

# MUSIC TECHNOLOGY

FEBRUARY 1989

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**REVIEWS:** Roland U110, C-Lab Notator 2.0, Oberheim Systemizer, Eventide Ultra-Harmonizer, Marion Systems S900 Board, MIDIMouse Mousterpiece

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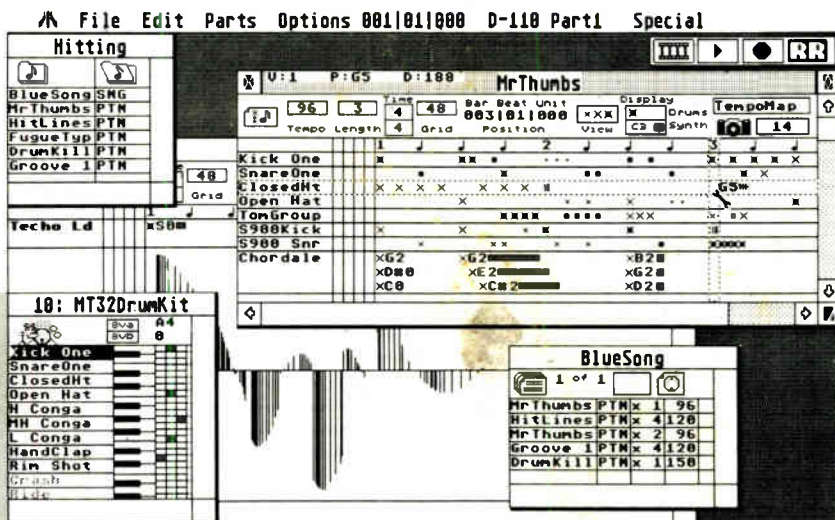
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**EDITORIAL***The Personal Touch*

WORKING WITH COMPUTERS and electronic instruments can be an impersonal experience. The constant onslaught of unintelligible parameters, inexplicable functions, lifeless factory presets and cold, meaningless numbers tends to make one long for a little human companionship – or at least a sign of some sort of human *involvement*.

Many computer and musical instrument manufacturers (and designers) have obviously recognized this need, because over the past few years their products have included more functions that allow you to add your own personality to their technology. From programming patches to creating computer start-up screens, numerous options are available to those who want to customize their equipment. In fact, the quality of the user interface for any piece of hardware or software is determined to a certain extent by how easy it is to develop your own working methods with the product, as well as how quickly you can produce results.

To my mind, several levels of customizing and personalizing are available to anyone who has attempted to put together a MIDI studio. On the most basic level, you determine your own environment by selecting the pieces of equipment you purchase and work with. The next level includes arranging that equipment (or those programs) into a format that you find most usable. I'm not just referring to the physical relationship between equipment, though ergonomics and studio layout are extremely important, but to the organization of the materials into an efficient environment. In other words, through the use of devices such as MIDI patchbays, MIDI processors, switching programs and the like, you can start making your gear work for you. The third level adds the creation of your own products, like programming your own synth patches (see this month's installment of 'Programming Compleat'), to the scenario. The fourth and final level involves the creation of your own tools, such as your own HyperCard stacks (see Part I of HyperMIDI Programming in this month's issue).

Unfortunately, many people never advance beyond the first level; they're content to let the machines control them. Another group

will progress to step two and start taking command of their environment, but few take the logical step towards level three. Step four is more of a leap than a step, primarily because of all the perceived difficulties in attempting it, but those who do generally find the effort well worth it. They have complete command of their equipment and are consequently in a much better position to be productive and happy with their gear and their work.

Directly related to the concept of personalizing your working environment is the idea of modifying your gear (see the reviews of the Marion Systems S900 Mod and the Real World Interfaces MT32 Mod for additional ideas). Aside from just being improved, a modified or upgraded piece of gear always seems more personal – because it's different from the standard it becomes more a part of you.

The bottom line in both personalizing and customizing your studio is attempting to create an inviting working environment that reflects your own tastes and preferences. Anything you can do to make the technology an extension of yourself will be extremely beneficial in both the long and short term. Give it some thought and plan accordingly.

ON THE SUBJECTS of customization and modification, we're making some changes to the look and editorial organization of MT. Starting with this issue, you'll undoubtedly notice that the Computer Notes section has been discontinued. Computers have earned such a prominent position in the lives and working habits of most technology-driven musicians that we felt it was no longer necessary to segregate information about them from the rest of the magazine. Next issue, the magazine's cover date will be moved forward – we just couldn't wait to pull our yearly April Fools jokes on you. In addition, look for a new MT logo, revamped editorial categories, and a bold new hi-tech look throughout the magazine. We're very excited about the changes and we're confident they'll ensure Music Technology remains essential reading for the '90s. ■

Bob O'Donnell

**MUSIC TECHNOLOGY (ISSN 0896-2480)** is published monthly, 12 times per year, for \$35.40 per year, at: Music Maker Publications, Inc., 22024 Lassen Street, Suite 118, Chatsworth, CA 91311. Tel: (818) 407-0744. FAX: (818) 407-0882. PAN: Musictech. GENie: Musicmkr.LA.

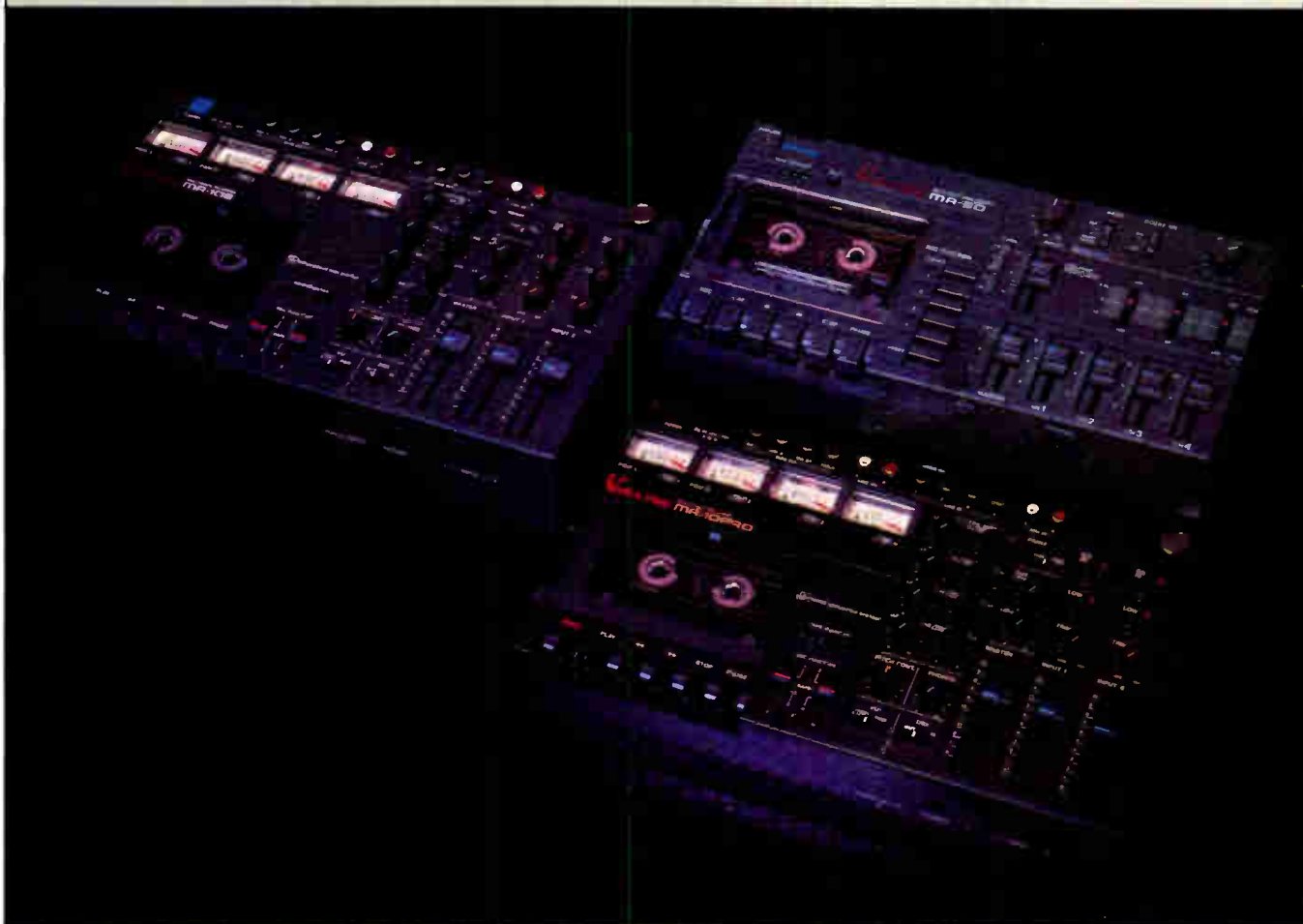
Second-Class Postage Paid at Chatsworth, CA and at additional mailing offices. Postmaster: Send address changes to: Music Technology, 22024 Lassen Street, Suite 118, Chatsworth, CA 91311.

**EUROPEAN OFFICE:** Music Maker Publications Ltd., Alexander House, Forehill, Ely, Cambridgeshire, CB7 4AF, England. Tel: 011 (44) 353-665577. FAX: 011 (44) 353-662489. PAN: Musicmaker. (Ad Manager: Graham Butterworth)

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# IN THIS ISSUE

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## MUSIC

### Peter Kaye 18

A new type of feature, brief Portrait interviews, is inaugurated this month by speaking with Peter Kaye, a Fairlight programmer and film composer who took a chance and succeeded.

### On Circuit: We • Be 28

From traditional African marimba music to contemporary pop produced with their own hand-made MIDI marimbas, this San Francisco-based all female quartet offers a refreshing alternative to most techno-pop bands working in a local scene.

### The Art of Noise 46

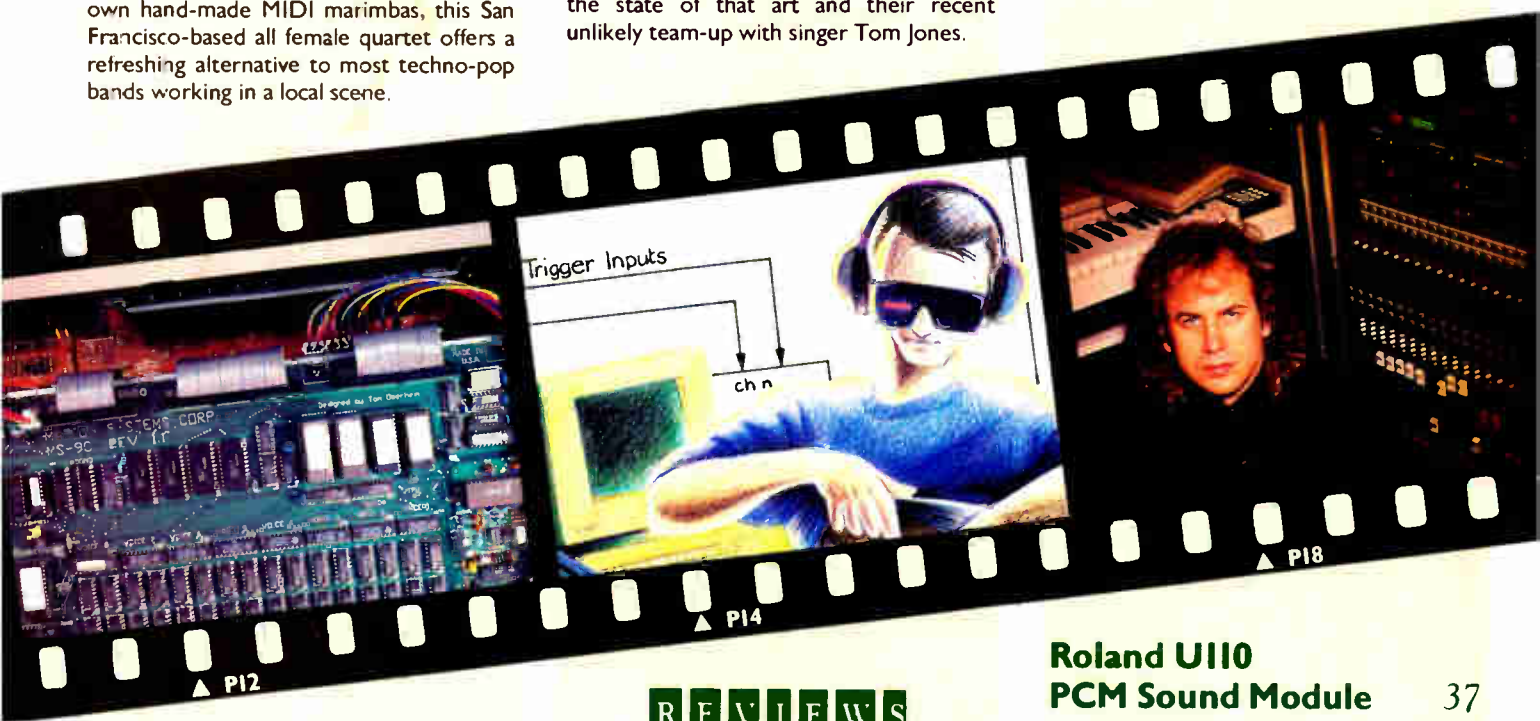
Recognized for their trend-setting and creative uses of sampling, the English duo of J. Jeczalik and Anne Dudley speak out on the state of that art and their recent unlikely team-up with singer Tom Jones.

### MIDIMouse Music Mousterpiece 20

Combining real-time MIDI composition via the mouse with three-dimensional controller capabilities, this intriguing program turns your Atari ST into an altogether new beast.

### Oberheim Systemizer 23

Trying to get the most out of a single MIDI controller and several sound modules? The first in the company's line of Perf/x MIDI performance effects may just turn your keyboard into a monster master controller.



## REVIEWS

### Techno-World Music 31

After a brief respite, our series on different genres of music is back, this time looking at and addressing the work of individuals who incorporate elements of folk musics from around the globe. John Diliberto talks to Terry Riley, Mike Oldfield, Eberhard Schoener, Michael William Gilbert and David Gilden about their visions.

### Marion Systems S900 Board 12

Ever dreamt that your S900 turned into a 16-bit sampler overnight? With the help of Tom Oberheim's newest creation, your wishes may come true.

### Roland UI10 PCM Sound Module 37

The latest one-space wonder from Roland is this sample playback instrument, which features six individual outs and an amazing 31-note polyphony.

## TECHNOLOGY

### Humanize Your Sequences, Part 2 14

Now that you've learned some tricks about sequencers it's time to apply them. This month's segment focuses on how to create convincing distorted electric guitar parts with synthesizers, a distortion box and step-time note entry.

### MIDI meets HyperCard 52

Designing and creating your own \$900 Editor for the Macintosh may seem like a rather auspicious task, but as Lachlan Westfall explains in the first of a two-part article, Apple's HyperCard makes computer programming possible for the rest of us.

### Micro Reviews 42

Under quick inspection this month are Pixel Publishing's Super Librarian generic patch librarian program for the ST, MIDI program change and TX81Z librarian DAs for the Mac from Altech Systems, and Real World Interface's modification for the Roland MT32.

### Eventide Ultra-Harmonizer 56

More than just an intelligent stereo pitch shifter, this new highly programmable multi-effects box can produce some impressive reverbs, delays and even sounds of its own, all under extensive MIDI control.

### C-Lab Notator 2.0 59

Take a well-respected sequencer for the Atari ST line of computers, add some interactive music notation and you end up with this expensive but impressive combination.

### Programming Compleat Part 2 72

Continuing our series on basic programming techniques for six-operator FM synthesizers, Lorenz Rychner discusses how to create a square wave on the DX7 family of instruments and explains the intricacies of envelopes.

## REGULARS

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Perspectives 70

MT reviewer and reader Robert Rich addresses the question that every musician who uses MIDI gear to perform live must eventually face: to sequence or not to sequence.

Listening Lab 78

On tap this month are records by the Pat Metheny Group, Peter Murphy, Skywalk, Ministry, and Hostyle.

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Updates & Upgrades 83

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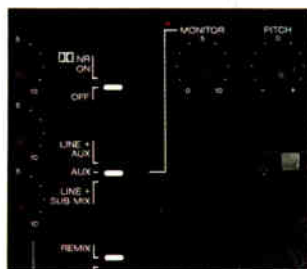
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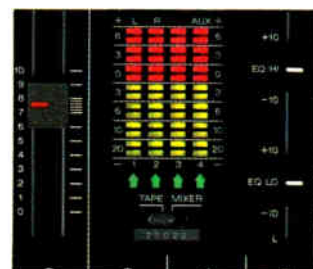
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# READERS' LETTERS

Got something on your mind? Drop us a line at: Readers' Letters,  
Music Technology, 22024 Lassen St. Suite 118, Chatsworth, CA 91311.

## Dear Music Technology,

We want to thank you for your in-depth review of Forte II (with sidebar on FWAP! and TrackGenie) in the November issue of MT, and to commend Matt Isaacson on a job well and fairly done. We say this not because the review was very favorable, but because we have learned that in our business one of the hardest things is to get reviews which fairly reflect the quality of our programs. Mr. Isaacson obviously worked a great deal with the program before he ever put pen to paper. That's all we ask of a fair review.

We would also like to point out our response to the complaints of critics and users alike: we have addressed *all* of Mr. Isaacson's "minor gripes" included in the review - 1) you can now load a Songlist from within the program's Disk/Directory screen; 2) Forte II now remembers your Path when you use the DOS shell; 3) the response to Song Position Pointer has been fixed so that no matter where you are when the MIDI Continue comes in, Forte II synchronizes perfectly. This was a problem, by the way, only on the Pattern Screen, where a fair amount of calculation has to be done at startup, and where apparently Mr. Isaacson was doing most of his work (and rightly so - it's the best place to structure your music once you've recorded all your "raw track material").

On a final note, we'd like to commend you for your support of the PC. We have found that most of your competitors tend to slight the PC when it comes to reviews. We don't really understand this, because it has been indicated that more music software runs on the PC than on any other computer. Since your magazine is the most balanced in its coverage of the various computers and the software running on them, it is to our thinking the only one which handles the responsibility of fairly informing the public. Keep up the good work.

**David Hicks**  
LTA Productions  
Hamden, CT

## Dear Music Technology,

Poorly-written manuals are the downside of electronic music (and of many other fields, I'm sure). I propose a series of short, concise, step-by-step tutorials on popular products that are known to have poor manuals. Such tutorials could unlock a lot of potential in readers' already-owned equipment.

My nomination for First Entry in the series is E! for the DX7II. Never have I seen so much potential hidden so deeply!

On another subject, is there any truth to the rumors that someone has come up with a way to modify an ESQM into an SQ80? I've heard that at least one exists at Ensoniq.

**Bill Morse**  
San Francisco, CA

*Thanks for the feedback Bill. We agree whole-heartedly that there's a need to teach people how to make better use of their existing equipment. That's the whole purpose of applications articles like the new 'Programming Complete' series we're running in the magazine. We're covering six-operator FM synthesis now and we'll be moving onto four-operator and multi-waveform FM (i.e., the TX81Z/DX11 and Casio's VZ1) as well as L/A and other similar synth/sample hybrids (like the Korg M1 and the Kawai K1) in the near future. And even though it's not machine specific, our new series on adding a human element to sequences is intended to offer tips to anyone who owns a sequencer.*

*As far as the ESQ-to-SQ80 mod you asked about, we too had heard rumors that despite Ensoniq's standard reply that it was impossible (which nearly fills the Letters page in the popular Transoniq Hacker every month), that someone had succeeded in doing it. So we called Ensoniq and they replied that they didn't know of one and were not planning any mod of their own - at least not yet. If anybody out there has successfully*

*completed the mod, or knows of one, please let us know. - BO'D*

## Dear Music Technology,

The review given to the Kawai Q80 in your November issue was very positive and should help make the consumers' decision about purchasing a dedicated sequencer an easier one. One of the "drawbacks" that your magazine drew attention to, however, is wrong.

The review stated that punch-in/out could only be done on the bar. That is not true. With a momentary footswitch assigned to punch-in/out (in the System mode), you can punch in and out on the note. Try it!

In regards to the manual being "sketchy," I agree - but Kawai has also rectified this problem. Peter Alexander, the well-known publisher of musical product "How-To" guides, has been contracted by Kawai to print the new Q80 manual. This is not an after-market guide to the Q80. For those consumers who have already purchased Q80's, these manuals will be sent directly to them from Kawai.

I hope you will make your readers aware of these two points.

**Doug Gould**  
Hanoud Associates  
Rehoboth, MA

*Thanks for the info Doug and sorry about the slip-up. I still think it's unfortunate that you can't set up a punch-in per note without the footpedal, but that's only a minor drawback. Interestingly enough, even Kawai themselves were a bit unsure of this feature, because when the review reached the final editing stage and I called Kawai to verify the accuracy of this particular point (the review model had already been returned so I couldn't physically check it), they confirmed the punch-in limitation. Oh well, I guess you can't win them all... - BO'D*

# NEWS DESK

## NEW ENSONIQ SYNTH

Just as we were putting the finishing touches to this month's issue, we received news from Ensoniq of a new synth they plan to launch at the Winter NAMM show - the VFX. Initial specs for the machine sound rather familiar: the VFX is a wavetable-like instrument that will have many on-board digitally-sampled waveforms as well as an integrated multi-effects processor. What may separate the VFX from the crowd, however, is that the VFX will allow you to move between waves within a patch, similar to what the PPG and Prophet VS offered previously, as well as stack up to six sounds at once, which should give the sounds a good deal of motion and harmonic complexity.

The VFX is said to have a great deal of synthesis capabilities as well. Digital filtering is included, as is the ability to "modulate anything with just about anything else - and I mean *anything*," according to an Ensoniq spokesman. As on other recent Ensoniq products, polyphonic aftertouch will be one of those modulating options, but apparently the VFX will have a newly-designed keyboard - specifically, one that doesn't have the annoying click found on the SQ80 and EPS. Twenty-one oscillators are available at one time, but the number of dynamically allocated, multi-timbral voices is determined by how many sampled waves are used per patch. The sound producing chip in the VFX is being called "third generation," but it is apparently very closely related to the DOCII chip found in the EPS.

The effects processor in the VFX is an integral part of the instrument's design. It is capable of doing multiple effects at once, including reverb, and all of its parameters can also be controlled in real time, similar to the synthesis controls. In other words, you could use poly aftertouch to move from one stack of waveforms to another as well as adjust the chorus rate and reverb decay. Another interesting note about the VFX is that it is one of the few Ensoniq products *without* a sequencer; I'm told the emphasis here is entirely on sound. The VFX will also not have a disk drive.

No exact retail price was known at press time, but the VFX will fall somewhere in the \$1500-\$2500 range. Look for more on this intriguing instrument and other new

goodies in our upcoming NAMM Report. It should be one helluva show.

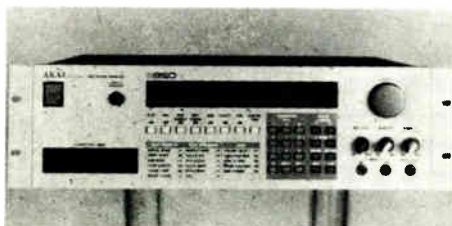
**MORE FROM** Ensoniq Corp., 155 Great Valley Parkway, Malvern, PA 19355. Tel: (215) 647-3930.

## HEIR TO THE THRONE

Deemed by Akai as "the designated successor to the S900," the S950 is the company's newest 12-bit sampler. The machine uses high density disks and a faster disk drive; it also features improved analog-to-digital converters; the sampling rate has been increased to 44.1kHz, thus expanding the usable bandwidth to over 17kHz, and the memory can be expanded with two nifty 750 k-byte cards for up to 2.25 Megabytes of data storage. The Version 2.0 software that S900 users feed into their machines via disk is built in to the S950's operating system. Editing functions supported by this software include crossfade looping, dynamic filter envelope, pre-trigger recording, auto start point location, and (drum roll, please) *time stretch*, which will lengthen or shorten the playback time of a sample without changing its pitch. The happy news for S900 users is that their sounds are not lost in antiquity - S900 disks are completely compatible with the S950's new high density disk drive. The S950 retails for \$2500.

For those who want massive storage capabilities, Akai offers an optional hard disk interface for the S950. The interface is compatible with either Atari or Supra hard drives, and up to 8 hard disks may be cascaded. For super-quiet samples, this interface will also let you record directly into the S950 from CDs or DATs, sidestepping A/D conversions altogether. A 44.1kHz sampling rate is used with CD, 32kHz or 48kHz for DAT. The CD/DAT interface uses both coaxial and optical cable inputs and retails for \$170.

**MORE FROM** Akai Professional, 1316 E. Lancaster, Fort Worth, TX 76113. Tel: (817) 336-5114.



The Akai S950 12-bit digital sampler is an enhanced successor to the popular S900.

## MULTIPLE PERSONALITIES

Sybil, the new MIDI program from Scorpion Systems Group, gives multiple personalities to your Octapad or other pad controller. Running on a Hypercard-equipped Mac Plus, SE or II, Sybil takes the MIDI output from your Octapad, processes it in real time, and gives you features similar to those found on the Octapad II as well as a few more. For example, it lets you trigger up to four notes from any pad simultaneously on multiple channels, each with an independent gate time. Velocity crossfade gives you a new sound when you hit the pad harder (open or closed hi-hat, for example). Additional features include the ability to store an unlimited number of pad setups, chain the setups together and use any pad to specify the switch. You can even send multiple program changes from any of the control pads (or inputs) in real time. It's pretty wild.

Sybil's interface represents another advance: the front end was done in Hypercard and it's extremely easy to use. While Sybil includes a manual, you can easily learn the program without it. The program costs \$69.95 plus \$5.00 shipping and handling (psychoanalysis fees not included).

**MORE FROM** Scorpion Systems Group, 328 Flatbush Ave., Suite 275-M, Brooklyn, New York 11238.

## RANE-FALL AT NAMM

At this January's NAMM show, Rane Corporation will be unveiling three new programmable MIDI equalizers, ready for shipment by April (possibly March). These micro-processor controlled equalizers include: the MPE28 (target price: \$749), a single channel 1/3-octave configuration; the MPE14 (target: \$799), a two-channel, 2/3-octave configuration; and the MPE47 (target: \$849), a four-channel 7-band configuration. All three models will feature 128 internal memory settings, constant Q interpolating filters, programmable gain control, full mapping and SysEx, phantom power over remote control devices, the ability to modify or combine two curves, and separate front-panel displays for EQ and programming functions.

**MORE FROM** Rane Corporation, 10802 47th Ave. West, Everett, WA 98204-3400. Tel: (206) 355-6000.

## DR. T'S D110 EDITOR/ LIBRARIAN

Created by Dr. T's "Caged Artist," this Mac-based program works with the familiar point-and-click graphic environment and an on-screen slider for data input. The "mouse play" option lets you "play" the D110 by pressing the mouse button, with horizontal and vertical position on the screen determining pitch and velocity respectively. Other nice features include a

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randomize function for selectable parameters, at selectable percentages, "compare/copy," which lets you audition your new patch with the original, and copy any parameter value to any other parameter value at a click of the mouse, and an "undo" function to reverse your most recent edit. The Roland D110 Editor/Librarian retails for \$129.

**MORE FROM** Dr. T's Music Software, Inc., 220 Boylston St. #306, Chestnut Hill, MA 02161. Tel: (617) 244-6954.

## EASTERN BOARD

If you're into MIDI, and you happen to be located near the eastern coast of the USA, you might be interested to know that there is now a new computer network catering to your needs. The East Coast MIDI Bulletin Board System (ECM for short) is now up and running. The board supports the Atari ST, Commodore 64/128 and Amiga, IBM and compatibles, and Apple and Macintosh computers. Open 24 hours a day, the bulletin board features lots of patches and samples, shareware and electronic mail from other musicians, producers, and software and hardware manufacturers, in the US, Europe and the Far East. In addition, ECM features a Steinberg Customer Support Hotline for Steinberg/Jones customers. ECM operates at 1200, 2400, and 9600 baud (9600 needs

## MULTI-EFFECTS FROM PEAVEY

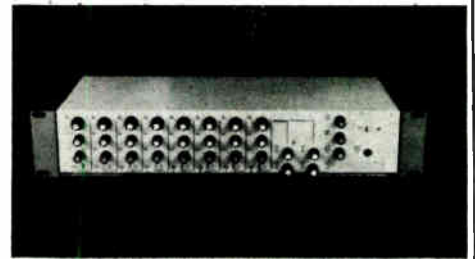
Peavey Audio Media Research hops on the multi-effects bandwagon with their new 16-bit QFX 4x4, a one rackmount space module. The QFX contains four separate effects modules which can be used individually, or together in any combination. Each processor features 128 user-programmable effects presets, with such adjustable parameters as echo, pre-delay, early reflections, room size, tonal color, reverb time, left and right stereo channel delay, left and right stereo echo feedback, chorus rate, depth, delay time (up to 2.75 seconds), feedback, and six algorithm facilities, with five fully-programmable effects per channel. Full MIDI implementation is supported for each of the four levels individually, and all effects positionings are re-mappable. While editing, changes are held in an edit buffer until a yes/no choice has been made. No list price is available yet (although the line at the last AES show was that they were aiming for \$1000).

a Courier HST modem), and the fee is \$65 a year, payable on line via major credit card. The two telephone numbers currently operating are: (516) 928-4986 and (516) 474-2450.

**MORE FROM** East Coast MIDI, 21 September St., Coram, NY 11727. Tel: (516) 928-4284.

Also coming out of Peavey's Audio Media Research division is the LM8 line mixer (\$250). The LM8 is a two rack-space unit which features eight line-level inputs with individual mutes, level and pan control, two Aux sends in dual concentric format, mono Aux returns with individual level and pan controls, independent master left and right outputs, a transistor head-phone amplifier with individual volume control, and a stereo input jack for routing directly to the left and right bus.

**MORE FROM** Peavey Electronics Corp., 711 A St., Meridian, MS 39301. Tel: (601) 483-5365.

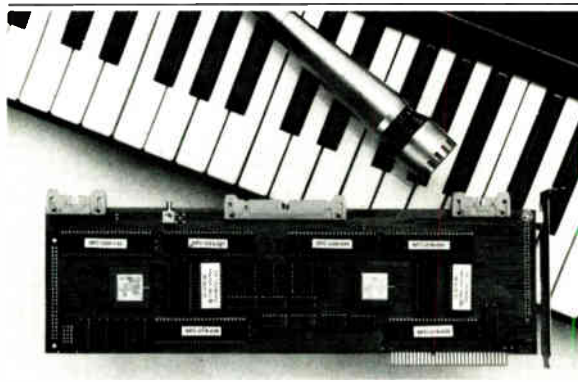


The Peavey LM8 offers affordable 8x2 mixing in a rack-mount package.

## CLEARLY MIDISOFT

As of February 1, 1989, Midisoft Corporation will be offering their Midisoft Studio music software for the IBM PC/compatible and Roland MPU401 interface card (IBM Music Feature cards supported in the near

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future). Two editions will be made available – the Standard Edition (\$99) and the Advanced Edition (\$199) – and sometime in “the first quarter of the year” we will be seeing these packages released in a Yamaha CI format as well. Midisoft Studio, which focuses on simplicity of design, works in a tape recorder format for recording, and features tempo change during playback, quantizing on either the note hit or release, cut-and-paste editing of track, measure or detailed segment, and step note entry. The Advanced Edition also features a MIDI edit list, including note on/off, controllers, SysEx, velocity scaling, and MIDI channel change, as well as a tempo track which features tempo scaling. Both editions come with a clearly written manual which includes a glossary and tutorials.

**MORE FROM** Midisoft Corp., P.O. Box 1000, Bellevue, WA 98009. Tel: (206) 827-0750.

## SWITCH YOUR AUDIO

From 360 Systems comes the Audio Matrix 16 (\$699), a programmable, MIDI-equipped audio patchbay in a two rack-space unit. The Audio Matrix 16 will route any audio source, be it instruments, effects sends, channel inserts or whatever. Up to 16 separate audio inputs and outputs can be configured in any way, and the configurations can be stored in 100 user-programmable presets, which can be recalled on the front panel or via MIDI. Each preset can store up to eight MIDI patch change commands, along with the associated MIDI channel numbers, and presets may be ordered into 27 different performance chains of up to 32 steps each, and also accessed through MIDI, or with a footswitch. Outputs 15 and 16 are duplicated on the front panel for easy access. If you always seem to be running out of inputs on your mixing board, this may be the ideal solution.

**MORE FROM** 360 Systems, 18740 Oxnard, Tarzana, CA 91356. Tel: (818) 342-3127.



360 Systems' new Audio Matrix 16 is a MIDI-controllable audio patchbay.

## THE “M” IN AMIGA

Intelligent Music's popular interactive program, M, has been revamped and released for the Commodore Amiga computer. Some of the specific Amiga features that are supported by M include: IFF-8SVX sample files, using the Amiga's high-quality internal sounds; multitasking, which allows you to access other music software like patch editors while you're using M; and, of course, M's graphic controls are well-

suited to the Amiga's full-color screen. All the other functions of M, automatic changes in MIDI velocities, note densities, rhythms, articulations and accents, the note randomization, and MIDI File support are featured as well. The suggested retail price is \$200.

**MORE FROM** Intelligent Music, P.O. Box 8748, Albany, NY 12208. Tel: (518) 434-4110.

## EDIT THIS

Opcode must have an incredibly huge number of software engineers, because they continue to crank out their well-known editor/librarians for more and more products. This time they're catering to the Roland and Macintosh market with a Roland Multi D-Series package (\$199) that works with the D10, D20, D110 and MT32 synths. If you just need the MT32 stuff, they offer a specific package for that machine at a lower price (\$149). They've also released Mac ed/libs for the Yamaha REV5 (\$199) and the Oberheim Matrix 1000 (\$199), as well as an update to their Oberheim Matrix 6 package which makes that program compatible with the Matrix 1000. Previous owners can get the Matrix 6 update for \$20 plus \$5 for shipping and handling. Each of the Editor/Librarians features visual on-screen editing, a patch librarian, random patch generation facilities, automatic alphabetizing, and “Bundles” for storing performance setups. The Multi D-Series also features special sections specifically for the drum setups.

For the Korg M1 and Mac, Opcode has released a Patch Librarian (\$99) using their new “version 5” patch librarian. Features include “Bundles,” random patch generation, storing/reading/writing sequences to disk, and unlimited access to sounds while writing music.

**MORE FROM** Opcode Systems, 1024 Hamilton Court, Menlo Park, CA 94025. Tel: (415) 321-8977.

## MAINFRAME BACH

A giant step for computer-kind. IBM researcher, Kemal Ebcioglu, has written a program called Choral which uses a new type of algorithmic composition that takes a melody line and writes a four-part choral score based around it. Ebcioglu studied and input the choral harmonizations of J.S. Bach into a program that produces results that he described “would probably receive an above-average to excellent grade in a college composition class.” He found that choral harmonies are often based on a large number of “heuristics,” or recommendations as to where the musical line should continue. Using what he calls Backtracking Specification Language (BSL), Choral will take a soprano line and add alto, tenor and bass parts to it, in a process which takes about 30 minutes on an IBM mainframe.

