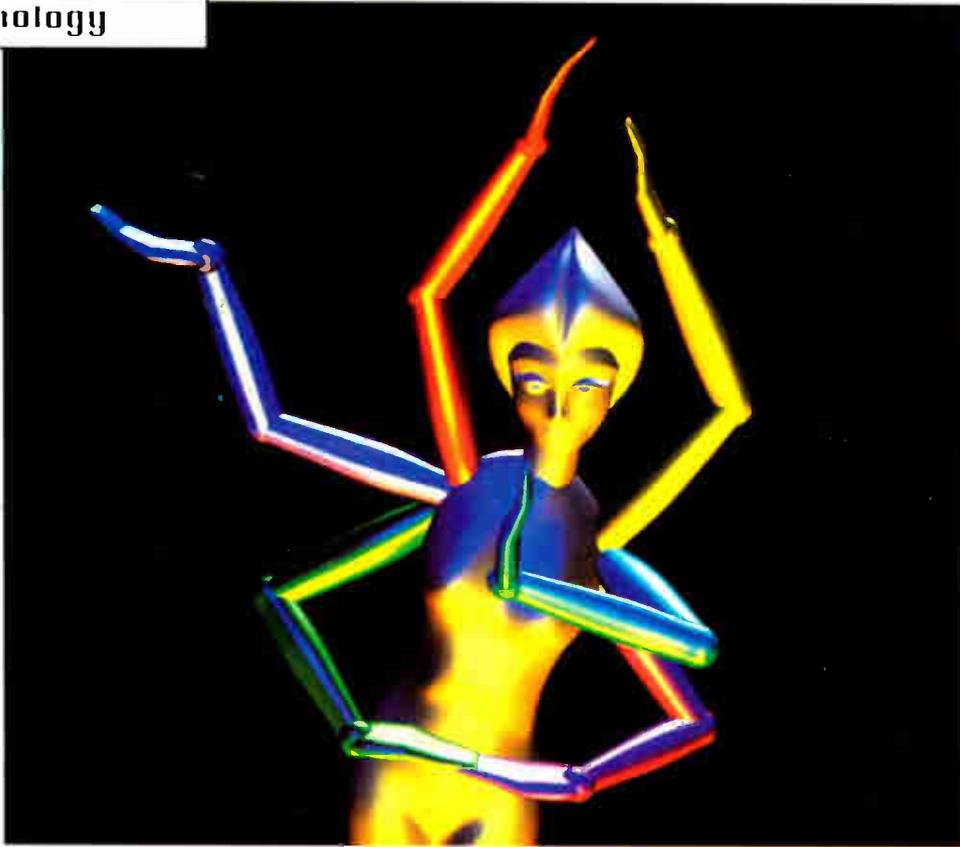
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0 0 0 0

Desk Librarian Editor Options Mute

TVA ENVELOPE

Partial 1	Time	Level	1	2	3	SusL	EndL	TVA ENV	1	2	3	SusL	EndL
78	66	79	6	100	36	90	92	64	36	90	92	64	64
100	61	72	42	0	90	100	80	63	88	100	80	70	0
Partial 2	Time	Level	74	85	0	0	100	0	32	90	92	92	64
Level			100	0	0	0	0	0	88	100	80	70	0



MULTITASKING

Destined to be the next major step in the evolution of personal computers, multitasking is beginning to come of age.

Text by Harvey P. Newquist III.

THINK OF ALL the times during an average day when you would like to be able to do more than one thing at a time. I'm not talking about attempts at simultaneously trying to walk and chew gum; that doesn't constitute two important things going on at once. How about playing your guitar while writing The Great American Novel? Or reading this article while programming your synth, and romancing your spousal equivalent - all at the same time? Such capabilities would certainly make our lives easier, and perhaps make us eligible for numerous awards, parades, and monuments erected in our honor.

Unfortunately, life is not like this. We are pretty limited to doing a single task at any given time (except for the proverbial gum-chewing/walking routine), or "singletasking." Those of you who want to do multiple things often wonder when you'll find time for everything and end up crying, "There just aren't enough hours in the day."

WHAT ABOUT THEM...?

Up until recently, personal computers were wondering the same thing. When you ran a

word processing program, that's all you ran. If you wanted to do something such as checking a name in a database, you had to exit your word processor, load your database, get your information, shut it down, reload your word processor, etc, etc. This made for a lot of wasted

time, especially if you were using something like an older Macintosh or single-drive IBM where continued disk switching became necessary. Wrist cramps could also result from having to switch disks too frequently, which could impede other tasks that you'd like to do, like practicing scales. See how the idea of "tasking" relates to just about everything you do?

After enough of the bother of shutting down and starting up programs, you wonder why the

computer can't just get into your database from your word processing program and pull out that address without so much fuss and bother. It knows where it is already... Admittedly, this is the functional equivalent of asking your computer to play the guitar, do your taxes, and

make you breakfast in bed (all at once), but why should that matter? After all, it is a computer, not a person, and we keep getting told how wonderful and organized they are - so why shouldn't it be able to do more than one thing at a time?

CAPTAIN SCIENCE TO THE RESCUE

Believe it or not, that's not an unreasonable request. Large mainframe computers and

Illustration Colin Cantuelli © 1988 Crystal Chip Inc.

certain types of scientific and engineering workstations have been able to perform multiple operations simultaneously for many years now. While this does not include breakfast in bed, it does cover applications such as inventory control, managing mail lists, payroll programs, report generation, and a whole bunch of other programs we normally think of as being part of complex systems. The ability to perform separate tasks at the same time is known simply as "multitasking."

This is great for Corporate America, but what about the rest of us who own PCs, and want to do sequencing, composing, performing, and writing of the Great American Novel on those PCs at the same time? Well, for those of you adventurous enough to imagine doing this sort of multitasking, microcomputers are finally beginning to catch up with you.

With the introduction of PCs in the early 1980s, people were pretty happy to have a machine with one disk drive and 64K RAM. In those days, PC hackers felt that if their computers had just a little more memory - say 256K - then they could create programs to do just about anything, including simulate God. Yet, as more and more memory was added to various machines, the programs that ran on them kept growing in size to eat up all the new memory that was available. Where once you could run a spreadsheet comfortably in 64K, now you need at least 512K to operate many of today's spreadsheets. As applications themselves got bigger and more complex, there was never

any time or any room to consider running more than one at a time. Multitasking was constantly put on hold.

In 1985, Commodore introduced the Amiga 1000, the first true multitasking microcomputer. The machine was outfitted with some custom processors to handle graphics and the like, freeing up computing power to allow for the

"In multitasking, the processor takes pieces of each application at once, spits them out, repeats the process with the next set of incoming pieces, and does so quickly enough that each application thinks it's the only one getting serviced."

handling of several programs running simultaneously. Though the business world did not flock to the machine, much of the entertainment and graphics industries found the answer to unlocking stifled creativity through the Amiga's multitask design. The Amiga quickly won fans that the less powerful Apples (of the time) had failed to win and that the uninteresting IBM PCs and clones had ignored.

In time, though, more cries for multitasking permeated the hallowed halls of the mainstream PC vendors. These cries were coupled with pleas for faster processors and greater graphics-handling capabilities. In 1987, both IBM and Apple revealed their plans to help the starving multiple-tasked masses. IBM introduced its PS/2 (Personal System 2) microcomputers, based on the Intel 80386 processor - which replaced its slower predecessors, the 8086, 8088, and

80286. The 386 was designed first and foremost to improve graphics handling within IBM PCs, as well as to start addressing some of the needs of multitaskers.

On the Apple side, the company incorporated Motorola's 68020 chip into its Macintosh II. The 68020 was already famous for being the core of the ultra-successful Sun

Microsystem workstations, which are used for everything from artificial intelligence to 3-D model simulation to stock monitoring. Beyond that, Apple realized the importance of multitasking for the Mac II, and gave it a complete interface environment just for that purpose, known as MultiFinder. The Finder is the Mac's basic application management program. It allows you to access and control all of your applications and documents, as well as getting your information to and from your disks. MultiFinder, however, allows you to jump in and out of separate applications that are open simultaneously so that you can do such things as spreadsheet calculations while you're typing your Christmas mail list.

The basic idea behind MultiFinder is that it allows you to do background processing (if the programs in RAM can support this). In other

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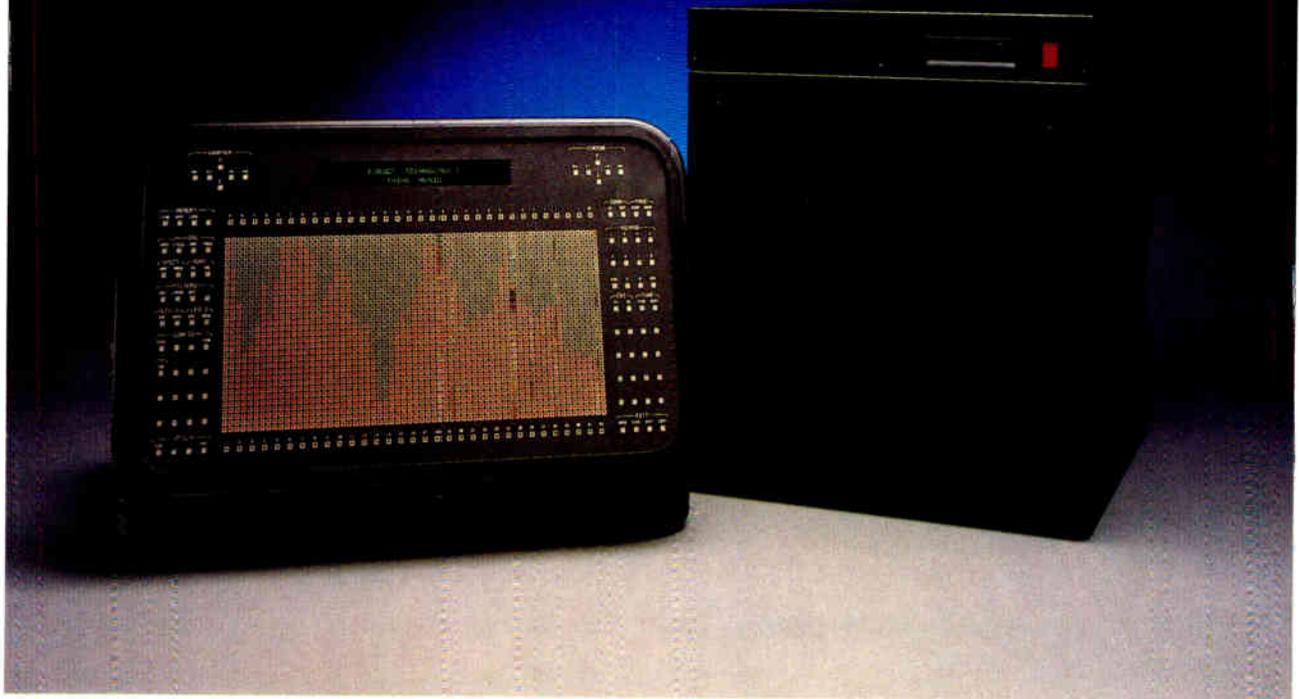
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► words, one program will run in the background while another is available to be worked on in the foreground. The switching capabilities of a program like Switcher are different. In that case, you simply jump from one program to the next – they won't work simultaneously.

Another problem with MultiFinder, and one that pervades all areas regarding micro multitasking, is the fact that it requires a great deal of RAM. No, 512K won't do, and in practicality, neither will 1Meg. You need at least 2Meg of RAM to operate MultiFinder, simply so the program can control all your simultaneous applications with room to spare within random access memory. Anything less than this causes MultiFinder to slow way down – and for good reason. It's much easier to service all those programs if they're all in memory at the same time. If they're not and if the user (that's you) suddenly switches to one that's mostly out of memory, the computer has to take the time to load it back in (at the expense of another) to run it.

Another problem shared by all multitasking systems is having enough power to act as if all programs are getting serviced all the time. In reality, most microprocessors can only deal with one thing at a time too, so they fake omniscience by being extremely fast. Extra memory helps a microprocessor keep its place in all the relevant programs.

Think of this as being similar to the President at a press conference. One person has to respond to questions by more than 50 members of the press, all of whom want his or her attention at the same time. They each scramble to make themselves heard, so that they can get their answers taken care of before any of the other reporters (or even at all). So they assault the President simultaneously during the conference.

But just like most humans, politicians are only capable of singletasking, and therefore can answer only one question at a time. In the meantime, the remaining reporters are chomping at the bit waiting to leap into action at the first available free moment. For this reason, press conferences can last up to an hour, until everyone is satisfied (much longer than a one-on-one interview). If the President was capable of transparent multitasking, he or she could answer everyone's question at once, and finish the press conference in five minutes. An important point to be aware of is that a lot of time gets wasted in the process of vying over who gets the next question answered (a little like you swapping disks, or the computer swapping things in and out of memory).

A microcomputer's processor faces the same dilemma. In order to accomplish much of anything, it has to take all applications in their turn. In multitasking, the processor takes pieces of each application at once, spits them out, repeats the process with the next set of incoming pieces, and does so quickly enough that each application thinks it's the only one getting serviced. Using the President as an example again, put him or her in the middle of a circle of reporters and have each of them ask

their questions very slowly while the President spins in a circle, catching all of their words almost simultaneously because he's moving faster than they are speaking. Granted, he'd have to have a huge memory to be able to handle and partition each of the words for each reporter (and be able to spin really fast), but that's the general idea in computing. The processor takes stuff in and spits it out so quickly that no single one of the applications feels it is being slighted due to sharing the processor.

The time between servicing applications may be only a matter of milliseconds, but now we're going to talk music specifics, and in some cases, a few milliseconds is a delay time worse than an eternal death.

ON THE MUSIC SIDE

When using MIDI on micros, which is about the only way we can currently get computers to make music, there are already some inherent time dilemmas. Without getting into the specifics of the MIDI spec as it exists now, suffice it to say that data transmission between PCs, MIDI software and MIDI instruments is not always in real time, especially when you've got a lot of things going on simultaneously. This is regardless of multitasking; a single MIDI operation can bog down a system based on its complexity, length, and type of information.

But as we mentioned before, we'd like to take advantage of multitasking on our PC by sequencing one piece at the same time that we are printing the score to our latest Top 40 single. How is our processor going to cope without just giving up and resorting to a life of word processing and antiquated video games?

First of all, this depends in large part on the processor. Older processors will simply lie

"MultiFinder allows you to jump in and out of separate applications that are open simultaneously so that you can do such things as spreadsheet calculations while you're typing your Christmas mail list."

down and beg for mercy. Yet, as I mentioned, the most recent microprocessors are robust enough to handle almost any sort of multitasking operation that is thrown at them. But even this is a source of contention in the music software community. Hybrid Arts, for example, makers of a wide variety of music programs for the Atari ST, claim that there currently isn't any true multitasking micro-computer environment for music software that meets their standards for rhythmic integrity. This is due to the fact that as the processor works on each part of different programs (say the sequencing and scoring), it might be involved with the printing of a measure at the moment a critical MIDI time instruction appears. Even though a fraction of a millisecond may pass before the processor gets back to the sequencer, the piece may slow down or fall slightly out of sync. All of a sudden you have a musical composition which has the slightest glitch (which may seem like a flaw as large as

South Dakota to musicians) because the processor was "busy" performing another task at the critical moment. Other companies argue that this is a software programming problem (you can hear them snicker in the background) and that the processor can be taught to do anything given the proper coded instructions.

To be fair, in an isolated example like this one, the glitch probably wouldn't occur with only two programs. But the concept of multitasking takes into consideration that you may want to have half a dozen or more applications ready to run at any given time, and this is where the processor and the programs run into trouble. Like asking the prez to spin in front of two reporters versus twenty. It gets tougher as you add more numbers to the process.

Another more insidious problem is that of sharing resources. Several programs running at once may all want data from the same MIDI in port, send data out the same MIDI out port, and want timing information from the same clock inside. And they want to do this without competing with the other programs running. This is akin to the President trying to listen to and answer twenty people with one set of ears and one mouth.

CURRENT SOLUTIONS

A few different attempts at addressing this problem do exist. Hybrid Arts has a product called HybriSwitch for the Atari ST which sells for a mere \$29. With this product, you are allowed to partition your RAM so that all your programs are floating around in active memory waiting to be utilized without taking up processor and hard memory time. This is done at the outset of the operations so that RAM memory is handled more efficiently. Most

programs when loaded will suck up as much memory as they can access – much like a vampire in a blood bank. This package allows you to limit the applications to the amount of memory you deem necessary to keep them functioning properly (as long as you give them at least the minimum requirement). Hybrid Arts is also seeking third-party support from other ST developers so that multiple vendors' products can be used within this switching-type of multitasking environment. The idea fits in nicely with another project it undertook a while back to allow for multiple vendor interaction – its Interchange File Format.

Therein lies another concern in multitasking – different applications from different developers. For example, Mimetics developed a set of modules for the Amiga that ran simultaneously, and had the MIDI stream piped from module to module. They eventually published their interface spec, but no one adopted it. Dr. T's Music Software offers up its MPE (Multi-►

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Program Environment) along with KCS 1.6 (Keyboard Controlled Sequencer) which also takes advantage of the full multitasking capabilities of the Amiga. But the program shares tasks among other Dr. T's packages, not amongst a wide variety of other software applications.

MPE is also available for the more conventional Atari ST computers, where it takes a different approach. Instead of multitasking, the company employs a technique known as both "nesting" and "multi-nesting." In this scenario, various applications sharing the same MIDI data can be run together, usually a few at a time. So if you're running a sequencing program that uses a specific format for structuring information about tracks with a scoring program that uses the same track format, then the two applications can share the same structure for their operation, instead of two separate ones. This cuts down on having to store a diverse set of instructions for two fairly similar functions. You can also do things like record system exclusive information, created while editing a synth patch with a patch editor, into a sequencing program. (Read it again, slowly...)