BSL is Ebcioglu's own algorithmic invention; it uses a “generate-and-test”

method of composing. When the program comes up with something that it feels is a dead-end harmonically, it will backtrack and rewrite the parts according to the Bach-based heuristics in its memory. While 30 minutes seems to be a long time to wait for a finished piece, the accuracy that the BSL method produces indicates that this type of algorithmic composition is actually quite efficient; it's performing about 23 billion instructions during that time.

**MORE FROM** International Business Machines Corp., Research Division, Andrea R. Minoff, P.O. Box 218, Yorktown Heights, NY 10598. Tel: (914) 945-3167.

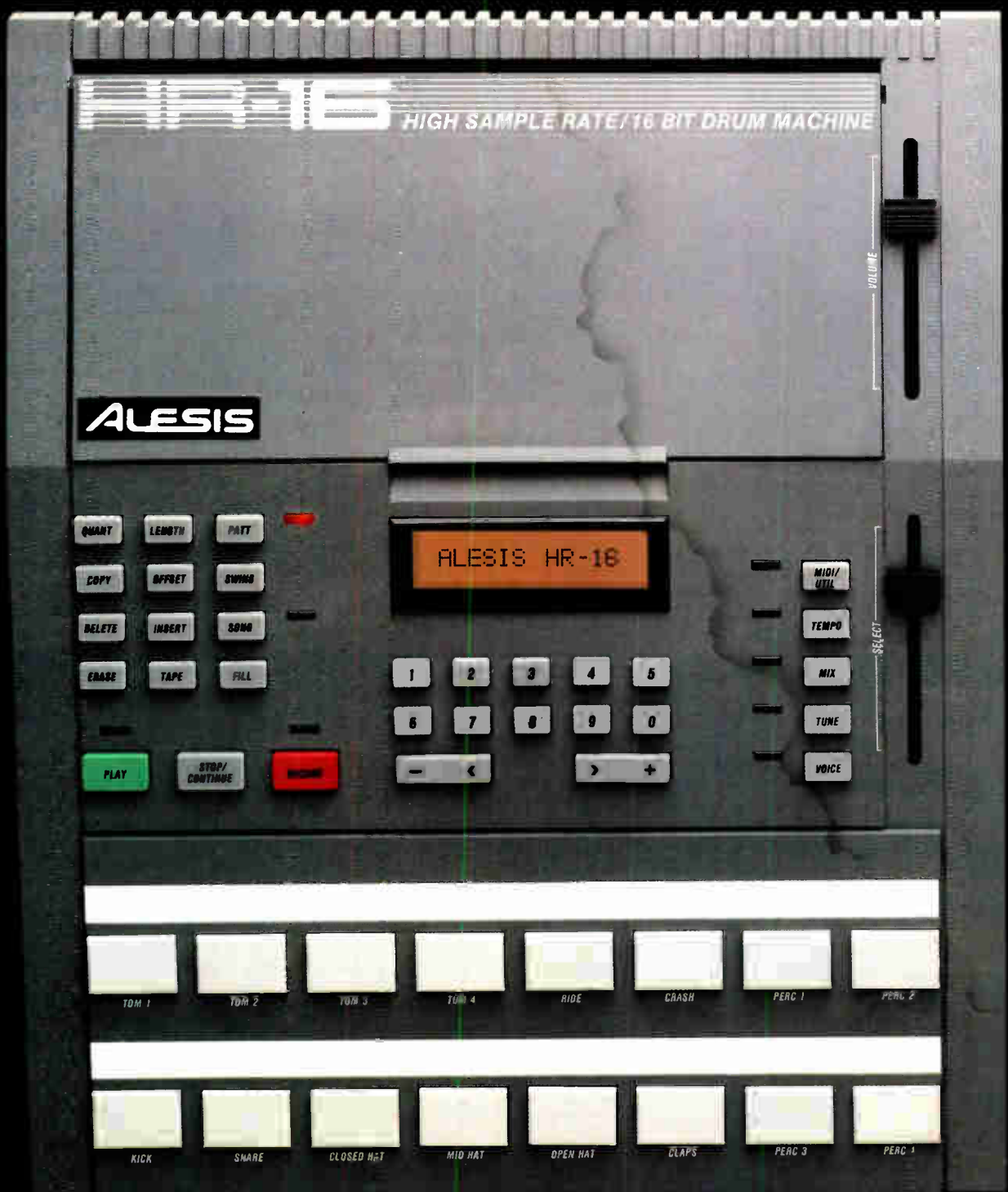
## OFF THE BEATEN TRACK

For those of you who are into composing soundtracks for film and TV, Offbeat Systems are about to release their Streamline Scoring System. This handy system, demo'd at the AES show in Los Angeles last November, basically lets you program clicktracks, streamers, cues and timing notes onto the video screen, completely synced to SMPTE. Streamline, designed to completely replace the “Clickbook” and the digital metronome, lets you create cues by allowing you to change tempos, beat and bar structures, and timing so that your “hit points” will land exactly where you want them to in the picture. It will generate five different colors of streamers, circular flashes in three different sizes, flutter punches with any number of flashes spaced apart by any number of frames, prepare and playback any type of clicktrack, and it will sync to MIDI for use with sequencers and all that stuff by using MIDI Song Position Pointer. Streamline converts any timing standard to any other, including all types of SMPTE and normal time, and it will print bar charts with the tempos, time signatures, and bar structures for each cue.

The system is essentially component-oriented, but Offbeat does offer three general configurations: the Transportable Streamer System includes a state of the art portable turbo IBM clone, “Timing Notes” software, three circuit boards, SMPTE generation, superimposed streamers and the click generator (\$10,000; \$7500 without computer); the Laptop Clickstation (\$4400), a simplified kit geared for the composer rather than the studio, includes the computer, one circuit board, SMPTE slave capabilities, and the software (no video overlay), so that the composer can do the dirty work and then plug it into the full system at the studio; and finally, the Timing Notes software (\$750) is available for the IBM as a stand-alone program. Also, Offbeat makes a MIDI port for their computer (\$300) to use with the Clickstation and Streamline sequencers. The circuit boards, incidentally, will fit into Toshiba laptop computers if that's your poison.

**MORE FROM** Offbeat Systems, 726 N. Citrus Ave., Hollywood, CA 90038. Tel: (213) 936-1458.

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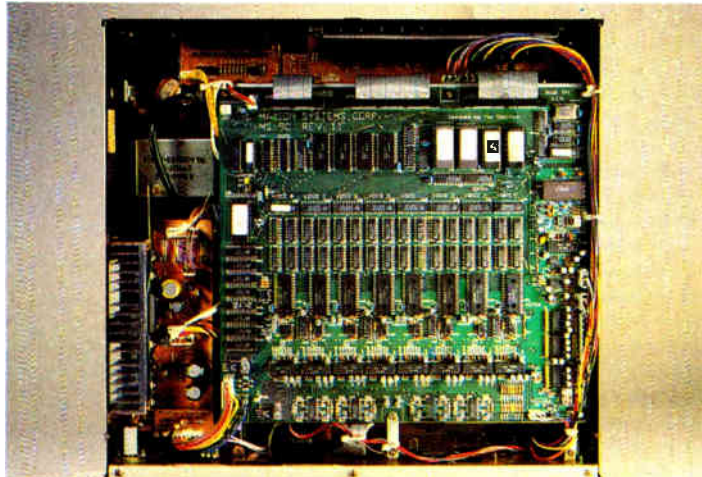
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# Marion Systems MS-9C



Photography Rose Rounsaville

The MS-9C installed in the S900 (yellow jumpers: data compression middle right; input resonance circuit rear left).

**Want to improve sound quality without losing all your old S900 programs and having to learn a new operating system? If so, Tom Oberheim's new product may be just what you need.**

*Review by Paul Wiffen.*

THE AKAI S900 is the most successful sampler of all time. Well in excess of 20,000 (probably closer to thirty) have been sold, and although it's now discontinued, the new generation of Akai samplers, the S950 and the S1000, both clearly owe much to their ancestor in architecture as well as looks.

If you look for an upgrade path for existing S900s, however, you will find yourself disappointed – that is, if you only check with Akai. Tom Oberheim (yes, the one you think it is) and the product from his new company, Marion Systems, have changed all that. Specifically, his MS-9C is a single board which simply replaces the uppermost (read: most accessible) board in the S900 (and, according to preliminary tests by Marion Systems, the S950) – all it takes is just a couple of minutes and a screwdriver. The result: 16-bit analog-to-digital and digital-to-analog converters (instead of 12-bit) and 7-pole VCFs (instead of 6-pole switched capacitor) for both input and output filters, thus keeping S900 owners up with the digital Joneses (you know, the “well I just can't work with anything less than 16-bit any more” types).

Usually, using more bits but keeping the same amount of internal memory results in an erosion of sample time; however, Marion doesn't do things the conventional way. Two modes of data storage are provided. The linear mode stores the first twelve of the 16-bits coming out of the A-to-D converter, ensuring that you have twelve accurate bits of data, instead of the ten or eleven you would normally expect from a 12-bit ADC (because of imperfections in its design and implementation). In this mode, the S900 can also play

back all the disks created on an S900 and S950, but with that extra something which the 16-bit DACs (and cleaner output filters) give. I personally found a definite audible improvement over standard S900 playback, even on old disks.

However, 16-bit components demand even greater exploitation, so the MS-9C also boasts a data compression system which stores the 16 bits of information as 12. This achieves higher fidelity than the 12-bit linear system in much the same way that 8-bit COMDAC (COMpressing Digital/Analog Conversion, which encodes 12 bits of dynamic range into eight) drum machine samples offer greater fidelity than samples from 8-bit linear machines.

The first demonstration of this 16-bit mode I heard was sampled from a jazz CD, starting with a couple of seconds of silence. The amp was up really loud, but when Playback on the S900 was hit, I assumed the audio wasn't hooked up – for the first two seconds, at least. When the music started, it was deafening. The signal-to-noise ratio difference is quite startling (85dB versus 68dB in the original). Subsequent CD sampling at home gave equally impressive results. The only side effect seemed to be on sounds with just high frequency content (above those which the old S900 can really deal with accurately) – a little high end hash is audible on untreated samples. I found that with the improved filters of the MS-9C, I could remove this noise without detracting from the sample. The problem didn't occur at all in the 12-bit linear mode, but then the high end wasn't quite so transparent. (In a conversation with

Tom Oberheim, he readily acknowledged that based on feedback from many individuals he decided to put the input filter's cutoff higher than “legal,” trading off a little bit of aliasing versus a better high end. – Tech Ed.)

The other remarkable effect is that the bass response is audibly improved. I always felt that low frequencies on the S900 were a little weak, but the MS-9C really rounds out the bottom end (18Hz-18kHz frequency response versus 80Hz-16kHz of Akai's original). This was repeated in the 12-bit linear mode.

The reason for this may be that the S900 includes a resonant circuit in its input stage which is designed to boost the incoming sample by 4-5dB right at the cutoff of the input filter. This would tend to give the impression of lower frequencies being attenuated. The MS-9C's input circuit gives a more faithful representation of the original sound. But again, talking to S900 owners, Oberheim found that many of them liked the way the S900 brightened sounds up (especially hi-hats and cymbals). So he added a second circuit with a similar but slightly different boost (+3.5dB, with a sharper hump). You choose between these by moving an internal jumper switch (at rear left on the MS-9C board – this could stand to be more accessible). This jumper setting only makes a difference during the recording of samples.

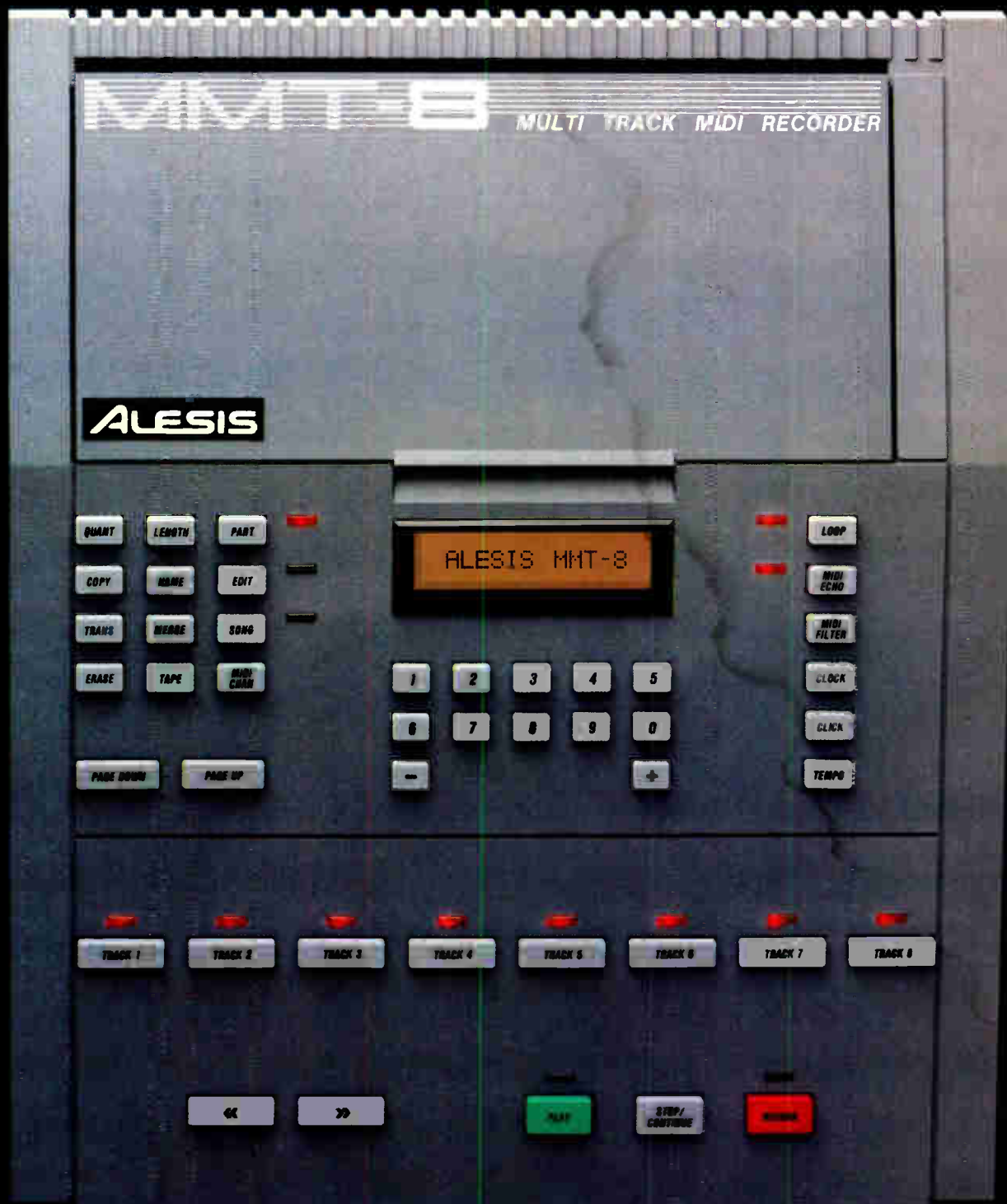
The default power-on setting for 12- or 16-bit resolution is still set internally with another yellow jumper, but the MS-9C comes with a Toggle disk which allows you to quickly change modes. Toggling is done this way to avoid changing the S900's operating system in any way (avoiding copyright problems with Akai themselves, keeping S900 operation identical for users, and ensuring compatibility with all S900 operating systems, past, present and future). The Toggle disk is loaded just like any other, right before a disk which requires the opposite mode to that currently selected. Toggling takes less than two seconds. Marion is also working on adding a hardware switch that could be turned on and off from outside the unit (this is required for S950 users).

For me, the MS-9C made a definite improvement in the fidelity of the S900, but wanting a second opinion, I left the board in the S900 when I returned it to the friend from whom I had borrowed it to do this piece. Using it both for sampling new sounds and playing back old disks on a studio session, he also heard the difference, but real confirmation came when I saw him aiming the old S900 board towards the trash. ■

**PRICE \$995**

**MORE FROM** Marion Systems, 1317 5th St. #301, Santa Monica, CA 90401. Tel: (213) 451-8910.

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## Part II: Rock Guitar

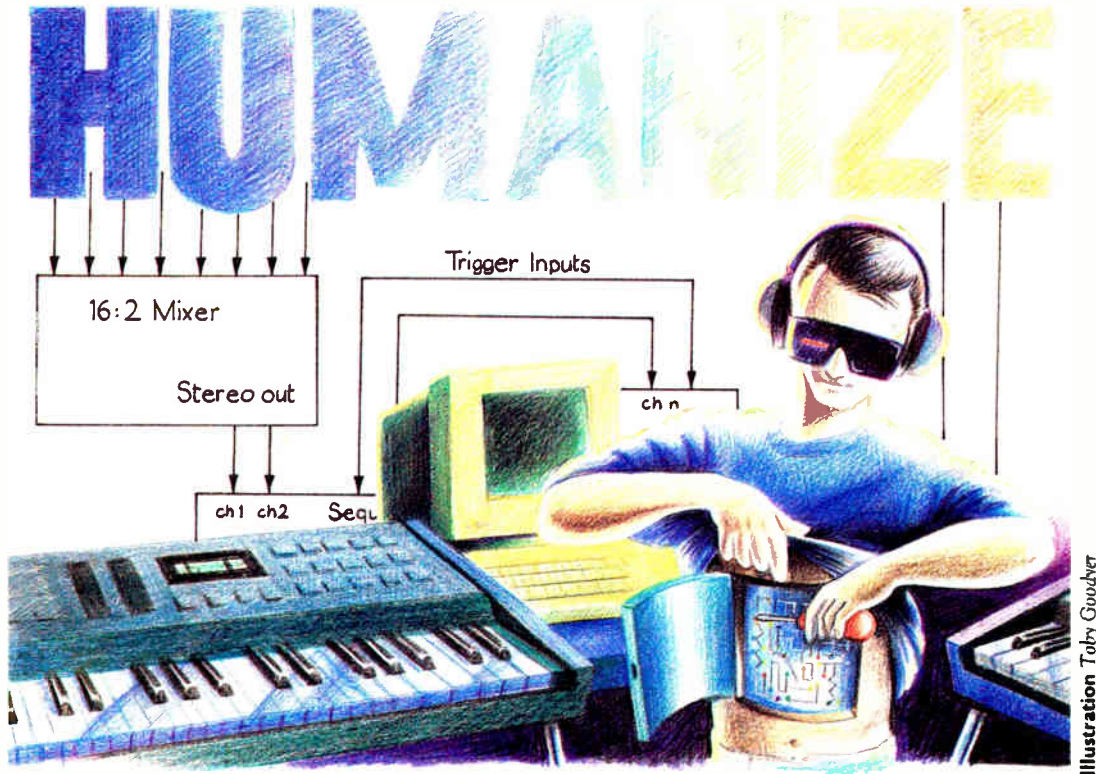


Illustration Toby Goodyer

**O**F ALL "REAL" instruments, the guitar is perhaps the most difficult to simulate with a synthesizer. Even a great-sounding patch or sample with immaculate signal processing requires terrific keyboard technique in order to pass as authentic. And even then, some moves, like properly milking a power chord, are still extremely difficult. Further, variations in tonal inflection and properly recreating numerous variations of the all-important attack are simply beyond the practical reach of real-time playing.

Using a competent sequencer and appropriate simulation techniques, however, many of these limitations can be overcome. I have been able to integrate acoustic steel string and classical guitar samples into works where the guitar parts are relegated strictly to background comping or else stand naked only for discrete intervals. Specifically, I've been able to imitate strumming, licks within chords and some fairly convincing finger-picking.

I'll save techniques for acoustic guitar and bass until next month, however, because hard electric is today's agenda (and, thanks to the blessings of distortion,

**Looking to add some Van Halen licks to your songs, but lacking in the guitar chops department? A sequencer, a distortion box, any synth and some time may be all the tools you need, as the second article in our series explains. *Faux Guitar Heroics***

*by Travis Charbeneau.*

metal or fusion guitar is where straight out-front, virtuoso potential currently lies). The following are some tips and techniques for chordal and lead metal guitar work, a few of which I believe are fairly unique.

### Black Boxes

FIRST, OF COURSE, you need signal processing, starting with the all-important distortion generator. It's amazing what can pass for metal guitar when run through the right distortion device (I've even had some success with the factory violin preset on the CZ101). Unless your heart is set on a Marshall stack (and you live somewhere out in the desert), my favorite for distortion in the studio is the famous Rockman series by Tom Scholz.

For keyboard and sequencing work, I heartily recommend the half-space, rack-

mount "Rockman Distortion Generator" (from \$110 to around \$140, depending on where you buy) as opposed to the cheaper X100 and other "Walkman-style" Rockmen. The rack unit not only dispenses with the rather wimpoid chorus and echo found on the X100, but has a bypass footswitch absolutely essential should you want to change patches for, say, a clean sax break. The rack unit also offers some nice EQ, phase notching (which emulate phase cancellations typical of a miked 4x12" speaker cabinet), more versatile compression, treble boost at the output stage and plenty of output gain. If you've got a bit more money, Scholz' Sustainor module is a real killer.

I've also had good results with the Rat, by ProCo, and, by all means, feel free to try out any old fuzz tones lying about. Some are terrible, others may do the job nicely. Be warned, all are noisy.

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You may also want to use a touch of chorus or flange. Stay away from too much regeneration, however. We basically want to just thicken up the sound a bit, so go for the Robin Trower thing only occasionally. Apart from distortion and flange, delay is always great to have and reverb is usually essential. These should be chained synth to distortion to flange to echo to reverb.

## Choosing a Patch

NOW FOR A workable patch. A lot of ho-hum stuff turns into Godzilla when properly processed, but some patches are naturally more monstrous than others. I felt certain when I acquired my sampler that samples of my old Les Paul would be unbeatable – and they do sound good – but I've found variations on my Yamaha DX100, four-op 'Brt Guitar' and 'Folk Guit' patches to be much, much better. Looped samples simply don't have that long, evolving fluidity we expect of a hotly-struck string, particularly when it comes to simulating those all-important, sustaining "feedback" harmonics. Synths, of course, do not have pickups which can interact with an amp for genuine feedback, but the attached patches provide a dead ringer for this sonic phenomenon. I have modified 'Brt Guitar' and 'Folk Guit' into 'Strat' and 'Les Paul' respectively, and the parameters are printed in the sidebar.

The critical changes made involve rate scaling and the DIR (Decay / Rate) value in the envelope for operator 3. These tweaks give you that evolving, high feedback harmonic, typical of Scholz' work in Boston. For further tweaking, I particularly recommend changing operator output levels and the attack portions of envelopes until you have half a dozen versions of each guitar type, each with a slightly different attack slope and overall tonal inflection. You might experiment using just three operators. But no detuning! I have read advice promoting detuning for "thickening," but this will literally beat the distortion generator to death. As noted, chorus or flange will do this job post-generator. And be sure to edit your patches with the distortion generator set at a working level – most will sound like garbage without distortion.

Include at least one patch with a "volume pedal swell" envelope – i.e., a very slow attack time. This is fun to switch to from time to time for your more spaced-out segments. One or two variations should also include a full-octave pitch-bend, for Hendrix-like whammies and slide guitar effects, and one with a fairly fast portamento for slide notes and chords. In brief, you want to have a patch to cover every conceivable permutation in the guitarist's bag of tricks. I store my dozen or so guitars via Voyetra's Patch Master librarian software, and include a nice sax  
MT FEBRUARY 1989

patch, a flute, a Rhodes, etc., to comprise a reasonably complete rock ensemble bank which I load with their Sequencer Plus III (although most event-oriented sequencer packages can be used for the following manipulations).

Critical to a convincing metal guitar simulation will be the switching among these various patches, occasionally just to emphasize a single note. By step-entering final program changes after the track is in, you can move through a wide variety of sounds impossible to achieve in real time, simulating the guitarist switching pickups, moving his hand in respect to the bridge, applying varying amounts of damping, and altering his attack from a dig, to a slash, to a polite brush.

Of course a few items in that bag of tricks are simply not available with any synth, and that's where the sampler definitely comes into its own. Put these in the category of special effects. In mine, I have a Pete Townshend down-the-wound-strings scrape, a fat-bottomed, muted chord chunk for chunky comping, a full-out Billy Gibbons-style squeal, a truncated squeal containing only the vicious attack transient, and a sample of one of my DX "guitars." This last has a slow attack envelope and can be velocity-mixed or layered with the chunk or squeal attack samples, so that the nasty attack stands alone, with the body of the sound immediately following. Velocity-mixed in particular, this can be very effective.

## Power Chords

ATTEMPTING TO SIMULATE distortion power chords on a synth, the first thing I noticed having been a guitarist for many years is that it is neither necessary nor desirable to use the same chord voicing a guitarist would use. If you've ever played a first-three-frets C major on a distorted guitar you know it sounds like mush – too many harmonics, and too many of them too low. Bar chords work better, although these too should not be complex. Even a simple seventh or a minor third can turn a chain saw power chord into a mud pie.

*"Critical to a convincing metal guitar simulation will be the switching among various patches, occasionally just to emphasize a single note."*

Semi-bar chords using simple fifths, preferably with one or two open strings sounding octaves, are the metal guitarist's stock and trade.

Follow this simplification in synthesis. Use fairly simple, perhaps even "bland" sounds when your synths are being run through a distortion generator. Similarly, make sure you're only playing simple chords. Depending on the type of synth and the particular patch you're working with, three and four notes max seem to be all this process will tolerate, and even these should be simple fourths, fifths and octaves,

especially fifths and octaves. Any more is asking for a sonic slurpee.

As an exercise, set up a simple 4/4 rock drum loop in the sequencer and start recording the three following three-note "chords:" F3/C4/F4; C3/G3/C4; Bb2/F3/Bb3; your basic "Baba O'Riley" progression. Once they're in at a clean two bars, loop the track and go into edit. Your three-noters should sound plenty thick enough. If not, try adding an occasional low octave of the root. Now play back.

Yup. Sounds like a keyboard player pounding some keys.

Change your "units" assign to a 64th note, and slide the bottom and top of the chord time-wise around a middle axis centered on the beat. In other words, in the first chord, F3 slips backwards one 64th, C4 stays on the beat, F4 slips ahead one 64th. If you've added octaves, slip them accordingly. You should now have a very fast but perceptible "strum" effect, which, even if it only involves movement among three events, contains enough movement to be perceived as "guitar" instead of "keyboard."

Now, copy, cut and paste until you've got four bars of this, add a fifth and sixth blank bar and lengthen the notes to fill this space, letting F3 die first, then C4, then F4. All these notes, when using the 'Strat' patch provided, will shift into high harmonic feedback soon after being struck. However, all feeding back at once just doesn't get it. By letting the bottom notes die in sequence, you run your feedback up the scale, controlling it in ways Jimi pumping his stacks could only have dreamt about. You're left with a single, screaming high harmonic, ripe for modulation or a nice bender.

Of course, this is an extreme example. Include a variation on the Strat patch in your bank which involves operator 3 rate scaling 3; DIR level 5. Try values of four to ten on DIR. The higher the value, the quicker the note will shift to its high harmonic, so that even short chords can get the feedback squeal treatment. By allowing, say, C4 to run just a little longer than its lower and higher companions, you

obtain a result that sounds uncannily like Ted Nugent trying to keep the lid on his Birdland, slightly missing a damped note and letting a spurious but still satisfying short bite of feedback escape from the stacks. Little sonic elements like this can thoroughly trick the ear.

Chording on the sampler using velocity-switching can also be very convincing. Recalling the velocity-mix I mentioned using a chunk and body, if you hit softly you'll get all chunk. The harder you hit, the more body you'll get. Thus, by programming the proper velocity levels you ▶

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can convincingly chunk up to a full power chord in real time. Better still, you can thoroughly mix your emphasis with velocity contouring and, of course, slip the notes into "strum" mode, for an even more realistic effect.

For example, say you've got a four-bar chord riff leading up to something nice, a lead guitar break or perhaps the chorus. Increase the velocity over all four bars in a crescendo so that the chunk-to-body threshold is crossed about halfway through your act. Then go in and velocity assign a full 127 to the highest note or two in the last chord. This is the kind of selective emphasis guitar players can do in their sleep. Us sequencer players have to work a little harder for it, but the result can be convincing enough to stand alone, without pads, drums or any other cosmetics to hide behind apart from the original signal processing. And, of course, mixed down behind a clean arrangement, metal chords can add a dangerous, glorious color nothing else can begin to approach.

### Lead Licks

LET ME PREFACE this section by saying that no simulation technique anyone can give you can overcome ineptitude at pitch-bends. Benders are the blues, and bender technique is absolutely essential to rock 'n' roll. Most guitar players work for years on their bending skills.

Thankfully, synth players have little wheels and levers and embedded controller I commands to learn instead of physical technique, but that doesn't rescue us from having to develop the ear for those truly astounding, micro-bends that make the world go 'round. You'll note that the pitch-bend parameter for my 'Strat' and 'Les Paul' patches is two semitones. I think I did bend four on a real guitar once and it cost me several layers of hard-won callus, but a whole step will be fine in almost all situations.

On top of the six-bar, "Baba O'Riley" background, overdub yourself a nice,

*"All kinds of little noises tend to escape in the effort to keep a distorted electric guitar under control. Including these sonic cues in your sequence can fool the unwashed masses and even experienced players."*

keyboard-style blues lead. Don't worry about speed, mod, or even benders if you can't control them effectively in real time, just concentrate on a nice, melodic riff extending over six bars. Now enter edit, clean up the clams and go back to the beginning. (If needed, set up separate tracks for MIDI controllers-only on the same channel, overdub your benders and mods, then merge the tracks.)

Enter edit again and set your autocorrect units to good old 64. Insert a 64th note, in or out of the current key signature, just before one of your melody notes. The reason we don't care if we're in

key or not is because we're going for noise, not a discernible tone. Sort of an "envelope simulation." This broken shard of noise, properly positioned, goes a long way towards simulating a variation in attack which most envelope generators simply can't approach (for clues on how to try, read 'Rehumanize Your Synth' in the October '88 issue).

By inserting this spurious little transient, however, you simulate the noise of a pick about to attack, then you get the full attack. Try moving the little bugger various distances from the target note until you get a real nasty effect. Sometimes, putting it directly at the same start time as the target will do nicely. You may also wish to change units to clicks in order to fine-tune your start position. But keep the note length around a 64th. Any longer and it actually becomes a note. Much shorter and it risks not being heard at all.

When you see your line reaching a high note, particularly a high bender, position a string of three 64th-notes, preferably in key this time, one 64th-note each ahead of the target note. For a bend-to-C6, for example, place a 64th note at C5, F5 and G5. C5 will fall three-64ths ahead of target, F5 two-64ths and so on.

This emulates one of the best tricks in the book - damping near the bridge with the side and heel of the hand and "glissing" the muted strings up to the target note, which is then sounded un-damped. It's preferable to use 64th notes in key this time, because this technique is usually done off a short bar chord. The three or four fast, "damped" clicks heard prior to the full-velocity target note are, again, another cue that this is not "keyboard guitar." There may be a keyboardist who could do this in real time, but he or she is certainly not from this planet.

Oddly enough, glissing down also sounds great, although it's next to impossible to do on real guitar unless you're a high-to-low strung lefty like Albert King. In this case, keep it short, one or two 64th notes

spread as much as an octave above but very close in time to the target.

Again, the word "spurious" comes to mind. One synonym for this word is "inconsistent," which in some sense comes naturally with the territory of playing a highly-amplified, electric guitar. All kinds of little noises, intended and unintended, tend to escape in the effort to keep the beast under control. Including these sonic cues in your sequence can fool the masses (and even experienced players).

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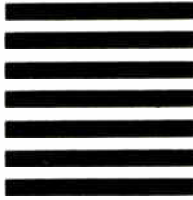


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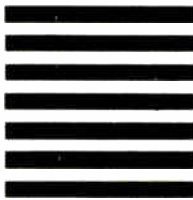


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scraped when the moment begged him to scrape. Billy Gibbons will not give us a full-out Tres Hombres squeal unless it's called for. Used sparingly, these elements too – difficult if not impossible to synthesize – can make for a convincing performance.

### Slide Guitar

BOTH SYNTH AND sampler can also do duty as a slide guitar, particularly when playing simple rhythm chops. Set for a full octave pitch-bend range, just hold a two or three-note chord, bend full and modulate. Listen to Johnny Winter doing Dylan's "Highway 61" or nearly all of George Thorogood's work. The simmering, slide guitar back-up technique on vocals is very easy to accomplish even half-baked. Fully-cooked, of course, is a different matter.

Full-cooking is more easily realized when emulating the now-famous Van Halen-style hammer-on-pull-off-and-poke technique. This requires incredible concentration and more practice than I care to think about in order to perfect on the guitar. On the synth, just switch from poly to mono or solo mode (not the similarly titled MIDI modes, but the instrument's single note polyphony mode). You'll notice just banging away on three related notes that, timed correctly, you can almost get this effect in real time. To get a better simulation, slow your tempo down and enter a thoughtful sequence at your leisure, hopefully including some melodic content; a sense of building to some destination, not just digital diarrhea. Start slow and increase speed. Then resume original tempo, quantize if necessary and embed commands that switch between monophonic and polyphonic modes where needed. This flurry of notes, played back in mono, can kill at a distance of 30 paces. Try a program change to a more "trebly" patch midway, and the carnage will be truly horrible to behold. Add a strategically-placed, full-octave pitch-bend and . . . Ah. Words fail.

### Runs

ON THE SUBJECT of speed, no one with a sequencer who has ever aspired to be John McLaughlin will be able to resist the temptation to insert a nice, 32nd-note lead run somewhere, sometime. If you've got any chops at all, the preferred method for doing this is to simply slow tempo and let 'er rip. If (like me) you're chopless when it comes to black and white thingies, use step entry. If you've got piano roll, select a 32nd-note unit size and just paint the screen.

World War I aviators had a dictum: if it looks good, it flies good. Oddly enough, I've found the same holds true painting a screen full of notes. Symmetry, spatial relationship and other overall design aesthetics offer at least the basis for a good ride. After it's in, you can always tweak to  
MT FEBRUARY 1989

hold a note for bending, add some 64ths as above, etc. The key to making this work within the context of your composition is finding the right hole for a fast run to fill. I suggest looking for some event that calls for a dramatic or frantic lead-up, deleting the preceding two bars or so, and re-painting them with hot licks.

If you have a DX-series machine, you have access to high, low and "kon," or all-note bender settings. These were made for guitar simulation. With the bender set to "kon," grab hold of D6, bend it up to E6, hit E6, then hit A6. Enter at slow tempo and build the necessary speed in the sequencer. This is a dead ringer for one of the deadliest licks in rock, going back to Chuck Berry and probably beyond. (There may be a guitarist who doesn't use it, but, again, not from this planet.) To practice getting the right feel, and as a variation, try just the first two, bending D6 to E6, striking E6. It can really squawk, and stuttering this into all sorts of clipped varieties can be very expressive.

Setting the pitch-bend control to affect the high or low note works best clean, and we'll work with this in the next piece. But it has at least one killer application used with dirty, distorted sounds. With the bender set to one whole tone, bend a whole-tone interval until it closes with its companion. The god-awful but controlled beating is exactly that produced by bending two strings into unison on a real guitar. (This is, by the way, the sort of beating you get if you violate my earlier rule about detuning your patch, only there it's god-awful and uncontrolled.)

### Switching Sounds

A FINAL WORD about patch changes: During your original lead track entry, try changing the patches manually, following whatever real-time feel you're going for. Later you can go back in and reposition the notes and patch changes you missed in doing this, make phrase-length changes, and, most importantly, do precise, step-entry changes at the single note level. MIDI will be happy to give you a new patch for every note in the lead. Again, used tastefully, the right changes at the right time will accurately simulate the guitarist's note-by-note emphasis.

Currently, as I said before, the guitar is still "safe" from electronic simulation. Strings may have suffered, as well as mallets, wind instruments, etc., but the guitar still eludes the synthesist. The above techniques in no way put this challenge to bed, not even in the metal department, where distortion gives us a tremendous opening and wide latitude for simulation. But, these will hopefully form part of the basis for a body of expanding techniques to eventually put good metal work in the hands of techno-nerds. When you invent some more, send them along. ■

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# Taking a Chance



**This month we take a brief look at Peter Kaye, a studio programmer who decided to stretch his skills (and his wallet) a little bit further . . . and is earning a reputation for scoring in the bargain. Interview by Deborah Parisi.**

**S**UNDANCE INSTITUTE, Robert Redford's retreat for aspiring artists, has become a tradition for Peter Kaye, where he spends a few weeks each summer programming the Fairlight for the film composer fellows. Prior to this year's session, he'd been spending 20-hour days in the studio, writing his own music to

accompany MTV's 10-second films. As this is being written (mid-December), he's just completed another batch.

Scoring is a relatively new endeavor for the guitar player turned songwriter turned Fairlight programmer, and in fact arose partly out of his purchase of the instrument. "I always liked the sound of Fairlight," he says.

"They were those mysterious things creating those incredible sounding records by cool people like Peter Gabriel. For a time, I really believed in the magic that I could do if only I had a Fairlight. But after working with one in the studio a few times, I realized that the only way you could really use and know one was to own one. That was a huge undertaking; I knew I'd have to make it a major part of my life to get it to pay off."

Kaye could resist it no more once the Series III was announced. "I walked in, plunked my money down and said, 'Gimme one of them thar thangs.' Took it home, set it up in the bedroom, and sat there for three

months without coming out. It was a real creative period. It's grown a lot over the past two years, and I've had the chance to grow with it. It's been a real interesting relationship."

That relationship has had an instrumental effect on Peter's career path, leading him towards scoring to picture. "A guy who owned the studio I worked at a lot told some people, 'I know a guy who has a Fairlight and makes great sounds.' As a result, they called me up and asked me if I'd score this horror film. 'Sure!'"

"The film turned out to be *Death Spa*, an exercise in terror. Horror films allow a certain amount of dramatic insanity, which turned out to be a lot of fun. The day I got that job, I realized that I didn't know the first thing about it. I could write music, but how do you sync up? I walked into Personal Support Computers and said, 'There's got to be a program,' and they had just gotten in an early copy of Cue. I bought it and sat down and started putting in SMPTE hits and figuring out tempos, and developed a system that works for me.

"I still use Cue, even though I think that Auricle is probably more musical in some ways. But I understand Cue instinctively, and I don't use a lot of tempo changes in my music, which is what Auricle's better at. I tend to just use a steady tempo and 'freeplay' stuff over it. So it works."

Peter is pleased with the flexibility the Fairlight offers. Although he uses an array of other gear, he's more than content with the sampling capabilities of the instrument. "What other sampler would I want?" he asks. "The Fairlight is a great killer sampler - it's the best there is as far as I'm concerned. The Akai S900 looks like a lot of fun, but . . . well, once you get accustomed to the realities of the Fairlight, I know this sounds elitist, but it's hard to go back to the other stuff. Plus," he laughs, "I have too much money invested in this to spend any more on sampling gear. That would be financially questionable."

Buying a Fairlight does require more than a minor investment, of course, and Peter's well aware of the trade-offs involved. "I just had to make a commitment of another \$20,000 to upgrade, to put in much more storage and faster processing, and it was a hard decision. I was scared - I was really scared about it, because that money could've gone for a Mac II and an EIII and all the software I could ever want. But when it comes down to it, I feel that the Fairlight is better sounding, and I think it's still about a year before the software companies really have it together in terms of writing programs to interface between the samplers and the computer."

Lest this become too much of an advertisement, Peter points out that he does need a lot of modules to create the kinds of sounds he needs. "As great as it is, it is not a synthesizer. You can do synthesis, as it were, MT FEBRUARY 1989

but it's very hard to draw what you need out of it. And you just waste your time trying to sample synth sounds for the most part. You just can't tweak the samples the same way you can the synth itself, and you don't have sounds working together in a relational way, like filter openings and closings. If you want synthesizers, you have to go out and get the synthesizers."

And then there are a few more odds and ends he had to pick up. "I never really wanted a home studio, I've seen everyone get bogged down in that, but I got one against my own wishes. Now I have a four-track, a 1/2" Otari, and I can lock it up to video, write the music, and deliver TV shows right from my bedroom. Of course, the tape machine wasn't all of it - I have three

different mixers, and dbx gates and compressors, and of course you can never have enough reverbs and effects - so it's still a never-ending venture."

Investing the money (close to \$100,000 in the Fairlight alone) has paid off for Peter, leading to jobs which included writing the theme music and scoring part of *Born in East LA* and scoring a number of *The New Monkees* episodes, as well as the MTV spots.

Chatting with Peter Kaye brings into question the challenge to every one of us: at some point you have to be willing to put your ass on the line - creatively, financially, physically - if you ever expect to realize your dreams. "My motto has always been, 'Do it big or go home!'" Peter laughs. Maybe now's the time for you . . . ■

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# MIDImouse Music Mousterpiece

**This startling new program for the Atari ST turns your computer and mouse into a three-dimensional MIDI controller.** *Review by Chris Many.*

**E**VERY ONCE IN a while, somebody turns a computer on its side, shakes it a little bit, throws it up in the air to do a couple of twists, and when it finally falls back to earth, a unique application has been born. Sometimes this application revolutionizes computing (witness spreadsheets or desktop publishing, for example); many times it's a new wrinkle on an old idea (à la the thousand-and-one Pac Man games); sometimes it's just a fun novelty. There are plenty of shades of gray in between, and Mousterpiece falls somewhere in this unconventional landscape, defying comparisons.

The packaging calls it "a MIDI controller and compositional tool for the Atari ST," and this will suffice as an accurate capsule description. However, perhaps the best thing about this product is that it forces you to rethink musical ideas and performance, provides a new method for musical experimentation, and creates a new interaction between musicians and their computers. Whether or not this inventive piece of software is more than a musical toy is really left up to the end user. It certainly can be viewed that way by some, but there will always be people who take the most unassuming "toys" and create remarkable art.

## Making Music

MUSIC IS GENERATED by moving the mouse across the screen (hence "Mousterpiece"), thus turning your ST into your prime MIDI controller. The screen is a software representation of a cube with three dimensions to work within - kind of a 3-D MIDI controlling map. These maps are completely editable, but there are several maps included with the package to get you started.

The introduction to the manual is littered with phrases like "multi-dimensional matrix" and "Z-axis glide speed" so it may be a bit rough getting started, but once you wade through all this and boot the program, it gets easy. The disk is copy protected, so it requires the original Key disk to function. If your ST's drive speed is off (as mine was), the protection scheme may not recognize that the original disk is in the drive, preventing

you from using it at all. The copy protection soap box already has many voices debating (still) the pros and cons, but to use a method that might prevent valid consumers from using a product isn't really fair, when other methods (like keyword validation or cartridge key) work as well if not better.

The initial screen boots up with a series of concentric squares, which denote the Z-axis (giving the illusion of moving in and out of the cube - very nicely done) and a vertical and horizontal line, the X and Y axes. By pressing on the Shift key, and moving the mouse around the screen, music begins emanating from your synth(s). If you're using a percussive sound, like an electric piano, you'll hear something like very fast scales moving in opposite directions as you move the cursor. By pressing down the right mouse button, you can change the position of the Z-axis, which is initially mapped to raise the pitch, pressing the left button causes it to descend. You can have a lot of fun playing around with this introductory map, especially if you use long sustain and decay-type sounds.

Each of 61 points on each axis is capable of being explicitly programmed to execute four MIDI events, including notes and their accompanying velocities and MIDI channels, as well as things like pitch-bend, aftertouch, modulation, etc., or any combination one can think up. Consequently, a total of 12 commands for every location on the screen can be executed at once (three axes times four commands per axis). All this information is stored within the "map," so the map you choose to use dictates the type of music you'll generate as you scoot around the screen. A map containing the pentatonic scale sounds quite different than a minor map, for instance. You can load in up to 10 maps on a 1040 (five on a 520), all of which are stored in RAM and accessible at the press of a key.

## Sequencing

MOUSTERPIECE ALSO CONTAINS two on-board sequencers, but because they are of an extremely rudimentary nature, they barely suffice for their intended purpose.

One is basically a recorder with a limit of 2000 notes that will record in real time and play back your moves; the other is a step-time sequencer. This allows you to input, or play in if you're using a MIDI keyboard, up to 10 monophonic sequences of up to 200 notes. The purpose of having such a simple sequencer is obviously not to replace a standard sequencing program, but to help you generate some compositional ideas, since you can play along with the sequencer. You can link sequences in the traditional drum machine-style method, and you can also drive your drum machine from the sequencer by activating MIDI start/stop and clocks.

One drawback, however, is that the recorder and sequencer will not operate at the same time. This doesn't mean you can't use the recorder for recording while the sequencer is running, but when you hit playback, only the recording will play back - not the step-entered sequences. It seems to me that if you're using the sequencing portion of the package to generate compositional ideas, you should be able to access those music passages that helped you generate the music. Although Mousterpiece is designed as a live MIDI controller that also has some basic sequencing features, it's missed the boat on this point.

## Real-time Controls

SEVERAL KEYS ON the ST keyboard are programmable to modify a variety of your synths' performances in real time. You can set most controller information to specified MIDI channels, as well as 10 patch changes to align to your ST's key pad numbers 0-9. Another function, called Snap Zoom allows you to program the bottom row of keys (z, x, c, v, b, n, m) to pre-determined Z-axis locations. In short, Mousterpiece enhances the ST's ability to be used as a real-time MIDI controller.

Programming maps, although not the least complicated task in the world, does provide a lot of flexibility. As mentioned earlier, each point on an axis is capable of generating four MIDI events, and when you start multiplying the number of graph points available ( $61^3$ , or 226,981) you'll find that you can get overwhelmed easily.

MT FEBRUARY 1989



File	Mode	Functions	I/O Ops	Tools
Lydiana				Name Map
point 12				Name Global
X-1	X-2	X-3	X-4	Copy
key vel chn	key vel chn	key vel chn	key vel chn	Scale/Fill
D#3 87 1	Aft 89 16	E2 113 1	A#2 11 1	Replicate
Br# 87 14	F3 85 15	C#2 80 1	C#2 11 1	Transpose
F3 87 12	G3 97 14	F#2 114 1	Vol 8 8	Invert
F#3 74 12	Ped 97 6	Bnd 80 1	F#2 12 1	Retrograde
Br# 98 3	A3 104 2	B2 120 1	G2 80 7	Create
G#3 126 5	Sos 80 8	Aft 110 1	Aft 112 1	User Files
A3 125 7	A3 107 3	D2 80 1	D#2 80 3	
PtT 124 7	E3 127 5	Mod 80 1	C2 124 12	
B3 125 7	Prg 117 5	Z 127 1	Z 80 11	
Usr 27 8	A4 117 9	D#3 80 1	Prg 123 11	
C#4 86 3	Bnd 80 7	Prg 127 1	A3 80 15	
Off 75 4	C4 23 9	E3 80 1	A#3 127 9	
D#4 98 2	F4 80 3	C#3 112 1	C#3 80 9	
E4 75 1	Bnd 80 5	F#3 80 1	D3 84 9	
Usr 75 1	Usr 80 1	F3 80 1	F#3 80 1	
F#4 75 1	A4 80 1	Prg 80 1	G3 80 1	
G4 75 1	A4 80 1	A#3 80 1	Prg 80 1	

**Mousterone**

.Mouster  6.SONICFLITE

.Lydiana  \* Menu On \*

.ET Call

4.MacroTool  9.Ionionics

5.Crystals  10.Aeolionia

Copy      Insert

Swap      Delete

Cancel

Maps can be created and edited on this page.

Mousterpiece contains some editing features that make map programming a little more confrontable, though. A copy function let's you copy portions of the map to different axes. A "Scale/Fill" feature allows you to fill a specified area within the map (referred to as a row) with any value; either the same value or a scale between two numbers. "Replicate" makes it easier to build scales, basically copying a group of notes you select as a scale and replicating them up an octave over an area within the map. Other features include transposition of areas within the map and Inversion and

Retrograde functions, often used by serial composers.

If you're familiar with MIDI data protocol, you can also create your own user files. These are basically user-defined macros that will execute a series of MIDI commands that have been programmed. These macros can then be inserted within your map just as other MIDI events, and whenever your mouse encounters the slot you've mapped, it will send all the bytes in that user file. This feature is really not for the uninitiated, but for those MIDI-hackers out there, it will allow you to get down to the byte level.

Other features include bank editing,

loading and saving maps as well as printing out a hard copy of them. Special data types (i.e., SysEx data) are also supported. You can mark (outline) special areas on the screen for use in live performance.

### Conclusion

SO, IS THIS a valid compositional tool or simply another MIDI toy? You can generate musical ideas using Mousterpiece, often of a new and unusual persuasion. You probably won't find a lot of new melodies springing to mind after a session with it, but who's to say what some ingenious mapping and enterprising mouse-virtuosity will come up with. If it opens your musical ears into another dimension, it's a valid tool. As a live performance MIDI controller, Mousterpiece certainly takes the ST in some new directions; and the 3-D, multi-dimensional matrix mumbo-jumbo translates surprisingly well to a two-dimensional computer screen.

To be honest, most of the music I was able to come up with using this product was eerie; not your run-of-the-mill pop tune or classic orchestral technique. But it was different, I'll give it that. Other algorithmic composition programs are better suited for getting music ideas that are more usable in a traditional sense, but as a new form of MIDI controller, Mousterpiece is unique. ■

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**Chronix**

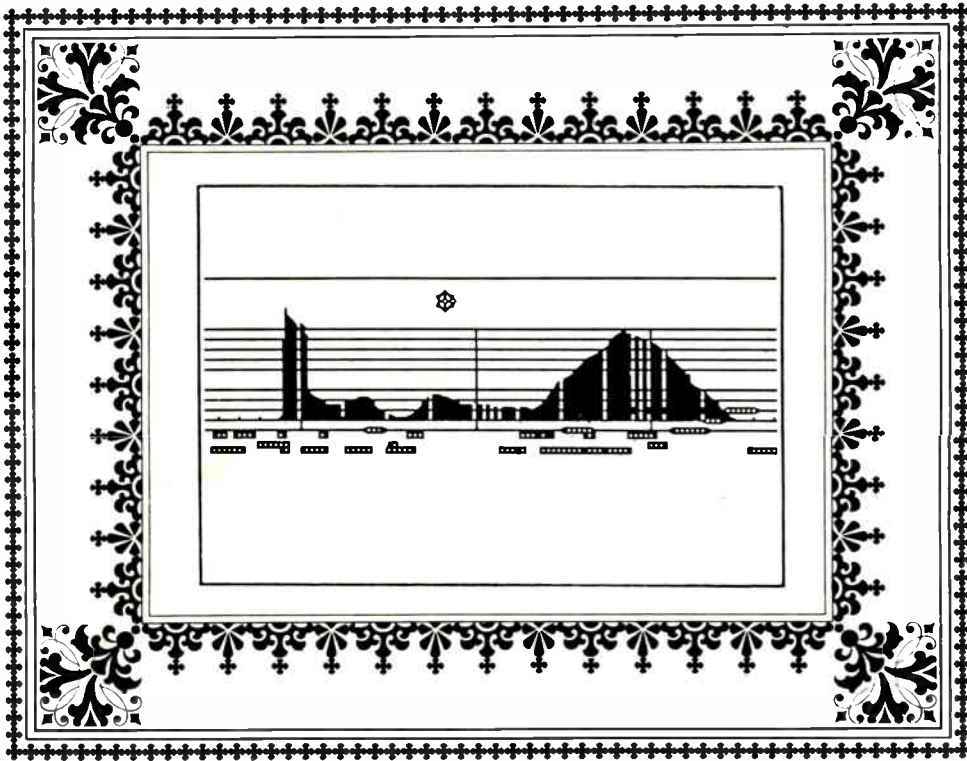
play mode      sequence 9      62

Bend: 52    Mod: 0    Aft: 12  
Brth: 38    Vol: 127    Pan: Right  
Foot: 12    Portamento: 20  
Port: up    Sus: up    Sos: up

Mousterpiece (tm) MIDImouse Music

Mousterpiece's three-dimensional controller screen.  
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*"What life is like... the stream that I am trying to convey."  
- Virginia Woolf*

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# Oberheim Systemizer



Photography Rose Rounseville

**The first in the company's new line of MIDI Performance Effects, this little MIDI box can let any controller tame even the wildest MIDI systems.** *Review by Robert Rich.*

**M**IDI HAS BEEN a mixed blessing for the modern musician. It has changed the way we make music, and it has changed the way our music sounds. In my opinion, not all of these changes have been improvements, however. MIDI began as a way to connect lots of keyboards together, and oddly enough this ability has led to some of its worst abuses.

I speak of none other than the "MIDI Monster Note," the sound created by an entire stack of MIDI synths tracking in unison. The MIDI Monster Note sounds huge and fat, but tends to be completely unresponsive to performance expressions. It sounds big, but lifeless. This static quality usually occurs when the dynamics of each instrument compete, with individual

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dynamics getting lost in a wash of sound.

The MIDI Monster Note arises out of laziness. It takes a lot of time to tweak the parameters of every synth in a stack so that each sound makes a dynamic contribution to the whole. Moreover, many master keyboards do not have the flexibility needed to control a big stack of synths with any subtlety. And of course once you have tweaked several performance setups to perfection, just try to switch between them in concert!

To solve these problems several companies have released MIDI mapping devices which can create keyboard splits, redefine controllers, store SysEx data, and otherwise help augment the abilities of an overworked master keyboard. These mappers are often expensive, and usually rather

frightening for the MIDI novice. It appears that Oberheim wants to change all that with their new line of Perf/x MIDI performance effects, the first of which is the Systemizer.

The Systemizer seems to solve most of the basic problems of setting up complex MIDI performances without getting bogged down with esoteric and rarely used features. Despite a rather uninformative front panel display, it is much easier to program than many of its mapping cousins, and its capabilities go pretty deep. Generally speaking, the Systemizer takes a single input from your master controller and splits it off to different modules in your setup, adding some programmable nuances along the way. These nuances include patch mapping, keyboard splits and instrument

# A PICTURE-PE



Clearly, Kawai has developed everything you need to create bright, sensational sound on stage, in the studio or at home. Our line includes not only keyboards, but synthesizers, sequencers, mixers, a patch bay, monitor speakers and drum machines. Of course, each model is compatible with the others or any MIDI equipment you may have. All together, they produce show-stopping harmony that'll satisfy the soul. Here's the story:

## M8000 MASTER MIDI KEYBOARD

You're the boss with this 88-keyboard controller. It gives you affordable, flexible control of your MIDI setup. You get four independent busses with independent MIDI channels, patch programmability, real-time mixing, and more. Three velocity curves plus velocity and after-touch sensitivity sliders let you set the keyboard response to suit your taste.

Arpeggiation and delay functions can control any or all of the instruments connected to the M8000. Spillover, Zone, Transposition and Detune add sophistication and subtlety as you like it. Program your setup into any of 100 memory locations for instant recall. Another option: Drive a drum machine from the front panel.

## K1 DIGITAL SYNTHESIZER K1m SYNTHESIZER MODULE

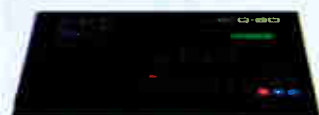
Whether you're a beginner or an experienced pro, the easy-to-use K1 multi-timbral synthesizer will reward your ears with amazingly natural sound. With 256 digital waveforms that include PCM samplers of actual strings, vocals, drums, guitars and many more, you can call up an inspiring range of dynamic sound, fully programmable at your fingertips. In Multi-mode, create up to eight sounds into a combination patch that includes splits, layers and multiple MIDI channels. Combine this outstanding capability with the least expensive velocity and after-touch keyboard on the market, and you'll understand why the K1 could have a starring role in your next performance.

## K5 DIGITAL SYNTHESIZER K5m SYNTHESIZER MODULE

Many professionals sing its praises. And rightly so. The K5 with its additive synthesis design creates a brilliant, distinctive sound that sings above other instruments. With the 16-voice K5, up to 15 different instruments can be stacked, split, or divided across independent MIDI channels — multi-timbral specs that no other instrument can match. Add four assignable outputs, dynamic voice allocation, a weighted action keyboard with After-Touch, Attack and Release Velocity. Now you'll get an idea of the awesome power of the K5.

K5 and K1 owners have free access to Kawai's large sound library. Contact Kawai for details.

# PERFECT SETUP.



## Q-80 MIDI SEQUENCER

This is one sequencer that's ready to jam as soon as you are, thanks to its Static RAM design. The Q-80 has been pulling rave reviews for its professional prowess, especially at its low price. Compare its features and you'll see why:

- 26,000 notes of internal memory, 10 Songs, 10 Data Dump files.
  - 3.5" disc drive with 150,000 note capacity per disc.
  - Song Organization: 32 Tracks, one MIDI channel per track. Independent tracklooping, Tempo Track, 100 Motifs (melodic fragments that can be used in any track, similar to drum machine patterns) Chain mode plays songs in succession.
  - Real and Step Time Recording with Punch In/Out.
  - Bar and Event Editing.
- Need we say more?

## MAV-8 MIDI PATCH BAY

The surprisingly affordable four-in, eight-out MIDI patch bay. MIDI assignments are easily made using the front panel sliders. A pair of jacks are also located on the front panel for easy access. Simply wonderful.

## K1r DIGITAL SYNTHESIZER MODULE

One dynamite package with the same explosive sound of the K1. The single space rack is designed for maestros with tight schedules. Same specs as the K1m including front panel sound programming.

## MX-8R MIXER

Our popular little eight channel keyboard mixer with 2 echo sends, input gain switches and XLR outputs. The MX-8R makes a roadworthy companion to any equipment rack.

## R-50e DIGITAL DRUM MACHINE

The rhythmic sounds that spell encore: a full set of electronic drums, ambient "room" drums, a eurostyle Click, Bass Guitars and Orchestra Hits. In addition, on-board effects are programmable for every note in every pattern. Preset patterns and a serious MIDI implementation make the R-50e the right drum module. Optional sound chips also expand the sonic possibilities. Let'er roll.

## KM-20 MINI MONITOR SPEAKERS

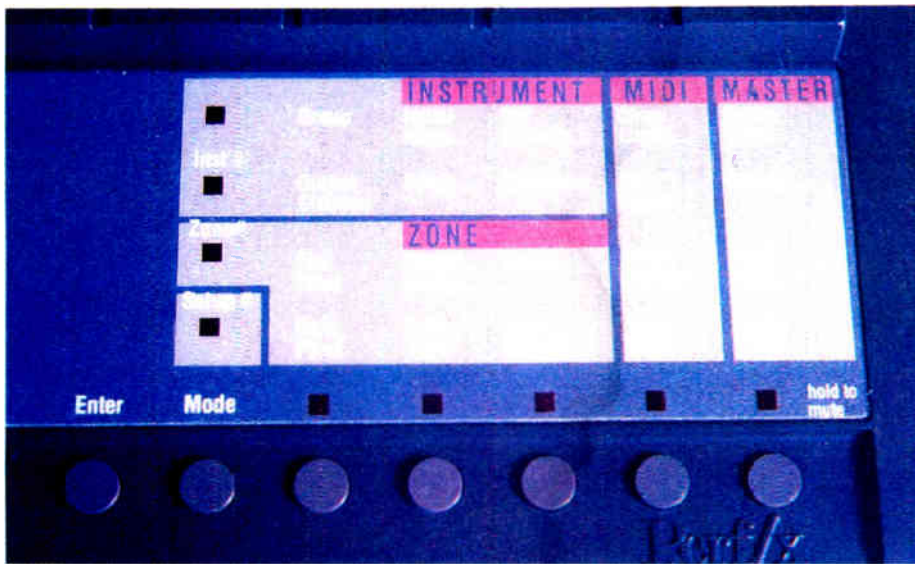
No question. These mini power blasters will punch sound out for small studios or near-field monitoring. They boast a 12cm speaker in a bass reflex enclosure plus a 20 watt power amp, two rear panel input jacks (one switchable high/low), a bass boost switch and threaded sockets for easy mounting in any setup. Now you're wired for high performance.

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► crossfading, volume settings, MIDI mode and controller changes, key transpose and more. Overall, the Systemizer seems to focus on the various methods of dynamically switching and crossfading between the various sound-makers in a system, which is exactly what it takes to add life to those boring Monster Notes.

The Systemizer comes in a little plastic box, about an inch thick and 9 inches wide. It gets its power from an external adaptor, destined to hog two spaces on your power strip. The back panel contains the adaptor jack and power switch, single MIDI In and Out jacks, and four (!) ¼" footswitch jacks. On the front panel you'll find a rather frugal two-character LED display, along with a row and column of LEDs which define a grid of 20 functions printed on the front panel. Nine buttons complete the user interface. Five of these access the five columns in the function grid, while another (labelled Mode) cycles through the four rows. An Enter button and a pair of increment/decrement buttons allow data entry.

### Into the Zone . . .

THE SYSTEMIZER'S CLEAR functional organization somewhat offsets the wimpy LED display. The front panel grid mirrors the Systemizer's internal hierarchy, which consists of functional blocks that should look familiar to anyone who has used one of Oberheim's Matrix synthesizers. The basic processing unit is the Zone, which roughly corresponds to a range of keys on the master keyboard. The Systemizer can define up to four Zones. Within each zone there are four Instruments, which represent single output channels of MIDI data. Basically, the Zone decides which notes it wants to chew on, and the Instruments define what it spits out. With each of the four Zones covering four different MIDI channels, the Systemizer can output on all 16 MIDI channels.

One of the four Zones does not handle incoming data. This fourth Zone is re-

served for sending setup data to modules that will not be played by the master keyboard. One might use this Zone for sending program changes to MIDI-controlled effects or to a second keyboard.

The other three Zones are arranged in ascending order up the master keyboard, with the split points definable for each one.

The higher Zones automatically shut off if the split point of the lower Zone is at the top of the keyboard range (G8). Sadly, Zones cannot overlap. Each Zone automatically starts one note higher than the split point of the previous Zone. For each Zone you can select a fixed or floating split point, but I found the floating split to be somewhat frustrating. A good floating split should guess where your left and right hands are playing, always a risky business, but the Systemizer's guesses seemed particularly dodgy (see sidebar for more).

The three main Zones each have six programmable functions. These functions are all designated on the front panel in the region labelled "Zone." Along with Split Point and Fix/Float, they include Zone Type, Assign Modes, Input Channel, and Keyboard. Zone Types include: Layered, where all instruments track the same notes; Velocity Switch, where soft notes play instruments 1&2 and hard notes play instruments 3&4; Controller Switch, where voices switch at the halfway point of a pre-defined controller; and four kinds of Crossfade - Positional, Velocity, Aftertouch, and Controller. (Note that many of these functions require velocity sensitive synths.) The function called Assign Modes lets you determine how the instruments in each Zone will play. As well as letting you select among four monophonic and polyphonic note assignment modes, this function lets you define various effects using groups of instruments. For example, one of these Group Types lets you jump from instrument to instrument with each note played on the keyboard. The Input Channel function lets you select the MIDI channel to which a Zone will respond.

Finally, the Keyboard function lets you customize the velocity and pressure response of each Zone.

### Controlling the Slaves

WITHIN EACH ZONE, four Instruments provide control over the particular parameters of each slave device. Like the Zone, each Instrument has six programmable functions. These include Output Channel, Patch, Transpose, Group, Initial Messages and Controller Enables. The Systemizer expects each slave in your setup to have its own MIDI channel, which corresponds to the Output Channel defined in the Instrument section. Patch numbers stored in the Patch function are sent whenever a new Setup is called up on the Systemizer. The Transpose function lets you raise or lower the pitch of a slave within a  $\pm 50$  semitone range. The Group function decides which, if any, instruments will be affected by the Zone Group Types. Initial Messages include Bank Select, MIDI Volume settings, Fine Tune, Bend Range, and MIDI mode for each slave. Controller Enables lets you decide which controllers you want to use on each slave.

The Systemizer's two other functional blocks deal more with controlling itself. Briefly, the MIDI section defines what the Systemizer is going to pay attention to. After all, you have to change the patches on the Systemizer before the Systemizer can change the patches on your slaves.

The Master section deals with memory management and pedal control. I already mentioned the four pedal jacks on the back of the box; along with these four internal footswitches, the Systemizer can also respond to four more over MIDI. These pedals can be programmed to perform some of the functions definable from the front panel. Just hold down the pedal, and perform the edit that you would like the pedal to perform when depressed. The Systemizer will then store these changes with each Setup. This allows for quick Setup changes in performance. Actually programming these pedals turns out to be a bit more confusing than this description, but it could be worse.

One nifty addition is an Auto Edit feature, which will randomize whatever functions you are currently editing, depending upon where in the hierarchy you are when you press the button. A more useful addition is the panic button feature which sends All Notes Off, Sustain Pedal Off and 128 individual Notes Off on all channels.

Oh, and did I mention that there are 32 internal Setup memories, which can be expanded with an external card? The manual says little about the nature of this card, but luckily all memory can be backed up to a computer. Speaking of the manual, it's quite good, with a minimum of "gee whiz" and lots of useful information,

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# FLOATING A SPLIT

Floating split points are a pretty rare commodity in keyboards and keyboard controllers, and the few that are out there use different sets of rules. To move a split point around, you have to make some pretty heavy guesses about how a person plays, and how they keep their left and right hands separated during a comp or a run. Of course, every individual is going to have a different set of personal "rules" - maybe even from song to song.

Oberheim's logic works like this: the split point starts off where originally you set it. When either hand comes within a perfect fifth of the split point, the split automatically moves to that key. If the next note lands within a fifth, it then moves to that key, and so forth (in other words, your hands sort of magnetically attract the split point, and it sticks with you as long as you stay within a fifth of it). If a key is not played within a fifth of either side of the split point for 1.3 seconds, it then returns to its original setting.

Apparently, the concept of making those parameters user-adjustable were discussed at one point inside Oberheim, but they were left preset to cut down on confusion and further taxing of the limited user interface. Knowing what those preset rules are in the first place should, however, help you alter your split point and playing style to make it work for you.

Chris Meyer

including a summary of all display abbreviations (of which there are *many*) and a fairly complete MIDI implementation listing.

## Conclusion

THE SYSTEMIZER IS powerful, inexpensive, and fairly easy to comprehend. It directly and elegantly addresses a few of the basic problems of large MIDI stacks. I especially like its simple patch mapping and the dynamic crossfading between different synthesizers. I do have some minor complaints, though. First, it does not respond to polyphonic pressure and second, I would like to see overlapping Zones and a better Floating Split. Most of all, the Systemizer would benefit from a good backlit LCD display. These are small complaints, though, considering the price and usefulness of this little box.