The problem with nesting is that it is often developer-specific, kind of like a MIDI exclusive command. Unless your sequencer, scorer, patch editors and whatnot have similar data and file structures, you're going to be out of luck. Then you'll have to resort to true multitasking again.

In that realm, developers of Macintosh software are trying to make sure their packages work within the MultiFinder environment. Already, MasterTracks Pro from Passport Designs claims to take full advantage of the Mac's multitasking ability by being "MultiFinder compatible," and others are certain to follow in the very near future.

Also in the Mac world, Opcode Systems and Digidesign are working on a utility called "MIDI Share," which is a small program that grabs the Mac's internal clock and serial ports and directs the desired information to and from the programs that want it. Eventually this will mean something like having a sequencer and an automation program run simultaneously. Southworth Systems is independently working on a similar concept.

On the IBM side, the highly-touted DeskView is supposed to help speed those micros in the process of multitasking, but very few packages anywhere in the MS-DOS world are designed to optimize this capability.

NO LOOKING BACK

While true multitasking on your PC is creeping up to your level by degrees, once it hits home there will be no turning back. In the near future, anything not capable of multitasking will go the way of the stegosaurus, or at least the manual typewriter. At that point, when you hear someone say, "Do this! Do that! And don't forget that! And make sure you remember to do that, too!" remember, with the right machine, and a single operating cycle, you will listen calmly to all of these commands, look back placidly, and say "Done."

MT MAY 1988



Passport Designs Score

Music Notation Software for the IBM PC

Creating manuscripts is an arduous task that software can make less painful. Passport's newest offering looks to be a slow but elegant remedy.

Review by Chris Many.

14

SCORE - Computer Music Graphics

The image displays a page of musical notation from the software 'Score'. It features five systems of staves, each containing parts for Flute (Fl.), Clarinet (Cl.), Violin (Vn.), and Viola (Vc.). The notation is dense, with many triplets, slurs, and dynamic markings such as *ff*, *mf*, *p*, *ppp*, *f*, and *mp*. Performance instructions like *pizz.* (pizzicato) and *arco* (arco) are present. The score includes tempo markings of $\text{♩} = 120$ and $\text{♩} = 80$. The piece is titled 'SCORE - Computer Music Graphics'.

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DESKTOP MUSIC PUBLISHING arrived several years ago. With the advent of the laser printer, software companies saw an opportunity to allow musicians to create high quality, professional scores and created the music industry's equivalent of word processing: scoring programs. As with any market, prices varied, as did features and performance.

Passport Designs, one of the early companies to recognize the future of computers and MIDI (they brought out one of the first sequencing packages for the Apple II, rudimentary by today's standards, but a breakthrough for its time) has entered this field with a high-end program called Score. It contains an enormous amount of features, and a hefty price tag to match. The question is, is it worth it?

OVERVIEW

Score is one of the most comprehensive music manuscript programs available to date. The package actually consists of five modules: Score, the main program; Sprint, the module which prints your score; Page, a page layout module; Just, a program for aligning (justifying) the score; and Draw, which allows you to create and edit your own musical symbols (this last portion of the package was undergoing some final revisions and was not available for review).

The amount of control you have over every facet of your manuscript is very complete, working within the framework of the software and the Score Command Language (the collective title of all the editing commands available). Printing is to a dot matrix or laser printer. Laser printing is done using the PostScript page description language and Score includes all of its own musical symbols and text fonts, so you won't need Sonata or additional text fonts.

Score imposes a certain degree of control in terms of the way you lay out your music, as a single file can contain, at most, one page of music. The manual recommends that it's better still to limit each file to a single system of staves (one staff for each instrument). Don't worry, you can combine your files to form complete pages using the Sprint and Page modules, but no matter how you slice it, using Score to create manuscripts means careful planning beforehand. The claimed trade-off is that the program "ensures the greatest degree of flexibility and precision in positioning musical symbols on the manuscript page." While this may be true, my personal reaction after working with the program for a couple of weeks was that it meant I had to have the music I was going to input very well planned out before I sat down to enter it.

Ludwig van Beethoven
Symphony No. 9

M Allegro assai vivace 545

FL. *ff*
Ob. *ff*
Fg. *ff*
Cor. 1. 2. *ff*
Tr. 1. 2. in D-Re *ff*
Timp. *ff*
S. *f*
O. *f*
A. *f*
T. *f*
C. *f*
B. *f*

Freu - de, achö - ner Göt - ter - fun - ken, Toch - ter aus E - ly - si -
Praise to Joy, the God de - scend - ed Daugh - ter of E - ly - si -

ENTERING MUSIC

Score is essentially a computer-based system, as opposed to a MIDI-based system. There is minimal MIDI compatibility, and the user must enter his or her music directly - there is no conversion of MIDI sequencer files into music notation. This point alone will discourage many current musicians who may be looking for a scoring program to augment their IBM system.

Three ways of entering music into the program are available: typing it in directly from the PC keyboard, pointing and clicking using a mouse, or playing in notes from a MIDI keyboard. The latter is preferable by far, even if you're not a keyboard player. The only other concession to MIDI is that you can hear your score via a four-track playback system, which can access four MIDI channels at once. By assigning different staves to specified MIDI channels, similar to the way you would lay out a

MIDI "Score is essentially a computer-based system, as opposed to a MIDI-based system. The MIDI compatibility is minimal and there is no facility for converting sequencer files into notation."

sequence, you can hear what you've entered. If you don't have a MIDI instrument hooked up to your PC, you can access the computer's monophonic sound output and hear single notes played back. Score is also compatible with the IBM Music Feature card, and will allow you to playback music using it.

To enter music requires two separate cycles; entering the notes, then the rhythms. It sounds odd, but actually goes quite fast, once you get the hang of it. It requires noting where the measures are as you go (although you can correct omitted measures easily), but you don't have to worry about rhythm or getting the note values selected as you input notes. Just play them on a MIDI keyboard, point with a mouse, or type in the equivalent note using the PC keyboard. As you play your notes in, they appear on the staff and also as letters in the command line portion of the screen (E3/D3/C3/D3/E3/E3/E3 is an example of a familiar nursery rhyme in this kind of text translation). When finished, you'll need to enter a semicolon from the PC keyboard or the mouse (if you've got a three-button mouse - if you're using a standard two-button mouse, you'll just have to use the keyboard).

Next, you'll have to type in the rhythms for each of the notes. Score will tell you how many you'll need to enter, but it's up to you to keep track of where you are. For a slightly jazzed-up version of the above example, you'd type in something like q/e/q/q/q/q/h - q for quarter, e for eighth, etc. After you do this, each note is assigned the rhythm you typed in. You cannot do this function from your MIDI keyboard - you'll have to use the PC keys or mouse pointer to select the beat values offered. Next, you'll be prompted to add marks, beams and ties or slurs.

MT MAY 1988

E♭ Clarinet G. Rossini - Overture to William Tell - Finale

ALLEGRO VIVACE

226 8 234 9 243 9 252 5
260
268
276 *p subito*
284 8 292 5 300
308
316
323 3 328 8

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▶ You've now got your first line of music entered.

You can continue adding music to the staff you're working on or select a second staff to write to. An extremely helpful feature is one that aligns your music from staff to staff. If you've written in twelve 16th notes in staff one, and have dotted eighths occurring in the second staff, it can be a real pain to line them up in the proper location. By selecting the appropriate commands, your notes on staff two (or three or four, etc) will automatically line up correctly after you've entered the rhythms. You can scroll up, down, left or right using the scroll keys on the PC. Additionally you can adjust the size of the score you're working with. If you'd rather change the notation size on the screen, you can incrementally zoom in or out. This allows a complete overview of the manuscript, or simply larger musical notation to assist in precise placement of notes, marks, etc.

So, in general, this is how Score codifies music notation and channels your manuscript input. Time to move onto playing with the 'script.

EDITING

Basic editing is relatively simple. First, save the work you've done in the input mode (which, by the way, you can also save as a text file, permitting you to edit it using a standard word processor) and enter the edit mode. You can either edit symbols item by item, or edit them by groups. In edit mode you can copy sections of the score to new locations, or new staves if you want, re-sizing spacing, position or any adjustment in terms of layout. If you want to tweak a note or two, it's a matter of point and click if you're using a mouse, or entering a specified number and moving the note around using the PC control arrows.

To be honest, this is just scratching the surface of the wealth of editing features Score has to offer. Although it's hard slogging through the reference manual (necessary, if you expect to tap the full potential of this program), you'll just have to harden yourself to it. You can adjust the thickness of the lines used, the length of trill marks, the clockwise rotation by degrees of a number of musical markings; draw circles, polygons and guitar chords; stretch, expand, compress or contract bars; and locate or relocate any symbol anywhere. In short, you can lay out your manuscript exactly as you want it to look.

Other features exist to speed up input, especially for those typing from the PC keyboard. Instead of typing in E4/E4/E4/E4 to denote four eighth notes, you're allowed to type E4X4 to denote the same thing. You can also get tired real quick of typing in the octave location when the notes are all close to one another (no large jumps). Happily, a proximity mode automatically assigns the notes as close as possible to previous notes. When editing orchestral parts, a big help is writing the manuscript out in concert and then turning to the transposition mode and selecting the instrument you want to transpose it to. Score automatically rescores the part for the selected instrument.

Macros can also be created to speed up entry. Commands (or groups of commands) can be stored as macro command files and, although not as simple as assigning a group of commands to a single key stroke, it can speed up repetitive commands immensely. Text can also be added to a manuscript, whether it be lyrics, a title or simply small notations to be included with the score. A number of fonts are included: large type, italics, bold, etc, plus mirror images, tiny text and other items that come in handy in specific cases. Text can be placed anywhere on the score and sized accordingly.

PRINTING

Printing out a completed score also involves a bit of work, depending on the scope of your manuscript. If it's a simple, one page job, involving one file, it's fairly easy. If you've got 16 files, each containing single staves for each instrument, and you want to compile a full orchestral manuscript, however, you've got a bit of page layout to do before you have a workable product. Using the Just and Page modules, you work up the way you want your work printed out, and type in the sequence they're to be laid out in. The program will go through the files, displaying the bars and beats in each file. If unexpected numbers appear, you'll need to re-enter the Score program and search out the offending error. To simplify the procedure, the Page and/or Just modules provide you with the ability to do music manuscript page layout, just as you would do in a typesetting environment.

The fonts used by Score are very good, with excellent, crisp graphics for every note, slur, mark or accidental. The dot matrix output is wonderful with the notes full sized, not thin and squeezed like some other scoring programs I've seen.

When you do finally print out your music, it will still take a while, depending on the complexity of the score and print mode. Plan on dinner and a movie if you're printing out a full orchestral score on a dot matrix printer. Even a short piece will take some time as there seems to be no way around the physical limitations of a dot matrix printer. Even a laser printer, for all its impressive print quality, still requires many minutes for a full manuscript.

CODA

Score is not a program for the casual user, even though anyone is capable of using it. The program is basically intended for the professional and will require some serious time and effort to learn. Unfortunately, the documentation is not as helpful as it could be in this regard. Although thorough, it is written by the program's author and assumes a good deal from the outset. The reference manual shouldn't even be opened until one has a working knowledge of the program. A shorter (50 pages) User's Guide (written by someone else) is much friendlier and provides the basics in a tutorial format. Still, Score is not the kind of software you just boot up and play around with. Despite the use of on-screen menu bars and

help screens at every juncture, it was tough to try and produce some music without a constant reference to the User's Guide. In other words, prepare for a longer than average learning curve.

On the plus side, however, once you've mastered the basic techniques and have a solid understanding of how Score goes about accomplishing the task of music processing, things speed up quite a bit.

Another drawback is that MIDI is only rudimentally supported, and there is no conversion of sequencer files available. The idea of extensive preparation before entering material requires a high degree of organization which some musicians and composers may find restrictive. To enter an orchestral score with each file containing single staff information means you really have to have everything all laid out beforehand; written out in long hand. Score, in this sense, is rather slow and doesn't lend itself to real-time arranging or orchestrating. It's very much a text-based system; so much so, in fact, you can store an entire manuscript as a text file and edit it with a common word processor. You'll have to be an expert in Score's particular language in order to do so, but it is completely possible.

Print Out "The fonts used by Score are very good, with excellent, crisp graphics for every note, slur, mark or accidental. The dot matrix output is wonderful."

Given the power of this program as a music typesetting system, however, you have to give Passport and the programmer, Professor Leland Smith of Stanford, a lot of credit. You get extreme and precise control over almost every detail, from positioning, to size of text, to symbols. The Score command language consists of hundreds of options to help one input and edit music. The quality of the finished product is excellent on both laser and dot matrix formats.

Score's feel is actually one of a professional music typesetting system, whose prime goal is to provide high quality music output to paper. In this context it is successful, with an understanding that essentially you're transcribing work already done to a computer-based publishing system. For your every-day MIDI musician looking for a simple system to print out a song, this package is really too high-end. If, however, you want to enter the music publishing field, have a regular outlet for scored material (colleges and high school bands and orchestras come to mind) or have a strong interest in getting your own music printed to paper, Score is a package you should strongly consider. Laying out almost \$800 for a music printing program is a real commitment to the muse, but if you're willing to go the whole nine yards, Score delivers. ■

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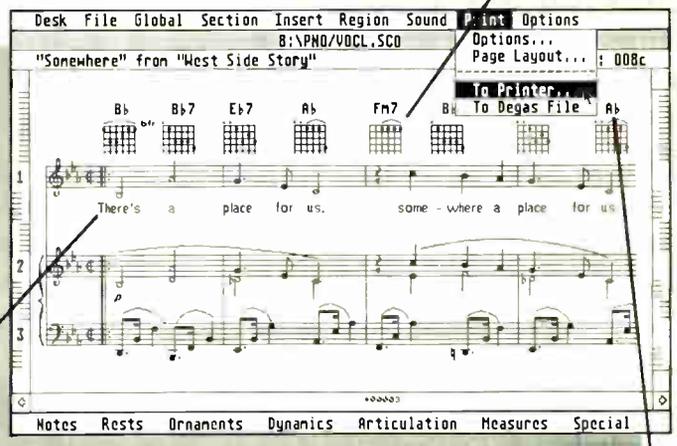
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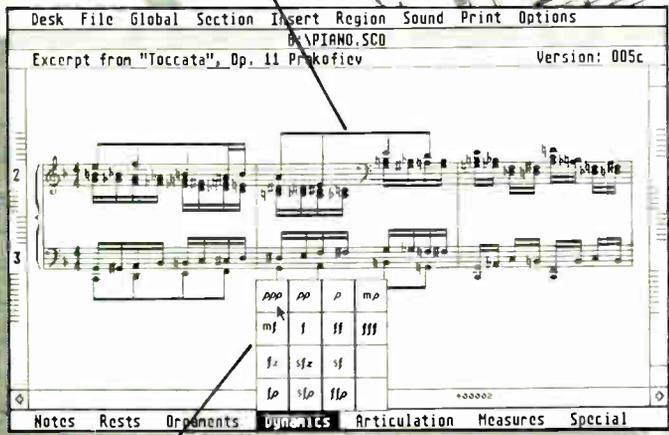
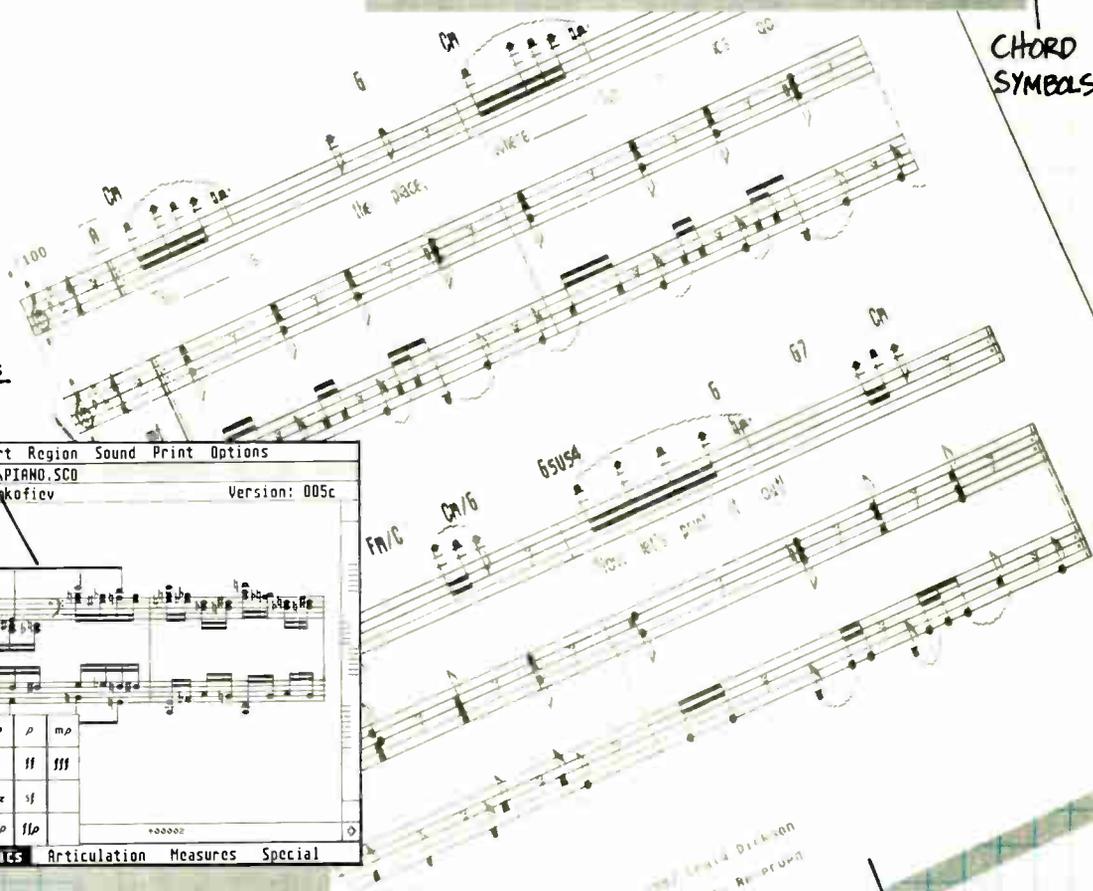
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Opcode Cue 2.0

The Film Music System

#	Description	Channel	Note	Level	Duration
1	Door 1	2	F4	63	s0:00:02:00
		0	A4	39	
		1	E5	55	
		1	F4	71	
		1	F4	71	
2	Door 2	2	G3	71	s0:00:02:00
		0	C5	127	
		1	C5	127	
		1	C5	127	
		1	C5	127	
3	Bottles falling	2	D6	31	s0:00:05:00
		2	D6	31	
		2	G6	27	
		0	G6	27	
		1	D6	31	
4	Female Scream	2	B5	71	s0:00:02:00
		0	C5	127	
		1	C5	127	
		1	C5	127	
		1	C5	127	

0:00:02:00 Clear Play MIDI Input Link to Cue

Film and video composers have to deal with a variety of problems that many musicians don't ever consider. The Macintosh program under test here helps clear most of them away. *Review by Chris Many.*

THERE ARE SO few good software programs that assist TV/film composers in the mathematics and administration of writing music. That when one comes along, it's a major event. Cue, from Opcode Systems, is such a program for the Macintosh. Its stated aim is no less than "automating every task that takes away from the creative process." Film composers should plan on throwing away their click book, although one is included within Cue, just in case it's too hard to give it up.