If the Systemizer is any indication, Oberheim's new Perf/x line should be a winner. MIDI processors like these may not make any sounds, but they can help squeeze some expression out of the noisemakers you already own. ■

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<p style="text-align: center;"><b>ESQ-1-ESQ-M-SQ:80</b></p> <p style="text-align: center;">80 voice E²PROM cartridges fully loaded with voices</p> <p>VC1 ESQ                  VC2 ESQ                  VC3 ESQ</p> <p style="text-align: right;"><b>62<sup>95</sup> each</b></p>	<p style="text-align: center;"><b>D50-D550</b></p> <p style="text-align: center;">64 voice RAM card with 32 voices</p> <p>VC1 D50                  VC2 D50                  VC3 D50 (Keith Emerson card)                  VC4 D50 (Jonathan Cain card)                  VCX D50 blank RAM also works in D10-D20-D110</p> <p style="text-align: right;"><b>85<sup>00</sup> each</b></p>
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# ON CIRCUIT

## We•Be

### San Francisco, California



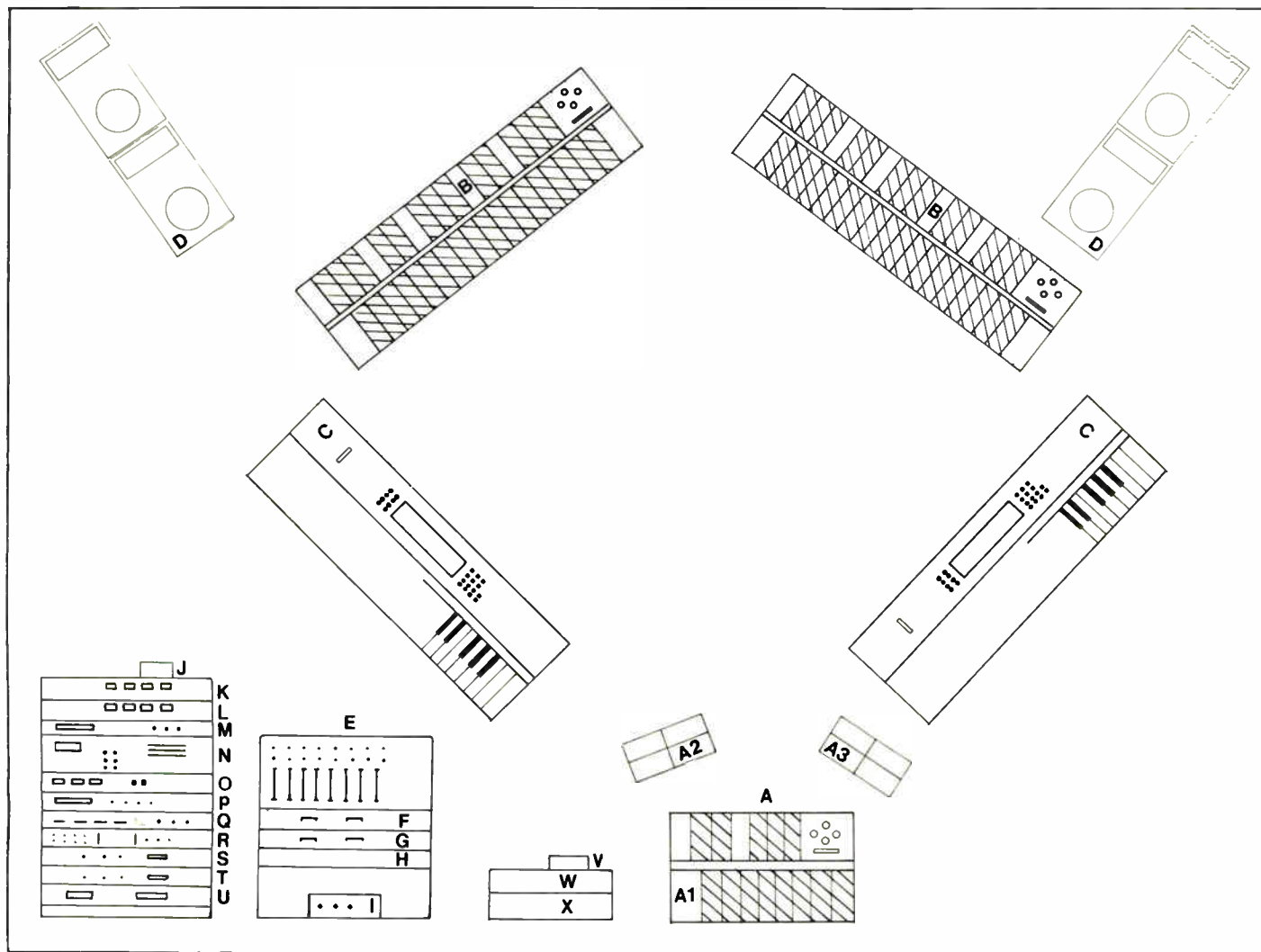
In this month's edition of On Circuit, MT takes a look at an all-female marimba/pop band that has gone to great lengths to establish a live-oriented MIDI setup that works with their "TechnoRoots" playing style. If your band has some live tricks that you'd like to share with our readers, write for a copy of our guidelines to: Music Editor, Music Technology, 22024 Lassen Street, Suite 118, Chatsworth, CA 91311. *Report by Dan Rue.*

I HAVE TO admit it was one of the stranger starts into technology that I had ever heard. The members of We•Be (Tina Blaine, Patti Clemens, Candice Pacheco, and Sholanda Smith), who previously called themselves The Present, began their musical careers together in a seven-piece Shona-style acoustic marimba ensemble. Their music was originally structured after that of Dumir Maraire, who brought Shona music over from Zimbabwe, until they decided that they wanted to do

more pop-oriented stuff. At the '87 Winter NAMM show, they first encountered electronic marimbas, namely the KAT MIDI Controller and the Simmons Silicon Mallet. They realized that these electronic controller pads would prove to be the impetus in their future direction of pop music, but they also felt that these particular controller pads were not really suited to the fast sticking of the Shona technique - the KAT was too "mushy" and the Silicon Mallet's pads were mounted

on plywood, which gave too much flexibility. So they decided to build their own controllers, which they call "Turtles," from scratch.

Patti Clemens of We•Be explained the concept behind it all: "We wanted a really visual thing. We wanted a big instrument, so people could really see what we were playing." In the beginning, they considered buying either the KAT or the Silicon Mallet, gutting out the insides for the brains, and just making their own trigger-pads. But they felt







that these products were still too bug-ridden two years ago. After some extensive research, the band decided they were going to have to get a board designed specifically for their purposes. They met up with an engineer from Silicon Valley who was so excited by the whole project that he and a friend designed a brain-board for them for free. The band members cued the engineers on the features they wanted, and helped out with a lot of the hand-wiring. After two circuit boards and several software revisions, the brains of the beast were up and running.

For the pads, they finally settled on 1/4" neoprene rubber, the stuff that mousepads are made of, and they mounted the neoprene on masonite because it was much more dense than the Silicon Mallet's plywood base. They designed the encasement with a completely open architecture for future expansion, and to enhance the visual aspect of their

homemade marimbas, they used purple neoprene pads, and made the housing out of plexiglass, with purple lights inside to make the instruments "glow on stage." Aside from an occasional piezo falling off, and a bit of cross-triggering, they've had relatively few problems, and these "bugs" in their instruments have largely been remedied. The cost of making their own instruments wound up being quite economical - about \$1000 for each unit.

The setup is extensive (see layout chart), so We•Be does a lot of MIDI prep before they perform. They use two MX8's and two Yamaha MIDI mergers, with the marimbas through one Yamaha and the keyboards through the other, and then send those two Thru's and a merge to the MX8. The main reason the band has chosen this sort of setup is to allow for the flexibility of using the marimbas independently of the keyboards, or in conjunction with them.

For their synth setup, We•Be initially used two E-mu Emax keyboards, but recently sold them to be replaced by two Korg MI's, largely because of "the down time between songs due to loading disks." They also found the MI's separate MIDI channels with enable/disable functions in the combination mode to be beneficial in allowing the marimbas to change programs independently of the synths, without having to make changes from the MI's themselves. They still use an Emax rack unit to play samples of the acoustic marimbas they created for their original seven-piece ensemble.

For sub-mixing, they use a Hill 16-channel Multimix for its sound quality, as well as its portability. The sound is run through a Microverb, a MIDIverb, and a Roland SDE1000 for effects, and out to four PAS speakers for monitoring. They have two soundpersons, one for monitor and one for the house, and they usually send the house four direct lines for drums, four more for vocals, one line for the MIDI Bass, and a submix of the synths and marimbas. The Kawai eight-channel mixer is used for the drums so that they can split the signal for separate house and monitor mixes. While they admit that using a splitter box would be simpler, this setup has worked pretty well.

The members of We•Be have really shied away from using sequencers while playing live, stating simply that they "do not see any advantage of using sequencers live." They do, however, find the sequencer useful as a composing tool, particularly while working out vocals.

So what's next for We•Be? Well, they've recently had 10 more circuit boards "burnt," so they're planning on building more instruments. There's talk of trigger body-suits and a plexiglass bass instrument that you'd play by striking it. And Patti had another idea: "Eventually we would love to just give everyone in the audience a trigger, so they could play along." Now that's audience participation . . . ■

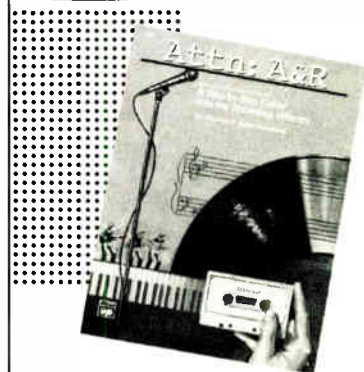
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- A. "Turtles"
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  - 2. Module 2
- B. (2) Electronic marimbas (Master Controllers)
- C. (2) Korg MI's
- D. (4) PAS speakers
- E. Hill Multimix
- F. Power supply
- G. dbx 160X Compressor/Limiter
- H. DigiTech DSP128
- I. Lexicon LXPI
- J. Alesis Microverb
- K. Roland D550
- L. Roland D550
- M. Yamaha TX81Z
- N. E-mu Emax SE
- O. Digital Music Corp. MX8 MIDI Patchbay
- P. Digital Music Corp. MX8 MIDI Patchbay
- Q. Alesis MIDIverb II
- R. Roland SDE1000 Digital Delay
- S. Aphex Aural Exciter Type "C"
- T. 360 Systems' MIDI Bass
- U. (2) Yamaha YMM2 MIDI Merge Boxes
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- W. Kawai MX8R Mixer
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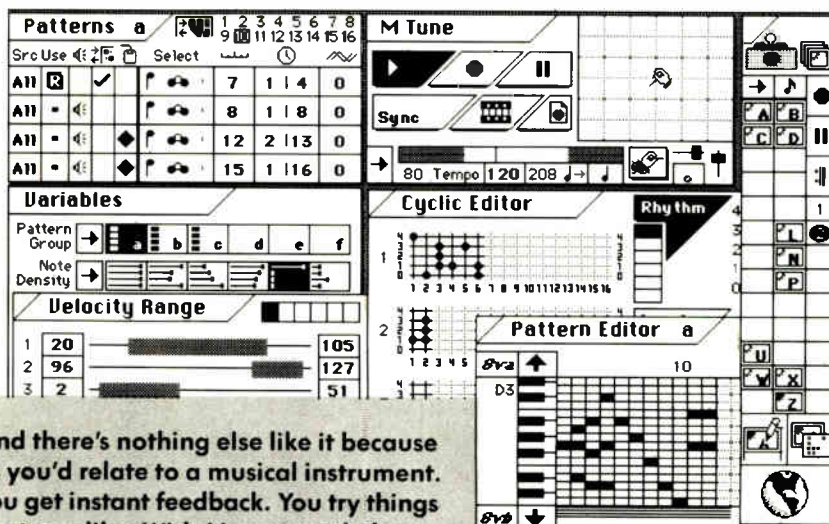
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# Towards A Global Music



Illustration Abner Darmoff

World Music, incorporating the rhythmic and melodic principles from cultures around the world, has been slowly invading the western scene for over 20 years. Terry Riley, Mike Oldfield, Eberhard Schoener, Michael William Gilbert and David Gilden discuss the ways and the means of adding yet another element: technology. *Interviews by John Diliberto.*

*"I want to be as newborn, knowing nothing, absolutely nothing, about Europe . . . to be almost primitive."*

- Paul Klee

*"All music is ethnic music. Good music carries the news of the day."*

- Steve Reich

A SENEGALESE DRUMMER beats out a hypnotic rhythm. Gamelan metalophones and gong-chimes sit next to an orchestra playing melodies based on the Balinese slendro scale. A Japanese shakuhachi cries out over a rock rhythm section. But none of these instruments are being played by native musicians – the Senegalese drummer is digitally looped by Jon Hassell, the gamelan orchestra and Balinese scales are synthesized by Wendy Carlos, and the Japanese

shakuhachi is on every other pop record trying for fast-food exotica.

Electronic music wasn't supposed to be like this. Synthesizers were going to open up a new world of sound, to realize futurist and author Marshall McLuhan's global village by giving everyone a new electronic language. Well, the global village is here, but electronics, if anything, have become a universal translator rather than a new language – a sometimes sleek, often clumsy probe into the primitive soul. ►

► Michael William Gilbert, a composer and synthesist from Massachusetts who has put out five recordings of his techno-world music since 1978, agrees. "People had this sense that new instrumentation would stimulate people to create things that were not drawing on tradition so much. But, in the sense that it would be the first time in history that they'd ever done that, it was rather unlikely."

Western musicians are borrowing from cultures around the globe, appropriating sounds, modes, scales, and rhythms, and manifesting them through electronic

technology. In many cases they're actually going to the source. Trumpeter Jon Hassell performed with the percussion ensemble Farafina, and re-contextualized their music into his own electronically processed world. Peter Gabriel plays with African singer Youssou N'dour, percussionist Manu Katche and Indian violinist L. Shankar.

But with this wealth of sonic materials and the technological means of appropriating them comes the danger of cheap cultural imperialism. Years ago, the German avant-rock group, Can, did a collection called the Ethnological Forgery Series, where they



Terry Riley

imitated various ethnic forms. Their fake-authentic renditions intentionally implied the danger of world music kitsch. Anyone remember raga-rock?

"It was funny during the '60s when you had rock bands with sitar sounds, supposedly showing an Indian influence," Gilbert recalls ruefully. "All they were doing was taking the sound of an Indian instrument and grafting it onto pretty straightforward western music. People have a tendency to confuse sounds and concepts, as if striking a gong or plucking one note on a koto makes your music Japanese."

Gilbert is among several composers who are bringing a new sensitivity to this techno-world music. Since his 1978 recording, *Moving Pictures*, Gilbert has always incorporated world music instruments and forms into his compositions without trying to duplicate them. "You can play wonderful Japanese music on a non-traditional instrument like a non-Japanese violin or synthesizer, if you take the time to understand what Japanese music is. What's more interesting about Indian music to me than the sound of a sitar is the way Indian performers improvise on scales."

**T**ERRY RILEY, THE father of minimalism, along with LaMonte Young, the grandfather, are western musicians who steeped themselves in the teachings of Indian music and religion. Both still study with Indian vocal master Pandit Pranath and for a time, Riley seemed like he wanted to become a Hindustani Indian. "When I first discovered Indian classical music I just wanted to go to India and stay there and live like an Indian," he recalls, sitting in the kitchen of his cabin on Shri Moonshine Ranch in Northern California. "Now I realize that's not really possible for me to do. I'm trying to make the best out of being a westerner who's very much in love with something from another

## IS IT OKAY TO STEAL?

WHEN WORLD MUSIC is discussed, the moral argument of whether or not it's okay to borrow from other cultures comes up – modern classical and "new music" composers in particular love to debate it. In the recent inaugural *Composer to Composer* conference in Telluride, Colorado (the first meeting of major composers in the US for 10 years, which we will be covering in greater detail in upcoming months), there was a panel discussion titled "Global Ethnicity and the European Orchestral Tradition" that touched on this very topic (among others).

One of the first topics to come up was how different cultures reacted to being borrowed from. Sometimes, it's positive. Vincent Plush, a major Australian composer, wrote a symphony called 'Pacifica,' in which one of the movements was meant as an eulogy for when the major earthquake in Mexico City wiped out the Plata Garibaldi, which was the main residence (culturally and physically) of Mariachi music. "That section had quite an effect on the Mexicans – that someone from a strange culture could have a response to their situation." However, other governments (most noticeably, Chile) have reacted in an extremely angry manner. He has had the same problem with a piece he wrote based on an aboriginal folk song: "They felt I was actually pilfering, and tampering, and dealing with a culture that wasn't mine to deal with."

On the home front, Kyle Gann (a composer in Chicago, and critic for the *Village Voice*), got interested in American Indian music in 1977. After lifting melodies straight up earlier, he's backed off somewhat. "What I'm trying to do now is extract the rhythms and melodic shapes from the music and incorporate them into my own language. I started having misgivings about using the material intact for a number of reasons; in short, I've come to believe that everything means something (one piece he borrowed ended up being a female fertility rite), and you can't lift material like this intact.

"However, the thing that makes me feel a little more comfortable about it, is that there are a number of young Navajos starting to use synthesizers, and drum machines, and various Western instruments (Kyle uses synthesizers

in conjunction with acoustic instruments himself), and most Indian tribes are extremely pragmatic about taking what they want from Western culture and leaving the rest. The fact that I see it going both ways makes me feel like there might be the chance for an interchange there."

Peter Sculthorpe, another well-respected Australian composer, had a different sort of story about "interchange" – namely, the time he wrote a piece of Balinese music: "I did my very best to get it right, but of course, not being Balinese, I didn't quite understand the style, and so I made some mistakes. And the Balinese were absolutely delighted. They copied my mistakes, and they asked why didn't I come back and compose more mistakes!"

When it comes to native Australian aboriginal music, Peter has taken Kyle's approach: "I rarely use actual melodies. I tend to listen to a melody, or transcribe a melody, and then sing it over to myself over a period of weeks, or a month or two, and it finally comes out as my own sort of melody.

"Although I do use many styles, I think my music is very recognizable. By the time I've put it through my little sieve, whether it's influenced by Japanese, Balinese, or aboriginal music, there's something that marks it as me." Another approach may be that of the late Canadian composer Claude Vivier, who attempted to invent a new Asian music – he tried to view Asia as if in a dream and composed music accordingly.

Renowned composer and critic Lou Harrison eventually commented that "there was a period in ethnomusicology when ethnomusicologists themselves felt that merely to study the culture was a defilement. But it has been determined, quite easily, that there is a constant interchange. Take Peter's making mistakes – all that means is that the Balinese like something different, and that they're constantly developing. All around the world people are interchanging materials. It's the hybrid that results that makes new vitalities."

As Vincent Plush perhaps best summed up, "Music is not a sacred, hands-off thing – it lives, and it grows, and it evolves." ■ Chris Meyer.

culture.”

Throughout the 1970s, Riley would perform long improvisations, creating trance-like cycles through tape delays and soloing on his Yamaha YC45D, an organ whose keys could waver a semitone either way if you wiggled your fingers on them. This allowed him to effect the bends and slurs of Indian music, especially vocal music, on the keyboard. Later he would switch to Prophet 5s tuned in just intonation, and sing curious, Dada-like ragas. Riley considers his mid-'70s album, *Shri Camel* (Columbia) to be a turning point in his music and his incorporation of Indian concerns. “It’s the first piece of mine that really starts using melody as one of the principal elements,” he observes. “If you can trace anything through my career, I think the increasing interest in melody has been the most prominent feature. Now I’m more interested than ever and I think that’s the influence of my teacher, Pandit Pranath, introducing me to all this incredible raga music, which is all focused around melody. And I was able to see that through melody itself, without anything else, you can achieve incredible power in music.”

Riley is working on new compositions now, especially for The Kronos Quartet. Composing with a Yamaha DX7 and Macintosh computer, his eastern inclinations are internalized into his music. He sees the danger inherent in grafting cultural elements together, but feels that the line separating kitsch from art is within the musician. “Until whatever you use as a musician has become true knowledge inside yourself, until it’s something you feel with some confidence, something you’re living with, it won’t have an effect when you use it,” he claims. “The only time I use a tamboura in a performance is when I sing Indian classical music. It would seem natural for me to use the tamboura and the organ, but that would be the same thing people were doing in the ‘60s, using things without a real knowledge of the effect of that instrument.”

Like most of the early minimalists, Riley was responsible for bringing eastern and African thought into western music. Philip Glass began forming his style while working with Ravi Shankar on the soundtrack to *Chappauqua*. Steve Reich studied Ghanaian drummers before he made his opus, *Drumming*. Riley just went into it a little deeper. “I’ve been criticized a lot for studying Indian classical music,” he says, “probably because people don’t understand what it is. Music is universal and the languages that we’re using didn’t only come from France or Germany. How many musicians are criticized for playing jazz? And yet jazz is essentially an African music that developed in America. What I would say is, white man can’t play the blues, but what white man can play when he understands the blues may be a very powerful music. That’s what I’m after. It’s not ‘Can I be Indian,’ but ‘What can I do in

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my music when I really understand what Indians do?’ ”

**D**AVID GILDEN FELT the same when he first heard the kora (a 21-stringed African harp-lute made from a calabash gourd). Although he’s a Brooklyn musician who plays keyboards, he took it up after attending a concert of kora music. “I taped the concert and would listen to it for the next year or so,” he recalls. “I kept listening to it and I thought, ‘This music is getting me high, it’s consciousness-raising.’ This was before the new age, in 1978, when there were no words for it.”

Gilden began mixing different cultures into his music, playing in the streets of Cambridge, Massachusetts. “I met other musicians in Harvard Square playing jigs and stuff and I’d adapt these pieces to the kora when I performed,” he recalls.

Gilden began introducing synthesizers into his kora music when he started recording. Using a PPG Wave 2.2 and other synthesizers, he mixed sampled and synthesized sounds along with his kora and kalimbas, orchestrating a rich, varied cassette called *Ancestral Voices* (Kora Productions) in 1986.

Every musician who looks beyond his culture must confront the criticism of musical colonialism and the sanctity of a pure music. Add in electronics and it can get

pattern under improvisations. With delays, Gilden can free both thumbs for more extensive melodic counterpoints. “I can lock in a bassline and solo against it or do more avant-garde things,” he explains. “So I’ve been doing some strange modal stuff, playing in the phrygian mode with lots of echo.”

Gilden is currently working on an electronic duet with Polar Levine, who sings wordless vocals through a vocoder and plays a DMX drum machine for a style of music that’s not unlike Jon Hassell’s in its rampant techno-primitivism. Although Gilden’s music is marketed as New Age, he’s actually a New Age skeptic. “We’re trying to bring about New Age with a beat, but still retain the mind-altering quality – this mystical-ethereal nonsense that allows you to transcend where you are, with visionary floating music,” he proclaims with wry cynicism.

Michael William Gilbert shares his skepticism, even though NARAS has him listed as a New Age artist as well. Gilbert doesn’t like any category, including the World Music one in which I try to plug him. “World Music is another one of those titles like New Age music which is quite freely batted around these days,” he says disdainfully. “Titles like New Age music and World Music are fine as long as they don’t dispose people into thinking that music which comes under that heading sounds a particular way. Bill Bruford said, ‘You can



**Michael Gilbert**

very confusing. Playing a traditional African instrument and studying with African teachers, Gilden was often compelled to keep his music pure from western culture and technology. But once you’ve crossed the line of pure traditionalism, anything is possible in techno-world music.

Besides playing his synthesizers and computers, Gilden is now processing his kora with an 8-second looping line. Traditionally, the kora is often played with an ostinato

call my music New Age to put it in the corner of a record store, as long as you put it in a record store.’ If New Age symbolizes a genre of smarmy-cosmic elevator music to people, then I’d sure like to be un-included in that. But if it means the portion of the record store where the neat eclectic stuff fits that doesn’t fall under rock, jazz, classical, folk or blues, then I’ll take it. World Music is the same.”

*Neat eclectic stuff is a good description of* ▶

► the music that Gilbert has been making for over ten years, especially on his albums, *The Call*, *The Light in the Clouds* (Gibex Records) and *In the Dreamtime* (Palace of Lights). With percussionist Tony Vacca, wind player Tim Moran and other instrumentalists, Gilbert orchestrates shifting electronic environments, intermingling his synthesized sounds and samples with their acoustic playing.

His varied influences all come out on *The Light in the Clouds*. "*The Light in the Clouds* was a real conscious effort to take musical influences of various cultural and religious backgrounds and bring them together," he explains. He takes the traditional Jewish hymn, 'Kol Nidre,' and drapes it in a surreal synthesized landscape while bassist Salvatore Machia cuts through the melody with his torturously, beautiful arco bassline. The Christian liturgical music of 'Alleluia' is turned into a haunting ethereal space hymn, and 'Kyogai' uses an almost gagaku rhythm.

For his 1988 follow-up, *Point Of Views*, Gilbert went completely solo, playing a variety of percussion instruments, mostly triggered from his Akai X7000 digital sampler. "Most of them were played on the keyboard, using the keyboard as a percussion

Price Happy Apple toy, and a clay drum he bought at an Arab market in Jerusalem. "It's a really nice high drum sound," he says as he strikes it on his keyboard. "But it sounds especially nice as a low drum sound, better than a kick because it has slight inharmonic overtones."

Along with his penchant for primitive, grittier sounds, Gilbert likes to think of himself as being at the low end of hi-tech, playing synthesizers he claims are last year's models. Using the X7000, he triggers two Yamaha FB01 synthesizer modules, two Akai S612 samplers, and an Oberheim Matrix 6R. His reverb comes from two Alesis Midiverb IIs; his mixes through two Yamaha KM802 mixers. For sequencing his complex overlays he runs a Leading Edge computer with Personal Composer, Passport Master Tracks PC, and Cakewalk, written by Twelve Tone Systems' Greg Hendershott. Gilbert has released his last two albums on CD only and he mixes down direct to two-track digital using a PCM system and Sony Beta VCR.

Running his synths and samplers through an Akai MIDI Patchbay, Gilbert has several mappings that he uses to create a percussion set on his keyboard. "I have a bunch of mappings which don't make sense heard on

that's very intense in one of these and it's like shifting in a bunch of players and instruments instantaneously."



**Eberhard Schoener**

**B**ALI HAS BEEN an inspiration for many composers. Certainly Wendy Carlos' all-digital gamelan orchestra on *Beauty in the Beast* is a landmark recording, technically and aesthetically. Less ambitious, less successful, but still unjustly ignored was Mike Oldfield's homage to Bali on his album *Islands* (Virgin), released in late 1987.

Oldfield created his own gamelan orchestras out of samples he recorded when he went to Bali. "I went to Bali with a professional video camera and I filmed everything I considered interesting in Bali," recalls Oldfield. "I recorded in stereo on the video machine, and the Fairlight samples in stereo now, so I was able to take those samples and build them into rhythm sequences."

Oldfield mixes the gamelans with tuned percussion played by Pierre and Benoit Moerlen, rearranging the gamelan orchestras into cyclical beds for Oldfield's sustained guitar leads. Elsewhere, he borrows from the Ramayana Monkey Chant and combines that with a children's choir and an Irish-sounding melody. "I hired a Ketjak group for an afternoon and recorded and filmed them," Oldfield says. He actually broke the chant down into its phonemes and re-sequenced them. "They'd say 'keh,' and 'cha,' and 'cho,' and all these different sounds, and I stuck them all in the computer."

With the Fairlight and a Harrison Series 10 Automated console, Oldfield was able to obtain some very complex mixes and cross rhythms. "I tend to build things up on the rhythm sequencer on the Fairlight, but at the same time I don't want everything to be from the machine; so there are some live sessions chopped in, in and out of the synthesized stuff."

Oldfield has been no stranger to world music. After the success of *Tubular Bells*, he immersed himself in Irish traditional music (his mother is Irish) as well as African music. He combined them in his lyrical tone poem, *Ommadawn* (Virgin), using The Chieftains'

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**Mike Oldfield**

instrument, recorded into a computer-based sequencer, and the sounds were primarily sampled or synthesized," he says.

Gilbert has an array of sounds: Japanese drums, a Revere Ware frying pan filled with water and struck, the bell sounds of a Fisher-

their own but in the context of a piece allow me to have sub-groupings of these instruments available in different ranges, as well as the ability to change between these sub-groupings very rapidly through MIDI," he explains. "I can have a section of a piece

Paddy Moloney on Uilleann Pipes and the African percussion ensemble, Jabula. "Believe it or not, I never used to like drums, western drums," he admits. "I thought they were a really horrible noise, especially when you listen to them just acoustically in a room. It's deafening cacophony. With *Ommadaun* I wanted some sort of percussion, but I didn't want to use acoustic drums. I thought of African drums and hired these drummers, then sampled them onto the Linn machines so I can have my African drummers."

Perhaps the most ambitious Balinese enthusiast is Eberhard Schoener. Schoener is an erudite German synthesist, composer and conductor who has been synthesizing the music of the world since his 1973 album, *Meditation* (Kuckuck Records). On that album, Schoener drew parallels between an eastern sense of time and texture and Gregorian chants with an old Moog Series III modular synthesizer.

In 1980, Schoener released the album *Bali Agung* (Celestial Harmonies) playing with a Balinese orchestra. "I brought my whole 24-track studio there," he recalls, "and worked with the Balinese musicians for about two months. I listened to the music for three weeks, 10 hours a day, because the music lasts that long.

"After three weeks, Prince Agung Raka said: 'Listen Eberhard, you're the only European who listens to this music. Others come and say, 'Oh, great,' but after two hours they leave. You really understand, so now the orchestra is yours.' One hundred and twenty musicians! I didn't know how to start, so I played my electronic music for them. I said, 'Listen, that's our music.'

"I found out that conducting the music is a dance, so I figured out my own way of conducting the orchestra, a kind of dancing. After months of work we brought them into our hotel where we had the studio and played together. Seventy percent of the music we made together, thirty percent we overdubbed. I thought it was very important that they really know what we were doing.

"I love the Balinese people, the culture and everything, but I have full respect and would never try to adapt it into my culture. On *Bali Agung* I said, 'Let's make music together,' but I didn't put on a sarong. The sarong is a mistake. Even a great musician like Terry Riley did this at first, and now he's found his own way."

In Bali they attach whistles to the throats of pigeons and release them into the air. The effect is like an airborne organ, circling in the sky. Schoener used them as the centerpiece for an outdoor extravaganza that should make Jean-Michel Jarre cringe in shame and weep in envy. In the mountains of Bavaria, on a lake called Tegernsee, he put a 40-piece orchestra and several synthesizers on a pontoon, blasting music from a 65,000 watt sound system. While Alpine horns called out from the mountains, 120 painted hang

gliders flew in, and Balinese pipes were attached to 4500 pigeons. The birds were released into the air, circled three times and returned 200 kilometers to home. According to Schoener, 100,000 people attended.

Schoener sampled the whistles by recording them in the wind tunnel of a BMW factory. "I sampled the sounds of the pigeons so I could play them on the Fairlight,

And that's what the new world music, be it techno or acoustic, should be about. As Terry Riley said, it should be absorbed within before it comes out, or else it's like putting on a Dashiki and calling it African or intoning "Om" and saying it's eastern. There's no doubt that Marshall McLuhan's global village is more of a reality in music than ever before. ■



Photography Steward O'Shields

**David Gilden**

and we synchronized different instruments – Oberheim OB8, Roland Jupiter 8, and Oberheim DSX sequencer. So we had 68 tracks, synchronized. All the music is sampled natural sounds."

Schoener's 1984 release, *Sky Music/Mountain Music* (Celestial Harmonies), his most integrated work to date, is a stunningly subtle work of reedy melodies and diaphanous textures. While it borrows from Bali, it's clearly music from Schoener's own experience.

**If you'd like to obtain any of the recordings mentioned, please correspond directly with the respective labels.**

**For David Gilden:** Kara Productions, 165 Prospect Park West, Brooklyn, NY 11215.

**For Michael William Gilbert:** New Music Distribution Service, 500 Broadway, NY, NY 10012.

**For Terry Riley's Shri Camel:** Columbia Records, 1801 Century Park West, Los Angeles, CA 90067.

**For Mike Oldfield:** Virgin Records, 9247 Alden Drive, Beverly Hills, CA 90210.

**For Eberhard Schoener:** Celestial Harmonies, 605 Ridgefield Road, Wilton, CT 06897.

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# Roland U110

## PCM Sound Module



Photography Adam Jones

**Looking for an effective way to expand your palette? How does a 31-voice, multitimbral, IU-high, rack-mount PCM expander sound? Review by Simon Trask.**

**T**HOUGH MANY PEOPLE long to incorporate sampled sounds into their music, manufacturers have learned that a good percentage of those same people are unwilling to create their own samples. Some people just don't like hassling with the interminably slow processes of loading disks, finding loop points and all the other chores often necessary to play high-quality sampled sounds. Ray Kurzweil and associates predicted this phenomenon several years ago and the success of their 250 and its spin-offs in the Kurzweil 1000 series stand as proof to his vision. Other companies have taken notice of this and are starting to offer their own versions of non-sampling sample players. The latest to hit the streets is the very tasty-looking Roland U110 PCM Sound Module.

The U110 (originally introduced in these pages as the T110) doesn't have any RAM for samples. What it offers instead are 99 ROM-based samples (called Tones), all of which are stored within its slender 19", 1U-high frame. The U110 is not a closed system, however, because you can have instant access to further samples on Roland PCM ROM cards (none of which, unfortunately, were available at the time of review). You can plug up to four of these

cards at a time into slots on the U110's front panel; not totally unlike Korg's DRM1 drum expander of last year.

Sample editing in the familiar sense doesn't exist on the U110. In fact, there's not too much you can do with the samples except play them (without the aforementioned hassle normally associated with making and using samples). The U110 also has two other features in its favor: it's six-part multitimbral and – good news for home and professional recordists alike – it has six polyphonic individual audio outs in addition to the usual stereo pair.

### Organization

**YOU CALL UP** the U110's samples by selecting from 64 onboard Patches. A Patch consists of six Parts, each of which is assigned one internal or one card Tone. A Part (rather than the sample assigned to it) has associated programmable output assignment, MIDI channel, note range, level, pitch and LFO parameters. By assigning all six Parts to the same MIDI channel and giving them separate or overlapping note ranges you can create all manner of keyboard textures, while assigning separate MIDI channels allows up to six instruments to be played independently

from a sequencer. Of course, you can also create any combination of these two approaches (say, split double-bass, piano and sax played together on one channel, drums on another channel and strings on a third). If you don't want some Parts to be active within a Patch, all you have to do is set their output assignment to "off."

Each Part within a Patch can be assigned its own volume level and velocity-response scale together with amplitude envelope attack and release rates (one of the few ways of altering the character of a sample on the U110). Additionally, you can transpose a Part +/- one octave in semitone steps, fine tune its pitch, and set a pitch-bend range and detune depth. Independent LFO control for each Part allows you to specify rate together with automatic depth, delay time and rise time or manual depth and rise time (rise time controls how quickly the LFO effect moves from zero to maximum). Manual control can come from the mod wheel, polyphonic aftertouch or channel aftertouch. Polyphonic aftertouch can also control pitch, while channel aftertouch can control volume (so owners of channel-aftertouch keyboard instruments can't control pitch-bend from the keyboard – a rather silly limitation). Patches can be bulk-dumped via MIDI SysEx, taking only a few seconds to transfer. In this way you'll be able to build up a Patch library on external disks quite easily.

Programming the U110 is accomplished from a mere six buttons on the front panel. ▶

► I found that, with only a little practice, I could move around the instrument's parameters extremely quickly. If you want even more speed, you can program and activate jumps to any four LED pages of your choosing.

Master tune, MIDI control channel and patch Maps (see below) together with MIDI control change, patch change, channel aftertouch, polyphonic aftertouch, pitch-bend and SysEx on/off are all specified in what's known as a Setup. There's only one Setup memory, but you can transfer Setups via MIDI SysEx. The U110 can respond to pitch-bend, modulation, volume and sustain pedal independently for each Part (if, of course, the Parts are on different MIDI channels).

One area into which Roland has clearly put some thought is that of calling up the U110's sounds via MIDI. As well as being able to select Patches via MIDI (up to six Tones at once) you can select Tones for individual Parts independently. The U110 also allows you to create six patch Maps, each of which allows you to "map" U110 Tones (internal and card) onto incoming MIDI patch numbers. For instance, MIDI patch 43 could call up Tone II on PCM Card three. Each U110 Part can have one of the six Maps assigned to it, so that effectively you can call up any internal or card Tone via MIDI's 128 patch numbers. This approach also makes it possible to call

up layered sounds on the U110 from a single MIDI patch change.

It's good to see that the U110 gives you not eight, not 16, but 31-voice polyphony (er, 31? Roland Japan's official explanation of this literally odd number is that the 32nd voice is needed for the U110's ROM Play facility). In practice, the U110's polyphony depends on whether you're using Tones which require one or two voices (these are split 50:50 in the internal Tones). The two-voice Tones are dual, detuned and velocity-mixed samples (settings are determined by Roland rather than you).

### Output Assignment

THIS IS ONE area of the U110 which is bound to cause some confusion, not least because the manual isn't very helpful (it's about time Roland Japan stopped providing

by which output mode you've selected. There are 50 of these output modes to choose from, each one allocating the U110's 31 voices to the outputs in a different way (Roland uses the term "voice group" to refer to an individual output). Output assignments and output mode are both programmable per Patch.

For example, output mode One allocates all 31 voices to output one, meaning that no voices can be sent from the other outputs even if you've assigned Parts to them. Mode Nine allocates 15:12:4 voices to outputs 1-3 respectively (this should start to look familiar to S550 users). If you want to use all six outputs then you're going to have a spread like mode 20, which gives you 7:8:4:4:4:4 voices. Unfortunately, the least number of voices you can select for a Part is three, which means

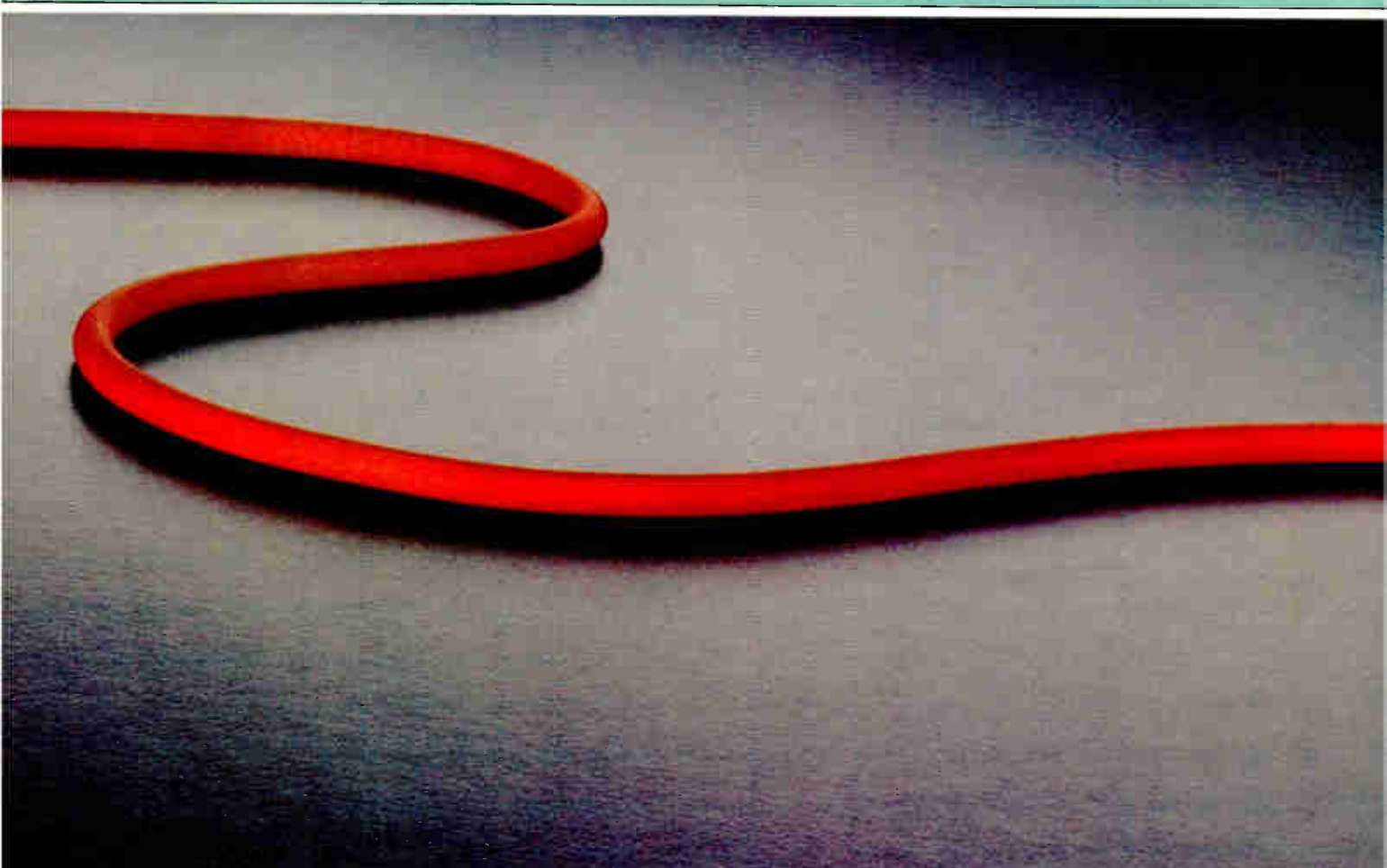
**Polyphony** *"All too often, an instrument's multitimbral capability is limited by its polyphony – thus it's good to see that the U110 gives 31-voice polyphony."*

their customers with poorly-translated versions of what the Japanese think a manual ought to be).

The U110's 31 voices are not dynamically assigned across the six individual outs. You assign each Part to one of these outputs, as you would expect, but the number of voices available for each Part is determined

if you want one Part to be a monophonic bassline, for example, you're going to have to waste voices.

Half of modes 21-50 have been given a stereo audio output assignment (L and R) for outputs one and two, which allows Parts sent via these outputs to be effected by onboard digital chorus and tremolo.



Rate and depth can be programmed for each effect, with settings storable for each Patch rather than for each output mode (if you select an "active effect" output mode for a Patch, its effect settings will come into play).

You can assign up to six Parts to any one audio output if you want, in which case that output's voice allocation will be shared dynamically by all the Parts – but that does rather negate the purpose of having individual outputs in the first place.

What all this means is that you have to put some thought into output assignment. Although Roland's approach has the incidental effect of acting as an automatic voice reserve (one Part can't steal voices from another), overall it's a real nuisance when you just want to get on with the business of making music. It would've been far better to have dynamic voice assignment with the option to reserve voices for any Part, but presumably Roland has good technical reasons for not implementing this approach.

### Samples

APPARENTLY THE U110's samples are derived from Roland's S50 sample library, which means 12-bit sample resolution and a sample rate of 30kHz or 15kHz. This does mean in practice that they're not altogether free of noise, but it's rarely

obtrusive. In addition, the samples have been "compacted" by, for instance, being given shorter loops.

The 99 internal Tones are divided into Piano, Vibraphone, Bell, Marimba, Guitar, Bass, Choir, Strings, Organ, Wind and Drum groups. As another means of saving on sample memory, there aren't actually 99 different samples – within most groups,

while the electric pianos include both bright, hard-edged and warm, chorused versions. The vibes and marimbas are suitably chunky but not particularly warm, while the bells are thin-sounding rather than deep and resonant.

The basses consist of slapped, fingered, picked, fretless, synth and acoustic varieties. I particularly like the warm,



single-sample Tones have also been doubled and detuned to provide further Tones.

The acoustic pianos are especially good, though their tone tends to thin out on sustained notes – a consequence of looping compromises. You get mellow and bright versions, and a great honky-tonk piano,

rounded acoustic bass and the slurred fretless, while the plentiful slapped variations are suitably snappy and funky. Among the brass, particularly good is the soft trumpet, which captures the characteristic attack very effectively, while the saxes are fairly realistic (again, the attack is good) if a bit limited in variety and character. ►

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► The skinbashers' section is taken care of by 37 drum and percussion samples, which have been mapped across a five-octave note range and collectively assigned to internal Tone 99. These are standard fare: several bass and snare drums; low, middle and high toms; crash, ride and china cymbals; open and closed hi-hats; hand-claps, cowbell and cabasas. In general they've been kept as short as possible (the cymbals are looped for length), which does mean they don't always "breathe" as they should. On the other hand, they're gritty and punchy, and make for a good modern-sounding rhythm section.

Personally I could have done with a few less slapped bass and organ samples. But, all in all, I'd say Roland has come up with a healthy range of basic, familiar sounds. It's a shame that effective use hasn't been made of velocity-switching, so that you could introduce, say, fingerboard slap into a plucked acoustic bass performance, or overblown notes into a sax solo (in other words, something more akin to the discontinuity of sound that you can get out of some acoustic instruments). Velocity-switching is "built into" a few selected Tones (it's not under your control), but hasn't really been taken full advantage of.

### Verdict

THE UI10 SHOULD be a big seller for Roland, combining as it does operational convenience and a respectable (and expandable) range of quality instrumental sounds. That the unit also has a flexible multitimbral organization, impressive polyphony and individual outputs to make the most of that organization all within a IU-high casing is icing on the cake.

Editing the UI10 is a non-tiring experience. With the notable exception of output assignment, Roland has made the UI10 as straightforward as possible, while the logical parameter organization and easy front-panel access ensure that you can zip around the instrument, no problem.

Although the UI10 is essentially a preset instrument, the ability to combine sounds, detune them against one another, alter their attack and release times, and put them through digital chorus and tremolo does give considerable flexibility, as does the ability to EQ and effect sounds individually via the separate audio outs. ROM cards will, of course, further expand your options; here's to hoping that they also show some originality and more exploitation of the UI10's resources.

In conclusion, the UI10 is essentially a utilitarian rather than an innovative product, and as such it succeeds very well in the task it sets out to accomplish. ■

**PRICES** UI10, \$1095; PCM ROM cards: no price available at press time.

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	oct	semi	fine	wave	mod 1	depth	mod 2	depth
OSC 1	-1	0	0	SAW	*OFF*	0	*OFF*	0
OSC 2	-1	0	4	SAW	LFO 1	+2	*OFF*	0
OSC 3	-1	0	4	PULSE	LFO 1	+5	*OFF*	0

	level	output	mod 1	depth	mod 2	depth
DCA 1	63	ON	ENV 2	+63	LFO 1	+8
DCA 2	63	ON	ENV 2	+63	LFO 2	+6
DCA 3	63	ON	ENV 2	+56	LFO 2	+5

	freq	Q	keybd	mod 1	depth	mod 2	depth
Filter	26	6	38	ENV 3	+63	*OFF*	0

	final vol.(ENV 4)	pan	pan modulator	depth
DCA 4	63	8	LFO 3	+33

	freq	reset	human	wave	L1	delay	L2	mod
LFO 1	24	OFF	ON	TRI	12	0	12	*OFF*
LFO 2	21	OFF	ON	NOISE	15	1	14	WHEEL
LFO 3	7	OFF	OFF	TRI	63	0	21	WHEEL

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	+63	+8	+20	0	0	0	50	63	20	9
ENV 2	+63	+50	+45	0	0	63	50	63	20	9
ENV 3	+63	+19	+41	8	0	9	9	63	44	0
ENV 4	+41	+63	+63	8	14	20	0	21	32	9

Filter Freq 26

## Envy Not.

If you use an IBM PC compatible, you've probably been envious of the slick graphic user interfaces of some other computers. Blame the software developers, not the computer. Microsoft Windows provides the PC with a graphics interface every bit as powerful as the other computers'. The MVP Editor/Librarians use Windows to give your synthesizers the front panel they deserve.

The MVP Editor/Librarians have complete facilities for creating, editing, and storing voice parameter patches. Pop-up windows let you edit envelopes graphically, or edit a group of parameters using a data entry slider for each parameter. The librarian features simple cut and paste editing to get the sounds into the proper program slots. And it means good-bye to an endless number of RAM cartridges, since even a floppy disk holds thousands of patches.

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# M I C R O REVIEWS

## Pixel Publishing Super Librarian

**A generic patch librarian and companion desk accessory for the Atari ST.** *Review by Aaron Hallas.*

YOUR COLLECTION OF patches and drum patterns is getting out of hand. The situation is dire – you need some way to store and retrieve them in an organized and convenient way, or Chaos will rule. Pixel Publishing has held a meeting of the Super-friends in an attempt to ascertain a possible solution. The gambit: Super Librarian for the Atari ST – a universal patch librarian that offers features not found in similar programs. What follows is a brief analysis by the Universal League of Music Technologists . . .

The program is supplied on a mere single 3.5" disk and can run as a stand alone program or as a desk accessory to most GEM applications. A hardware key must be inserted in the joystick port of the computer to run the main program, but the accessory is not copy protected, thus allowing it to be used with your sequencing program of choice. At this point in development, the Super Librarian accessory will not run with SMPTETrack because of a memory conflict, but Hybrid Arts is apparently offering an upgrade to SMPTETrack which will fix this problem. However, I had no problem using the accessory with Creator, M, Midisoft Studio and EZ-Score Plus.

I found the Super Librarian main program



to be organized quite logically, starting with the "Set-up," a collection of so-called "Device Folders" along with several options. A device folder contains the "profile," a set of instructions for system exclusive transfers to and from an instrument, and up to 288 data files. Data files can contain individual patches, banks of patches, sequences or drum patterns. Up to eight device folders can be installed at a time, each with its own name and its own MIDI channel assignment. The most notable options that are saved with a set-up are the "Memo" option that allows the storage of a message with the data file, the "Free Trade" option which allows you to copy any file from one folder to another, and up to ten "mini-sequences" for testing your patches. The disk contains profiles for many popular instruments, and registered owners are entitled to free updates via mail, BBS or through their Super Librarian dealer.

If your device or instrument isn't currently supported by the program, you can use either the Gendump or SysEx profiles which will

accept MIDI data from any device that allows you to initiate a transfer from the front panel, or you can modify or create a profile for that device with the "Profile Editor."

Several other notable features:

1) The "Bulk Organizer," available from within the main program itself, allows patches to be copied, exchanged or renamed; and permits you to assign names to patches on instruments that do not support patch naming.

2) The "MIDI Patch Bay" feature will likely appeal to those with programmable MIDI patchbays. When a transfer is initiated for a specific instrument the patchbay is sent a program change that places the instrument on-line with the computer. After the transfer is completed, the "switch to keyboard control" patch change switches the patchbay back to the master keyboard control configuration.

3) The "Performance" function allows you to record a series of transfers to any number of devices in your system. This sequence of transfers is stored as a performance and can be executed at any time with a single command.

At this point in time, all that we can do is anticipate and observe the impact that the Super Librarian might have on the civilized world . . .

**PRICE \$149**

**MORE FROM** Pixel Publishing, 1573 Eglinton Ave. W, Suite #3, Toronto, ON M6E 2G9. Tel: (416) 785-3311.

## Altech MPS II and TX81Z DAs

**A program change desk accessory and a Yamaha TX81Z librarian desk accessory for the Macintosh.**

*Review by Stefan B. Lipson.*

ALTECH SYSTEMS IS a rather quiet company in Shreveport, Louisiana that has put out several excellent MIDI related products. They are responsible for MIDI Basic and MIDI Pascal for the Macintosh, as well as the MIDIface I and II interfaces. Altech has just released two new products for Macintosh users – desk accessories (DAs)

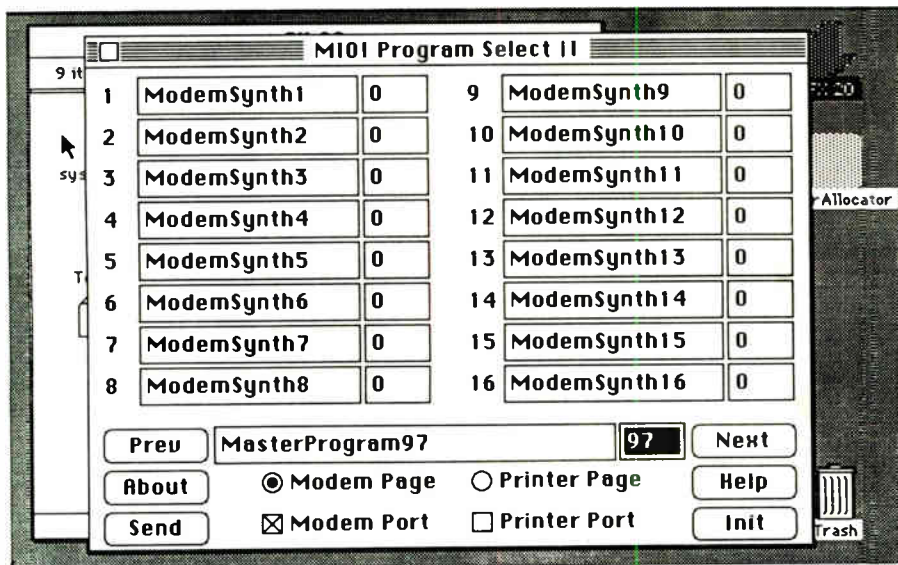
that may just be the solution to problems you've encountered.

First, the MPS II desk accessory is a program change utility that lets you send out 16 individual program changes via the printer port and an additional 16 over the modem port without leaving an application. You can specify your program change information by number for 16 different channels or devices, each of which can be named, and then name the entire configuration. For example, if you set up a configuration called "Song #8," when it came time to play Song 8, you could just click on the DA and select Song 8 and all your MIDI synths and signal processors would set themselves up appropriately. You'll no longer need to climb over all your gear to reset patches, and there's no need to leave an

application if one is active on the Mac screen. It's simple but it can certainly be very helpful. By the way, the number of available configurations is limited only by memory.

Altech's other DA is also simple and, if you're a TX81Z owner, also very helpful. The similarly-priced TX81Z DA allows you to transfer TX81Z patches without having to open an application or leave an application that is presently active. Just select the DA and you can send entire banks of patches or individual patches to the 81Z. In addition, the DA permits patches to be renamed, re-ordered and reorganized into different banks, as with most stand-alone librarian programs. You won't find any frills here, but it gets the job done.

As part of Altech's general good sports-



manship, they also include a set of some of the better public domain programs. Included in this customer freebie is CZ Librarian 3.0, a nice little librarian that reads and writes voice patch files in Opcode's patch librarian format; Kamikaze DX, an editor/librarian for the DX7, TX7 or TX816 (written by Fumitaka Anzai, a musician in Japan who used Altech's MIDI Basic to write the program); and MIDIScope, a data analysis program that lets you look at individual bytes of the MIDI data stream.

MIDI DAs are a good way to give users access to a particular function or feature that needn't occupy the whole screen and shouldn't take much memory. Seeing as there are about a million other DAs floating around for the Mac, let's hope more MIDI-based DAs begin to appear. These contributions from Altech are a good start. ■

**PRICE** \$69 each  
**MORE FROM** Altech Systems, 831 Kings Highway, Suite 200, Shreveport, LA 71104. Tel: (318) 226-1701.

# Real World Interfaces' MT32 Mod

**A hardware modification for Roland's MT32 Multitimbral Sound Module.** *Review by Bob O'Donnell.*

I LIKE MODIFICATIONS, particularly if they transform a well-loved but slightly lacking tool into a great new instrument. I'm pleased to report that such is the case with the Real World Interfaces modification for the popular Roland MT32 L/A synth. This Australian company, whose work is performed and warranted in the US by software company Beaverton Digital Systems, addressed most of the complaints that people have made about the MT32 (including many of the ones that Roland themselves addressed with the D110 module) and have really turned the little machine into a monster.

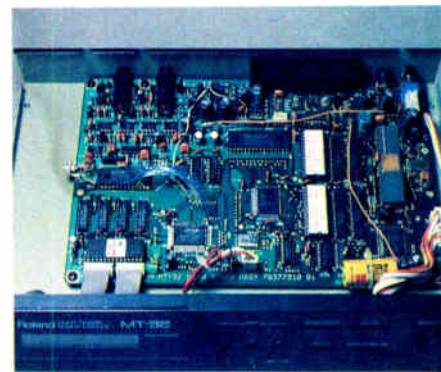
The Real World Mod currently consists of three levels (an additional one that will allow front panel programming of all sound parameters is under development). The first level involves changing the MT32's ROM and adding a battery backup for RAM which will allow you to store 64 of your own timbres, as well as recall patch table assignments, drum note assignments, tuning, reverb and patch-to-Part assignments even when the machine is turned off. Unfortunately, this doesn't add the ability to access the 64 memory timbres via the front panel, which would be really nice - according to Beaverton, that will be added in the voice editing upgrade. In the event

that you don't have editing software (or at least it isn't handy), the new ROM changes on the first level also add a very nice new MIDI implementation that allows you to use MIDI control change parameters to adjust overall patch, reverb, drum assignment and general MIDI parameters within the MT32. For example, you could set Part 3 to MIDI channel 14 by sending Control Change #23 (all of these parameters are listed in the informative documentation which accompanies the mod). The MT32 responds by temporarily showing the value of the parameter being affected, but not the parameter itself, in the right-hand corner of the LCD. You need access to a device that can send any MIDI control messages to do this, of course - Lexicon's new MRC came in very handy for me - but it really works well. One other point worth mentioning is that the modified MT32 I worked with had no problems when connected to a software editor/librarian program.

The most important part of the first level of the upgrade is the greatly improved signal-to-noise ratio of the unit. Even while just sitting at full volume, the MT32's familiar annoying hiss is almost completely gone and while playing, the patches all sound much cleaner and quieter, both with and without reverb. In fact, I found the modified MT32 to even be subjectively quieter than a D110.

Finally, the first level increases the number of available front panel reverb modes (different combinations of delay and level settings) to 50. The second level of Real World's mod actually provides slightly different reverb programs - apparently they're similar to the ones found in the D110. The Hall setting remains the same, but there's a new Medium Room, Bright Plate and a different delay program with longer delay times which replace the MT32's original programs.

The third level of the Real World Mod is



Photography Rose Rounseville

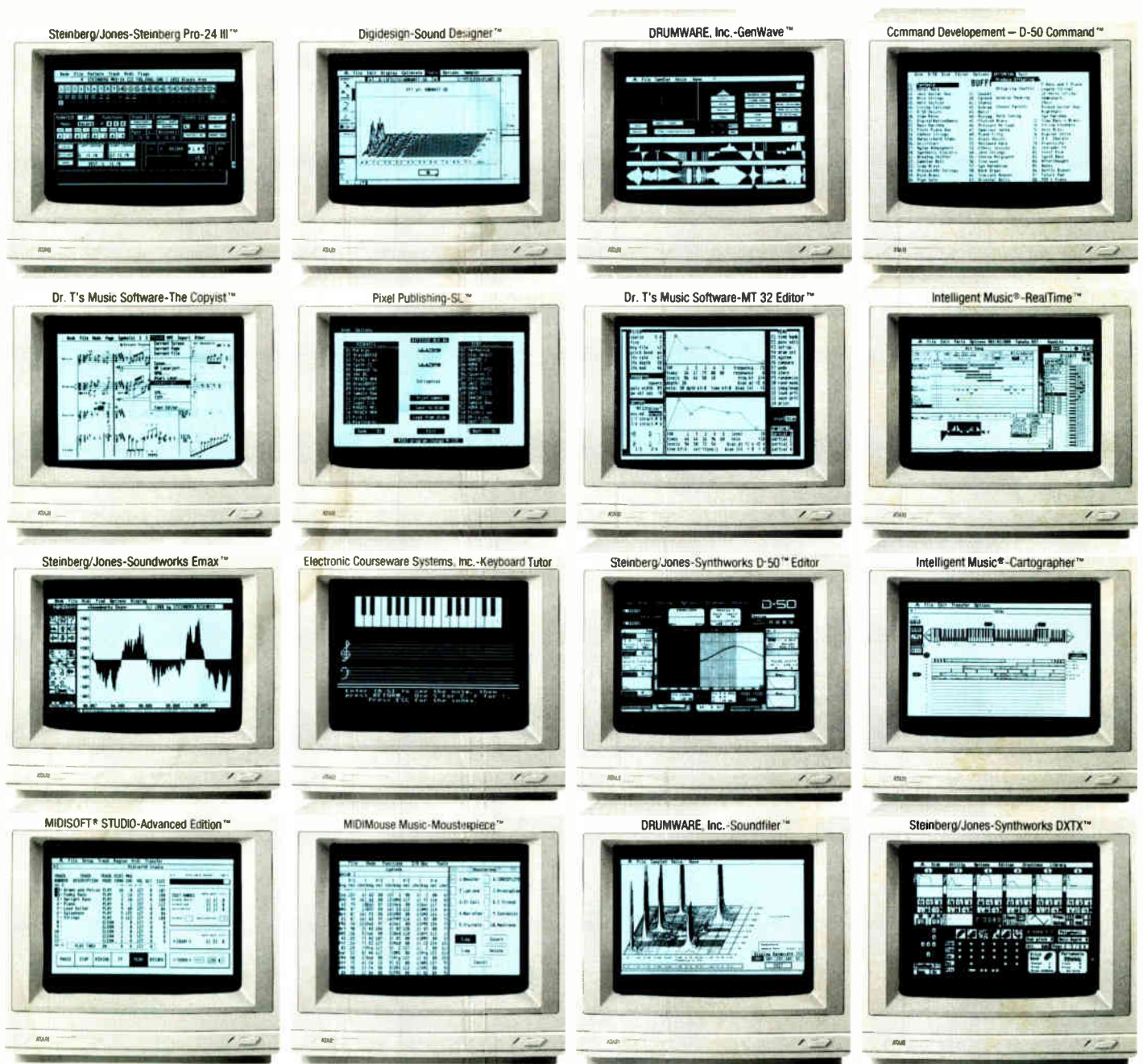
additional outputs - but we're not talking separate outs for separate Parts as in the D110. Instead, what's offered is two stereo pairs, both of which are taken from the sounds that are to be sent to the internal reverb (in other words, that have the reverb turned on). The top pair contains the direct out of the signal sent to the reverb and the bottom pair just the reverb signal. Through judicious use of the MT32's stereo structures and by turning the reverb on and off for various sounds, you can get the equivalent of four direct outs (two of which can also have reverb).

The Real World Mod won't turn your MT32 into a D50, but it will make it sound much cleaner and much better. I wish the price for it was a bit lower, but if you're one of the many who didn't trade their MT32 in for a D110, then you should definitely check this upgrade out. Good stuff. ■

**PRICE** \$149 for first level; \$30 for new reverb modes (second level); \$50 for additional outputs (third level); \$99 for the voice editing level (when it becomes available). You need to purchase the first level to add on the other levels.

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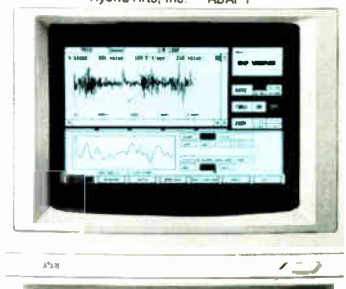
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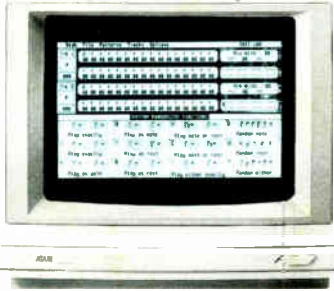
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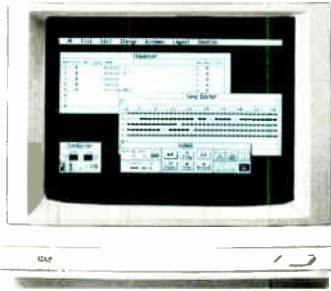
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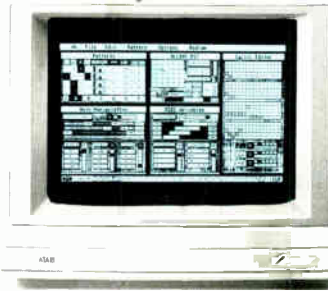
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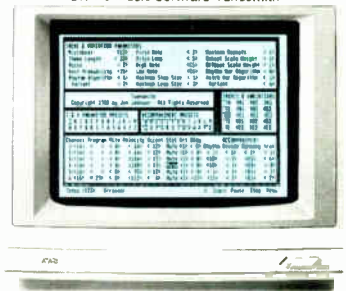
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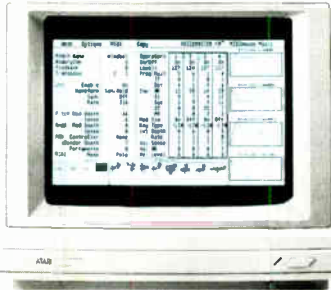
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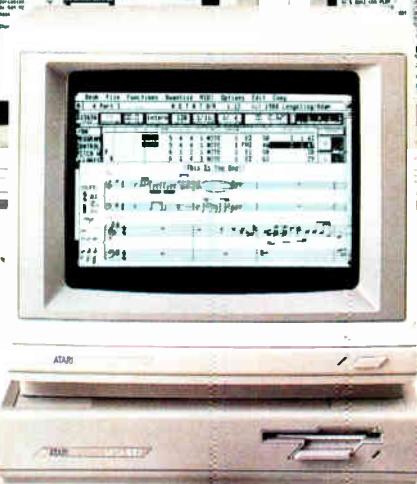
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# The A-A-Art of Noi-N-N-Noise

Masters of sampling J. Jeczalik and Anne Dudley proudly present their first "Best of" LP . . . yet the new 'Kiss' is what's topping the charts. *Interview by John Diliberto.*

**A** LIEN SONIC LANDSCAPES – trains, horns, street noise and musical snippets – collide in the textured creations of the Art of Noise. Voices stutter and repeat, and a momentary blast from an unidentified symphony invades the scene as a fleeting glimpse of sanity, viewed through twisted mirrors.

Perhaps things haven't changed much since 1948, when Pierre Henry and Pierre Schaeffer re-contextualized sound in a style called *musique concrete*. Forty years later, the Art of Noise has taken the style, digitized and synthesized it, locked it into a crunching groove and turned it into dance music for the '80s. While Schaeffer and Henry spun actual phonograph records and, later, tapes, mixing them live, the Art of Noise uses Fairlight CMI's and Akai S1000 samplers and the skyscrapers of multitrack recording to create their updated sound.

According to J. Jeczalik, the Art of Noise began as a technological jam session while they were working on the Yes album, *90125*. That album helped launch digital sampling into the forefront of America's consciousness, with its big band sampled break on the hit single 'Owner of a Lonely Heart.' The duo also worked with Malcolm McLaren on his *Duck Rock* album and the dance hit, 'Buffalo Gals,' co-written by the other half of AON, Anne Dudley.

The Art of Noise was originally part of Trevor Horn's production team for Zang Tuum Tumb Records, producing the techno-decadence dance music of Frankie Goes To Hollywood, Propaganda and others. Taking their name from Luigi Russolo's 1913 Futurist music manifesto *L'arte dei Rumori*, which translates to "the Art of Noises," they launched an avant-garde attack on the dance charts with 'Into the Battle' and 'Close (to the Edit).' The group was faceless, not even appearing in their malevolent videos, which nevertheless became MTV hits.

After the first album, Gary Langan, Anne Dudley and J. Jeczalik split from the Zang Tuum Tumb organization, a fact that Trevor Horn and Paul Morley, ZTT's image shaper, extolled upon bitterly in their liner notes to the CD compilation *Daft*.



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World Radio History

there because I found the sound of his voice and that of Ian Paisley, the Irish gentleman, so fascinating. And Hitler and Churchill might have been on there as well because of the way they sounded rather than what they were saying. The fact that they may have had a message afterwards was coincidental. And from there on it's up to the person listening to it."

AD: "I think it would be a mistake to put too strong a political emphasis on those tracks. I don't personally think pop music is the place to make heavy political statements.

orchestra sting and I just played three notes and Anne said, 'Hang on a second, that's a good idea,' and played a chord and said, 'Play those notes again.' And that's how it started. The chord of the orchestra and the notes I chose to play, quite by chance, evoked what then became the song. And then we started to look for things to put on it. So it was very much a kind of two- or three-way process. Very symbiotic."

MT: 'Eye of the Needle' has a jazzy, hipster kind of groove with that crooning voice.

AD: "The idea came from the particular

records to have it. Frankie Goes to Hollywood's Welcome To The Pleasure Dome had the same sound all over it.

JJ: "Similar. Well, it became pervasive after a while. Orch 6 was on the Fairlight library for years before it was 'discovered,' and the Art of Noise and many other people used it at the same time."

AD: "I had a D50 some time before most people had them and I used those wonderful wispy floaty sounds. Then I heard them everywhere else and thought, 'I can't use them anymore.'"

MT: The Yes record you worked on, 90125, particularly 'Owner of a Lonely Heart,' was one of the first overt uses of that kind of sampling in the instrumental break to appear in a big way in America.

JJ: "Yeah, absolutely. It was a bit of a milestone actually in terms of shoving up the ears of the listening public as to what was going on. Funnily enough, the stab sound was the sound that came back to me on the Fairlight library. It's everywhere now, but at the time it was exciting and new."

MT: You pull a lot of things off of other records and many people think that's cheating.

JJ: "No, and there's a precedent for it, not that it justifies it in any way. All composers from time immemorial have borrowed from each other, stolen from each other, copied, improved. The only difference with the new technology is that you can actually physically take things from records and recordings by other people, but I defy anyone to listen to our stuff and say, 'I know where that came from.' Because when we have done it, it's been in such a way that we take the essence of what the mood is and not the actual thing itself.

AD: "I must admit that when we did 'Buffalo Gals' in '82, I thought, 'This is amusing. This is the end of it.' Little did I know that six or seven years later I'd be hearing the same ideas. I think it's a shame. Sampling has become an open case of theft. When I hear chunks of songs, usually James Brown - that's never what we did. We would use tiny bits of tiny bits and turn them around, put them upside down and try and do something different with them."

JJ: "What pisses me off is that people take things verbatim, don't change them, don't improve them, don't look at them. They just plunk them on their records and think it's good. Which it obviously isn't. Because I know that when I sit at the Fairlight and I have a snippet of Bach or something else, it's meaningless until I do something with it. And just because one has the Art of Noise drum kit, it doesn't mean you can have a dance hit."

MT: There's a reference aspect to it, a commentary on what the other recording meant.

JJ: "It's a two-edged sword. If you're involved in that sort of creation, then you have to realize that if you keep on doing that, in two or three years time all the people who are not modifying things and not creating things of their own will not have anything left to nick. You have to originate something somewhere, even if it's modified, because after awhile it will cease to be." ■



I know why you're saying that, because they have coherent voices saying coherent statements . . .

MT: Well, when you put Botha on a track . . .

AD: "You're saying something. We're just trying to give a general impression. We put the choice there and let people decide for themselves."

MT: Are your songs generated out of the sounds that you have at hand, or do you go looking for sounds to fit the songs that you have?

JJ: "Both. Of course, there's a large library now. 'Moments in Love' started from an

sound we had for the bass. I remember thinking it has an interesting bass sound, and wouldn't it be interesting to have a walking bass part with this kind of bass sound. So we started with the walking bass sound and the whole piece developed a jazzy kind of vamp around it."

MT: 'Moments in Love' used, I believe, what was called Orch 5 on the Fairlight?

JJ: "Well, there used to be one called Orch 6, but it wasn't that one. That was my own."

MT: That sound became very much a cliché of the early '80s and that was one of the first

► **MT:** *It has a very trance-like rhythm. How were the drums processed on that?*  
**JJ:** "In verse one they were from the Fairlight into the room at AIR studios, gated, compressed, miked up and back in again and then fiddled with on the desk. Verse two was just a sample and verse three was a percussion loop with some original drums from verse two, I think, which were taken from a previous track on another album that I had laid together, which was the cabaret bit."

**MT:** *Why did you incorporate snippets from your other songs?*

**JJ:** "Publishing. We were incorporating bits from other songs because we were defending ourselves, really. It's on a greatest hits compilation. We thought if we didn't it would sound like a Tom Jones record. Also, they're quite good tunes, and there was this bloody hole that needed filling. 'Think I'm gonna dance now,' hmm, so what? 'What are we gonna do here? I know, a medley.'"

**MT:** *How do you think using non-instrumental sounds affects the rhythm?*

**JJ:** "For example, take 'A Day at the Races' which is on the previous album, *In No Sense? Nonsense!* We had a recording of race horses galloping down in the field on a windy day and that sort of thing. And as I heard the tape go by I thought, 'Well, if I take out that bit there and repeat it, it will become its own rhythm,' and that was the origination for the whole track. Everything was built around that because there's an innate rhythm in that, which you can't possibly make up. And as soon as you start cutting it up and repeating it, then it takes on an entirely new character."