WHO NEEDS PAPERWORK?

It's hard to pick a place to start with a product like Cue, because so much of the day-to-day work of timing, spotting, cue sheets, etc.

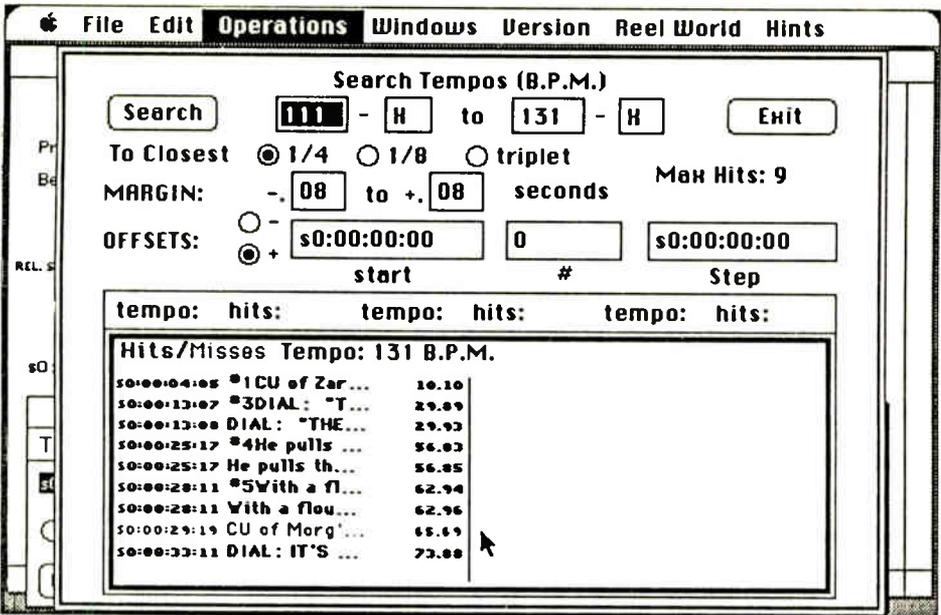
is handled by the program. So let's start with something we all hate - paperwork. A screen containing all the basic administrative data is presented by accessing familiar Mac pull-down menus. Production title, Cue title and number, percentage breakdowns for composer and publisher, orchestrator name and more are filled out by the user, all of which is integrated in various aspects of the program.

There's more: Cue will also print out custom score paper for you to use in writing or transcribing your music, complete with meter changes, hit descriptions, and all the timing references you can work out with the program. It will also print out the cue sheet you've been working with, a master cue list of all the cues

you've worked on, and a Performing Rights cue sheet. It's great to have all this administrative stuff computerized, and once you've already inputted everything, it's really just a matter of turning on your printer and clicking a button.

TIME AND WEATHER

Cue is very flexible when it comes to time and tempo formats, displaying information in several different modes at once. There are actually two columns for showing hit information timings, and you may select them to read out either the Absolute or Relative time in a variety of formats. Absolute time refers to the actual timing points of the cue as taken from a video tape or moviola. Relative time is simply the actual running time from the start of the cue. Unfortunately, unless you have a wide-screen monitor for your Mac, you're only going to be able to comfortably see one of these columns at a time. It's easy enough to scroll the screen over to encompass both of them, but



then you can't see other valuable timing data. However, having two columns of timing data available in several formats is helpful.

The display formats include a readout in Hours:Minutes:Seconds, SMPTE (Hrs:Min:Sec:Frames) in formats of 24, 25, 30 nondrop (B&W), and 30 drop frame (color) frames per second, and as film standards of Feet/Frames for both 16 and 35 millimeters. Because you have two columns of data to display, you can have your main column entered in SMPTE format as

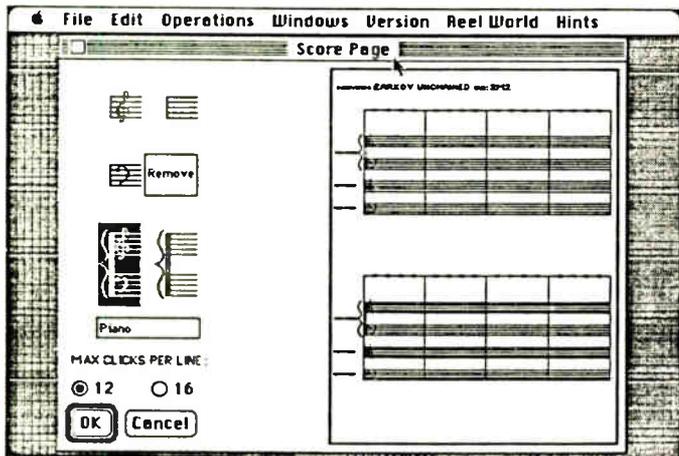
SMPTE, Hrs:Min:Sec, or Feet/Frames, whichever convention you're working in). To enter hits, it's a simple matter of typing in the time of the hit, and a description of what the hit is.

Cue's flexibility shows up again in the input window. Not only can you enter your hits in any format you want and have it converted and displayed in the main format you selected, but you can enter hits in either absolute or relative mode. This may not seem as obvious a feature as some others, but if you're working with a script

beat into musical divisions, enter a 2 for rounding off to the nearest eighth note (1/2 a beat) or 4 for 16th notes, etc. Another mode is to round off the beat and display in parentheses the + or - fraction of a beat that you're off. It's really left up to you how great the resolution is for beat location.

In the Input window are two other boxes - one to notate a Key hit, and the other to note a cut (as opposed to dissolves, which vary in length). You'll probably enter more hits than you care to catch musically and by checking the Key hit box, you're referencing the main hits you want to ensure you catch within your cue. This will become important later when you search for a tempo.

Although it's easy enough typing in the hit times, there is another method of inputting these moments into Cue: directly from SMPTE. Providing you have the necessary conversion boxes, you can either read LTC (Longitudinal Time Code) or VITC (Vertical Interval Time Code) directly into Cue. LTC is the time code most of us use and are familiar with; it is an audio signal recorded onto your video or audio tape. VITC is embedded into the video signal (if you request it) and is read by hooking up the video output of the tape to a box that will convert VITC to LTC. The main advantage with using VITC is that because it is part of the video signal, you can read SMPTE in slow motion, reverse and even when paused. This means you can rock the video back and forth until you've



Absolute time, while the second column shows the elapsed time (relative) in Hrs:Min:Sec. Or you can use feet/frames and SMPTE drop frame, or any combination of the display and time formats. If you would prefer to see measures and beats as opposed to the total number of clicks, you can set Cue up to display it in that fashion as well. You also have control over how fine a resolution you see in terms of beat location.

ENTER THE HITMAN

To start off, you'll need to enter the running time of the cue. A line asks you to enter the time from the reel start to the beginning of the cue; in other words, when the cue starts (in

and you know a certain hit is going to occur 23 seconds into the scene, you can enter it in relative time, rather than converting out where it might wind up in feet/frames, etc. As you type your hits into the input window, it automatically transfers each one to the main cue sheet, along with beat placement information.

As mentioned earlier, you have control over how fine a resolution you see in terms of beat location. A hit rarely comes right on the beat, usually some fraction of a beat early or late. This fraction can be displayed as 100ths of a second, or up to 999ths of a beat. If you're working with a high-resolution sequencer, for example, you could set this beat divisor to show you the exact beats and sequencer ticks that precisely correlate to it. Or if you wanted to break the

got the exact hit point located, press the mouse button and voilà; the time is entered. You can use LTC similarly, but you'll have to catch the hits on the fly, so to speak; you don't have the luxury of slow motion.

Editing cue points is simple - point and click, and the hit point you've selected appears in the input window. If you want to change the timing, however, you'll have to delete the old hit after you've corrected it. Instead of replacing the old hit, Cue looks at the new time reference as a new hit point and adds it to the cue list. It's a minor pain, because now you have to re-access the original hit point you just edited and erase it. If there are a number of consecutive hits you want to delete, there is a range deletion command that works in either relative or



absolute time. Cut, Copy and Paste features exist as well, using the standard clipboard functions.

TEMPO MAPPING

Now that you've got all your hits entered, you'll need to find a tempo that catches them, or at least the majority of them. Cue helps you isolate which might be the best tempo by searching through the hits and comparing them to a number of tempos, then displaying the results. You'll need to enter some kind of starting point for Cue to work from, either input the one you have in mind, or, if you don't know what it is but have a good feel for it, tap it in using the Mac keyboard. After the 17th beat, Cue will display whatever tempo you tapped out.

One other method of calculating a starting tempo is by using beats and time. By selecting a start and end point (time wise) and figuring out how many beats you want to have fit within that time (like a verse and chorus, for example), Cue will calculate what the tempo would have to be in order to have those two factors come out.

Once you've established a working tempo, you select the Search Tempos option. Here you're asked to select a tempo range for the program to search through, options to choose whether you search to the closest quarter, eighth or eighth note triplet, and the margin for error that Cue designates as acceptable (prior to or after hits). Once you've set the parameters to your liking, click the start button. Very quickly each tempo between the ranges you set are displayed, and next to them are the number of hits that fall within the parameters you set. If you had a maximum of 15 hit points noted, you'll see immediately that some tempos work much better than others. If you're lucky maybe one will include all 15. You can zoom in on any of the tempos displayed and see an abbreviated version of the cue list: the hit time, the hit description and the beat on which it falls (including fractions of a beat to 1/100th). This way you can quickly preview any of the proposed tempos, inspecting them to see which one will work best.

You can also reset your parameters at any time and re-search for a tempo until you're satisfied. Of course, the bottom line is what works best for the scene, but having a computer help you pick a tempo that works sure can make life a little easier.

So now you have a tempo that you're happy with. Unfortunately, there's a few hits that don't come in right on the mark. Another feature - accelerando and ritard - can help alleviate this problem. By setting Cue to retime your music, you can gradually speed up or slow down the track to help adjust it to these important hits. Because the changes are made gradually, live players don't have much trouble following the tempo, as it feels quite natural. Used correctly, you can tighten your cue up tremendously, getting each of the hits to happen right on the beat (or upbeat, or wherever you want them to land). It's not as easy as it sounds, because by

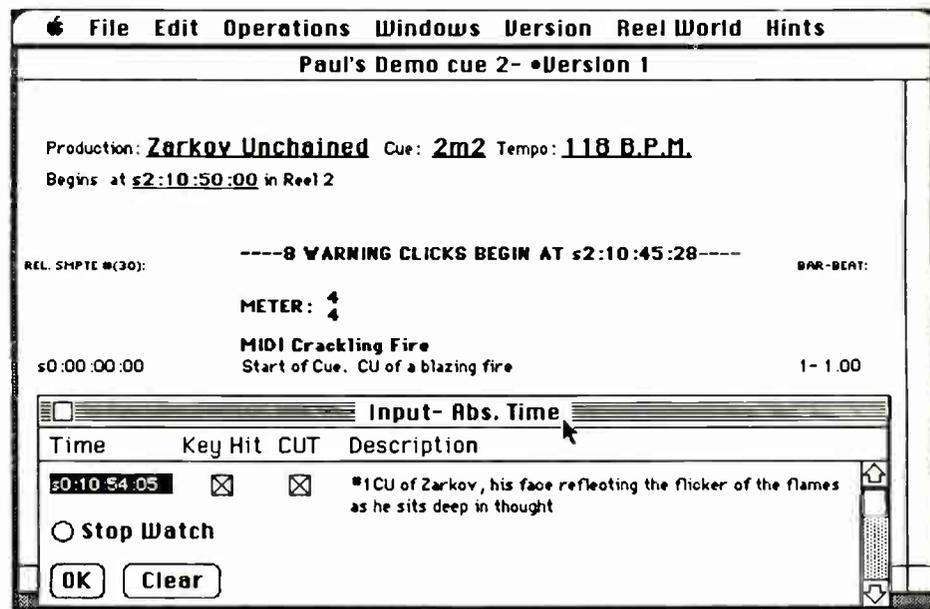
adjusting an early hit point through retiming, you may throw off the accuracy of later hit points, necessitating some surgery in those areas as well.

One other point to keep in mind is whether or not you want a specific hit to land on the downbeat of a bar, rather than beat two or four, for instance. You may want to change the meter of a bar or bars to accomplish this and inserting a meter change is easily accomplished. You're able to change the meter for one bar or for the remainder of the music if you want, by clicking the Set Meter option, entering the new meter and where it is to start.

While you've been fine tuning your cue, all this information has been added to the main cue

makes it easy to use the tempo and meter calculations you worked out for your cue with a sequencer, without having to program in minute accelerandos and ritards.

Cue also includes a MIDI event trigger which can store up to 40 MIDI events, each of which can be triggered as many times as you want. Using an event list, you can assign any MIDI note, channel and velocity setting to be triggered at any time for a specified duration. This is very helpful in laying down sound effects and speeds up the process tremendously. This feature also links to all the other information you've processed with the program, so if you were to go back to the main cue sheet, you'd see MIDI event triggers noted along with the



sheet: ritards, meter changes, etc. and all the adjustments are clearly marked on your master reference sheet. But there is yet another window that provides a better picture of how the timing map relates to your musical cue; the Clicks window. This gives a linear representation of the cue as laid out against measures and beats. The Clicks window shows meter, bar numbers, the time of the beat at the start of each bar, and the beat number at the start of the bar. Not only that, but it also shows each hit point, an abbreviated description and where it lays with reference to the beat. This is a useful visual window, giving the composer a realistic musical reference point of view.

Aside from using Cue as a tool to write music with and print out the results, you also use it as an audible timing reference for live tracks by laying down a click track from the Mac's output jack. In addition, Cue displays streamers and punches on the screen, and there is hardware available that will allow you to superimpose these visual references on the video you're working with. But the best part is the fact that Cue interfaces with the MIDI environment as well. You can lock Cue to SMPTE if you have a SMPTE/MTC conversion box, as Cue is MTC compatible. Cue will also output MIDI clock and Song Pointer, and will drive your sequencer/drum machine/MIDI device just as easily. This

rest of your data. It goes without saying that the event trigger will also be locked to SMPTE (again, providing you have the requisite hardware).

THE CLOSING

There are still more features included in the package, some more useful than others. The documentation, although complete, was written using standard film examples (ie. the tutorial aspects of the manual use feet/frames and film click tempos), so if you're unfamiliar with these points of reference you may find your learning curve to be a little steeper than usual. The manual's prose itself is written with bits of humor, so it's not a dry read at all. I personally didn't mind, but it can get a little distracting after a while.