**MT:** *From the beginning you've had tracks that are very avant garde, arrhythmic tracks.*

**JJ:** "Yeah, I know what you mean. A lot of those were failures, actually. Let's try this and that and bang them together and see what happens. And they failed. But others had their own momentum and had their own meaning. And so it kind of made sense to leave them as they were."

**MT:** *Are you one of these people who walks into a room and starts banging on things to hear how they sound, or when you hear something your first thought is, 'Let's sample it?'*

**JJ:** "Well, I think if you start going around and tapping things and thumping things, inevitably they end up sounding like things that already exist in music. You can't tap the hooter of a diesel train. It has its own reason for being there, it has its own crazy force. It was designed for a reason, it has a purpose and so you can then capture that rather than forcing it to be something you want. That's much more interesting than going around and tapping things and saying, 'Well, why doesn't this diesel train sound any good?' Because it was never designed to sound any good to you or to anybody else. It's there and you have to take it at face value, which is where the kind of dirty, crude bit comes in, something that's got distortion."

**MT:** *You toured with the Art of Noise in the States, and there wasn't a lot of pre-sequenced*

*material.*

**JJ:** "No, it was all live. Well, actually with the exception of 'Moments in Love' because it was my job to play the ba-ba-ba-ba-ba-ba-ba-ba for ten minutes and I just could not do it. I don't mind admitting it was tough. So that was sequenced."

**MT:** *There seemed to be, a "gee whiz, look what we can do" quality to the performance. For instance, I remember the drum solo where Paul Kevin Robinson was just playing samples (from 'Opus 4') and Anne came out and said, "How did he do that?" like it was a parlor trick.*

**AD:** "Oh, I didn't know. It was intended to be a sound poem, because I've always liked that Thomas Hook poem 'November' and the girl who sings it is named Camilla, whose voice is magical. The combination of the two seemed to work great."

**MT:** *It seems in the beginning that Art of Noise was making social statements and was more politically inclined on pieces like 'A Time for Fear (Who's Afraid)' and 'Instruments of Darkness' with Botha's voice.*

**JJ:** "They may be perceived as being statements but their origination was the



*And you were kind of miming to some of the things.*

**JJ:** "I think the problem came about because I had never played live before. And there was this thing of, 'What do you do?' You can't stand up there and press a key down and have a sound come out and expect people to be excited about it. But I don't think there was any kind of 'gee whiz' attitude about it."

**MT:** *'Opus 4' is an unlikely track to put on your greatest hits.*

**AD:** "Is it on there?"

**MT:** Yes, it's the lead track.

sound. In those particular instances, 'Who's Afraid,' the Americans had just gone into Grenada and we were listening to the news and just happened to have a tape recorder lying around and recorded what was going on. I remember seeing this story emerge. There's some chap in a foxhole in Grenada and he doesn't have a clue about what's going on and he's got his radio on to find out why people are bombing him and that's how that started. But yeah, I suppose that was a statement, a reflection of what was going on.

"Whereas the one with Botha, that was

Nevertheless, as J.J. smugly points out, they went on to have hits: 'Legs,' the theme from *Dragnet*, 'Paranoimia' and most recently, a trance-dance version of Prince's 'Kiss,' sung by Las Vegas belter Tom Jones. The team's framework is set up in such a way that Anne Dudley handles the melodies with her Royal College of Music training, while J.J. holds down the groove and takes care of the technical end.

J.J. lives an hour southwest of London in a house called Laundry Cottage. It's there that he sets up his Monster Rat (as opposed to Montserrat) studio in a dining room, with Series II and III Fairlights, Roland TR Rhythm boxes and other devices. He'll soon be moving Monster Rat into his garage when he builds a serious studio with a DDA console. He's a techno musician to the core, describing his keyboard skills as "Digital, as in one finger."

He leaves the dexterity to Anne Dudley, whose own home studio is about 30 miles away and includes a 24-track Sony MCI and Soundtracs console with a Roland D50, Akai S1000 and a Bösendorfer grand piano. Dudley is currently heard on the soundtrack to *Buster*, starring Phil Collins. She wrote the score and arranged the strings for Collins' UK hit, 'A Groovy Kind of Love.' She'll also be heard on 1989 albums by Boy George and Peter Frampton.

When we spoke, J.J. was at home at Laundry Cottage; Anne was in Los Angeles, cutting another film score for Cameron (*Fast Times at Ridgemont High*) Crowe's new film, *Say Anything*. They're currently making some rare press appearances to pump *The Best of the Art of Noise*, which includes most of their hits, but in radically altered and re-mixed form. Re-contextualizing is what the Art of Noise is all about.

MT (John Diliberto): *I always had the feeling that the idea of the group came out of studio experimentation.*

JJ (J. Jeczalik): "From the first day I met a Fairlight, it struck me that the obvious thing to do with it was to actually put non-musical sounds in and play them in a musical way. When I was programming for other people, I always had these noises that I wanted them to use on records and they wouldn't because they were too outrageous; people thought I was mad back in 1980. Now, of course, every record's got them and more; it's become much more in vogue."

MT: *It's actually become clichéd in many ways. Did you think there was a danger in that?*

JJ: "Oh very much so. The thing that fascinated me quite recently was that I had a new library sent over to me from Fairlight and on it was a sound that I know I sampled, that I created in 1983! It had been given someone else's name. The irony of it was

that it sounded better on the library disc than when I first did it, which made me laugh. And also, the fact that it had been entirely around the world in the form of digital information was an odd situation. But it didn't bother me at all. It's irrelevant who did it – it's the way you use it and when that makes a difference."

MT: *I guess you can wind up with samples of samples of samples to infinity.*

JJ: "Yeah, exactly. But until quite recently, whenever you made a sample there was a slight loss. It occurred to me that in a logical extension of that, inevitably things would

**J. Jeczalik:** "All composers from time immemorial have borrowed from each other. The only difference with the new technology is that you can actually physically take things from recordings by other people."

disappear altogether, and the world's biggest drum sound wouldn't exist at all."

MT: *A lot of times your sampling sounds down and dirty. There's not a lot of processing or anything.*

JJ: "Oh yeah, very much so. Because, especially with the (Fairlight) Series II, which I still have, the quality is not its great strength, let's face it. But to me, after a while it became horribly apparent that you just have to take things as you heard them. And if you hit the key and it sounded great, that's it, and there was no point in fluffing with it, you know. One of the problems people have gotten into is, in the immortal words of a great keyboard player friend of mine, 'That sounds good, let me change it.' You know that's something that I tried to avoid myself; it's so dangerous. Suddenly you wave bye-bye and the sound disappears and the idea is gone and you've lost it.

"A lot of it sounds a bit crude because I may have sampled something, and Anne would play deedle-a, deedle-a, and then we would record and that would be it. And that's when musicians are at their best – fooling around, thinking intuitively, working things out and kind of finding out what's going on, what the possibilities are."

MT: *Had you listened to musique concrete?*

JJ: "Some, but without knowing it. It didn't have any bearing on what we were doing as such."

MT: *I had always thought of the Art of Noise very much as musique concrete with a groove – a sort of 1980's version.*

AD (Anne Dudley): "Everything we did with the Fairlight was feasible using the techniques of *musique concrete*, using pieces of tape and doing what they used to do. But when the Fairlight came along it became easy to experiment quickly and find out whether something was going to work immediately. *Musique concrete* was so complicated. If you're physically cutting up the tape, slowing it down and turning it around, you're never getting an immediate effect. That's not a very attractive proposition to me because I like to work quickly and I like to be fresh and I like a certain amount of improvisation to be in

our music."

MT: *Do you think you work less intuitively now?*

JJ: "Unfortunately, yes. Because over the past five years I've been exposed to a huge amount of information about song construction and all that business, and necessarily there are things that I had to comply with so that people could come to terms with the music. And, in fact, if I listen back to some of our early creations, it's pretty standardized. There were verses, choruses and bridges, but because there's not a lead vocal they're not as easy to identify.

But the essential elements of music are there."

MT: *Speaking of vocals, you've just done your first one with Tom Jones.*

JJ: "Well, funnily enough, when we first started in 1982, Trevor Horn was always a great fan of Tom's and he said, 'Wouldn't it be great to do a record with Tom Jones?' We all laughed and said, 'Yeah, Trevor, go and make some tea.' And that was the end of it. He wanted to do it because he thought he had a great voice, which indeed he has. So that idea was forgotten until about six months ago. I was producing some stuff for Nick Kamen, and the A&R chappy was on the phone and said, 'Yeah, it would be great – Tom Jones and the Art of Noise.' It was a laugh and then bells started ringing and I thought back to five years ago. And actually, of all the people who could sing, I couldn't think of the sound of one voice that I wanted to work with more, maybe other than Bob Hope or Bing Crosby, because I think they have such a sound in their voice, and likewise Tom."

MT: *What did Tom Jones think of it, playing in this context?*

JJ: "I don't know what he thought of it initially, because we didn't work together at the same time. The tape we sent to Los Angeles had a different rhythm track than the one that ended up on it."

AD: "That's why he was great to work with (laughs) – send him a tape, get it back, and you meet on *Top Of The Pops*."

JJ: "It came back to England and I worked on it for a few days, and thought it was boring. His voice sounded so out there and up front that I thought it needed something radical going on in the background. Eventually, after I'd figured out that we had this lead vocal and we could swing things around it, we mixed it and sent it back and he thought we were geniuses, because we had a good sound on his voice essentially. It came down to engineering, but also the fact that we didn't have that modern boom-crash – which I think is there to disguise the fact that a lot of people can't sing – stomping all over his voice." ►



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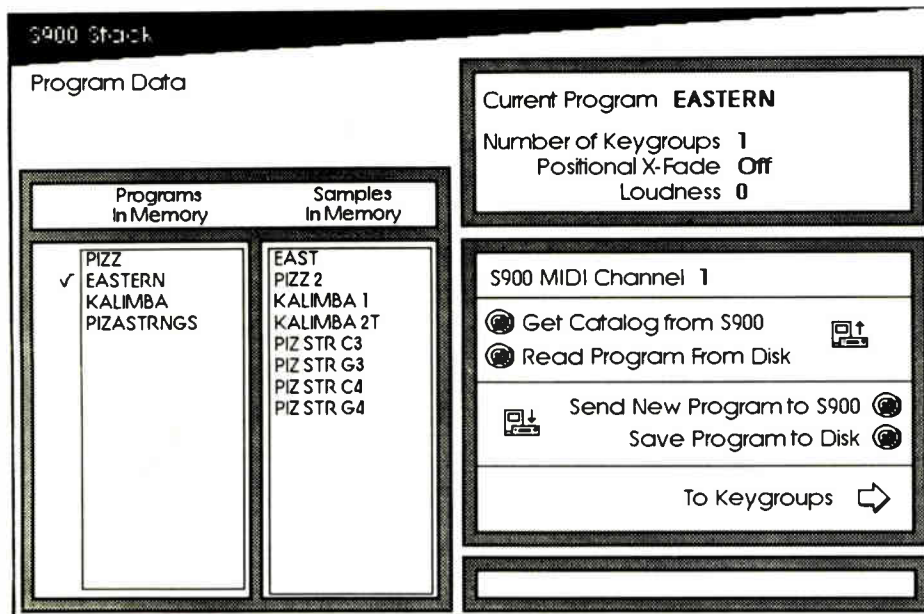
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# HYPER MIDI PROGRAMMING

## PART 1



The first card in the S900 Editor stack.

Apple's revolutionary HyperCard program promised to offer and, in fact, has delivered "computer programming for the rest of us."

In the first of a two-part article, an adventurous HyperCard explorer shares his experiences in putting together an S900 editor MIDI stack. *Hacking by Lachlan Westfall.*

**O**KAY, I'LL ADMIT it. I've always held in awe those people who could take a computer and make it do whatever they want - especially those who write MIDI applications. The amount of work required in dealing with hardware MIDI interfaces, timing, the user interface, etc., has always seemed overwhelming, especially when working with my computer of choice, the Apple Macintosh. Dealing with all the rules and regulations of the Macintosh seemed entirely beyond the grasp of such a fledgling programmer as myself.

That is, until HyperCard brought Macintosh programming down to a level that anyone with a basic understanding of programming concepts can handle. At the same time, HyperCard gives the advanced user the ability to "customize" the application allowing data to be sent and received from a MIDI interface, among

other things.

I've been a MIDI fanatic since the inception of the interface, and the idea of having complete control over what goes in and out of my computer by using the MIDI interface was too much to handle - this is real power! So, much to the distress of my wife, family and friends over the past few months, I've struggled with and completed (if any program is ever "complete") my first "MIDI program" - an editor for the Akai S900 sampler. Through this experience I learned that programming a useful MIDI application is not nearly as difficult as I originally had thought, and although at times frustrating and time-consuming, it was ultimately extremely fun and rewarding. I hope to share my experiences, insights, and struggles with you in this series of articles by taking a step-by-step look at how I went about designing my HyperCard program and how

the System Exclusive data gets in, displayed, edited and sent back out.

### HyperCard Tutorial

AS I MENTIONED, the impetus behind my leap into the Land of Programming was Bill Atkinson's HyperCard program for the Macintosh. Attempting to explain HyperCard to people, even computer users, has often been as difficult as explaining to my parents what MIDI is.

In a nutshell, HyperCard contains two decisive features that makes programming MIDI applications possible: first, it includes a built-in programming language, HyperTalk, that is very easy to learn and implement in your custom HyperCard programs, or "Stacks;" and second, HyperCard allows users to extend the set of HyperTalk commands by adding "resources" to the application (see sidebar). With a set of resources called the "HyperMIDI Toolkit" you're able to send and receive MIDI data from within a HyperCard stack.

HyperCard is unlike any other program running on the Macintosh. Although it's not essential for using the Macintosh, Apple includes the program with all new



Macs and defines it as "System Software." Many users look at it as simply a rolodex-type database program for storing phone numbers and addresses, while others push HyperCard to the limit by creating their own resources, such as the HyperMIDI Toolkit, for performing specific functions or controlling external devices.

A file created with HyperCard is called a "Stack," analogous to a stack of index cards, each containing specific useful information. A card is the size of the standard Macintosh screen (on the SE or Plus), and a Stack can have any number of cards. Cards are used to hold a combination of pictures, fields and buttons.

If a number of cards are to perform similar functions or hold some of the same information, they may share a common "Background." For example, if a button that exits the Stack is supposed to appear on all cards, it can be placed in the Background layer. It will then appear on all cards sharing that background. If one specific card of that background type also needs a special button, it can be placed on that card's foreground (or "Card") layer. It will then only appear on that particular card.

A "picture" is simply any bit-mapped image and can also be placed on the foreground or background layer. A "field" is somewhat like a mini-word processor that is used to store and display text on a particular card. "Buttons" are used to initiate some sort of action. The user can click on a button and it will, for example, cause HyperCard to go to some other card or display a certain field. I use buttons to request data dumps from the S900, among other things.

What a button does when a user clicks on it is determined by its "script." A script is a set of instruction routines that will be performed when that button is clicked by the user. Here's an example of a simple script:

```
on mouseup
  go to card "Editor"
end mouseup
```

This routine will instruct HyperCard to go to the card named "Editor" when the mouse button is let up (i.e., clicked).

The power behind HyperCard lies in the fact that not only do buttons have scripts, but everything can have a script. Fields can have scripts, Cards can have scripts, a Background can have a script, and the Stack itself can have a script. The advantages of including scripts in the various elements of the Stack is that the many parts of a complex program can be broken down into simple routines that are directly associated with the object you are using to initiate the routines. Furthermore, a number of different routines can be included in a single script.

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Each routine is called a "handler," and although they're stored with a specific element, access to a handler is not strictly limited to its button, field, card or stack. In fact, buttons can call on handlers stored in the card's script, the background's script, or practically anywhere. This is due to HyperCard's hierarchical message structure, which basically networks the various "elements" (cards, scripts, etc.), allowing handlers to access elements that are lower in the hierarchy.

A complete description of HyperCard would take several books and is well beyond the scope of these articles, but I just wanted to give you a quick idea of the basic elements of HyperCard that are used in the S900 Stack. Now we can examine the first steps in getting HyperCard to the point where it can communicate with MIDI instruments.

## Extending HyperCard with XCMD's and XFCN's

**ONE OF THE** most significant advantages to using HyperCard, and indeed the reason that MIDI via HyperCard is at all possible, is the fact that the programming language of HyperCard - HyperTalk - can be extended by the user. In essence, this means that a user can add commands to the programming language as needed. This is accomplished through the use of "resources" which are a large part of the way in which the Macintosh works. Unlike most computer file formats, Macintosh files have two sections, or "forks." The "data fork" contains the actual information in the file, the text of a letter or the numbers in a spreadsheet. The second fork is called the "resource fork" and this contains information that is used by the Macintosh for that particular file or application. Common resources include fonts, dialog boxes, and menu items. However, resources can be designed to be practically whatever a user wants them to.

The HyperMIDI package, designed by Nigel Redmon of EarLevel Engineering, is a collection of various resources that can be used to give MIDI capabilities to HyperCard. There are two types of resources that can be automatically accessed by the HyperTalk language: XCMD's and XFCN's (called X-commands and X-functions). XCMD's typically take arguments and execute an instruction set, while XFCN's are typically used to take arguments and return a value or values to HyperTalk.

HyperMIDI includes resources for sending and receiving MIDI data, filtering received data and converting

## The HyperMIDI Toolkit

BY INSTALLING THE resources from the HyperMIDI Toolkit into a Stack, I'm able to send and receive information over a MIDI interface from within HyperCard. Since these resources can be called up with scripts, HyperMIDI essentially adds thirteen commands to the HyperTalk language.

HyperMIDI's InitMIDI and ResetMIDI commands are used to set up and dispose of its input and output buffers. For example, the command:

```
InitMIDI 500kHz, 8000, 2000
```

will define the MIDI interface rate to be 500kHz, set up an input buffer of 8000 bytes and an output buffer of 2000.

TxMIDI and RxMIDI are the most commonly used HyperMIDI commands, since they're used to transmit and receive ►

raw data into symbolic representation. In addition, there are various resources for making it easy to include visual "sliders" on-screen which will send data as they are moved.

In addition to the set of HyperMIDI resources, I use two additional XFCN's to make my stack workable. The first resource gives me a method of computing a checksum without doing the math in HyperCard (which takes much too much time). This resource, which was graciously provided by Greg Provisor of SyntheSystems, basically allows me to compute a checksum by simply sending the resource a range of decimal values in a HyperCard Field. The XFCN then returns the checksum. The second is a public domain XFCN called Pop Up Menu that allows you to create menus that will "pop-up" when you click on a specific field or button.

Any resources can be installed directly into the HyperCard application, the "Home Stack," or the actual Stack you are designing. There are a number of programs available for moving resources between applications. The most common is a program called ResEdit; it's available from most Mac-related BBSs. If ResEdit is a bit too scary (it's not too difficult to ruin an application by messing around with ResEdit), there are some HyperCard Stacks available for moving resources as well.

The HyperMIDI Toolkit is shareware (\$30) and is available from EarLevel Engineering, 21810 Barbara St, Torrance, CA 90503. It can also be downloaded from the PAN telenetwork. ■ LW

► the actual MIDI data. The commands: `TxMIDI "240 47 01 247"` will send the MIDI bytes corresponding to the decimal numbers enclosed in the quotes, and `RxMIDI "100"` and `RxMIDI "all"` will return the first 100 bytes or all the bytes, respectively, to the input buffer.

In addition to standard input/output functions, HyperMIDI includes commands for setting up a MIDI input filter, channelizing incoming data and setting up an automatic MIDI Thru function. Data can be converted from decimal to Symbolic notation as well. Finally, six commands are available for defining on-screen sliders that can be set up to transmit MIDI data.

HyperMIDI's limitations arise when you try to accurately time-stamp incoming data. It can't do it. This makes it virtually impossible to design a stack that will correctly record and play back incoming performance data. But applications such as these are so "time-critical" that they are better left to much faster compiling languages anyway. (The limitation should also act as a warning to any of you trying to write a real-time MIDI application in HyperCard with anything less than the speed of a Mac IIx).

designing an editor that works via System Exclusive, this can often be difficult, since each instrument is different and you will most likely be dependent upon the manufacturer to supply you with documentation.

The System Exclusive charts for the Akai S900 were a mixed bag. The documentation itself was sketchy, including indecipherable mnemonics and lots of "Jinglish" (Japanese/English - you've read it if you have a Japanese instrument). But once I figured out the codes, the actual System Exclusive format didn't look like it would be too difficult to master.

The format is divided into five sections. Each section independently handles the data for drum trigger settings, overall settings, program settings, the sample/program catalog and sample parameters. This is helpful, because my application only sets up and edits programs which determine how samples are played across the keyboard, via individual "keygroups," which MIDI channel they are on, envelopes, levels, etc. The drum trigger setup is an optional feature I decided not to tackle in this stack. I also had no desire to attempt to compete with tried-and-true sample editors and somehow attempt to display a digital sample within the many constraints of HyperCard (don't lose any sleep,

back any of the four parameter settings dealt with in this Stack.

2) The transmission from the S900 to the computer of the "current memory catalog," specifying which programs and samples are resident in memory.

3) The transmission from the S900 to the computer of an individual program, containing all the information about keygroups, MIDI channels, samples, envelopes, etc.

4) The transmission from the computer back to the S900 of a program that has been changed (the most difficult task of this whole project).

The first group of information I want to get from the S900 is the catalog of what is currently residing in the sampler's RAM memory. This then allows me to set up an overall display for the user, showing what's available for editing within the S900. Requesting this information from the S900 simply involves sending a series of eight bytes over MIDI. The first three are the SysEx status byte, Akai's ID number, and the MIDI channel. The fourth byte is the critical byte - it tells the S900 what type of information I'm requesting. Byte five is used to identify the S900 and is always set at 64, and byte six ranges from 0-31, identifying the preset or sample I'm requesting. Byte seven is set to 0, and is followed by the final EOx (End Of eXclusive) byte. In order to request any other type of data I simply need to alter the fourth byte to let the S900 know what type of information I want it to transmit.

## A Little Q&A

NOW THAT I have my cake, I have to figure out what to do with it. Remember, whenever data is received at the MIDI In of the computer's interface, the HyperMIDI resources will store it in a buffer. After requesting information, the first thing to do is take the data and permanently store it in a field. The part of my script that performs this operation is very simple:

*on mouseUp*

*ClearFields*

*set the style of cd fld samplelist to rectangle*

*put (line 1 of cd fld MIDIChannel) -1 into MC*

*get RXMIDI ("flush")*

*--*

*TxMIDI "240 71", MC, "3 64 0 0 247"*

*wait 1 second*

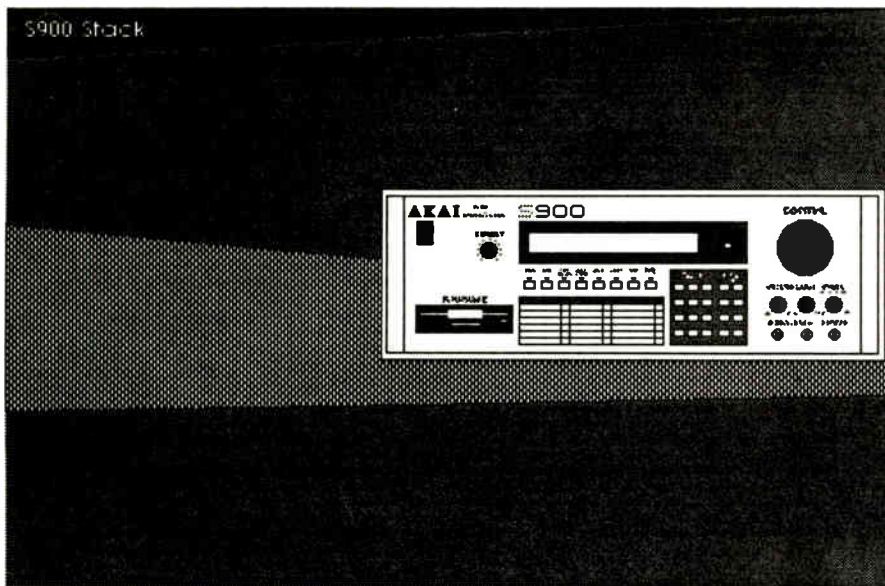
*put RxMIDI ("all") into card field "Overall"*

*OveralltoList*

*end mouseUp*

This handler first looks in a field I've set up to allow the user to determine which MIDI channel (1-16) to send the messages to. A value of 1 is subtracted from the number so that it will match the (0-15)

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Now that we have HyperCard all primed and ready to communicate with the external world via MIDI, we should take a look at the other end of the line, the System Exclusive messages we'll be sending and receiving, before we jump into designing a Stack.

## Who, What, and Why

THE FIRST STEP in designing any type of HyperCard MIDI program, especially one that deals with System Exclusive messages, is to figure out exactly what parameters the instrument you'll be communicating with is capable of transmitting. When

Digidesign or Blank). Nonetheless, the parameters accessed within "S900 Stack" encompass most, if not all, of the parameters ordinarily used on the sampler, providing your samples are all nice and clean.

The first thing I had to do was to figure out exactly what I needed to send to the S900 and what I would get back. While this may seem like the most difficult hurdle to get over, it actually ended up to be quite straightforward. Sending and receiving data boils down to four types of System Exclusive transmissions:

1) A message that must be sent from the computer requesting the S900 to transmit

scheme of the S900. The final number is stored in a variable called "MC." Next, a TxMIDI command asks the S900 to transmit the names of the Programs and Samples currently held in memory. The response of the S900 is then stored in the input buffer and the data is extracted via the RxMIDI command, and placed into a card field I've named "Overall."

After a week of getting incomplete data and practically getting to the point of giving up, I realized that it is critical to include a "wait" statement. I found that I was occasionally trying to read information out of the buffer before the entire message had come in over MIDI. I figured this out by watching the LED data indicator lights on the MIDI interface - they were still lit sometimes when the data was being put into the "Overall" field. While HyperCard can be accused of being slow, sometimes sending lots of data over MIDI is even slower.

Now that I finally have some real data in my stack, it's time to set up a method of decoding it and displaying it so that the stack can be of use to someone. Data comes in from the S900 and is displayed in HyperMIDI as decimal numbers. The display can be changed to Hex, but since much of my information includes ASCII characters I opt for decimal. The data returning from the S900 after requesting the program/sample catalog is as follows:

```
240 71 0 11 0 64 0 0 80 0
 84 79 79
69 32 80 82 71 82 77 83 0
 84 79 78 69
32 32 32 32 32 32 121 247
```

The S900 data sheet informs me that the current program and sample names follow a header of 7 bytes. They are identified by either a "P" and/or "S" (ASCII characters 80 and 83), followed by the program or sample number, and then the name in 10 characters.

Deciphering this is a bit tricky because the number of programs and samples in the S900 is variable, so I have no idea how large this message is going to be. Since I know that the name of each program or sample is going to take up 12 bytes (the "P" or "S," the program or sample number, and the 10-character name), I simply have to determine the total number of words in the field, which is easy in HyperCard: subtract out the Header (7 bytes) along with the checksum and EOX (2 bytes), giving me a number that, when divided by 12, will give me the number of programs or samples currently in memory.

However, although I know how many names I'm dealing with, I don't know which are programs and which are samples. I want to set up a display that shows samples in one field and programs in another. To do this I set up a loop to repeat for exactly the MT FEBRUARY 1989

number of programs and samples put together. If the first character is an 80 ("P"), I perform a NumToChar operation (for translating ASCII numbers to characters) on the following name, and place it in the program field. If the number happens to be an 83 ("S"), I translate it and place it into the sample field. The result is two fields displayed next to each other that list the programs and samples currently in memory. So now I can use these two fields as reference points throughout the stack.

### Until Next Time . . .

I'M GOING TO have to leave you hanging here until next month when we will look at the actual designing of 'S900 Stack.' We'll

take the current memory catalog and turn it into something that can be of value to someone working with an S900 by displaying all the information and allowing the user to edit any parameter values. I'll also look at other methods of decoding and encoding System Exclusive codes, along with their associated difficulties, as well as special functions that can be implemented which make the S900 Stack editor even more powerful than the S900's on-board controls. ■

*Lachlan Westfall is the director of the International MIDI Association, the secretary of the MIDI Manufacturers' Association, a complete Mac and MIDI freak, a crummy poker player and a heckuva nice guy.*

# JAN HAMMER



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# Eventide H3000

## Ultra-Harmonizer

The eagerly awaited next generation harmonizer has finally arrived – and with it comes a new standard for pitch shifters, reverbs and MIDI control. *Review by Robert Rich.*

THE EVENTIDE Ultra-Harmonizer poses many challenges to reviewers like me: the challenge of completely exploring its complexities in such a short period of time; the challenge of trying to describe all the features in such a short article; and the challenge of writing an honest review without sounding like I'm taking bribes from Eventide. In short, the Ultra-Harmonizer is amazing.

Rather than try to squeeze a complete description of the H3000 into an impossibly short space, I will try to explain what makes this effects processor different from the others. The Ultra-Harmonizer can do pitch shifting, reverb, multi-tap echoes, chorus and flange, sound synthesis and more, along with some of the most unusual and bizarre special effects I have ever heard. Even its most mundane processing algorithms have a certain pizzazz that sets it apart from the crowd. The H3000 is rather expensive – well over \$2000 – but considering the crystal clear sound (16 bit, 20kHz bandwidth) and the level of control that it provides, this price seems almost a bargain.

### Basics & Algorithms

THE APPEARANCE OF the H3000 reflects its price: uncluttered, solidly built, and very functional. The rear panel sports stereo balanced XLR inputs and outputs, which expect +4dBm line levels (internally switchable to -10). A cursory glance also reveals MIDI In, Out, and Thru, and several mysterious cut-outs intended for future expansion (no planned obsolescence here).

The front panel features a large backlit 2X40 character LCD display, with four "Soft Keys" underneath. The screen always indicates what these keys will do at any time. A rotary encoder provides continuous control over all parameters, and a numeric keypad allows direct numerical input. Three buttons give you access to the operating modes of the H3000, another button lets you set master input levels with a twin 10-segment LED

bar graph, a bypass switch activates an internal relay to completely disengage the unit, and a power switch does what power switches normally do. The controls feel very solid and the display tells you exactly what you need to know.

To confuse things just a bit, there are actually two different kinds of Ultra-Harmonizers: the H3000S (studio) and the H3000B (broadcast). The more expensive H3000B adds an extra jack on the rear panel which can control the tape speed of a properly equipped tape deck. Beyond this, the broadcast version also has different presets in ROM, three algorithms not found in the H3000S: Stutter, Patch Factory, and Time Squeeze, and an

Each algorithm also contains the hooks for complete MIDI control, with almost every editable parameter assignable to any MIDI controller.

Once you have edited an algorithm to the full extent of your perverse whimsy, you can save it to any memory location that is not reserved for a ROM preset. The Ultra-Harmonizer comes with a healthy 1000 memory slots, arranged into 10 banks of 100. On the H3000B, about 80 of these are used by presets. You'll probably run out of memory long before you run out of program numbers; having so many allows all sorts of flexibility in arranging your own "banks." The Ultra-Harmonizer can take almost a second to load one of these



extensive internal function generator. I'll discuss these momentarily.

An algorithm represents a particular arrangement of processing modules, such as pitch shifters, delay lines, filters, mixers, and modulation functions. Most of the algorithms give you several levels of control, from global parameters in the normal editing modes down to the minuscule in the Expert Modes (the Ultra-Tap algorithm even has a Tedium Mode.)

presets, and it will mute its output as it does. I never heard it hiccup during this process, but you should be cautious when changing presets during a mixdown.

### The Algorithms

I WON'T ATTEMPT a complete description of all the algorithms, but here is a brief list with some of the more salient features:

– Diatonic Shift: Probably the most  
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ballyhooed of the H3000's algorithms, Diatonic Shift will add two pitch-shifted musical lines to a monophonic (single-voice) input while staying within the key and mode of your choice. Standard pitch shifters will simply transpose whatever comes in, creating some intervals that do not fit into the key you are playing; this one detects the pitch of the incoming note and changes its transpose interval to fit any desired sequence of playback pitches. You can select any of seven modes in any equal-tempered key, select droning notes, or define your own scale by note name and transpose interval. Alternate tuning enthusiasts can rejoice: the two user-defined scales can be microtonal. How well does it work? It can be a bit glitchy if you're not careful. The pitch-detection circuitry tends to get easily confused with harmonically complex sources, resulting in a rather wobbly output. Sounds with a fast attack can point out the processing delay inherent in the analysis. However, I found that it worked very well with voice and flute. As always, there are plenty of parameters to tweak if you need to improve its performance (such as what range of notes it should expect on input, helping it throw out "illegal" choices).

- Layered Shift, Dual Shift, Stereo Shift: Three variations of a standard pitch shift function. Layered Shift takes the left channel input and sends it to two separate pitch shifters. Dual Shift sends left and right

to be processed. These are some of the cleanest, most "in tune" sounding pitch shifters I have ever heard.

- Reversed Shift: This one is unique. Two separate pitch shifters take chunks of the incoming signal (up to 1.4 seconds at a time) and echo them out backwards. The pitch, splice rate, and feedback can be modulated by just about anything. Placed in the hands of someone sick enough, this algorithm can splatter a sound into shards of fragmented nonsense. I loved it.

- Swept Combs: Six parallel delay lines contribute to make big fat sounds. Each delay line can range from 0 to 200 milliseconds, and contains its own separate modulator. The modulators are all randomized, so the resulting sound has none of that tiresome swept quality. (Of course, if you want a simple sine wave sweep, you can get that from the function generator described near the end of this review.) Global controls let you adjust the parameters of all six delays together, and Expert controls let you adjust their relationships to each other. Among other things, you can place each delay somewhere in the stereo field, and then adjust the width of that field globally.

- Swept Reverb: This resembles Swept Combs, except that the six delay lines all enter a reverb network, which further randomizes the echoes. The results can be very subtle or very weird. This algorithm can fatten up even the wimpiest sounds,

tailor the room to your heart's content. To my ears, these reverbs rival some of the best from Lexicon, AKG and others.

- Ultra-Tap: Yet another very versatile ambience algorithm. This one specializes in dense, fizzy multi-tap echoes. The signal first enters a diffuser, which consists of four all-pass filters with individually controlled feedback loops. After getting fluffed up by the diffuser, the signal enters a 12-tap delay with up to 1.4 seconds total delay time (all 12 taps added up together). Every delay parameter can be individually tweaked if you feel patient enough to tackle the programming, or you can just stick with the global parameters. This algorithm sounds thinner than the Reverb Factory, and is best suited for airy, "fluttery" reverb sounds or for simulating near reflections.

- Long Digiplex and Dual Digiplex: A single 1.4 second delay line, or two 0.7 second delay lines, respectively. These are pretty standard DDLs, except for the glide control which lets you define how fast the delay time responds to modulation changes (the H3000's other delay algorithms have this feature, too). These delay lines also benefit from the Ultra-Harmonizer's extensive modulation abilities, which I'll get to shortly. I do wish the delay times were a bit longer, though.

- Stutter (broadcast version only): Th-th-th-the effect we have all come to know and hate. Now it's even easier to create those Max Headroom effects, with automatic random repeats, pitch shifts and hiccups, all in one box and waiting to be abused.

- Patch Factory (broadcast version only): When you can't get the sound you want with the other algorithms, this one is for you. Two delays, two variable Q filters (high, low or bandpass, with resonance to the point of oscillation), one pitch shifter (with a 5-octave range), a noise generator, some attenuators and summers, all completely patchable. There are a lot of parameters to play with, which can result in some pretty unique effects. Along with processing external sounds, Patch Factory lets you convert the Ultra-Harmonizer into a very unusual synthesizer. The factory presets include a convincing wind storm, jet plane and some interesting plucked sounds which resemble Karplus-Strong synthesis. It's pretty hard to create interesting tuned sounds that you can play on a keyboard, but it's great for sound effects.

- Time Squeeze (broadcast version only): This algorithm uses the added tape speed control on the H3000B to speed up or slow down recorded program material while pitch-shifting the material to maintain the program's original pitch - perfect for fitting a 35-second advertisement into a 30-second spot. While you could always do this manually with a calculator and a bit of luck, Time Squeeze does all the thinking for you. ▶



inputs to their own separate shifters, which could be used to process completely different signals. Stereo Shift takes left and right channels separately, but it is optimized to retain stereo imaging. Needless to say, all of these shifters are completely MIDI controllable. All shift channels allow programmable delay, feedback, mix and modulation. You can also tweak them for glitch-free operation by defining the characteristics of the sound  
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simulate Doppler effects, and possibly induce motion sickness.

- Reverb Factory: A very complete, very programmable reverb algorithm with pre-delay, EQ, programmable gate, and six independent delay lines which sum to a reverb network. Different reverb and EQ settings can apply with the gate open or closed. The settings of the six delay lines will change the reflection characteristics of the resulting reverberation, allowing you to

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never had a chance to test this feature, because the review unit did not have the control jack. We'll take it on faith . . . this time.

## Modulation

NOW THINGS GET really interesting. The H3000 gives you real-time control over most of the high level parameters in each algorithm. This control can come from MIDI or from a very extensive internal function generator.

The internal function generator, which is unfortunately only available on the broadcast version, is one of the most complete I have ever seen. Continuous LFO-style functions include sawtooth, sine, triangle, peak, and square waves, sample & hold, and lowpass filtered noise. The wide range of triggered functions are a bit harder to describe without pictures, but suffice to say that there are plenty. These one-shot functions can mimic the envelope generators found on most synthesizers, and can be triggered from the front panel or from MIDI events.

Speaking of MIDI, anything that can be modulated (meaning nearly everything) can be assigned to a MIDI controller. Furthermore, any changes that you make on the front panel can be saved in real time to a sequencer. Upon playback, the H3000 will echo these edits. For example, imagine using the Ultra-Harmonizer along with tape sync and a sequencer to create rhythmic flanger sweeps in sync with the rhythm, or to correct the pitch of only a few bum notes buried in a complex vocal line. The possibilities become rather mind boggling.

## Conclusions

THE EVENTIDE ULTRA-HARMONIZER is one of the most unique sounding effects devices I have ever heard. It is also one of the cleanest and quietest. It provides more control and more programmability than many units that cost three times as much. The reverb algorithms create some very convincing three-dimensional environments, which can sound as natural or as bizarre as you want. The Diatonic Shift algorithm does glitch with some sounds, but it works like magic when it knows what to chew on.

We have seen a lot of amazing effects devices these days, many of which cost less than \$500. You could easily buy a half-dozen budget reverbs and multi-effects devices for the price of the H3000. The H3000 justifies its price with its flexibility, crystal clear sound, elegant user interface, and open-ended design. It's a bit like that guitar amp in the movie *Spinal Tap*: "It goes up to 11." ■

PRICES H3000S: \$2495; H3000B: \$2995

MORE FROM Eventide, Inc., One Alsan Way, Little Ferry, NJ 07643. Tel: (201) 641-1200.

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# C-Lab Notator 2.0

Not content with producing one of the most highly regarded sequencers for the Atari ST, this German company has added music notation to the package. *Review by Lorenz Rychner.*

THE NOTATOR PROGRAM from C-Lab was never an Only Child. From day one it was joined at the hip, born as an added feature of C-Lab's sequencer, Creator (reviewed in MT April '88). So when you buy Notator, you really buy two programs bundled into one, and hence the name: C-Lab Notator MIDI Sequence & Score Edit/Printout Management System. As of December '88 Notator is in its second rebirth, namely version 2.0, with future enhancements planned – good reason for

first get to know this section, since the notation part of the program relies on data in the sequencer's tracks. So before I can describe the workings of Notator, I need to give you a quick Creator overview.

## How It Works

CREATOR TREATS THE entire contents of the computer's RAM as a song – loading a new song (a .SON file) from disk wipes out what was in RAM before. A song is made up of patterns (up to 99) that can be saved and loaded individually as .PAT files.

in – the notation display takes up the lower half, below the sequencer's graphic and alphanumeric events list (Figure 1). How many staves you see depends on the number of tracks that are recorded in the currently selected pattern. You have several display choices, including single tracks and Score mode. In addition, the proportion of edit list versus notation on the screen is adjustable. The screen doesn't show you the pattern number, but the track number and name (if you gave it a name) are shown at the top on the left.

Each track is first shown on a single staff and can be turned into a grand staff. Changing an event in one display mode (screen half) affects the display in the other. In other words, if you make adjustments to the notation, the appropriate changes will be made in the event list and vice versa.

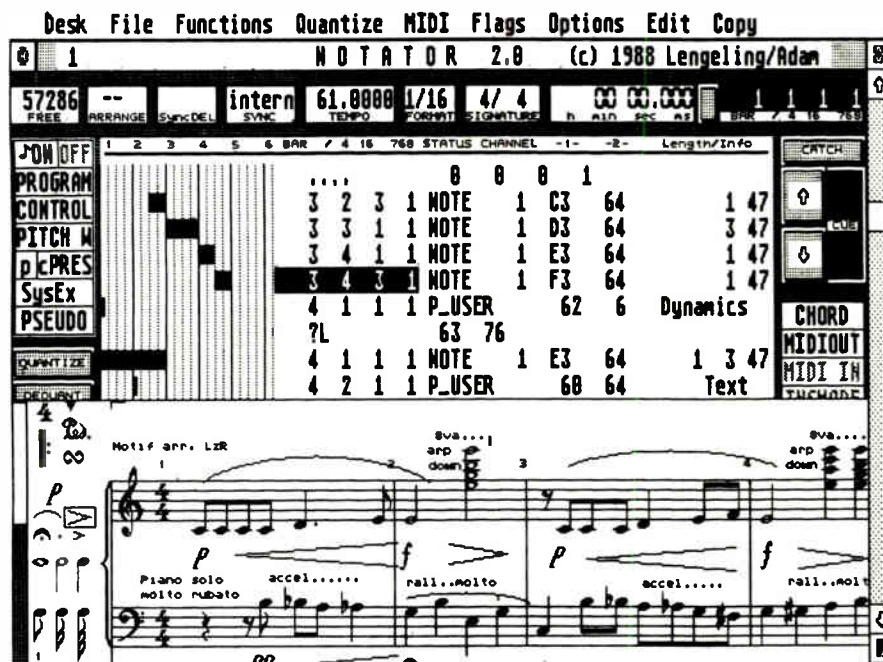
## Sequence Display

THE EVENT PART of the screen starts on the left with a vertical grid of beats and subdivisions, and events are plotted as block graphs running from left (start time) to right (end time). Then comes a series of four numbers, bar, beat, subdivision according to the current quantization, and the amount of clock ticks according to the finest resolution that the program offers – 1/768 notes, or 192 pulses per quarter note. This is followed by a word describing the type of event, "note" in the case of a MIDI Note On event. Next comes the MIDI channel number, then the pitch listed in letters and octave numbers (C3, G#5, etc.). The next two numbers show the velocity and the length (duration), the latter in bars, beats, quantization subdivisions, and 1/768 clicks.

I'll give you an example: your music on MIDI channel 1 starts on the downbeat of measure 1 with a strongly played (velocity = 120) half note on middle C (C3). You have the display quantization for this track at 1/32. Below the events list, on the musical staff, all is well – you see a half note, and a rest for the second half of measure one. Above, to the left, a solid black block representing this note starts on the first vertical line and extends towards the right across the spaces allocated to the first two beats in the measure, stopping just short of the line where beat 3 starts. Then the line reads:

|||| NOTE | C3 | 120 | 1720 ▶

Figure 1.



some excitement if you take into account the enormous strides C-Lab has made over the previous version 1.12.

The package is well presented, boxed and ringbound, with a single program disk and a protection cartridge for the Atari ST. If you buy C-Lab's Unitor (see sidebar), the SMPTE synchronizer that connects to the modem port, then you don't need the protection cartridge. One notable update worth mentioning early on is that version 2.0 or Creator and Notator will now work with color monitors. To announce the additional sibling, a new cover and a Notator section were added to the Creator's manual. The sequencer description takes up more than three quarters of the book, and new users must

A pattern has up to 16 tracks that can be saved and loaded as .SEQ files.

Patterns can be as long or as short as need be. Each track can have its own quantization, loop, delay (track shift), high/low note limit, transposition and other characteristics. Tracks can contain data on as many MIDI channels as desired, and various ways of copying and merging data are available. More complex musical pieces can be achieved by assembling a playlist of patterns in the program's arrange feature. Longer patterns can overlap with shorter ones, some can loop while others run straight through. The arrange mode playlist is saved to disk as part of a .SON file.

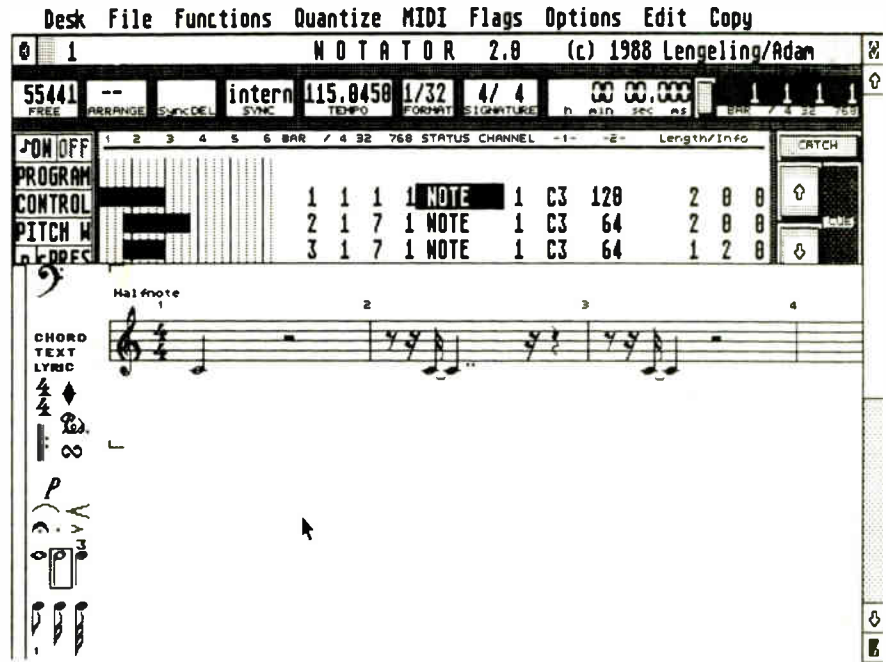
The Edit screen is where Notator comes

► This stands for Measure 1 / Beat 1 / Quantize Subdivision 1 / clock tick 1. The last three numbers (Beat/Quant Sub/Tick) might be anywhere from 1 7 12 to 1 7 23 or even 2 0 0, meaning that the actual length can be just a fraction less than a full half note, but for notation display purposes it's shown simply as a half note (see Figure 2).

Now let's say you would like this note to start on the fourth sixteenth after the downbeat, anticipating beat two. And you want it to last just over one beat, cutting off before beat three. You have a few ways to adjust this. You can click-and-drag the block in the grid just to the left of the line for beat two. This doesn't work too well for notes of shorter duration, because the mouse icon covers up the block and makes accurate alignment difficult. But in any case, the half note in the musical staff would also have moved, to a sixteenth note tied to a double-dotted quarter note, followed by a sixteenth and a quarter rest. And the numbers to the right of the grid now read 1 | 7 | if you were accurate in your mouse movement. Instead of messing with the block in the grid, clicking on the numbers on the event line can do the same jobs. The right mouse button decrements the numbers by one, the left button increments them.

Finally – probably the quickest way – you can point at the note head in the staff and briefly click the left mouse button. The

Figure 2.



note head now flashes to indicate that it was selected, and the event list jumps to the group of lines that include the selected event. Now aim the mouse arrow at the note head again and hold down the left mouse button. A command line appears above the notation area, showing the

words "Transpose" and "Time," and the event list for this note. Move the mouse horizontally and you're shifting the note in time while the position numbers are being updated. In our example here you would release the mouse button when the numbers 1 | 7 | appear. But not before

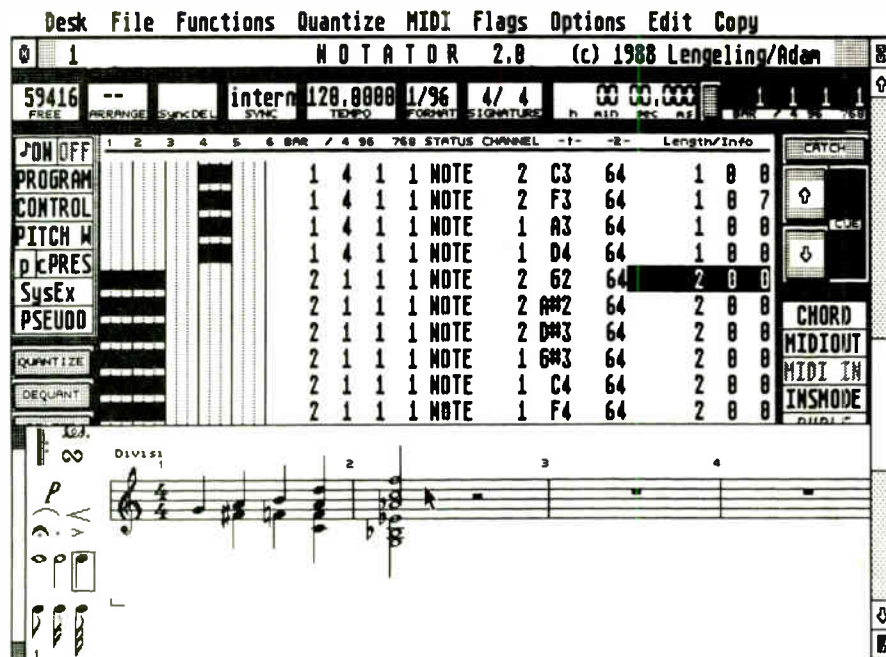
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Figure 3.



checking the column for pitch, because moving the mouse vertically shifts the pitch of the note. As you release the mouse button, the new data is reflected in the event list.

This should give you an idea of the extent to which the notation is married to

the sequencer – it's really just another kind of edit screen. But the notation side of the program has a life of its own. There are a good number of parameter choices that only affect the notation display, without altering the MIDI data. Each notation track can have its own display quantization that

may be different from the musical quantization. (Creator has just about the most incredible selection of playback quantization I've ever seen, including swing modes, human feel, and more). The key in which a track is notated can be different from the playback key. Overlapping note durations, often needed to accommodate smooth legato with certain synth patches, can be notated without cluttering up the screen. Similarly, the small gaps between notes that may sound just right with synths where the release time is on the long side would look awkward if they were represented by lots of rests. A Rest Correction feature is available. "Interpretation" is a new function in which the program looks at player idiosyncrasies and makes certain display decisions.

### Notation Display

INITIALLY EACH TRACK is displayed as a single staff, with a choice of clefs including alto and tenor, and with octave transpositions in each (loco, 8va, 8vb). Simply key in "S" for split and a bracketed Grand Staff appears, complete with bass and treble clef. A split point can be assigned for note allocation to either staff, and this split can vary as the music progresses. A neat drawing feature lets you input a line around the notes for defining the floating split. Each staff in a bracketed system can still have its own transposition, clef, and even ▶



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## Buying a Notation Program

REMEMBER THE OLD-FASHIONED way of communicating music? No, not with MIDI note numbers, clock references, durations and velocity numbers, but with those funny dots on five lines? A whole new generation of musicians don't write down their music in the conventional way. More "writing" is done into sequencers and onto multitracks than on paper. But in many musicians' careers there comes a time when a professional situation requires traditional notation, and a computer notation program looks very tempting. Can it really just take your sequences and turn out a professional score, like the advertising leads you to believe? I hear this question daily, and there's never an easy answer. Before I can even consider the question I need to know more about the user. What is the intended use of the printed music? What kind of music is it? How many parts? Is the user familiar with the laws of notation as they apply to different situations, from a conductor's score to sightreading players' parts, for leadsheets, sheet music, master rhythm parts, etc.?

If you're new to this notation stuff you may not realize how many subtle decisions go into writing a score. Some have to do with the music itself, but many are simply matters of correct presentation, for which there are strict rules, that every professional takes for granted. The two most important considerations are horizontal spacing within each part, and vertical alignment of beats across the parts in the score. A composer or copyist constantly plays with these rules, adjusting the size and spacing of note heads, the length of stems, the width of beams, while trying to stay within the boundaries of legibility. He or she does this on the fly, from experience, and with the help of the eraser, the harried composer's best friend. Can a computer make all these decisions for you and still save you time? The brutally honest answer is "no" for anyone who has learned to copy studio-ready music by hand in a professional manner. Only a few programs come close, as yet none of them for the Atari ST, and any saving of time comes only after an extended period spent on familiarization, creating templates, personalizing defaults, not to mention the investment in a hard disk, special printer, etc.

What about the rest of us? This brings me back to the first question: why do you want to print your music? To check your sequences for mistakes? To speed up a rehearsal by handing out parts? To present your song to the publisher? To extract examples and exercises for teaching? To save on copyists' fees on an orchestral project?

A few rules of thumb might clear the air. Go for a program that can distinguish between the MIDI data and the display data. Computers take things literally; musicians don't. A simple quarter note can be played in many ways (Figure 7), for musically valid reasons: a little early (Example 1), a little late (Example 2), held for more (Example 3) or less (Example 4)

time than its exact length, accented or not, etc. A program should know the difference, or the music becomes unreadable. Sure, you can always edit the MIDI data to prepare it for perfect display, but this takes time, and it will affect the music on playback.

If your music is already heavily quantized and repetitive in nature, consisting of few instrumental parts, then most programs can display the sequences quite accurately. With luck and foresight you'll only have to change things like transposition and separation by MIDI channel before you're ready to print. Transposition because you may, for example, have played your bass from the middle of the keyboard (the oscillators in your bass patch were at the 16' setting or the keyboard was transposed), and now the bass notes show up in treble clef, or in bass clef with a zillion ledger lines (Figure 8 Example 5). Channel separation may be needed if your sequence is merged, showing up on a single staff or system, and you can't tell which is the pad and which is the melody. As you look closer, you may find short notes that should be long. Or you might have tapped a key and held the note with a pedal for two bars, so you expect to see a whole note tied to a whole note, but all you see is an eighth note. And the note that you bent upwards with the pitch-bend wheel might not look right - the program shows the starting pitch (flat) instead of the arriving pitch (the real note you ended up sustaining). And those triplets you played with a laid-back feel have become something else (Figure 8 Example 6). Welcome to the club.

Then comes the headache of printing. How many bars per page width? How many staves per page? Does the program give you control over the format, or are you stuck with defaults? How about page numbers, titles, repeats, alternative endings, etc.? Is your printer compatible, and does it make your music look good? Again, it depends on the intended use. For publication, nothing short of a laser printer will do. They don't come cheap, and a program may not be configured for laser output even if you have access to one. The new generation of 24-pin dot matrix printers can do an acceptable job for many uses, as long as your program has the right printer driver for the right printer. You should be able to configure the driver from within the program. Ordinary 9-pin dot matrix printers make your music look crude. And when you switch a printer into graphics mode for better results, be prepared for a lot of waiting around. A page can take many minutes, and they soon add up to hours during which a reasonably competent copyist would have finished the job ahead of time.

As you can see, there are a lot of ifs and Buts. And all I can say to you is bear in mind exactly how you intend to use the program. With so many notation packages out there, the decision will ultimately have to be yours. ■

Lorenz Rychner

► key signature if needed. More staves can be bracketed together within a score, and the measure lines can extend across the space between selected staves if desired. A whole staff can be left empty except for clef, key signature, time signature, and measure lines, so that a part may be penciled in by hand at a later date. Or a staff may be printed out smaller than the others, as in some lead sheet formats.

The screen displays the track staves on an endless horizontal plane that is scrolled from left to right or vice versa with the mouse and a scroll bar, or with keystrokes, by quantization increments, beats, or full measures. Vertical scrolling through the tracks is done with the mouse and another scroll bar, or with key commands. The distance between staves can easily be altered with a mouse click-and-drag. Text can be entered on a command line and placed anywhere, in normal, bold, italic, light, underlined, outlined, or small print. Lyrics are typed in to lock onto individual notes. They, too, can have different print characteristics, although I haven't found an easy way to do this yet. A title page header can be configured that appears only on the first page. Groups of notes can be beamed or left unbeamed, or a whole track can be left unbeamed in "Vocal" mode.

Note and non-note symbols are available from a side area called the partbox, where they're grouped into families, and repeated clicks on the currently displayed symbol cycles through the others in the family. The complete set of symbols is available from an extended selection area that pops up when the mouse arrow touches the bottom of the screen. A click and a mouse-drag moves the desired symbol into the staff. Once selected, it is available from the right mouse button. Note heads can be entered after selecting them with a click, or via the Atari's keyboard.

Once you get used to this type of entry, you can work up considerable speed without ever using MIDI input. Each note you insert also appears in the events list and is now part of the MIDI data, which you can hear by events or as a track. Scrolling up and down and left and right is somewhat vague, and lower staves don't show bar numbers. Segments can be copied easily, but the program returns you to the top of the track. Individual notes or groups can be dragged around, for shifting or for duplicating, but not beyond the current window - scrolling de-selects selected notes or groups.

### Drawbacks

HOW DOES NOTATOR deal with those pitfalls (see accompanying sidebar) all-too-common to notation programs? Quite well, but not well enough to my liking. Toggling the rest correction mode on and off helps in many cases to avoid what you

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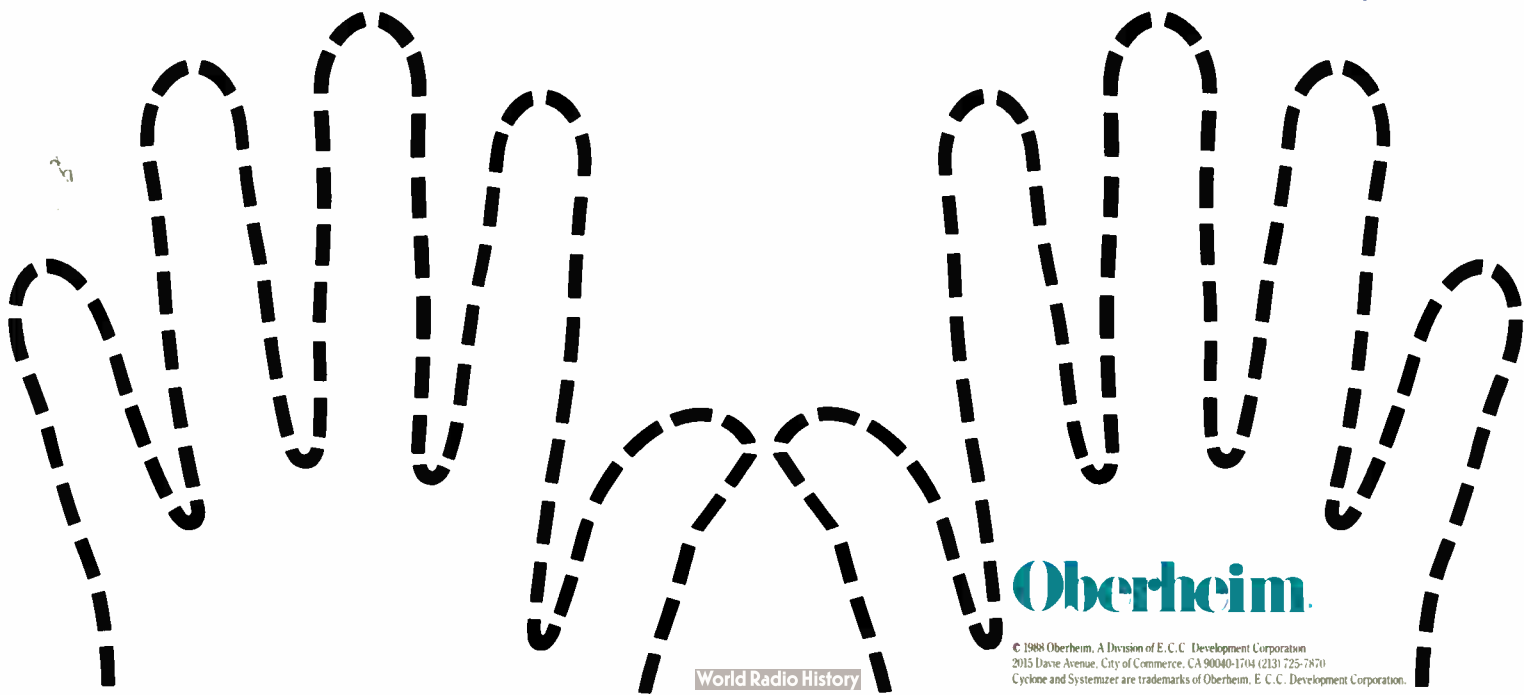


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see in Figure 2. And the program's sensitivity to player-idiosyncrasies helps correct tiny time shifts without affecting the MIDI data. If you had a good reason for playing the way you did, then your music will still sound the way you planned it. But these helpful modes are only available per track. The same goes for the display quantization. Now don't get me wrong, it is helpful to have the notation default to a different resolution than that of the playback. But more regional control, say, by bars or assignable blocks between markers that the user can place anywhere, must be added before it all makes practical sense.

The current version gives the user some control over the horizontal spacing of notes, and a newer version will offer similar control over rests. This will be important because half note rests in particular are wrongly placed, and quarter rests on beat four almost touch the bar line. When the micro-movement of notes is invoked, the notes often leave rests in lower or higher staves behind, and the vertical alignment falls apart. Non-note symbols (accents, staccato dots, bar numbers, etc.) are rigidly placed by the program, and if you don't like where they appear you're out of luck. While a variety of noteheads are available, I'm still waiting for slashes (/) that can be treated as notes, beamed, flagged, etc., or inserted as is. Similarly, repeat slashes (./ or ./.) are missing.

Printing is so far only possible with dot matrix devices, including wide-carriage printers. A number of printer drivers are on the program disk, and you have the

option of writing a custom printer configuration. The 24-pin NEC P6 comes up as the default, which is also suitable for Epson LQ (24-pin) printers like the LQ 500, 800, 850, and 1000 series. Selected track segments or entire single tracks, selected pattern segments or entire single pattern scores, or whole arrangements can be printed. But a lot of guesswork and paper waste will have to be overcome by future updates. Currently there is no telling what the format will be and just where exactly the title and other text entries show up.

A new feature is the chord symbol editor, where any extensions can be entered in text, as in "Am9," etc. The font selection for these chord descriptions is still hazy; I could only get the previous default to work, while the first letter always comes up in large print. And finally, triplets are a problem. The triplet sign is always the square bracket interrupted by the number three. This, of course, is wrong for eighth-notes or smaller values, when the 3 under an arc is the only legal symbol. Only severe and time-consuming fiddling gives the desired result - sometimes.

### Advantages

ON THE PLUS side there are many enhancements in version 2.00. For example, it's great to have a chance of doing divisi parts within one staff (stem up/stem down), each with one or more notes, playing on separate MIDI channels (Figure 3).

A consequence of this is the drum map (Figure 4). It works like this: first you

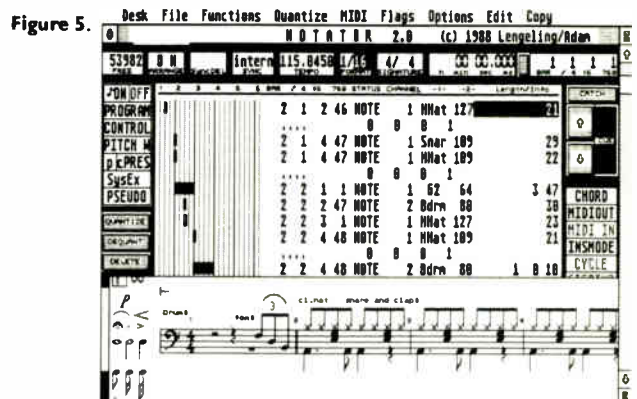
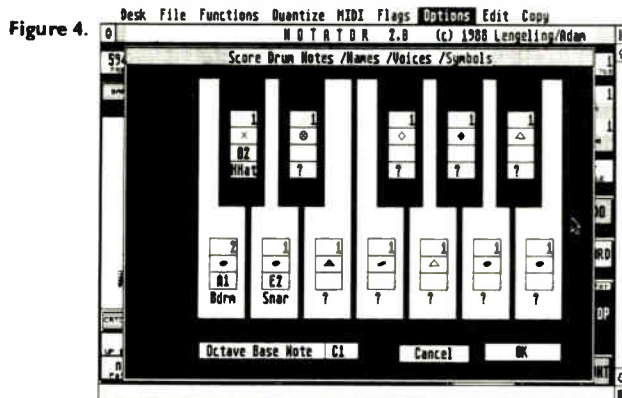


Figure 6.

Notif arr. L&B

1 2 3 4

*p* *accal.....* *ritl..molto* *p* *accal.....* *f* *ritl..molto*

Piano solo *molto rubato*

Percuss. *Balltrun*

PizzBass *pizz* *mf* *p* *ritl..molto*

Figure 7.

Ex.1 early

Ex.2 late

Ex.3 held long

Ex.4 short

Figure 8.

Ex. 5 bass displaced

bass

triplets

Ex. 6 triplets

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assign your samples or drum machine voices to MIDI Note Numbers that fall within one octave. Then you decide which drum or cymbal should appear on which line or space in bass clef (percussion clef is not available). For example, the bass drum on most drum machines is assigned to C1, but on a staff in bass clef it is usually written in the space called A1 or A2 depending on whether you're talking MIDI as adhered to by Yamaha and others, or A2 in the traditional octave numbering as followed by Roland, Korg, and others. When you program your drum parts into a track that has the drum map enabled, the bass drum is recorded as MIDI Note Number 36 (C1) but displayed as A. If you defined it as being Voice 2 then it can have its stem pointing down. Better still, the events list shows it as "Bdrm" if that's the name you chose in the drum map (Figure 5). The program is not too flexible when it comes to handling rests per voice - they're either all there or not. I'm hoping that this can be defined per bar or region in the next update.

### The Verdict

SO WHO SHOULD spring the considerable bucks for this program? This is a tough question, because you're mostly buying a state-of-the-art sequencer that has also undergone updates since our last review. In fact, Creator is now so advanced that the shortcomings in Notator's additional notation features appear more glaring than they would be if coupled with a less comprehensive sequencer.

For sequence editing and for printing rehearsal material I can recommend the program wholeheartedly. Twenty-four-pin printers, while slow in graphics mode, give neat results (Figure 6). Leadsheets and sheet music configurations are possible, but the lack of laser printer support is a hindrance. The same goes for teaching and publication examples. Screen dump (snapshot) programs are restricted to what's on the Atari's screen, which is never a formatted page (I used Michtron's Snapshot Accessory and Degas Elite to capture the examples used in this article). Full orchestral scores, while not impossible, would take more time and compromises than I'm prepared to put up with: the lack of overview means constant scrolling in all directions, and bar numbering is not flexible. I haven't tried wide-carriage print-out, but I'm assured by C-Lab that it works.

Where is the program headed? I have high hopes, based on the swift and extensive work I saw the developers put in to bring a very basic version 1.12 to the current version 2.00. In the words of its authors, Gerhard Lengeling and Chris Adam, who see its place mostly with the average rock and MIDI musician, it is not targeted to compete with Finale. Laser

printer support and other new features are due in early '89, free to registered owners. The rest is largely up to us users. If we express our wishes in enough detail and with sufficient urgency, Mr. Lengeling is more than likely to address them, Creator being a superb witness of his programming skills. ■

PRICE \$649; \$495 for Unitor; \$175 for Export  
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### The Unitor

IN ADDITION TO offering the ability to read and write SMPTE timecode and convert it into MIDI information, C-Lab's Unitor takes the place of those small, easily lost keys (which in essence make the tiny little cartridge worth the entire cost of the sequencer if lost or stolen) without which your sequencer - Creator or Notator - will not run. Unfortunately, Unitor won't hold auto-booting ROMs with the actual sequencer software on them. Still, I guess that would make updates trickier and you can achieve virtually the same result by running the sequencer with a hard disk.

Another good thing that Unitor adds to the whole C-Lab package is an extra two MIDI Ins, and MIDI Outs E and F (in addition to the B, C and D Outs that the company's existing Export interface gives you). This means that you can now sequence 96 different MIDI channels and accept MIDI input from three different controllers simultaneously - allowing MIDI Clocking from one while inputting note data from the other two. I also tried connecting the Unitor up through the cartridge port on the soon-to-be released Lynex (a 16-bit stereo sampling system based around the ST) interface - as version 2.0 of both Notator and Creator adds Lynex compatibility - and everything seemed to work fine. The Unitor also features a D-connector-type Multi-Port which is for future expansion. C-Lab is planning to use it to send servo-control signals to tape decks like the Tascam 238 and MS16 as well as VCRs and synchronizers. Along similar lines, the SMPTE ports will soon have the capability to send and receive timecode on the same line using a stereo patch cord, thus freeing the second SMPTE port to send clock pulses or other types of sync signals. ■

Paul Wiffen



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# perspectives

## IS IT LIVE OR IS IT?

*Opinions by Robert Rich.*

THE ARENA LIGHTS dim, and out of the stage mist appears the hair-do's of the latest synth-pop rage. Someone backstage presses the start button on a MIDI sequencer, and the PA pounds the pulse of their latest hit single. Two keyboardists finger one-note melodies as the singer croons. The crowd goes wild.

Oops - the sequencer isn't syncing correctly to the SMPTE stripe on the 8-track tape! The concert grinds to a halt as technicians hurriedly rewind tape and restart the sequencer. After a brief apology from the lead singer, the concert starts again - from the beginning. The crowd is befuddled. We all ask ourselves, "Did I really pay \$20 to see this band dance around to the same music I can hear at home?"