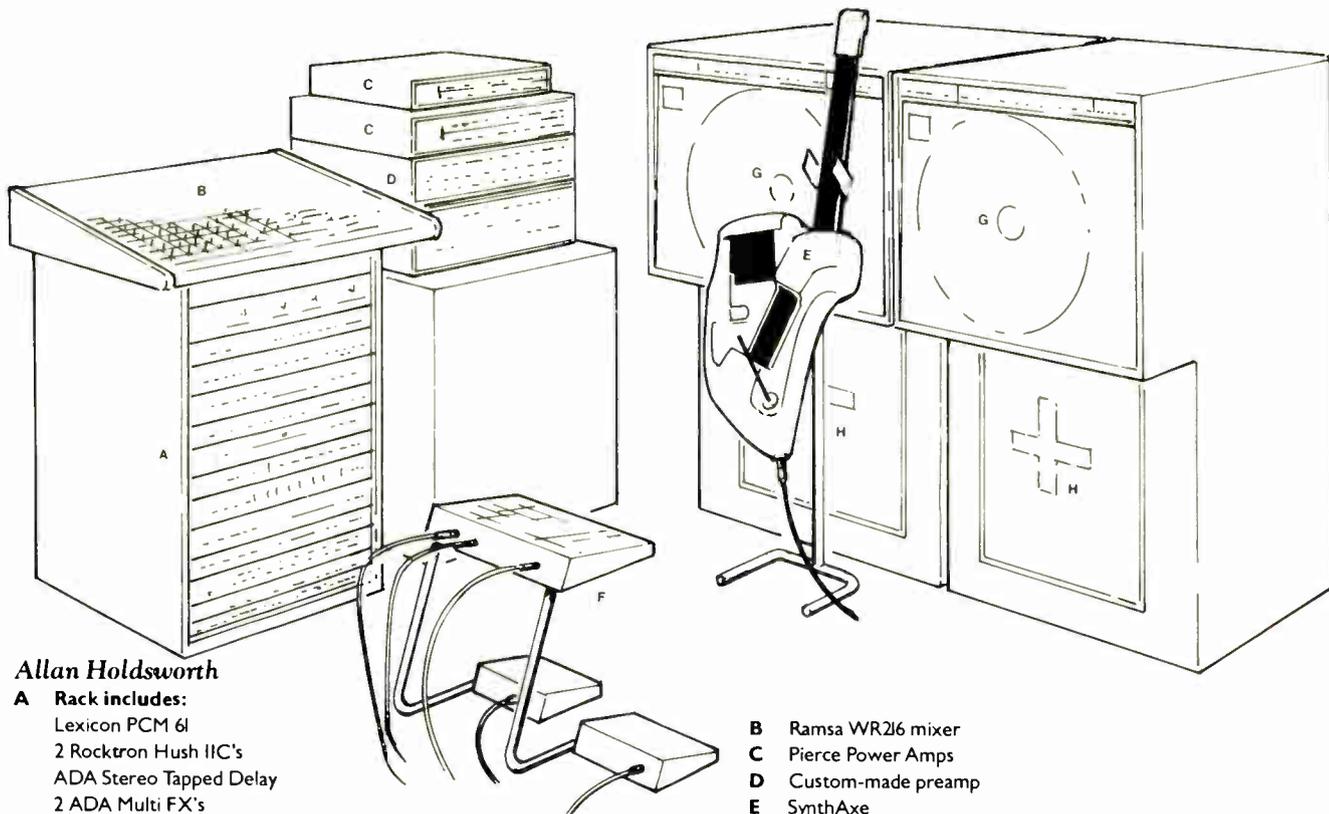
Cue is not as graphic a system as some of the other film scoring programs available, but that doesn't make it any less powerful. If you have a Mac, or are simply looking for a strong software package to ease the administrative and mathematical burden of scoring music for film or TV, Cue is one of the best programs around.

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On Stage

ALLAN HOLDSWORTH

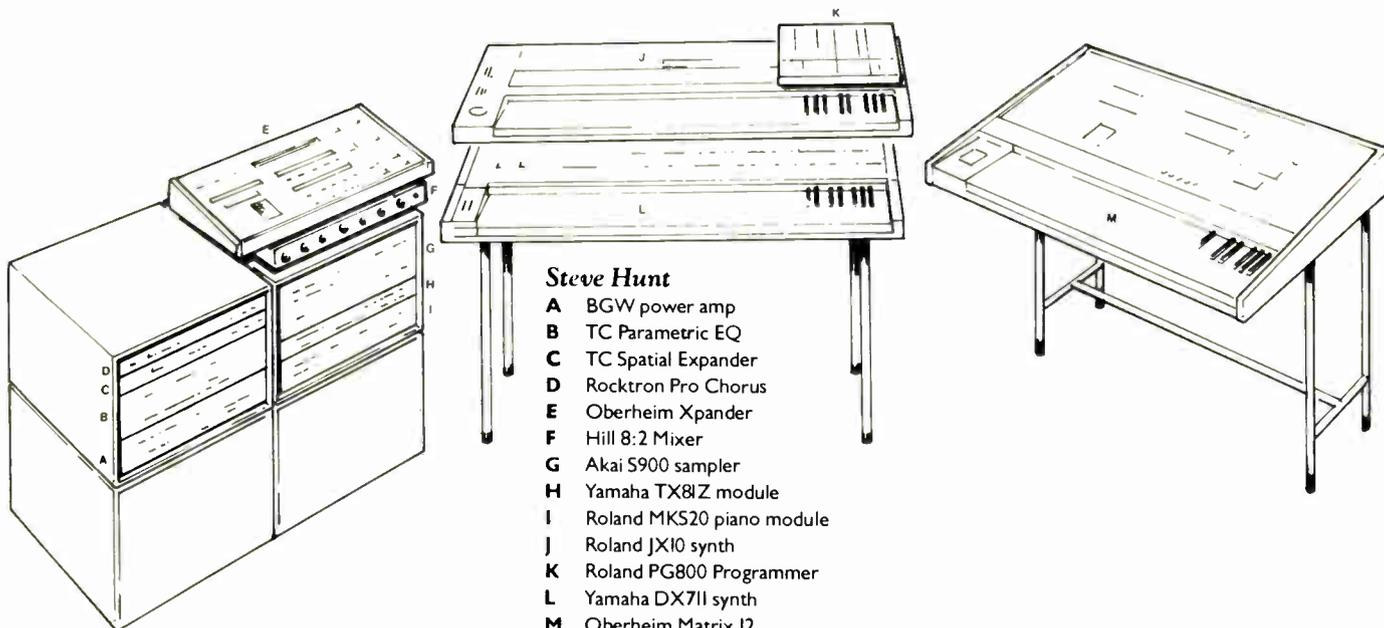


Allan Holdsworth

A Rack includes:

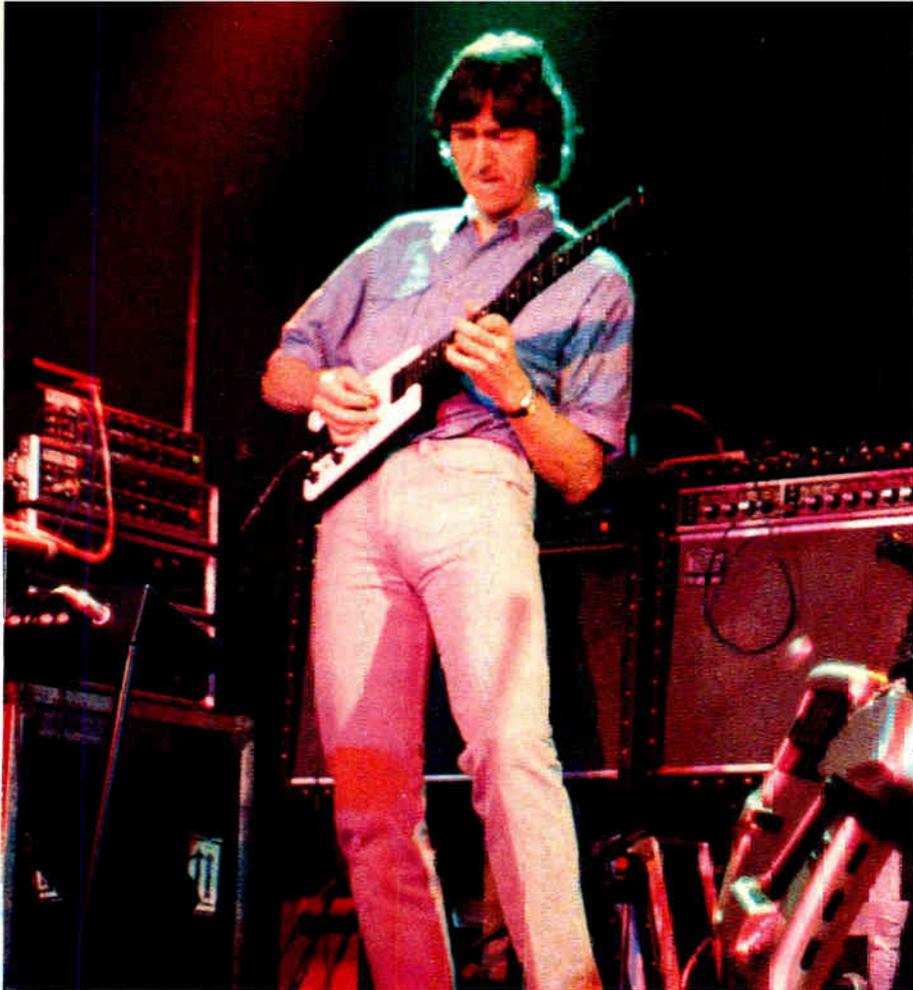
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- ADA Stereo Tapped Delay
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- C** Pierce Power Amps
- D** Custom-made preamp
- E** SynthAxe
- F** SynthAxe brain
- G** Roland JCI20 guitar amps
- H** Marshall cabs loaded with Nash 1X12 speakers
- Offstage:** Oberheim Xpander and Matrix 12



Steve Hunt

- A** BGW power amp
- B** TC Parametric EQ
- C** TC Spatial Expander
- D** Rocktron Pro Chorus
- E** Oberheim Xpander
- F** Hill 8:2 Mixer
- G** Akai S900 sampler
- H** Yamaha TX8IZ module
- I** Roland MKS20 piano module
- J** Roland JX10 synth
- K** Roland PG800 Programmer
- L** Yamaha DX7II synth
- M** Oberheim Matrix 12
- Offstage:** Alesis Midiverb



WITH A SYNTHAXE, an Oberheim Xpander, and a Matrix 12, Allan Holdsworth probably plays the most expensive, highest-tech guitar around. And some would say the fastest, too. But a question: Does the yin of Holdsworth's Technology and Technique outweigh the yang of pure musicality? Would it even hold up? A pilgrimage to catch Allan in action at the San Jose Cabaret was in order.

Allan brought with him an extremely talented band consisting of the animalistic Gary Husband on drums, Jimmy Johnson on five-string bass, and Steve Hunt on keyboards. Husband plays with the sheer power of Billy Cobham, but with a style consisting of machine-gun bursts and broken times as opposed to Cobham's artfully steady jackhammer. He lost several sticks throughout the night, but you only noticed if you were watching. Johnson had an uneven night. He was devastating when laying down pantsleg-flapping grooves or strumming chords, but during the faster runs, Jimmy seemed to be struggling to keep up. Keyboardist Hunt was a great find, often playing monophonic lines so fast they blurred into a fluid line. On the phone a week later, Holdsworth bubbled over with enthusiasm about Hunt. Apparently, Holdsworth had been through two other keyboardists already, "... and they changed the music. They made it more like a cabaret act. Keyboardists will do that, you know ..."

Holdsworth played like a true sensei (master). His work on the SynthAxe was split between atmospheric chordal work (as atmospheric as fast jazz can get) and

saxophone (!) leads aided by his mastery of the 'Axe's breath controller. Not only is Holdsworth the most visible user of the SynthAxe, he seems to be in complete control of all phases of it, mixing keyboard, fret, and plectrum technique. His "normal" guitar work on the Steinberger was divided between blazing harmonic leads and fast rhythm work. Holdsworth has almost identical effects equipment chains for rhythm and lead work (look at the equipment list, and look at the pairs of identical amp and speaker stacks) with entirely different settings so he can just switch signal paths, instead of fiddling with knobs during the performance. The synths triggered by the SynthAxe shared the lead guitar's amp "which is a compromise, really," Holdsworth admits. "The guitar wants a guitar amp, while the SynthAxe wants a full-range speaker system. The Roland JC is the best compromise between the two." And for his roadies, too, I imagine.

Slowed by only one respite when Holdsworth played a gentle, convoluted chord sequence on the SynthAxe and then soloed over it, the performance was simply the most enjoyable speed-jazz I have ever witnessed. Instead of trading licks, Holdsworth and Hunt blew people's socks off trading whole sections. And Larry and Jimmy (grinning wolfishly most of the time) knocked off whatever was left. A live band that cooks can add quite a bit of heart to the mind usually displayed on a jazzier's album.

On many different levels, It All Worked. ■

Text by Yung Dragen.

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Simmons SDX

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DRUMMERS ARE A hesitant bunch, especially when it comes to electronic percussion. On the one hand, they're mindful of the benefits that technology can bring them – access to a greater range of sounds and the ability to change setups at the touch of a button, for example – yet they're all too willing to dismiss the demon electron with a shake of the head and a “Yes, but it just hasn't got the *feel* of my acoustic kit. I can't get the subtleties, the nuances . . .” It's what I call the “Venus de Milo Complex:” people are always too busy lamenting what isn't there to appreciate what is.

It's a problem that Simmons, for one, has been constantly up against; for years they've been encouraging drummers to

Simmons' latest state-of-the-art electronic percussion system comes closer to the dedicated music computer system of the Fairlight than the “traditional” electronic drum kit.

Review by Nicholas Rowland.

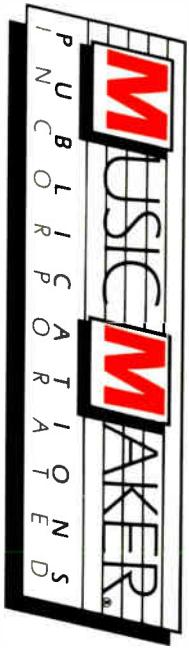
bite off more than they can eschew. Hence, while they've been gently prodding percussionists towards more creative use of sound, they've also been spending much R&D time and money bringing the hardware closer to what the average drummer expects whenever he or she sits behind an acoustic kit.

Enter now Simmons' new baby (baby monster, that is), the SDX, a dedicated percussion system which claims to let drummers have their cake and eat it. On the face of it, the SDX represents

Simmons' most sophisticated and innovative attempt yet at mimicking the action of the acoustic drum.

Specifically, it features “Zone Intelligent” pads, an apocalyptic way of saying that, as well as the strength of a stroke, they can also detect its position on the pad's surface. This combination of “how” and “where” in turn determines which one of the nine samples that normally comprise each SDX drum sound will be triggered. Thus, by judicious programming you can imitate the way that the pitch and timbre

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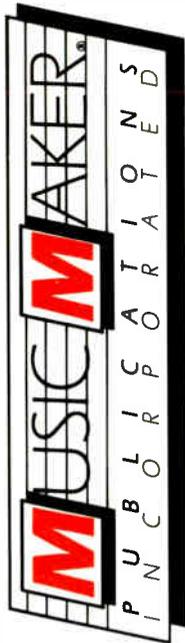
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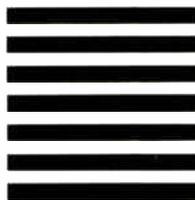
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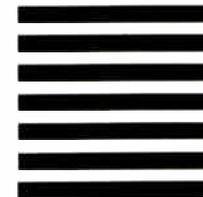
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of a real drum changes according to the way it's hit.

This same system applies to the electronic cymbal pads, which not only swivel in rough (very rough) approximation to a conventionally mounted cymbal, but can be grabbed and "damped" just like the real thing. The SDX also has an electronic hi-hat, with a pedal which can be used to "open" and "close" (albeit metaphorically) the hi-hat sounds. They can even produce the appropriate "chip" sound when pressed smartly to the floor, as with any self-respecting piece of hi-hat hardware.

But in fact these features merely represent the icing on the cake, the skin-basher-friendly interface which accesses a sound creation setup of incredible power and complexity. The power behind the drum throne consists of a 16-bit linear sampling system with a maximum of 88 seconds sampling time at 44.1kHz, or nearly six minutes at 11kHz. Memory size is an initial 2Megabytes, though upgradable in 2K steps to 8K. If this is not enough, an optional 20Megabyte Winchester hard disk can be fitted and there's a SCSI port to connect up to six more. Otherwise, loading and saving information is achieved on 2Megabyte floppy disks.

The SDX internal computer uses a multi-tasking editing system which involves one 32-bit, three 16-bit and two 8-bit

processors and will be constantly improved and expanded by software upgrades. One of these will be a 32-track sequencing package, featuring 16 internal and 16 external tracks, capable of reading and generating SMPTE code and storing a quarter-of-a-million events per floppy disk.

What in effect we're talking about here, is an instrument akin to the Fairlight which happens to have a set of pads rather than a keyboard attached at the other end. Though that's not to say that the SDX system can't be driven by a set of ivories. In Keyboard mode, we're promised you'll be able to assign 16 overlappable splits across the keys, with each split capable of up to 16-note polyphony. And for good measure, SDX also has tracking filters, sustain looping, transpose, pitch-bend and modulation LFOs.

Naturally, this little lot doesn't come cheap, though compared to sampling systems of comparable power it's a fair bargain. You'll need \$8792 to get your hands on a five-pad/2Meg memory system, but around \$14,440 for a 10-pad kit with all the memory upgrades. (And for non-drummers, the SDX console alone costs around \$7960 and the sequencing software will be \$299). While the SDX is going to be very much beyond the average drummer in the street, I've no doubt that the ideas will eventually percolate down in budget form through future Simmons

products. In the meantime, though, I've no doubt that the SDX is going to be of as much, if not more, interest to producers and professional studios as the ultimate stand-alone sampling drum machine/sequencer, with the ability to record all the inflections of a drummer's session performance.

Which is why, even if you're not a drummer, there's no excuse to ignore these pages and turn instead to "MIDI-Matrixing for the Instrumentless Studio." Read on, bunky, while we cover what's here now.

The Console

THE MIGHTY SDX console (brain is just too small a word for it since it takes two men to lift it comfortably) looks and feels like something out of Star Trek - apart from the multitude of inputs and outputs at the back, there is very little to indicate what it does or how it does it. There are but few controls: 16 gray rubber keys arranged in two rows of eight, a tracker ball and two buttons, a headphone socket and associated volume control, a slot for 3.5" floppy disks and a 9" high-resolution monitor screen. There's only one criticism: all the panel surfaces slope, so where do you rest your beer?

Insert the System disk, switch on, and after 45 seconds the screen comes to life with an outline picture of the SDX control

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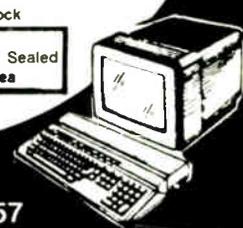
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9-16	○○○○○○○	○○○○○○○	○○○○○○○	●●●○○○○

Drum Name	AMB Tom 2	Hi-Hat	Symbol	Pitched
Voices 1-8	○○○○○○●	○○○○○○●	○○○○○○●	○○○○○○●
9-16	●●●○○○○	●●●○○○○	●●●○○○○	●●●○○○○

SURFACE CONSTRUCTION

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Envelope Surface

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Soft	+000	+000

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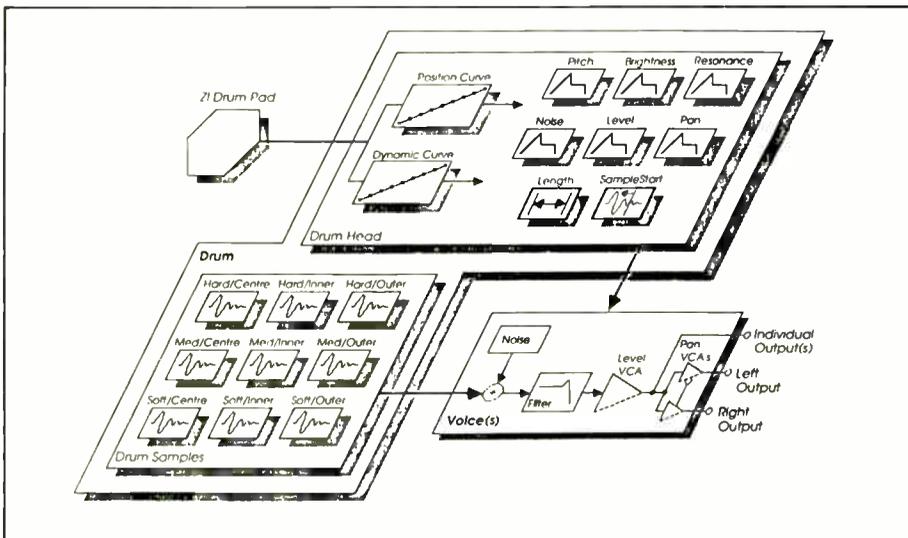
Pitch Envelope Shape

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Low Duration : Level :

FLIP

Pitch Bright Res Noise Level Pan



▶ panel and a brief explanation of what's what. Aha! The tracker ball controls a cursor, and the buttons are used to select icons or different functions within the pull-down menus. It takes a little while to get used to this inverted mouse format, but once you do, programming the SDX becomes second nature.

At this point, if you're new to the SDX game, you're advised to load the Help disk, which contains an abridged version of the 90

instruction manual. This disk can be accessed at any time at any level and is divided into sections so you can choose which particular function you want to read up on. But as Simmons themselves point out, it's no substitute for reading the 200-page manual.

Unless you're creating drum sounds from scratch, in which case you'll smartly exit to Raw Sampling mode, you'll next need to load some existing kits or drums

from floppy or hard disk into memory. (Like any computer system, this memory is the working editing area which gets lost as soon as you switch the machine off. Hence, if you don't want to lose it, anything you've worked on in this memory must be saved to disk before power down.)

At this point let me introduce the fact that there is already an extensive library of complete kit disks available which really do show off the SDX's 16-bit sampling and parameter manipulation. These have been prepared by famous name producers and session drummers. Particularly excellent are the huge, ambient, house-type drum sounds recorded by Steve Levine in what sounds like an aircraft hangar. Bill Bruford has also contributed kits featuring rototom and log drums which have a charm all of their own. You actually get six kit-disks with any SDX package and it's Simmons' hope that as the number of SDX users grow, sounds will be freely swapped. Hmm, I wonder (on the other hand, E-mu owners have been quite free with their wares so far). Other disks will also be available shortly containing different examples of the same drum.

After kits have been loaded, the Kit Select screen displays these as a series of identical icons with each kit's name underneath. To choose one, simply move the cursor to the appropriate icon and click. The current kit selected is indicated by the presence of a drummer (which looks remarkably like a caricature of Dave Simmons himself) and encompassed by a box. To change kits simply move the cursor to another kit and click, and the figure leaps to the appropriate kit. Though it takes a second or so for this to happen on-screen, the change is actually instantaneous (good that sounds have a priority over visuals). Incidentally, new kits can be loaded while others are being played, though Simmons doesn't supply the extra arm or roadie you'll need to do this without dropping a beat.

Those gray keys below the screen are in fact dynamically sensitive triggers - handy in lieu of, or in addition to the kit pads - though accessing the Control Panel screen allows you to change their function. For example, they can control all 16 drums at a fixed dynamic, one drum at 16 dynamics or they can be arranged to be kit select switches.

The second page of the Control Panel mode brings us to the Auto Trigger function, which allows you to program in a one bar/16-step rhythm pattern at any tempo between 40 and 180bpm. The display is very similar to Fairlight's Page R and is as easy to understand. I can only hope that when the SDX sequencer arrives, it will also adopt this user-friendly format.

Auto trigger can be accessed at any editing level and is particularly useful if ▶

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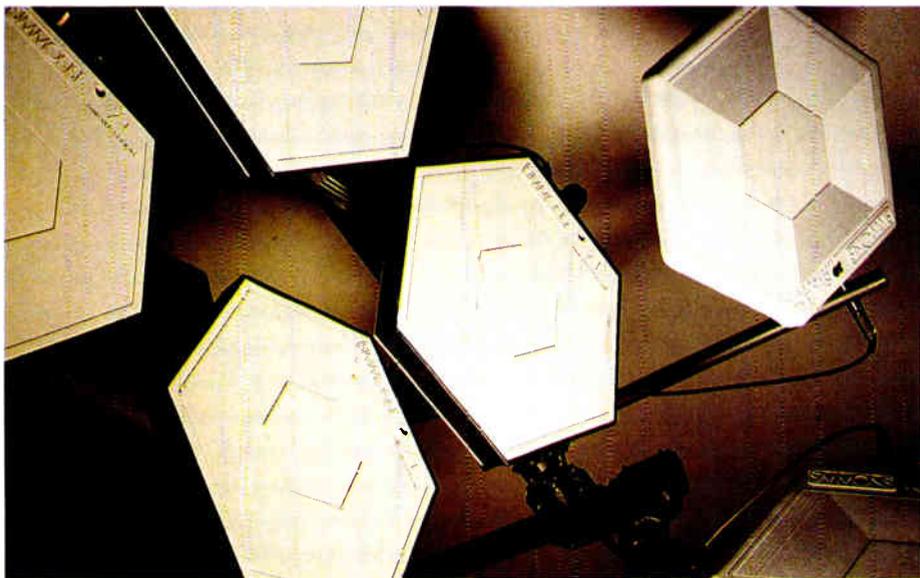
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▶ you're trying to set up a mix and need to know how the drums are sounding in relation to one another. It also means that in live situations you can go out front and listen to just how badly the mixing engineer has messed up your drum sound.

The next logical step is to the SDX's onboard 16:2 mixing facility, which again makes its appearance as an on-screen graphic – this time as a representation of a conventional mixer. You're given control over the length of each drum, its tuning (+/- 12 semitones), pan position and volume – all a matter of putting the cursor over the appropriate "knob" or "slider" holding a click button down, then spinning the ball. A pull-down menu allows you to choose whether these changes are fine, medium or several degrees of coarse. And naturally once you've set up a mix, all data is saved to disk as part of that particular kit's information.

Complex Editing

IT'S NOT LONG before you get the smell of blood in your nostrils and you know it's time to experience the wild thrill of the more advanced editing procedures. On



Photography Tim Goodbyer

then to the Kit Configuration page, gateway to the more subtle aspects of the SDX. Here the drums in the current kit are displayed in a series of boxes (eight drums to a page) showing the drum's name and pad type (displayed as an icon) and something called Voice Assign, which, put simply, determines the polyphonic capability of each drum.

Assigning one voice per pad results in all the sounds being monophonic – that is, samples will be retriggered from the start, which in turn means that fast cymbal or snare rolls will sound unrealistic. Hence you would normally assign at least two or three voices per pad, though you'd soon run out of voices because the maximum number is 16. To get around this problem, the SDX allows you to share voices

between different pads, giving all of them polyphonic capability, though once more than 16 voices are sounding at once, a complex voice-robbing process is brought to bear.

The 16 Voice numbers directly correlate to the 16 external outputs. Consequently, if the bass drum is assigned to Voice 1 it will come out of output 1. If a pad has more than one voice assigned to it, it will rotate around the corresponding voice outputs. Note though, that the snare output automatically has three voices assigned to its output. All voice outputs are monophonic, and are unaffected by the pan control of the mixer – that's for the unit's stereo outs.

The upshot of all this is that, if you want several drums to be polyphonic, say a couple of crash cymbals and some long tom sounds, and you want to add EQ and effects individually, then you're going to use up several voice outputs for each drum.

Meanwhile, back on the screen, whatever pad icon is assigned to a drum determines the way that the drum behaves and how many samples it contains. Pads with a snare, tom or cymbal icon assigned to them are made up of nine different

samples, which as I mentioned above, are triggered according to where the stick falls within the dynamic/position matrix. (Dynamics are described as Hard, Medium or Soft, while the positional zones are Center, Medium and Outer.)

However, both bass and rim consist only of three samples, triggered according to dynamic only. The hi-hat is also slightly different in that the samples are controlled by the position of the remote hi-hat pedal (open, closed or half-closed) as well as where the hi-hat pad is struck. Here though, there are only two positional zones.

Another variation is the Pitched Pad, which is selected whenever the SDX is to be triggered over MIDI from external sources. Here a MIDI range, rather than

just a single MIDI note, can be assigned, thereby giving a split keyboard facility even to those controllers which don't have them. Again, there are three samples here, each accessed according to dynamics. Naturally the pitch of the sound will change according to the keyboard note played.

Though the concept of Zone Intelligence is rather difficult to explain on paper, it's graphically illustrated when you move to the Sample Assign screen, which immediately shows you which samples are assigned to what part of the pad. And just in case you can't tell which of them you've triggered, a small cross appears by the side of the appropriate one every time you hit the pad.

Editing facilities at this stage include allowing you to increase the pitch or level of each sample, thereby enabling you to program subtle variations across the pad. The threshold level for Medium and Hard dynamics can also be quickly set and memorized for each drum. Naturally, other samples can be called up from the memory or from disk to replace one or more of the original samples – a quick way of getting some interesting new edits. You can also create and edit new samples yourself and install them into an already existing drum. And if this weren't enough, it's also possible to take existing samples, modify them, then reinstall them into the drum configuration.

Sampling

TIME THEN TO plunge deeper into the very bowels of the SDX system and take a stab at the Sampling page. Here, if you're modifying a sample already in memory, you'll find two windows: one, the Sample Window, giving you a view of the waveform as a whole, the other, Zoom Window, showing a "magnified" portion of the waveform. Before any editing can take place you have to turn the sample protection off.

If you're sampling a new sound, the windows are empty and the system is ready to go. First, you are invited to specify a sample length and sample rate and the SDX obligingly tells you how many bytes you are going to use up as a consequence. While I've quoted 88 seconds as the maximum time available at the highest bandwidth, let me make it clear that this is only if you have the full 8Meg of memory installed. Owners of the humble 2Meg option, will be able to sample for 22 precious seconds, which is still pretty impressive when compared to most current keyboard or rack-mounted samplers. (From this, you'll be able to work out that each 2M upgrade buys you another 22 seconds sampling time.) Just in case you were wondering, this figure represents the total time available for all samples combined.

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The preview feature allows you to see whether the sound will actually fit into the space you've allowed. There's a peak meter at the side of the Zoom Window, which records the highest peak of the incoming signal and thereby allows you to set the gain quite accurately. The trigger threshold is also fully adjustable.

If you're wondering how sounds get into the SDX, then look no further than the single socket on the back panel, which I'm afraid is padded to receive a line input only. It seems somewhat ridiculous not to have included a switchable input to allow mic signals too, but Simmons' argument is that as you'll be doing your sampling in the studio, there'll always be a mixer handy from which to derive a line input. Ours is not to reason why, but I'll just say that when Simmons' roving demonstrator wants to show just how easy on-the-spot sampling is, he has to resort to using a makeshift mic preamp. I rest my case.

After preview, comes the actual take and after that, sample editing. On offer are Truncate, Reverse and Looping functions, the latter function having its own dedicated screen. Precise loop/truncate points are quickly set up using arrows within the zoom screen, maneuvered by the tracker ball; alternatively the SDX will automatically find loop points for you. Then you can go on to set up backwards and forwards loops or crossfade loops between the marked points. Loop gain adjustment is also available.

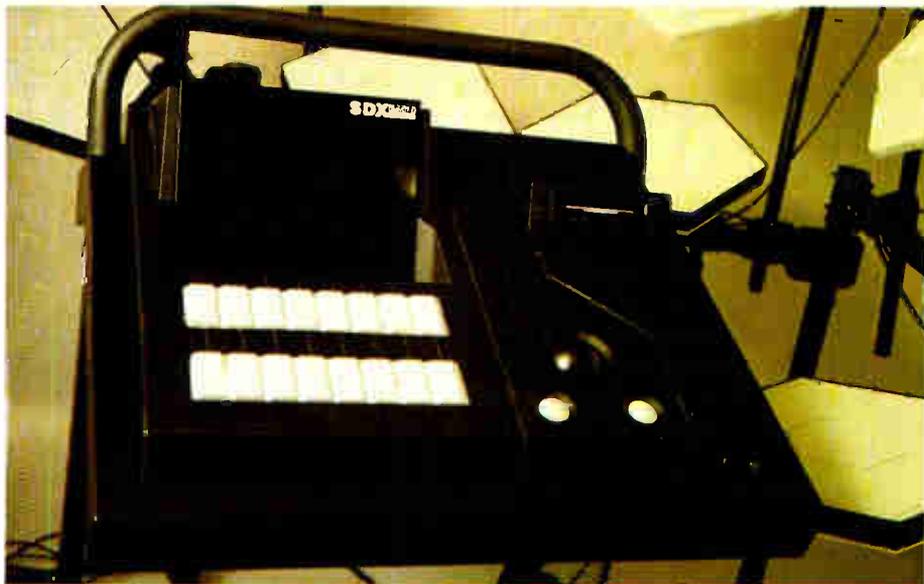
In short, if you want to sample a cymbal from a drum machine, then turn it into a reverse gong of which a small portion loops backwards and forwards for well over a minute as it fades away, you can. And because it's all displayed for you on-screen it's quite easy to do.

For those of you worried about sample quality... well, let's say that at the CD standard of 44.1kHz you don't need to worry about it, providing of course that the source signal has been set up properly in the first place. And even if it hasn't, if it's too weak for example, the SDX allows you to correct this after the event by normalizing the sample amplitude.

Drum Heads

ONCE NEW SAMPLES have been created or old ones edited, they can be re-installed into the drum configuration back on the Sample Assign screen. But this is only half the story of each drum, because there is another element in the construction of drum sounds - the Drum Head page.

This page features a series of what, in SDX parlance, are called Surfaces. In effect, these are parameters which can be applied to each pad to affect the character of the samples in real time, depending on how the pad is struck. These parameters consist of Pitch, Brightness, Resonance, Noise, Level, Pan, Length and Sample Start. Any
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combination of them can be applied, manipulated and then memorized for each drum, giving you the opportunity to create some startling effects.

For example, a pitch envelope can be applied to a drum, so that if hit harder on the edge the pitch bends dramatically down. Or if hit softly in the center the sound pans first left then right across the stereo image. Cymbals can be given a very gradual attack according to dynamic. A sample retrigger time can be set part way through the sample, and as the dynamic of a stroke increases, the trigger point moves further back towards the beginning.

What's particularly exciting is the Surface Construction window, which allows you to draw your own waveforms for these parameters as well as choose them from a menu of presets. While the action of different surfaces can be immediate, they can also be individually delayed in reference to the initial strike, and hence a combination of effects is possible. Spending time at this level bears some particularly tasty fruit on cymbal or gong voices, or more exotic percussion like bell trees and finger cymbals.

Again, this is difficult to explain on paper and even the SDX manual makes heavy work of passing on the necessary information. But once you actually start fiddling around in a fairly random way, then the mist clears and the meaning of the on-screen graphics becomes obvious.

Conclusions

IT'S IMPOSSIBLE TO describe in detail the many features of the SDX in a review of this length. But let me impress upon you two important things. The first is that the SDX is an extremely rewarding instrument to use. It's logical, it's friendly: you can leap from screen to screen, from function to function with great ease. Reading and storing important information, be it a request for help or for a list of what's

available from a particular disk, is accessible at all times. Hence there's a feeling that for once you're controlling the machine.

More importantly though, is that excellent as it is now, you can be sure that it's going to get a lot better given Simmons' commitment to software upgrades and the future availability of extra sound and kit disks.

I do have criticisms, but these mainly have to do with the hardware - the playability and durability of the pads and hi-hat pedal, the rather rickety construction of stands, the fact that Simmons still hasn't managed to eliminate that ugly proliferation of cords. There's also the (unavoidable) vulnerability of the console to consider, in particular that of the models containing hard disk drives. I can't really see a way around this but be warned: Simmons has installed mercury sensors within the case that will tell them if the console has suffered any severe impact - even if the case bears no signs of it.

But quite frankly, I don't think these points are all that important. At the risk of having multiple paradiddles played across my temples with jackboots, I'd say that the SDX is almost too good to let drummers loose on anyway. And even the people at Simmons themselves have noticed that it's the eyes of studio engineers and producers which light up when its lengthy spec sheet is unrolled at their feet.

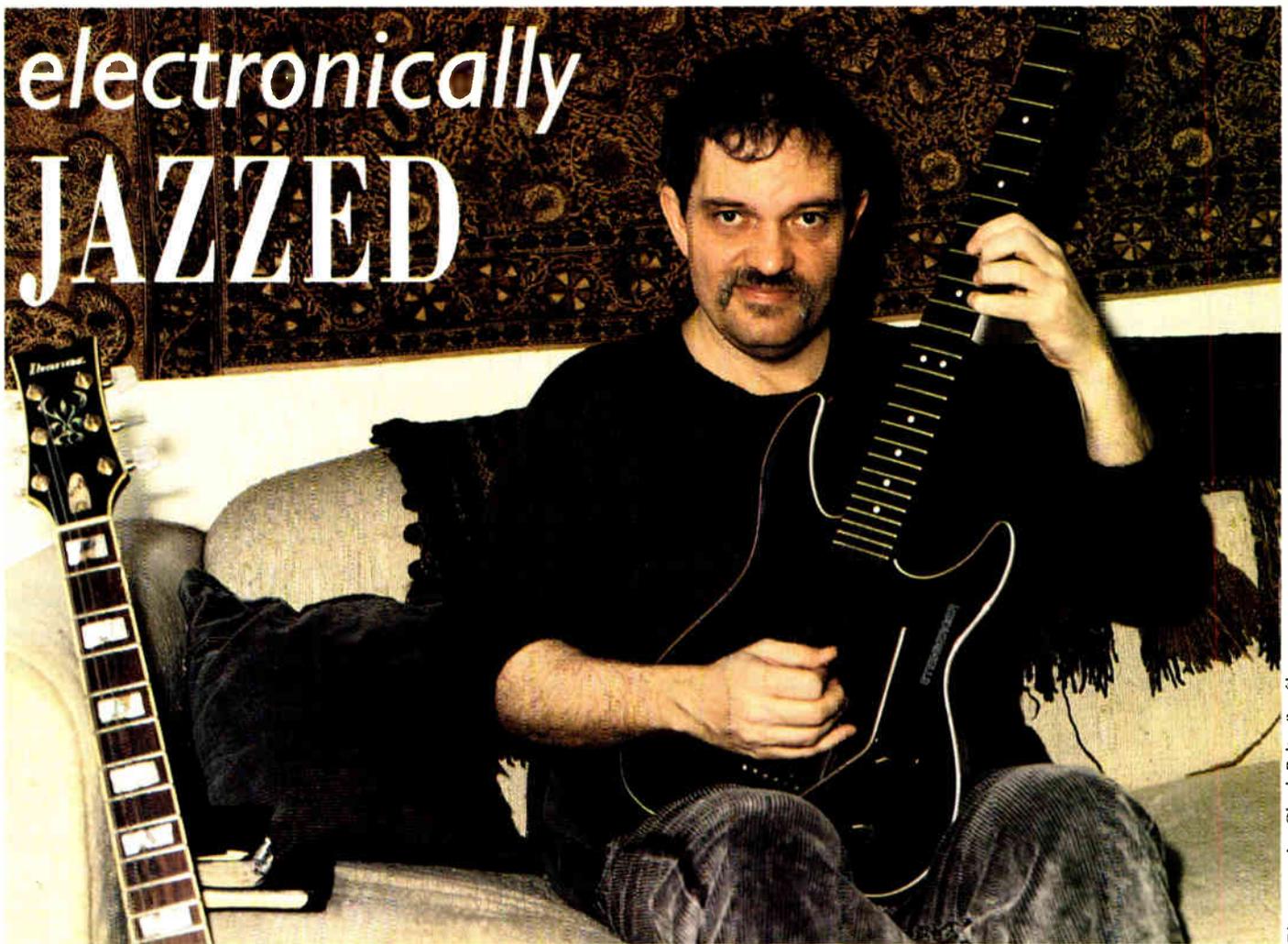
Besides, drummers are a hesitant bunch when it comes to shelling out a few thousand dollars too. But at least this may have the advantage of eventually forcing Simmons to introduce the \$1000 SDX. In which case, we may all want to be drummers. ■

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Photography Chuck Pulin, Starfile

Experimentation in both musical and sonic terms has long been a trademark of jazz guitarist John Abercrombie. Now the Photon MIDI guitar controller is expanding his capabilities even further.

Interview by John Diliberto.

JOHN ABERCROMBIE USED to be a straight jazz guitarist, a disciple of mellow, round-toned pickers like Wes Montgomery and Jim Hall. He took the jazz guitarist's pilgrimage to the Berklee School of Music in 1962, honing his chops and mastering be-bop chord changes. So how did he get to the point of plugging a Steinberger guitar with synth pickups into a bank of synth modules?

Abercrombie looks back to the 1960s for his electronic genesis. "A lot of that is a result of the psychedelic revolution," admits the 43-year-old musician, "and listening to people like Jimi Hendrix, who made the guitar expressive in a way that jazz players hadn't. Up until that point I was a dyed-in-the-wool jazzer. For me it was Wes Montgomery and Tal Farlow and Jimmy Raney, Jim Hall, Kenny Burrell."

He didn't abandon his jazz chops and start playing feedback guitar wails and fuzz-toned forays, however. Over the course of nearly 25 years of professional playing, he's managed to combine jazz and rock elements. His new group features drummer Peter Erskine and bassist Marc Johnson, and

the new album, *Getting There*, is Abercrombie's most eloquent and dynamic record in recent years. Sequencers and synthesizer leads are brought into a jazz context without devolving to the clichés of fusion.

The dive into technology wasn't a result of some calculated commercial plan or an awe-struck epiphany about the place of electronics in the universe. It's been a struggle, a yin-yang pull between the jazz purist and the musical adventurer. But Abercrombie seeks a balance, playing straight jazz dates with his old quartet, avant-garde fusion with drummer Jack DeJohnette's Directions, mainstream fusion with Billy Cobham's big band, and escaping into chamber duets with acoustic guitarist Ralph Towner from the group Oregon.

He's been battling himself since the '60s, when he was side-tracked from jazz into the illusion of big band jazz rock, playing with Dreams. Besides Abercrombie, Dreams featured the Brecker Brothers, Randy and Mike, and drummer Billy Cobham.

"The whole experience was kind of strange," he recalls. "Not the music, but

what went on around it. We were playing very big arenas and were in competition with bands like Blood Sweat & Tears and Chicago, in festivals with rock bands as opposed to jazz bands. You wore a headband and Indian shirt. I never felt like I was a great rock 'n' roll guitar player, though. I was a fair one. I was just so out there . . . that was why Dreams liked me. Billy liked me because I would take a chance and play weird things."

With Dreams, he realized he wanted to make the guitar sing in a way that jazz guitarists couldn't because they rejected any processing beyond the amplifier. But he also knew he wasn't a rock guitarist. "I was more akin to John McLaughlin, who was a big influence when he came out," he says. "There was a guy with a lot of technique – a real inspiration – and he played with a rock 'n' roll sound but wasn't really a rock 'n' roll guitar player. I mean, there's guys who can play rock 'n' roll better than John can play it, but they couldn't play what he played."

One of the things that intrigued Abercrombie most was the soaring sustain

and sound-shaping malleability of rock guitar. "The idea of a lot of sustain, making the guitar sound like a violin, using volume pedals to make the thing swell and decay, this all became very interesting to me," he says. "And I used to use a lot of those devices. So now I look at the synthesizer as just another big effect, in a way. By 'effect' I mean that it's just another thing that you can add to the guitar to hopefully make it more expressive. That's what I'm trying to achieve. I think with the effects - with the fuzz tones, and what have you - they weren't so pure sounding. They were meant to make the guitar sound a little screwy. But the synthesizer is an instrument in itself."

Like other synth guitarists, Abercrombie is concerned about maintaining his own personal sound, although he admits he can sometimes be a 'note player,' with endless streams of sixteenth notes. "There's so much pressure to sort of be hot, be flashy, be fast, be the quickest kid on the block, that you tend to forget about the actual sound you're producing," he confesses. "It's made me more wary even when I pick up an acoustic guitar, like if I just let a chord ring or listen to a few notes. There's a lot of sound in just a couple of notes. And I think the synthesizers open me up to that. It's this sort of thing that goes back and forth, kind of love-hate, you know."

He took the synthesizer plunge three years ago, first with the Roland GR300, then the Roland GR700, which he unveiled on the *Current Events* album. He got into synthesizers to develop new sounds, but once he arrived he didn't want to lose himself in a sea of preset sound-alikes. "I immediately came into this room here, locked the door and started pushing buttons and programming it, eliminating most of the presets," he recalls. "It was so easy to program the synths, that's what I liked about it. I could do it by ear, which is still how I do a lot of these things."

The Roland gave him a greater range of sounds and control than had been available to him with his extensive stomp box experience. "I actually started about '68/'69, with *Dreams*, when I first got my fuzz tones and wah-wah pedals and what have you. For about the next six or seven years, just forget it. I was lost in this world of badly made electronic devices, which I still like. I mean even today I use a fuzztone - not an old one, but an Ibanez Tube Screamer.

"I was always involved in using some devices on the guitar," he continued. "There's a little bit on every record. There's a phase shifter, a distortion box, wah-wah pedals, reverbs and harmonizers. I have an MXR pitch transposer that I used on some records. So there has always been an interest in just altering the sound of the guitar, trying to dig something out of it that would make it a little more expressive to me other than the linear style of jazz

playing."

The "effects" which became available to him with the synths were not free from problems, however. Jazz is played in the moment, with musicians responding to each other's tricky chord changes and shifting time signatures. Whether playing live on stage or in the studio, they have to exist in the now and anticipate the future. With guitar synthesizers, that hasn't always been the case. Abercrombie's well aware of these problems and admits that when he first started he was forced to shift his time sense, adjust to the delay of the instrument, and play ahead of himself. "Yeah," he agrees. "I found myself doing all sorts of strange things. I had to think a little bit ahead to make the notes come out, if I wanted them to come out very precisely."

Many musicians might yank out the plug, make some rude comment about synthesizers being gimmick instruments and pull out the old Les Paul and Fender amp. Abercrombie found a virtue in the faults. "I found the thing I liked about it the most was allowing this sort of lag time to become part of your playing," he reveals. "It's not an unusual thing for a jazz player to lay behind the beat. And I found that just worked out well with my playing. As long as I wasn't trying to play things that were too technical, I could sort of get into this lag time. I would have to mix a little bit of the guitar in with the synth sounds or it would be too weird. And I found that really opened my ears up to playing more melodically, because you can't immediately pick it up and wail away and play everything you play on the guitar."

That drawback has stymied more than a few guitarists trying to become synthesized, but Abercrombie took it as still another lesson. "I thought 'Oh, gee, this is a drag,' but what happened was I learned how to be a little more musical. Since I couldn't just play fast, I had to rely on my ear and play melody, and play more what I was hearing."

But the yin-yang battle begins anew. "Then you reach a certain point where it starts to become frustrating," he says, "because you say, 'Okay, I've learned a lot playing this way, but I also want to be able to play more technical things, things that are more complex.' And then the synth can't handle it. That's why I'm investigating these new systems like the Photon."

The Photon is a MIDI converter that Abercrombie is currently driving with a custom-made Steinberger electric fitted with optical, rather than normal guitar, pickups. "This Steinberger is strung up with all B-strings, which is one of the ways the Photon works," he explains. "You can have a normally-tuned guitar or one that's all tuned in B or E strings. They call that a 'hyper-speed' version of the guitar, or 'hyper-space,' as I refer to it sometimes. The reason for that is obviously the strings are the same gauge so they're going to all track

pretty much the same. When you're dealing with a lower frequency, it's still going a tad slower than your upper strings but it's pretty much going to be the same. The problem with the old Roland 700 system was that things would move fairly quickly on the upper strings, but once you got down below the D string, the tracking was going to be very slow, because the vibration of the string would take it longer to transfer into a pitch from the voltage, or however they did it."

But now that he has his digital guitar, he doesn't want to lose the analog sounds he got with the Roland. To remedy the problem he got a pair of Roland MKS50 synthesizer modules. "My reason for getting them, even though they are sort of cheaper analog synths, was to duplicate the sounds I had on the old 700," he says. "I didn't want to lose those sounds. I didn't want to give them up because I found that they were pretty personal to me. They were almost like guitar sounds. I felt close to them and I knew what I could do with them. I think that's what you have to try to do with all this stuff - humanize it somehow."

"The things have such identifiable sounds and they do certain things, and to get any kind of personality out of them takes a lot of time. It can be done. I firmly believe that the synthesizer can be a human, personal instrument but it just takes a lot more, it takes a different kind of work. You also have to be what Peter Erskine termed a 'propeller head.' He means somebody who can just get into the technology and likes to read manuals. I have just enough of that so I can do it. But primarily I still do everything by ear. I listen to the sound and edit the sound until I get it the way I like it and I lock into the memory and try different combinations of sounds."

ABERCROMBIE'S PLAYING MOVES freely from one jazz style to another. All of them are characterized by an adventurous, questing spirit, whether it's the introspective, sedate sound of his old quartet or the hell-bent, free-form improvisations of the Gateway group with drummer Jack DeJohnette and bassist Dave Holland. "It was like being thrown into a whirlwind of such high-level musicians that could play completely free and do it all night," he says, laughing and recalling his experiences. "The music we decided to play was very free. Some of it had no rhythm at all."

Abercrombie has had a long-standing relationship with ECM Records, going back to 1974 and his first solo record, *Timeless*, with its classic title track, performed with Jan Hammer on Hammond B3 and drummer Jack DeJohnette. From this high-brow fusion, Abercrombie recorded ▶

▶ the all-acoustic album *Characters*, with multitracked acoustic guitars. "I have a Revox A77 tape recorder that was given to me by Manfred Eicher of ECM Records back in '72 or '73," he laughs. "I started writing a lot of compositions using the tape recorder, and that's how *Characters* came about, using a Revox A77 at home, just practicing. I still have the practice tape from that, and if I go back and listen to it, it sounds almost identical to the record."

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Getting *There*, the new album, contains some of Abercrombie's most memorable compositions since *Timeless*, and many of them are generated on sequencers, some more intentionally than others. Abercrombie uses a Yamaha QX5 to drive the Roland Modules, a Casio CZ101 ("I don't trigger the sounds in it much, I use it for running the sequencer") and the Roland Digital Piano module. On tracks like 'Chance' and 'Sidekicks,' he employs ostinato sequences that are woven into the rhythms of Erskine and Johnson.

"Actually they were all triggered from a guitar except for the first tune on the second side, 'Thalia,' which is the one that has a kind of vibes sound and a very long sweeping line. That couldn't be played that fast on a guitar synthesizer with that sound. The guitar would never track it. That tune was written by a fellow in California named Vince Mendoza, and he sent me a tape of it and the music. I loaded it into my

sequencer from this little keyboard in what they call 'step time,' because it was all sixteenth notes. So I figured, 'Well, if I play these notes I can play one, come back a half hour later, play another one. I just went through it until I finally had them all, and I just pushed the sixteenth note button on the QX5 and it immediately played back this sweeping thing, and I was able to play the melody along with it.'

Abercrombie is still finding his way with the technology and sometimes the mistakes turn out better than his original concepts, like the track called 'Chance.' "That tune was totally written by mistake," he says. "That sequence you hear is not actually what I played. What I played was something completely different and then I went into the sequencer and tried to quantize it to eighth notes and realized that I had picked the wrong note value. I tried something else, but each time I did it I was changing it again. So I went through this process about twenty times at least, and then finally I hit the button and this thing started to play back. And I said, 'Oh, gee, that's not what I originally intended, but it doesn't sound too bad.' And I let it keep playing and walked around the loft. I had a cup of coffee. I just listened to it and I said, 'That's perfect. I couldn't have written something that good.' It's like the machines wrote that piece of music, with my original input."

Abercrombie still plays semi-straight guitar. He recently held down a week at New York's Fat Tuesday's, playing duets with guitarist Ralph Towner. In his duet performances, Abercrombie plays a soprano or piccolo or mandolin guitar, depending on who you talk to, custom made by Kevin Schwab. He was originally turned on to it by violinist Jerry Goodman, who had a Fender mandolin guitar.

In a recent concert, Abercrombie plugged in his Ibanez Tube Screamer and discovered he could get a sound close to his synthesizers. It was so close that one of his students came up and asked what synthesizer he was using. "I said 'Jesus, is that where I've gone to, am I going to make my synthesizers go back to the '60s?' I don't want it to sound too hi-tech, though, which is another reason I run it through guitar amplifiers."

John Abercrombie is still refining a personal sound, the voice through which only he can speak. But he's not afraid of the prospect of one day ending at the beginning. "It's funny," he laughs. "I was just talking to (guitarist) John Scofield on the phone yesterday. He said, 'You know what you'll probably do, you'll probably go through all these synthesizers, you'll perfect the perfect sound, you'll get it down, you'll put it on the drawing board and it'll come out as a fuzztone.' And in a funny way, he's not too far from being wrong." ■

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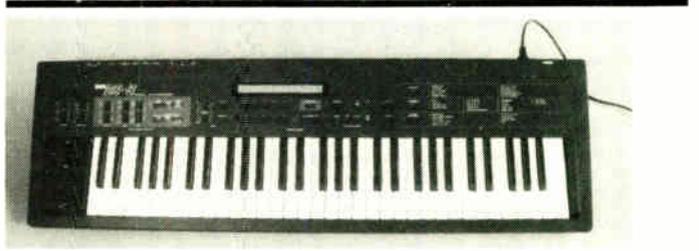
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PITCH EG (2)	STL	-8
	ATK	0
	ATL	+8
	DEC	63
	REL	0
WFRM 1 (3)	RLL	0
	TYPE	1
	SPTC	1
	RING	0
	LIMT	ON
WFRM 2 (4)	KBD	0
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	SPTC	4
	RING	0
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T.EG 1 (5)	KBD	0
	TIMB	48
	INT	6
	ATK	8
	DEC	17
	SUS	2
	REL	0
T.EG 2 (6)	KBD	0
	TIMB	66
	INT	0
	ATK	4
	DEC	6
	SUS	0
	REL	0
A.EG 1 (7)	KBD	0
	LEVEL	22
	ATK	0
	DEC	0
	SUS	15

A.EG 2 (8)	LEVEL	63
	ATK	10
	DEC	0
	SUS	15
	REL	7
MG (9)	KBD	0
	WF	S/H
	FREQ	42
	DLY	12
	PICH	0
	T/A	0
	TSEL	1+2
PORTAMENTO (01)	ASEL	1+2
	MODE	1
JOYSTICK (02)	TIME	16
	BEND-PICH	12
VELOCITY (03)	TIMB	1
	MOD-SPD	3
	TEG 1	3
AFTER TOUCH (04)	TEG 2	2
	AEG 1	3
	AEG 2	4
ASSIGN (05)	PMG	
	MODE	
MULTI (07)	TIMB	
	AMP 1	
	AMP 2	
	EFFECT	
	TIME	115
	FB	-9

PATCH WORK

This is the page where MT's editorial team invites you, the readers, to demonstrate your own synthesizer programs. Send us your favorite sounds on a photocopy of an owner's manual chart (coupled with a blank one for artwork purposes), accompanied by a short demo tape. Please include a description of each sound and write your full name and address on each chart. If we publish your patch, you'll be rewarded with a complimentary one year's subscription to MUSIC TECHNOLOGY. Interested? Then get twiddling and get scribbling!

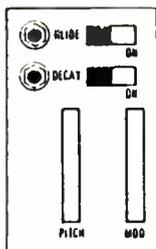
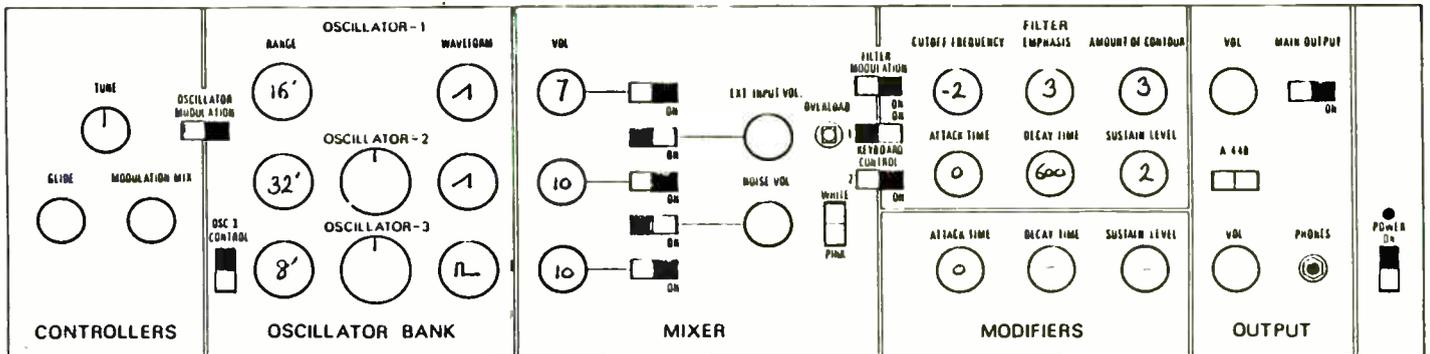
The address to send sounds to is (note - it's new): Patchwork, MUSIC TECHNOLOGY, 22024 Lassen Blvd., Suite 118, Chatsworth, CA 91311. ■



Though we're not certain how often you'll need a bagpipe patch for your tunes, here's one just in case. Nick's tape of 'Amazing Grace' was terrific, with the patch run through a DRV-1000 for a bit of reverb. Heavy playing technique is required to get the reedy sound; a softer touch produces more of an accordion's timbre. Aye, we see the dew on the heather... ■

MOOG MINIMOOG

Ringlet
Ron Bacard, San Francisco, CA



Ron says his patch is so called because "it employs a little ring modulation". Cute.

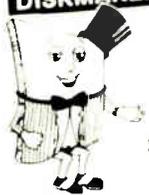
He also tells us that the patch is best suited to slower echoed passages where the modulation can be introduced when required using the mod wheel. The pitch of the note played may be made to either rise or fall with the modulation according to the modulating waveshape. ■

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PATCH WARE

NEWS: MIDImouse Music has a new series of **ROM and RAM cartridges and sound disks for the D50, MT32, and SQ80 ESQ1.** Sounds include acoustic and electric piano, combined layers, synth leads, strings, voices, movie soundtrack support, and more. ROM cards for the D50 with 64 sounds are \$99.95; RAM card with 64 sounds, \$119.95; Sound disks with 64 are \$29.95. Sound disks for the MT32 are \$29.95. For the Ensoniq products, ROM cards are \$49.95, with 80 sounds; RAM with 160 sounds are \$124.95; SQ80 sound disks with 80 sounds, \$29.95. The sound disks for the D50 and MT32 are available in self-load versions which automatically load from the ST and don't need a patch librarian. From the same company come digital samples for the Emax, a set of 19 disks for \$24.95 per disk. For more info contact *MIDImouse Music, Box 877, Welches, OR 97067. Tel: (503) 622-4034.*

For the serious sound effects professional, *Castle Music* has a CD sound effects library, **Sound FX, The Library.** The 25 disc set offers over 25 hours of sound effects, nothing synthesized. Included with the package is a *User's Handbook*, offering a creative guide with aural blueprints to assist in altering and adjusting sounds for the desired effect. Suggested price on the package is \$1500. For more information, contact *APM Hollywood at (213) 461-3211 or APM New York at (212) 997-5680.*

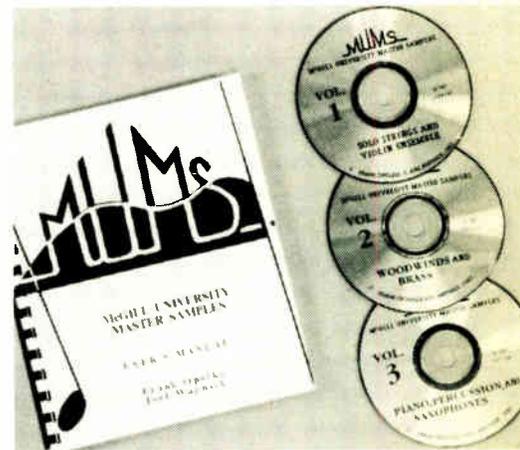
Sounds for the Roland D50 are really taking off now. A new collection of 64 voices, **The D50 Top Forty ROM**, programmed by *Bo Tomlyn* is now available. Among the voices are acoustic pianos, Rhodes, Wurliitzer, Clavinet, electric and synth basses, and marimba. Contact *Key Clique Inc., 3960 Laurel Canyon Blvd, Suite 374, Studio City, CA 91604. Tel: (818) 905-9136.*

REVIEW: The *McGill University Master Samples* package is a three-CD set of acoustic instruments, recorded specifically for the purpose of being used as a basis for high-quality samples. Everything was recorded in stereo, using a Sony PCM 3202 DASH system. Excellent mics were used (B&K 4003s and Sennheiser MKH40s), every instrument sounds very clean, and sonic fidelity is high.

Clean recording of instruments is not the only requirement for usable samples, as you know. Things like vibrato, timbre and a host of other factors can compromise even the best sample. The care that has gone into this collection of sounds is quite evident. The importance of timbral evenness from note to note was stressed with the concert artists used in these CDs, and although it's almost impossible to achieve complete timbral consistency, the fact that every single note in

the selected instrument's range was recorded twice gives plenty of options to choose from. The instruments used are some of the best available, including originals from the 18th and 19th centuries.

The three CDs cover strings, woodwind and brass, and Grand Piano, percussion and saxophones. The strings contain a variety of different formats; unfortunately, however, the ensembles were created by multitracking, overdubbing and subtle signal processing in which five different recordings of each pitch were combined. With such painstaking attention taken with the rest of the sounds, I was surprised to hear the string ensemble, as it just doesn't sound like a live section. The solo violin was recorded with vibrato intentionally, and does translate well to samplers, provided you take enough samples and spread them across the keyboard. The solo cello, viola and double bass sound great, but again, the ensemble stacks sound unnatural to my ears.



The woodwinds and brass, flutes (piccolo, alto and bass included), oboe and english horn, a variety of clarinets, bassoon, several trumpets, french horn, trombones (alto, tenor and bass) and tuba all are very usable. I missed the splats of the tuba and horn sections, but overall, this CD is excellent.

A 9' Steinway Grand (soft, loud and plucked), and 9' Hamburg Steinway are wonderfully recorded for those who care to tackle a piano. There's tons of percussion from Turkish cymbals to castanets, whips to claves. The saxes include bass, tenor, alto and soprano.

Overall, the *McGill University Master Samples* constitute one of the better CD sample libraries I've heard and for those looking to add to or expand their sample collection, this is a great investment. Prices are \$69 per CD or \$199 for all three. For more information, contact them at: *McGill University, 555 Sherbrooke Street West, Montreal, Quebec, Canada H3A 1E3. Tel: (514) 398-4548.* ■
Chris Many

OFF THE RECORD

Reviews by John Diliberto.



KLAUS SCHULZE & ANDREAS GROSSER

Babel
Venture

KLAUS SCHULZE'S MUSIC exists in its own time. Free of MTV quick cuts and AOR airplay concerns, he's always enjoyed the slow evolution of his musical ideas. *Babel* is his most controlled and structurally developed excursion since *Audentity*, yet it's a jam session, albeit a computerized one, with a video technician named Andreas Grosser, who also dabbles in synthesizers.

Babel courses through its 60 minutes (continuous on the CD) with an unerring logic. Unencumbered by the thudding rhythms and embarrassing vocals that have marred his last several albums, Schulze once again travels the spaceways with a classical grace. Interlocking patterns revolve and careen with their own inner design, seemingly unencumbered by human intervention, yet with a suppleness of form and shape that lets you know there's someone at the controls. Precision sequencer lines march through different voices in overlapping polyrhythmic layers, with Schulze and Grosser improvising variations while introducing synchronized counterpoints.

Schulze has all his latest synth gear on line, including his Publison digital effects device. With its long sampling time of 70 seconds, Schulze rolls out a layered carpet of textures for the second half. The sweeping strings and choirs get very ponderous but emerge into what sounds like a sheet metal factory. The only thing I've ever heard like it is a train screeching to a halt, Bertoia Sounding Rods or steel cellos, but Schulze claims he just

sampled 'Death of an Analogue' from his first digital album, *Dig It*.

While hundreds of groups, inspired by Schulze's early *Timewind* and *Moondawn* recordings, are still riding four-note sequencer patterns to infinity, Schulze has experimented with form, technology and for the last few years, his own demons. *Babel* is the first promise of a revitalized musician.

SONNY SHARROCK BAND

Seize The Rainbow
Enemy

SONNY SHARROCK IS back with a vengeance. After more than a decade with no records and only a few appearances on Bill Laswell's *Material* albums, he's released four recordings in the last year that funnel his scatter-shot guitar lines into some Laswell-produced environments.

Sharrock's forays with Don Cherry's *Eternal Rhythm Orchestra* and on his own albums, *Black Woman* and *Monkey Pockie-Boo*, made him the enfant terrible of electric guitar in the '60s and '70s. His free-form guitar style seemed to slice the strings with serrated blades, playing more like saxophonist Ornette Coleman or pianist Cecil Taylor than any linear-minded jazz guitarist you could name.

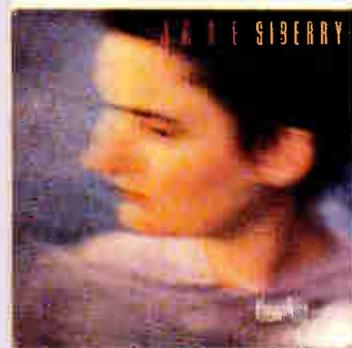
On *Seize The Rainbow*, he emerges with a band that tries to combine heavy metal with free jazz drumming from Pheeroan Aklauff and Abe Speller. Sharrock doesn't have a real sensibility for metal's heroic lyricism and crunching rhythms. His melodies sound like they were dredged from the bottom of New York Harbor and the rhythms are as rigid as steel girders pummeled into the ground.

But when the soloing begins, watch out. The drummers start shifting meters and Sharrock cuts loose with fuzz-toned sustains and strangled banshee wails. Dick Dogs establishes the groove with a few coarse chords, a quick line of arpeggios, and then it's off into the stratosphere with scrapped strings, hammer-ons, and psychotic scribbles. Sharrock plays like he can't get it all out fast enough, yet it doesn't seem rushed or uncontrolled.

Bassist Melvin Gibbs holds the center, trading in his string-popping funk bass for a deeper blues sound while the drummers flail around him. On 'Fourteen,' the twin drums work out free cross-rhythms while Gibbs

holds down a two-note ostinato for Sharrock's edgy blues ruminations. JD Schaa, on the other hand, has inside-out solos that will spin your eyes around.

If you want to hear where guys like Steve Vai got a lot of their stuff, here is one of the forgotten sources. *Seize The Rainbow* is short on composition, but few can cut loose like Sonny Sharrock.



JANE SIBERRY

The Walking
Reprise

RARELY HAS AN artist captured me with the totality of Jane Siberry. *The Walking* follows up on her successful 1986 album, *The Speckless Sky*, and I can hear why she took two years to make it. Siberry doesn't write songs so much as create audio theater. The album is framed by two epic works, 'The White Tent The Raft' and 'The Bird in the Gravel.' Just between these two tracks, totalling 20 minutes, you feel like you've been through an LP's worth of tunes. She erects elaborate structures that build, shift gears, return to themes and jump into new ones with a cinematic momentum.

Siberry has been aptly compared to Laurie Anderson for her decidedly modern electronic edge; Kate Bush for her studio art and vulnerability; and Joni Mitchell for her penchant for vocal leaps, moving from speaking, to a fragile soprano, to tremulous falsetto. She also shares Mitchell's fondness for odd song constructions.

Siberry doesn't write love songs, but about the psychology of love. Her songs are laden with glancing looks, whispered regrets and hidden subtexts. 'The White Tent The Raft' even has printed lyrics that don't appear in the song. Her voice, layered in choirs, exhorting, or whispering the loneliness of 'The Lobby,' takes you straight into her psyche.

With the aid of co-producer and bassist John Switzer, *The Walking* has more depth and instrumental colors than *The Speckless Sky*. Multiple keyboards and digital synths create a rich and shifting landscape for Siberry's psycho-dramas.

Jane Siberry doesn't hit you with overt hooks, but her themes insinuate themselves into your consciousness just as effectively. *The Walking* is an album I'll be living with for some time. ■

Korg 707 FM Synthesizer



Korg has taken Yamaha technology and put their own stamp on it once again. This time the result is a new budget-level FM synthesizer - but does the world really need another FM instrument? Review by Simon Trask.

WHAT'S IN A name? When you're confronted with a synth called a "707" it's hard to know. Is it a bird? Is it a plane? One thing's for sure: Korg's latest synth has nothing to do with a certain other manufacturers' drum machine.

In fact, the 707 is Korg's replacement for the venerable Poly 800, but apart from a budget price tag, the two synths have little in common. Instead the 707 is a slimmed-down version of Korg's DS8 FM synth (reviewed MT July '87).

Now, you'll all be wondering what Korg

has sacrificed from the DS8 in order to get the price down. The answer is, perhaps surprisingly, not a great deal in practical terms. Korg's new synth has the same number of voices (eight) and the same voice architecture as its more expensive relative. The only significant omission in sonic terms is the DS8's digital effects section - delay, flange and chorus.

Inevitably, the company has economized on front-panel operational controls. Missing are the DS8's volume balance slider, velocity and aftertouch on/off buttons and oscillator combination button. Korg has also given the 707 a smaller LCD (2X20-character backlit).

Better news is that the 707 retains the DS8's edit sliders, 100 RAM patches and 10 Combination memories together with Split, Layer and Multi modes, and cartridge storage. The 707 can load DS8 sounds, and uses RAM cards capable of storing 200 patches plus 20 combinations and 400 patches plus 40 combinations. Last but not least, Korg has given the 707 a dynamic four-octave keyboard (attack velocity and channel aftertouch).

Chic Times

THE MOST NOTICEABLE feature of the 707 is its chic appearance - all rounded edges and compact design. To my mind, Korg's design awareness can only be a good thing. After all, style is a natural part of today's image-obsessed world, and if you're going to spend countless hours in the company of an instrument you want it to look good.

Less enthralling is the news that the 707 is to be made available in a range of colors. How about gray, blue, white and "Japanese Red" (which I'm reliably informed is a euphemism for "lurid pink"). Now this could be taking stylishness too far.

Lift the 707 from its box and you immediately become aware of how *light* the instrument is (just under 11 pounds, in fact). This is a good thing, because Korg has included strap buttons so that you can sling the 707 over your shoulder and step out to the front of the stage. Battery power is included for those moments when the 707 is necessarily parted from its power supply.

For ease of use in strap-on mode, Korg has positioned the pitch-bend and mod wheels on the rear edge of the synth, and has allowed the operation of both wheels to be reversed at the touch of a button.

The rear panel of the 707 sports the usual MIDI In, Out and Thru sockets along with stereo and headphone audio outputs, and two footswitch inputs. The footswitches can be assigned to program up, program down, portamento or sustain functions. The front-panel wheels to some extent make up for the lack of a footpedal input: the control wheel can be assigned to volume or modulation, while the pitch-

Photography: Tim Crandley

bend wheel can adjust timbre as well as (or instead of) pitch-bend.

Sounds

THE 707'S SOUNDS have the familiar clear, sparkling quality of FM synthesis, and Korg has coaxed a wide range of sounds from their synth. These have been divided into 10 categories (each offering 10 sounds): keyboards, MIDI stacks, organs, bells (tuned percussion), brass, solos, analog sounds, guitar and bass, strings, and percussion. As usual, the keyboard, organ and tuned percussion sounds are among



the most effective; there's the inevitable Rhodes-style electric piano, several hard-edged acoustic pianos, some well-detailed pipe and jazz organs and the usual vibrant tuned percussion instruments (vibes, marimba, celeste, kalimba). I particularly liked the jazz guitar (Joe Pass revisited), the Round Bass (warm and, er, rounded), the French Horn (very mellow) and King&Queen (Baroque harpsichord and strings). The 707 acquires itself well in the screaming lead synth department, while some of the percussion sounds (including congas and cowbell) are among the best I've heard produced using FM. All in all, I'd say that Korg has done their new synth proud.

Programming

LIKE ITS MORE expensive relative, the 707 imposes a simplified and more intuitive programming system on the real workings of FM synthesis (the algorithms, operators, carriers and modulators which you'll encounter on Yamaha's FM synths). The basic voice architecture of the 707 consists of two oscillators each with its own four-stage timbre envelope and four-stage amplitude envelope, plus a four-stage pitch envelope and a Modulation Generator (LFO by any other name) which are common to both oscillators. You can also use oscillator one to cross-modulate oscillator two.

The oscillators provide familiar, harmonically-rich waveforms in the shape of sawtooth and square waves which can then be "filtered" by the timbre section. This gives the appearance of subtractive synthesis, but in reality it's still good ol' FM you're dealing with. In FM terms, the 707 is a four-operator synth which employs two algorithms (the second one is chosen by

MT MAY 1988

selecting cross-modulation). You don't need to understand the underlying FM structure (and Korg isn't about to tell you), but to my mind it makes the results of editing on the 707 easier to understand. On the other hand, it's best to use your ears and learn a programming system on its own sonic terms, and you can certainly do this with the 707. The virtue of Korg's simplified programming system is that it allows you to concentrate on the sounds rather than the button-pushing - which can only be a good thing. Indeed, perhaps this is the reason why Korg has called their new synth a "performing synthesizer," and the message "Let's Make MUSIC!" scrolls across the 707's LCD each time you switch the synth on.

The best way to begin programming the 707 is to pick an existing sound close to the result you want to achieve, and play around with the synth's three performance sliders. One of these is given over to controlling the timbre of both oscillators, while the other two are dedicated to controlling the timbre and amplitude envelope shapes governing oscillators one and two respectively.

Korg has cleared up one annoying feature of the DS8's slider editing. On the earlier synth you could neither store the results of this editing nor return to edit mode to fine-tune them. In contrast, the 707 allows you to store a slider-edited sound; the new sound then becomes the basis for more precise editing in edit mode. A welcome improvement, I'd say.

Combinations

KORG'S SYNTH ALLOWS you to combine sounds on the keyboard in Split and Layer modes, while in Multi mode up to eight different sounds can be played over MIDI. These three modes can be stored in ten Combination patches (one mode per Combination).

Layer mode allows you to detune the two sounds, while split mode (or "double", as Korg calls it) allows you to place the split anywhere on the keyboard and to shift the octave range on each side of the split. In all three modes you can pan each sound to A, B or A+B outputs. Incidentally, adjustments made with the edit sliders affect *all* the sounds being used in each mode.

In Korg's implementation of Multi mode you have to preset the number of voices assigned to each channel/patch (within the total of eight) and select one of the active channels as the source of MIDI controller data for all the others (though fortunately you can switch reception on or off for each channel).

On the plus side, the company has improved on the DS8's multi Combinations in two significant ways. You can now define a volume level for each patch in a multi Combination, while pressing the

Program button allows you to see the name of each patch as well as its number.

When you're in Combination mode, incoming MIDI patch changes ordinarily select one of the 10 Combinations. This isn't really ideal for multi Combinations, where you'll probably only want to select patches at the same time on all channels when you're at the start of a piece. However, pressing the Program button enables patch changes on individual MIDI channels.

Finally, the 707 includes the usual System Exclusive transmit/receive capabilities, so you can store the large number of patches you'll no doubt create on the 707 to an external storage device.

Conclusions

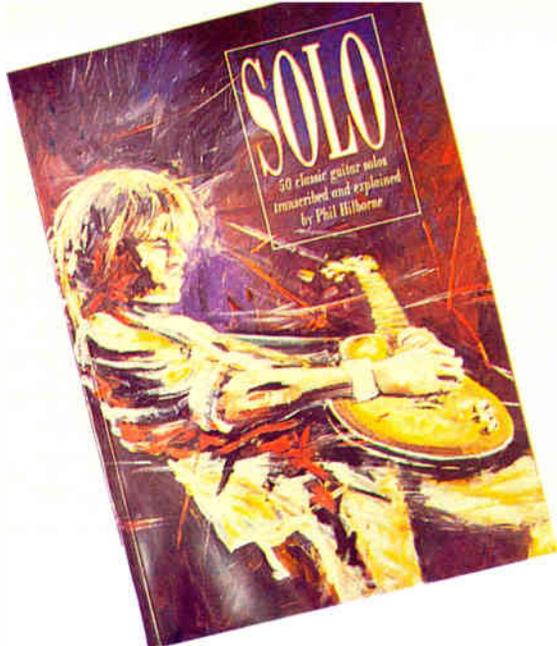
THE 707 IS a welcome addition to the range of budget (well, relatively budget) synths on the market. It makes available many of the DS8's features for around two thirds of the price and throws in portability (so to speak) as well. To be honest, it's hard to see where the 707 loses out to the more expensive DS8 when it comes down to the most essential aspect of any synthesizer: the quality and scope of its sounds. Even the 707's minimalist front panel doesn't really seem to count against it; I didn't find the 707 any harder to use than the DS8.

Given that Yamaha is essentially still using the FM voice architecture and programming system that they've used from the outset (witness their latest FM synth, the DXII) the 707's simplicity and ease of use can only be a good thing. I reckon it'll win itself a lot of friends. ■

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KEYBOARDS

AKAI I214 Recorder, \$6000; Roland MC500, \$750; Kawai K3, \$550; Roland RD300S, \$1500. Tel: (301) 526-4788.

AKAI X7000, \$1025; Yamaha TX802, 1265, REV7, \$735; CX5M, \$150. All new, still in box with warranty. Tel: (205) 633-7495.

ARP ODYSSEY synth, owners manual, patch book, footswitch, \$350; RMI Electric Piano, \$350, both exc cond; Ensoniq ESQ1 digital synth, expanded seq, used only in home, like new, c/w original box, \$1200; Memory Moog Plus, has MIDI and seq, owners manual, service manual, schematics, CV Pedal included, like new, \$1000. Tel: (919) 489-8430.

ENSONIQ Digital Piano, new, still under warranty, with accessories, originally \$1395, now \$800. Kenny, Tel: (205) 833-0659.

KORG DSSI sampler synth with mic, pedals and 15 disks, exc cond, \$1600. Glenn, Tel: (415) 643-1806.

MEMORYMOOG PLUS with anvil case, \$1200. Tel: (777) 586-3917.

OBERHEIM MATRIX 6 synth, 5-octave keyboard, as new, \$750 or trade for music or pro audio gear.

Ken, Tel: (805) 493-1443.

OBERHEIM OBXA, the old classic analog sounds, 120 programs, calzone road case, \$600. Tony, (944) 779-3840.

PPG WAVE 2.3, unique digital synth, with case, perfect cond, sacrifice, \$3250 obo. Scott, Tel: (817) 387-6339.

ROLAND JX10 vgc, \$1350; Rhodes Chroma w/MIDI, \$800. Tel: (215) 739-1548.

ROLAND JUNO 2, new cond with memory cartridge, \$700; Prol with stand, \$125. Tel: (714) 720-1018.

ROLAND MKS10 rack-mount piano module, \$400 obo; 360 Midibass, like new, \$250 obo. Mike Nibert, 23354 Baker, Taylor, MI 48880.

ROLAND SUPER JX10, exc cond, nearly new, accessories included, best offer over \$1700. Tel: (817) 765-3556 or (817) 765-3556.

YAMAHA DX21, exc cond, never roaded, MIDI cable, stereo outs, sustain pedal, additional sounds, \$550. Tel: (716) 381-2785.

YAMAHA TX416 MIDI rack with Opcode DX/TX editor for Macintosh, perfect cond, \$2200 obo. Tel: (602) 326-8407.

DRUMS

KORG DDDS, mint cond, plus 2 RAM voice cards, \$400. Tel: (944) 725-2629.

SIMMONS SDS7 digital-analog drum kit, 9 drums, custom sounds, 4 EProm modules, extra sound chips, \$1800. Tel: (213) 372-0863.

YAMAHA RXS drum machine, MUST SELL, I paid \$1050, will sacrifice for \$850 obo. Tel: (944) 357-0301.

SAMPLING

MIRAGE DPXI and EPS owners. Samples for trade/sale. G-4 MT Productions, 622 Odell Ave, Yonkers, NY 10770.

OPTICAL MEDIA "Universe of Sounds" CD ROM Vol 1&2 for Emulator II, \$1000 for both. Tel: (714) 722-7319.

PROPHET 2000 512K, 32-sec sampling, calzone case, 160+ disk library, 3-tier USS stand, Yamaha mic, mint cond, \$1600. Tel: (814) 454-1890.

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OPCODE MIDIMAC patch librarians on Macintosh for JX8P and Juno 106 synths, version 2.01, disks and manuals, \$50 each. Donald Phillips, 8695 Hebrides Dr, San Diego, CA 92126.

PASSPORT MASTERTRACKS (Atari) new, \$225; Opcode seq V2.5, new, \$145; Opcode Studio + interface, \$145; Yamaha MEP4, \$275. Tel: (201) 870-3115.

SOFTWARE FOR MAC Passport MasterTracks Pro factory disk with no

docs, \$50; software for Commodore, DX7 Librarian/Editor your choice, Dr. Ts, SynTech, or Passport, includes over 1000 DX patches, \$25; Korg DW/EX8000 Librarian for Mac by Opcode, \$25. Tel: (716) 691-7219.

RECORDING

AKAI MG1214 multitrack recorder, mint cond, \$5000; Roland MKS50, mint cond, \$425. Tel: (203) 838-1374.

SCULLY 280B, mint, \$2300; Crown CX824 VS, new in box, \$1500; MCI VH14 24, \$14K. Dan, Tel: (215) 432-0520 days, (215) 776-1455 eves.

TASCAM 34 4-tr, exc cond with rack mounts, punch-in switch and 8X10 ft. RCA cables, \$1100. Tel: (314) 234-5542.

PERSONNEL

KEYBOARD TECH/ROADY needed for local circuit. Roger, Tel: (818) 795-8037.

MISC

AKAI MG1214, DBX160X, Emax rack and 63 disks, PCM70, Roland TR707, patch bays, MIDITrack ST with SMPTE, DX & CZ Android, all with warranty. Tel: (718) 699-6666.

CASIO CZ101 plus 2 cartridges (worth \$120), free, mint cond, \$220; Korg EX8000 stereo module, mint cond, over 1600 sounds on cassette, \$680; Savant Audio Edit 8000 for Atari ST Editor/Librarian software with 1200 sounds for Korg DW/EX8000, \$60; Yamaha EM1001 stereo mixer, 6-ch, reverb, mint cond, list \$800, sacrifice, \$400, moving to Europe. Tel: (805) 647-7815.

DEPS, \$650; REX50, \$400; ProVerb, \$226; MT32, \$525; Listen 2.0, \$75; MasterTracks Pro 2.0, \$225. David, Tel: (805) 964-7724 X385.

YAMAHA MEP4, \$250; Apex Type C, \$175; EV100s stage monitors, \$400 pair. Peter, Tel: (617) 381-4905 days, (617) 322-3927 eves.

YAMAHA PBI Bass Biamp-preamp with parametric EQ and EFX loop, \$250; Peavey CS400 power amp, \$400; Anvil 7 space rack, new cond, \$150. Tel: (714) 720-1018.

WANTED

DBX NOISE REDUCTION gear for Tascam model 38 and rackmount ESQ1. Tel: (408) 253-9425 after 7pm PST.

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ROLAND D50, MT32, Macintosh SE. Let's trade patches, programs. Sean White, 9024 Beartooth Pass, San Antonio, TX, 78255.

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ENLARGING THE WINDOW

*Graphic editing/librarian software for the PCM 70 Digital Effects Processor:
a Lexicon applications brief.*

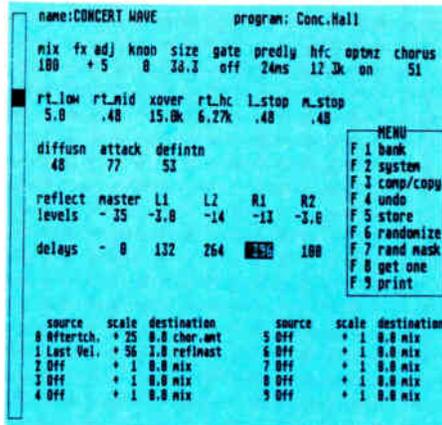
Musical technology changes: to keep up, hardware has to support evolving software that will continue to generate new functions and sounds. That's why Lexicon digital processors aren't fixed systems.

The PCM 70's MIDI implementation illustrates the value of our approach. Lexicon *Dynamic MIDI* controls ten PCM 70 parameters from MIDI sources like pitch wheels, pedals or aftertouch. It's already the most complete system of real-time or MIDI-automated parameter control, but that didn't stop us from adding MIDI System Exclusive to Version 2.0 of resident software and the new optional Version 3.01 package.

As soon as software developers got wind of our intentions, they began asking us to release the Sys Ex spec so they could write editors and register librarians. Not that there isn't ample storage space for your own sounds, or the tools to create them using the fluorescent display "window" and the soft knob. But a computer does make it easier to fully explore the PCM 70's vast potential.

We released, they wrote, and now even those of you who haven't heard a PCM 70 can see what sets it apart. Just examine these screens from Digidesign's FX

Designer uses Macintosh graphics to amplify the meaning of PCM 70 parameter values with informative displays. Each screen lets you edit several related parameters and shows you what you're doing. As you edit *Delay* values in this *Delay & Mix* screen, the bars move to show time relationships. They grow and shrink as you change the *Level* settings. FX Designer includes over two hundred pre-programmed registers to suggest avenues of exploration, and interfaces with Opcode Systems' PCM 70 librarian so you can store your discoveries.



The Caged Artist PCM 70 Editor widens the window to put all parameters of an algorithm on screen at once. You edit values as fast as you can move and click a button on the Atari ST (or Commodore 64/128 or Apple IIe) mouse. The other mouse button triggers a MIDI sound source so you can hear exactly what you're doing and how the sound relates to the instrument and the music you're writing it for: how chorusing spreads out a synth voice, or how BPM affects the echo delay times. In this patch, echoes and chorusing are panned to the PCM 70's two outputs, for independent mixing and balancing of the two effects.

If you're not sure what all this means, the Randomize function will explore possibilities for you: it varies the parameters you choose in the range you specify to generate new

registers. The Compare/Copy function lets you shift *Dynamic MIDI* control patches and other parameters between registers (so Aftertouch could always add more chorusing, as it does in this Chorus & Echo program). The built-in librarian holds 200 registers.

You may think you already know what the PCM 70 sounds like, but these editing programs will surprise you. Faster, more intuitive editing not only lets you tailor reverbs and delay effects faster, it will reveal capabilities you've overlooked until now.

Now that you can write more sounds in the time available, you'll need larger storage space. Computer-based editors let you store complete register banks: librarian programs from Opcode Systems (for the Macintosh), Club MIDI and Voyetra (for IBM PCs and compatibles), or Hybrid Arts (for Atari STs) give you the filing capabilities you need to rearrange your sounds in useful categories.

The PCM 70 lets you design sonic spaces and make them an interactive part of your music. The new graphic editors and librarians give you even greater freedom to explore the potential of this unique instrument. The window to new dimensions is wider now: step through it at your Lexicon dealer.

Graphic Editor/Librarians

Digidesign *FX Designer*

Dr. T's *PCM 70 Editor/Librarian*

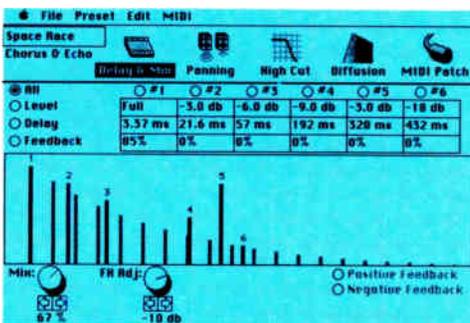
Patch Librarians

Voyetra Technologies *Patch Master Plus*

Club MIDI *Prolib*

Hybrid Arts *GenPatch ST*

Opcode Systems *PCM Librarian with Patch Factory*



Designer and the Caged Artist PCM 70 Editor by Dr. T's Music Software. Each expands the PCM 70's window in a different way, revealing the unprecedented intricacy of PCM 70 algorithms. With more parameters than typical effects have programs, these algorithms give you powerful, detailed control over your sound: computer-based editors help you make the most of it.



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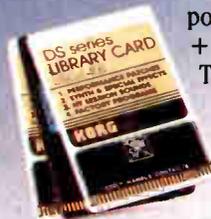
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