The above scenario is true. I won't name the band, because I am really quite fond of them. Anyway, they aren't the only ones who rely on automation during live performances. Anyone who uses hi-tech equipment in concert must come to terms with the fuzzy border between live and automated performances.

Recording musicians face a dilemma if they want to perform. On one hand, many people want to experience studio quality sound in concert. As most of the music we hear nowadays is recorded, we come to expect the same sound live. On the other hand, both the audience and the musicians get bored with concerts that are too "safe." If a performance is completely predictable, why bother?

Many great musicians cannot reconcile these opposing directions. Some give up on live music, as did Glenn Gould, The Beatles, and XTC. Others focus primarily upon live performance, with records a mere afterthought: The Grateful Dead, Terry Riley, Sun Ra and others have yet to make a record that comes anywhere close to the experience of their best live concerts.

These different approaches to the musical experience lead me to question the various functions that music fills in our society. Many cultures make little distinction between musician and

audience; our own culture has come to treat music increasingly as an item of commerce - and for a piece of music to become a product, it must be perceived as complete. Perhaps for this reason we have witnessed the natural progression from interpretive musical performances to completed and "perfected" musical recordings.

As musicians, we must seriously consider the role of live music - for ourselves and for the section of the society to which our music speaks. What worries me is that the misuse of current technology may be threatening the spontaneity of live music. Musicians should not feel obliged to duplicate their recordings in concert, nor should they rely on technology which forces them to sound the same every time they perform.

These worries came to haunt me recently when I embarked on a short tour

*"Anyone who uses hi-tech equipment in concert must come to terms with the fuzzy border between live and automated performances."*

to perform some of my solo electronic music. I've always enjoyed live performance, but lately my work has moved out of the live context and into the studio. For the first time, I wanted to perform some of these "studio" pieces in concert, yet I still wanted them to feel "live."

My own solution? Four-track cassettes and a Macintosh for sequencing. I gave a lot of thought to what material would be pre-programmed. I put the least noticeable parts on tape or sequencer, and left the hardest for myself. Whatever parts required the most physical and musical involvement stayed live. Furthermore, I interspersed the tape and sequencer-assisted pieces with more "on the edge" improvisations. By trying to make the live parts as improvisatory as possible, I would like to think I kept the audience (and myself) interested in the performance.

I still wish I could have used real musicians to play the parts I had on tape; I didn't for many of the same reasons that also plague so many other electronic musicians - because I couldn't afford it, and because I suffer the same well-known "composer in a closet" syndrome typical of our breed.

I am still looking for a good personal solution to the problems presented by live performance. I won't give up, because I still believe that some elements of music simply cannot be conveyed by recordings. We must remember the magic of a truly inspired performance - when performers and audience interact as one; when music is more than just the sounds we make.

Interestingly, some of the same technology that has come to threaten live performance may come to its rescue. As MIDI sequencers become more advanced, some intrepid programmers are finding ways to modify recorded streams of notes in real time. Companies like Dr. T's and Intelligent Music (among others) have shown great dedication to these issues. Some synthesizer manufacturers also recognize the importance of performance features, although the disappearance of knobs was a great setback. Overall, things are looking up.

For those of you who feel forced into using backing tapes and sequencers in concert, think of the options. Music works best when it is allowed to breathe. Bring your music to life. ■

*Robert Rich is an electronic music composer and performer who prefers acoustic instruments and things that go glurp in the night. His latest CD, Numena, is on the French Badlands label.*

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# PROGRAMMING COMPLEAT

## part 2: more DX basics



Illustration Rick Lohnes

**Splits and layers and sawteeth and squares are all combined in this month's installment, which shows how you can make an FM synth do three things at once.** *Tricks by Lorenz Rychner.*

**L**AST MONTH IN the first article of this series, I showed you how the DX instruments produce their sound, and how important the relationship between modulators and carriers is, both in terms of their tuning (frequency ratio) and of their output levels. You saw how easy it is to build your own sawtooth wave from scratch, using just two operators. According to our formula, which involves maximum feedback in the modulator, you can do it in any one of the 21 algorithms where the feedback loop is attached to a modulator that connects directly to a carrier.

What's a sawtooth wave good for? Well, for openers, most brass and string sounds are based on the sawtooth. But let's first look at the other major waveform that every synth except the DX has in store: the square wave. It is part of the pulse wave family, and its sound is best remembered as that of a clarinet in its mellow register around middle C: warm, wooden, slightly hollow and reedy. It has no octave duplications of harmonics, and therefore no even numbered harmonics, only the odd ones (1, 3, 5, 7, etc.). When these harmonics are in the typical loudness

relationship to the fundamental (turn the number into a fraction under a 1 and you know how loud any harmonic is compared to the fundamental: the 3rd is 1/3 as loud, the 5th is 1/5 as loud, etc.), then it looks something like Figure 1. How you make a square wave on the DX from just two operators is shown in Figure 2. Since the feedback is not needed, you can use any algorithm except #32 for this formula.

### Plan of Attack

**HERE'S THE PLAN** for today: you'll make a voice that you'll split on the keyboard, even on the "old" DX. Your right hand will end up playing a synth sound that can instantly change from reedy (for fast leads) to brassy (for accents and chords), while your left hand controls a bass sound with an extra sharp picking attack that you can accentuate whenever you wish. Your foot pedal will have separate control over the volume of the left hand, and I'll show you how to get a chorus or flanger effect. In the process you'll learn about the following DX parameters that didn't appear in last month's article: EG (Envelope Generator) Rates and Levels, Keyboard Velocity Sensitivity, Keyboard Rate Scaling, Keyboard

Level Scaling, Frequency Ratio Fine, Detune, Amplitude Modulation Sensitivity, and EG Bias. I trust that you remember how to access the parameters and functions from last month. I'll list the tabs in parentheses, first for the old, then for the new DX.

When you plan a sound from scratch, the first decision should be the selection of an algorithm. This process seems mysterious to many newcomers, so let me explain how I came to select alg. 11 for the task at hand (Figure 3). Read the previous paragraph again, then see if you agree with this: first of all, you need separate volume control over the bass sound, in a separate region of the keyboard, so it makes sense to look for a separate carrier with its own modulators. You can't afford to dedicate more than 3 operators to the bass, because you want both a lead and a brass sound in the right hand, pretty much according to the square and sawtooth wave formulas, with two modulators each connecting directly to a shared carrier. One of these two modulators must have the feedback loop for the sawtooth wave. That adds up to 6 operators.

Having thought about all this, you simply  
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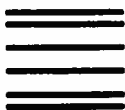
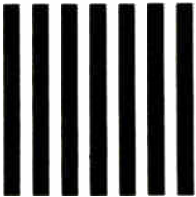


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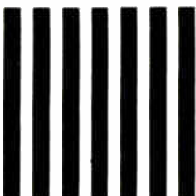


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go shopping from among the 32 algorithm diagrams. Sometimes there are several possibilities, but in this case there's really only one choice. In alg. 11 the basic body of the bass sound will have to come from the carrier and its immediate modulator, Ops 1&2. The pick accent that will last only for a split second during the attack is a different kind of sound, with a lot of high frequency energy, so you'll use Op3 for that, with a high tuning. How do I know about the high frequency energy? By ear - if you've ever heard the high scratching sound a pick makes on a bass string, you'll understand what I mean. For the reedy lead sound, Op5 will modulate Op4, and Op6 with feedback is in charge of the sawtooth wave for brass. Let's do it.

### Setting Your Patch Up

SELECT THE FUNCTION Voice Initialize and press Yes twice. This puts you automatically into the Edit mode, with Op1 as the only operator that makes any sound. Turn it off (tab 1/tab 17), you don't need it 'til you get to the bass sound. Use Algorithm Select (tab 7) to move to alg. 11, then start with Ops 4&6 and turn them into a sawtooth according to last month's formula: Output Level and Feedback is all you need to adjust, because their tuning is already the same, courtesy of Voice Initializing. Then use Figure 2 to turn Ops 4 and 5 into a square wave (Op4 is already set): Op5 must be at Frequency Ratio 2.00 (double the carrier's) to produce the right harmonics for a square wave, and its output should be around 65. When you turn Op5 off (tab 5/tab 21), you hear the sawtooth from Ops 4&6. When you turn Op6 off (tab 6/tab 22), you hear the square wave from Ops 4&5. When all three operators are on, you hear a blend of a sawtooth and a square wave, and guess who wins: the sawtooth, because it has more harmonics.

How can you make sure that this combination of square and sawtooth waves only sounds in the right hand? Look at Figure 4 where I list the three parameters that have to come together to achieve this goal (tabs 23-24-25/tab 10 press twice). On the "old" DX there's only one kind of Level Scaling, which was re-named "normal" when the DXII family and the 802 came out, where you also have "fractional" scaling. For now you'll use the "normal" mode. The idea is simply to fade out the sound of your right hand, to the left of a chosen key on the keyboard, to make way for the sound that your left hand will play. And when you get to the bass sound, you'll set a breakpoint so that you can fade the bass to the right to give way to the lead/brass sound.

Because the lead/brass sound won't stop abruptly at the breakpoint (I wish Yamaha had called the breakpoint "fadepoint"), you have to guess a  
MT FEBRUARY 1989

breakpoint that's a few notes higher up, to account for the two octaves it takes before the sound actually fades out completely. Speaking of which, here's a rule of thumb worth remembering: if the sound on the other side of the breakpoint is of a kind that can cover up and disguise the fading sound, plan on a fade over the distance of one octave, then listen and make small adjustments. When you make splits like this, you always have to sacrifice an octave where the two fading sounds blend together with varying degrees of musical usefulness. In our example it shouldn't be too bad, because the right hand and the left hand will play somewhat similar sounds (at least not as different as if you had a metallic bell sound crossing over into a warm string sound - the bell would stick out more offensively than a brass or reed sound that blends with a bass sound). As you can see, you're dealing with a compromise, and your ears will be the ultimate judge.

Because you want to fade out the total sound from Ops 4, 5 and 6, you only need to program the Level Scaling for Op4. It is the carrier of this combined sound, and when it fades, you also stop hearing the contributions from the modulators. Set Op4's breakpoint at F4, the key of F above middle C, which is C3 in MIDI and on Yamaha instruments. This alone won't have any audible effect. Now check the Voice Initialize table (Figure 2 in last month's article), and you'll see that all curves are already set to -LIN (negative, for a fade, and linear, for a straight-line response). Set the Left Depth to 99 for a total fade (on the old DX, press tab 25 repeatedly to toggle between L and R Depth). Now make sure that Ops 4, 5 and 6 are all on, and play a scale down along the keyboard. From F4 downwards the volume fades out gradually, a little more on every key as you move away from F4. Turn Ops 4, 5 and 6 off, for now. You'll come back to their sound, it's far from finished, but let's first make the bass sound.

### The Bass Sound

TURN OPI BACK on. By itself it can only produce the wimpy sine wave. Op2 needs to give it the gutsy bass sound. We can start in the ballpark of the sawtooth wave, without the feedback of course, which is reserved for Op6. But by tuning Ops 1&2 to the same Frequency Ratio, you still create similar harmonics.

Having started out with Voice Initializing, you know that they are currently tuned to Frequency Ratio 1.00. But because it is supposed to be a low sound, tune Ops 1&2 to Frequency Ratio 0.50 (remember, dividing Ratio numbers in half transposes the operators down by one octave). Now give Op2 some output, maybe 85. Op3 is the pick sound. Tune it to Frequency Ratio 11.00 and give it an output of 50. That's enough for a fairly rude sound. The quality ▶



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► of the sound is fine, but what's rude about it is the fact that it sustains along with the low body of sound. A pick sound should come on quickly and disappear, leaving just the low body of string sound behind. This brings you to the most exciting parameters on the DX - the EG (Envelope Generator). This is where you'll spend most of your programming time, so let's take some time out.

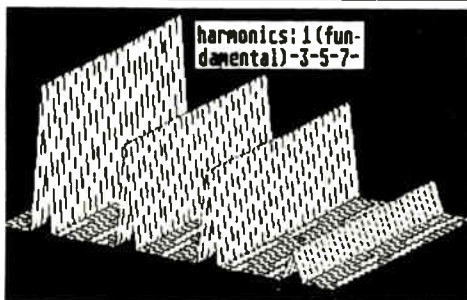
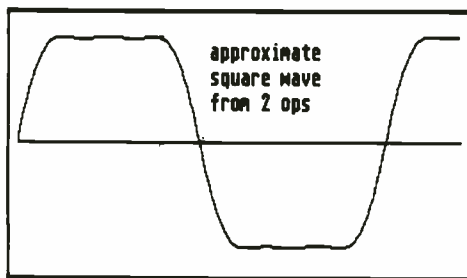
Each operator has its own EG where you control the shape or outline of the operator's activity, from the moment of a keystroke to beyond the moment of releasing a key. Imagine having a volume fader for each operator, and lightning fast reflexes. Every time you'd strike a key, you would have to raise the operator's fader so that it produces its planned contribution. Lightning fast for sounds that are immediately at their loudest, or gradually for sounds that are supposed to swell up. Then you would have a choice, while still holding down the key, of changing the operator's output to some new level, at maybe a different speed. That wouldn't be all - you would have a third choice for a new level, where the operator would settle in and remain unchanged until you'd let go of the key. At the point of release you would move the fader again, at a certain speed, probably to reduce the operator to zero output. There's no way you could handle all of that, for up to six operators, and play music as well. So you program these kinds of level changes into each operator's EG, and the operating system takes care of business whenever you strike a key. Figure 5 shows the sequence of events for a held note. The slowest speed is Rate = 00, the fastest is 99.

Make sure you understand that Rate 4/Level 4 springs into action whenever you let go of a key, from wherever the operator's signal happens to be at the time, even if it's long before reaching Level 3 (sustain level). A carrier that has a very slow Rate 1 and a Level 4 of zero (normal for carriers so that they shut up when you stop playing) will make no sound if you just tap the keyboard. A carrier (with a typical Level 4 of zero) that has reached a Level 3 (sustain) of zero during a long held note (typical for pianos, bells, etc.) will stay at zero when you release the key. Also understand that a Rate is not an absolute time measurement, but a Rate of Speed like miles per hour. You need to know both the Rate and the Distance from one Level to the next before you can predict whether the level change will happen fast or slowly. Next month I'll have several practice sounds where I'll ask you to solve some perplexing EG riddles, based on factory sounds that most of us had to alter at some time or other. Right now, let's fix this pick sound on your bass: Op3 should not sustain. Set EG Levels 2 and 3 for Op3 to zero, and experiment with EG Rate 2. Let's settle on 50.

## Fixing the Click

HAVE YOU NOTICED the clicking sound at the end of every note? It's because the sound from all operators returns to Level 4=00 at the fastest possible speed, Rate 4=99. Reduce Rate 4 to around 60 for a softer release feel. Any lower, and short notes have a little tail at the end of them. Set Op1 to Rate 4=50, and you can hear its sine wave for a split second after release. The reason: the modulator that creates the overtones stops doing so abruptly (Op2 Rate 4=60, going from EG Levels 1-2-3=99 matching its output level = 85 down to Level 4=00) while Op1 returns slower (Rate 4=50) and has a longer distance to travel (from EG Levels 1-2-3=99 matching its output level = 99 to Level 4=00). Bring all 3 operators back to Rate 4=60. If you wanted both the volume and the overtone color to fade out gradually after releases, you'd have to slow down Rate 4 for the carrier and for the color-producing modulator(s), in this case Ops 1&2. More about that next month. But right now you should take into account that a real bass fades away gradually, both in overall volume and in color intensity, when the

Figure 1.



player holds on to a note.

To give the impression of volume fades during held notes, at least to a lower level that you can sustain (which a real bass couldn't do), set Op1 to Level 2=85 and Level 3=70, and make the level change at the speed of Rate 2=40 and Rate 3=30. Then treat the color of the overtones by setting Op2 to Level 2=94 and Level 3=91, at the speed of Rate 2=30 and Rate 3=20. To avoid having the bass interfere with your lead sound, set a breakpoint for Op1 at F2 (the key of F below middle C). You know that the curve is already -LIN, so go on to R Depth and set it to 99 (maximum fade). Now play from the bottom of the keyboard upwards and listen to the fade. Wouldn't it be nice if the pick sound disappeared a little sooner? Set a

breakpoint for Op3 of F2, and an R Depth of 99 (the R Curve is already -LIN). Try it; it works. So far, so good.

## Add Some Sensitivity

SHOULDN'T THE PICK sound be more prominent when you hit the keys harder? Yessir, coming right up. Find Velocity Sensitivity on your DX instrument (tab 28/tab 11), and give Op3 a value of 7. Now you don't hear the pick unless you hit extra hard. And remember, it sounds louder on lower keys because you scaled its level. If you raise its output level from 50 to 60 you have better control. Velocity Sensitivity does not add output to an operator, instead it takes away according to the Velocity value. To get the output level back during play, simply hit harder.

There's just one problem: all Yamaha keyboards I've ever seen, certainly all the velocity sensitive DX instruments, produce less than the standard velocity range over MIDI of 127 values. Instead, they peak at around 110. So if you play your DX voices from another keyboard make, or from a sequencer where full velocity has been recorded, you'll be in for some surprises: normally well-behaved operators can scream to the point of distortion. When that happens, either lower the transmitted velocity values, or reprogram your DX voices by lowering the velocity sensitivity values. And when you use your DX as the keyboard controller of sounds in other makes of synths or modules, you may not be able to trigger them to their fullest, no matter how hard you play. It's a pain, but there you are. Only the famous E! update (a smart replacement operating system for old and new DX7 keyboards, made by Grey Matter Response, acknowledged by Yamaha and reviewed in MT Sept. '87 and May '88 respectively) can take care of that internally.

Oh, and by the way - why did I suggest a Freq. Ratio of 11.00 for the pick sound from Op3? Nothing magical; I simply wanted it to inject some high energy into the sound. Feel free to change it to get different flavors.

## Getting Octi-vated

CHECK OUT FREQ. Ratio Fine (tab 19/tab 8). Here you get 100 increments, raising the tuning of the operator from its current Coarse position to just under one octave higher. Starting from Coarse 1.00 you get 1.01, 1.02, 1.03, etc., up to 1.99 (remember, doubling a Ratio number results in transposing the operator upwards by one octave). Starting from Coarse 5.00 you get 5.05, 5.10, 5.15, etc., up to 9.95 (10.00 is double of 5.00 and therefore one octave higher). In the process you'll come near some of the Coarse positions - you'll hit some, and you'll closely miss some.

For example, starting from Coarse 5.00

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Figure 2.

SQUARE WAVE FROM TWO OPERATORS

	OUTPUT LEVEL	FREQ. RATIO: 2:1	FEEDBACK
MODULATOR	65	twice the Carrier's	n/a
CARRIER	99	1.00 or t'posed	n/a

Figure 3.

THREE-IN-ONE

Op	R1	R2	L2	R3	L3	R4	L4	put	Out- Tuning	C./F./D.	Freq.
6	46	99	38	92	199	92	168	81	78	8.58+3	Ratio
5	99	99	199	99	199	99	178	81	65	1.00-3	Ratio
4	99	99	199	99	199	99	178	81	99	8.58+8	Ratio
3	99	99	158	81	99	81	168	81	68	11.77+8	Ratio
2	99	99	138	94	128	91	168	81	85	8.51+8	Ratio
1	99	99	148	85	138	78	168	81	99	8.58+8	Ratio

Level Scaling		Rate		Vel	Amp
Left	Breakpt	Right	Sc1	Sns	Mod
Curve/Depth	Curve/Depth	Curve/Depth			Sns
6	-EXP 99	6 4	-LIN	8	2 7 8
5	-LIN	8 A -1	-LIN	8	8 8 8
4	-EXP 99	E 7	-LIN	8	8 8 8
3	-LIN	8 F 2	-LIN	99	8 7 8
2	-LIN	8 A -1	-LIN	8	8 8 8
1	-LIN	8 F 2	-LIN	99	8 8 3

Algorithm 11  
Feedback = 7

E6 Bias assigned to Foot Controller with Range = 99

E6 display: 2 sec

you hit every one of 6.00, 7.00, 8.00, and 9.00, because you're dealing with multiples of 0.05. But starting from Coarse 3.00 you get 3.99 instead of 4.00, 5.01 instead of 5.00, and so on, because here you're working with multiples of 0.03. Don't worry about the math, just set a Fine value down to its lowest .00 Coarse value before stepping over into Coarse, or you'll be forever carrying the fractions after the decimal point. I like the flavor of 11.77 for the pick sound, maybe just because it looks

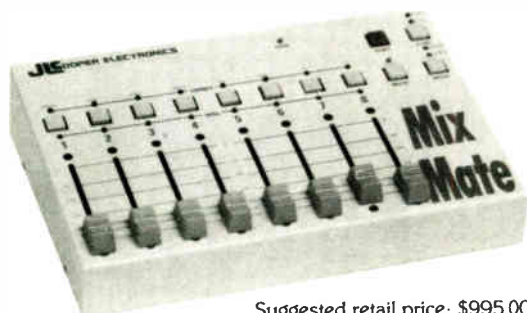
good . . . Start with Coarse at 11.00, then press Fine and raise it to 11.77.

And while on the subject of tuning, check out Detune (tab 20/tab 8). It does just what it says by +7 (sharp) and -7 (flat), tiny fractions of a quarter tone. Detuning between carriers that are otherwise in tune (at the same Freq. Ratio) creates a subtle phase cancellation which we'll explore next month in detail. Detuning between carriers and their main color-contributing modulators creates

subtle flanging effects where the color seems to wander.

Set Op2 to Detune +7 and listen closely. Some movement inside the sound appears. And because it is frequency-dependent, you will hear a change of speed as you play up and down the keyboard. This robust bass sound can tolerate more than just Detune. Set Op2 back to Detune=0, and give it Freq. Fine =0.505 or 0.51. Notice that there are two pushes of the +1 tab for every number change, since Fine ▶

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► gives you 100 increments from 0.50 to 0.99. But the LCD can't show 0.505, 0.515, 0.525 etc., so keep track yourself. Leave it at 0.51.

### Programming the Lead

LET'S GET BACK to the lead/brass sound for the right hand. Leave Ops 1, 2 and 3 on, and turn Ops 4, 5 and 6 on. It seems to me that the right-hand sound would be better transposed down by an octave to place it in a musically expressive upper midrange rather than in the squeaky treble. Reduce the Freq. Ratio numbers for Ops 4, 5, and 6 by half, and all is well. Play down the keyboard, and you hear the buzz from Op6 way down in the bass range. Turn Op6 off, and the more subdued square wave from Ops 4&5 is also too noticeable in the upper bass.

This is normal. This kind of adjustment always has to be made after both sounds are established. Try the -EXP curve for Op4, with a breakpoint of E7. This helps, but I treated Op6 separately, with a breakpoint of G4, -EXP Left Curve, and 99 Depth. Now the octave from middle C to C4 is a musical compromise, but to either side of it you have usable sounds.

To make the brass sound more convincing, give Op6 some envelope shape. It is typical for brass instruments to have the overtones (the modulator with feedback) come in slower than the

carrier's sine wave. And once the attack has peaked, there's usually a slight reduction in the color intensity and volume before the sound settles in for the sustaining quality. This gives it the typical overshoot. Simulate it with these numbers for Op6: R1=46, L1=99, R2=30, L2=92, R3=anything, L3=92, R4=60, L4=00. Why R3=anything? Because there is no change in level between L2=92 and L3=92, so any rate number will do, or rather, will do exactly nothing. To eliminate the hard release of this sound, change R4 for Op5 to 50, and for Op4 to 70.

Check out Keyboard Rate Scaling. It lets you do on the synthesizer what happens automatically in nature: higher pitches have faster rates of change than lower pitches. Think of how long it takes the lowest strings on a piano to ring out, compared with the highest ones. By assigning a Rate Scaling value of more than zero to an operator you cause all of its EG rates to speed up the higher you play. It covers more than the 5 octaves of the keyboard, starting at A1, and a value of 7 (maximum) has more drastic results than you'd encounter in nature. Give Op6 a rate scaling of 2 and listen to the subtle difference in the attack speed between C4 and C6. The initial idea is that you have separate control over the brass. Give Op6 maximum velocity sensitivity, and you've

got it. Play extra hard when you want brass, play normally when you want the clarinet-like lead sound. If you want some color movement in your lead sound, go to Detune, maybe +3 for Op6 and -3 for Op5.

### Get the Balance Right

NOW ALL THAT'S left to match our initial sound description is establish separate volume control over the bass. This is done with a combination of parameters: Amplitude Modulation Sensitivity (tab 16/tab 11) in the (blue) Edit mode, and EG Bias (tabs 20-24-28-32/tab 25) in the (brown) Function mode.

Since Op1 is the carrier of the entire bass sound, it's the only one you need to adjust. Find Amplitude Modulation Sensitivity and set Op1 up at maximum value (3 on the old, 7 on the new DX). Now, in Function mode, set EG Bias=On for the Foot Controller (substitute the Mod Wheel if you have no Yamaha swell pedal), and give it the maximum range=99. Now Op1 can't make any sound until you connect your pedal and move it away from the heel position.

This can be tricky if you don't know about it. You may have DX voices in your library that have one or several operators with Amplitude Modulation Sensitivity. If you call up one of those voices while, unbeknownst to you, one of the

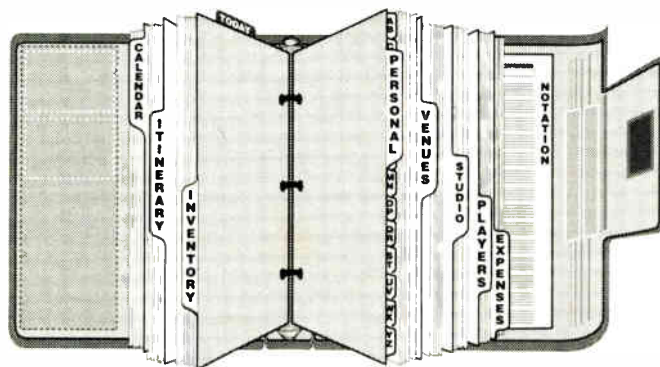
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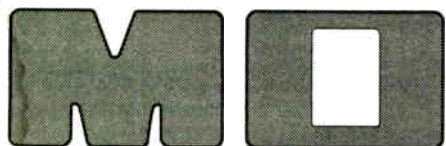
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controllers is set to EG Bias=On with Range=99, you have no chance of hearing all that's hidden in those operators. And if you go to a store or to a friend's place to audition and download some new voices, make sure that you check all four controllers in the brown Function mode. Turn EG Bias off, or leave it on for the Mod Wheel, and make sure to turn the wheel for every new voice that you call up to hear. And while you're at it, check the controllers for the other jobs they can do: Pitch Modulation and Amplitude Modulation. We'll cover these later in this series.

### Name Your Baby

ALL THAT'S LEFT to do now is give this voice a name. After you select Voice Name (tab 32/tab 7), hold down the Edit tab firmly (for the sake of its double duty function as Character Select) and, with the other hand, use the DX as a typewriter according to the small numbers and letters that you find on the tabs (below on the new DX). Call it THREE-IN-1 (or whatever you want to call it), and then store it after turning the internal or cartridge memory protection off. Press internal or cartridge memory select, hold down the Store tab, and select a number. If you can't afford to wipe out one of your existing voices, keep this printout (Figure 4).

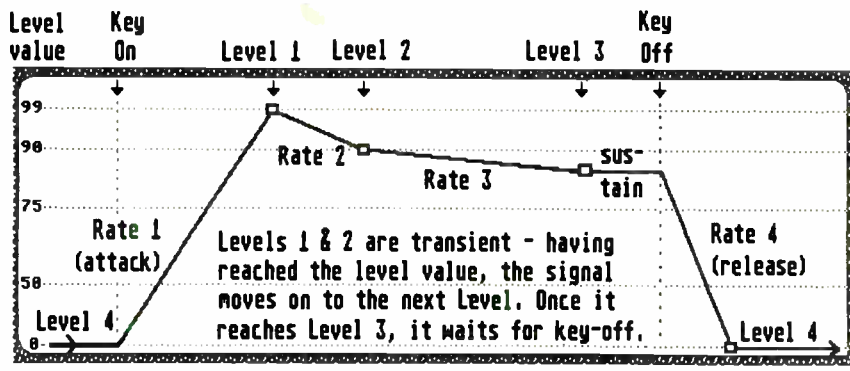
3) so that you can input the numbers some other time.

Next month we'll get into some serious EG control. I'll give you some more rules-of-thumb and plenty of realistic practice. Then we'll look at fixed frequencies, LFO modulation, more controller functions, and other goodies. Have fun!

Figure 1, 3, and 5 are modified screens from the following Atari ST software products: DX-Heaven (Dr. T's), SynthWorks DX/TX (Steinberg), X-Alyzer (C-Lab). The screens were captured with a Snapshot Accessory program by Michtron, and I modified them with Degas Elite for printout on an Epson LQ-850.

Figure 5.

The EG takes care of the changes that the output of each operator must go through during every note played. The example below is typical for operators acting as carriers, where Level 4 is set to zero level (no output, silence after notes and therefore before the next note's key on). In theory, an operator's Output Level is reached anytime its EG lets it rise to a Level value of 99. But Velocity, Kbd Level Scaling, Amplitude modulation, and EG Bias can still reduce the actual output.



### DX Keyboard Level Scaling: Normal Mode

This is a three-stage procedure. Nothing happens until Depth is higher than zero.

1. **Breakpoint**. Select a pitch/key between A1 and C8 as the dividing point. Keep in mind that the operator will fade out, with a Depth of 99 and a negative linear curve, over at least one octave and 6 half-steps. With a Depth of 99 and a negative exponential curve, set the breakpoint at least three octaves away from the keyboard range where a fade-out is required.

2. **Curve L/R**. Here you select, to either side of the breakpoint, the kind of response you wish to hear: Negative = the operator fades away, or Positive = the operator gets stronger. The way this is going to happen can be: Linear = in a straight line that starts right at the breakpoint; or Exponential = for about three octaves away from the breakpoint it seems as if nothing has happened, then the response starts to kick in.

3. **Depth L/R**. Here you program the intensity of the effect (weakening or strengthening of the operator) that you have set up with the parameters Breakpoint and Curve. If you leave Depth at zero, then the values for Breakpoint and Curve have no effect, and the operator's output is controlled by the usual combination of parameters only: Output Level, EG, Velocity, LFO Amplitude Modulation, and EG Bias.

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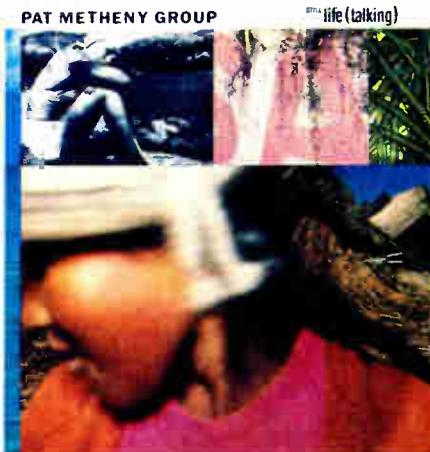
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# Listening Lab

Focusing on the tech behind the glitz, here's another batch of album reviews.



Pick of the Month

## PAT METHENY GROUP

*Still Life (Talking)*

Geffen Records

Ever since a friend in high school turned me on to *As Falls Wichita, So Falls Wichita Falls*, I have been a devoted fan of Pat Metheny and Lyle Mays. As a guitarist I'm absolutely fascinated by the tone that Metheny manages to draw from his instrument and associated electronics (not to mention his distinctive Synclavier guitar work), and my vested interest in synthesis is constantly piqued by the pleasantly warm and extraordinarily tasteful timbres that Mays brings to the combination. This late 1987 release, which has been secretly making its way back into my car's cassette player more and more often lately, admirably demonstrates the qualities that make the pair – and the entire group for that matter – work so well together.

From the quietly distinctive analog synth pads and broken guitar chords that introduce the rowing 'Minuano (Six Eight)' through the unique sitar-like guitar sound on 'Last Train Home' to the fat, but edgy synth sounds and impressive samples in 'Distance,' you just know that this is a Metheny, Mays and company outing. Actually, the upfront drumming of Paul Wertico, the solid bottom provided by Steve Rodby, the Brazilian-influenced percussion of Armando Marçal and the impressive wordless vocals of Marçal, David Blamires and Mark Ledford add quite a bit to the overall sound – particularly the vocal work doubling many guitar and synth melody lines. Talk about adding a human element to electronic sounds . . .

78

Throughout the album, Metheny and Mays create a musical backdrop of interweaving textures that is their sonic signature. Lots of synth pads are delicately hidden back in the mix and only brought to the fore for moments of dynamic emphasis. If you enjoy harmonically enriched jazz that incorporates intelligent but pleasing use of electronic instruments, then this is the kind of record you should be listening to. – *Bob O'Donnell*

## PETER MURPHY

*Love Hysteria*

Beggars Banquet/RCA 7634-1-H

Okay, so I'm a bit slow; the album's been out for awhile, and the tour's already come and gone. I tend to buy my records only when they reach the "used" bin. Previously the voice in front of Bauhaus and Dalis Car, Murphy kicks out a solid and sparse late '80's rock album that exudes "cool" – not to mention some great drum and percussion samples, the occasional processed voices, icy PPG digital synth and sampled voice pads, ring-modulated piano, compressed guitar, and subsonic bass. Good lyrics, too. Give a lot of credit to keyboardist Paul Statham; he also co-wrote most of the songs. The recording (Abbey Road) had FM-radio dynamics and impact. Makes me feel like I've got sunglasses on and I'm behind a rack of the hippest synthesizers around – except that I can't sing as well as Murphy. – *Yung Dragen*

## SKYWALK

*Paradiso*

Zebra

Canadian bands generally do not get much attention in the States, especially jazz bands. Crossing this border to tour is a lot harder and more expensive than most people realize. One band trying to make the crossover is Skywalk, and their current album is an excellent example of the technical expertise available from our northern neighbors.

The all-around musicianship here is flawless, with pieces varying from soft acoustic to heavy electronic. Technical hoorahs go to the recording engineer for crisp acoustic piano and sax. The drum

sounds are tailored to each mood, from brushes to thunderous samples. The keyboard duties are covered by Graeme Coleman (one of the main composers) and Tom Keenlyside (sax player and composer). The songs have lots of *real* piano with tasteful synth horns and strings. Points of interest: the use of monophonic, repeating basslines (they are still cool in the proper places), overlaid with great fretless lines. And the lack (yeah!) of any DX bells or Rhodes patches. Good clean fun. – *Rick Huber*

## MINISTRY

*The Land of Rape and Honey*

Sire

Violence. Fuzzed, repeated voices. Industrial drum machines. Alternately wailing and buzzsaw guitars. Songs like 'Stigmata,' 'Deity,' 'Destruction,' and 'Abortive.' You're impaled on the front of a rusted, runaway nuclear train being driven by a madman (actually, two – Alain Jourgensen and Paul Barker). Minimal (but nonetheless present) melody on synthesizers. Violence. – *The Cyberpunk*

## HOSTYLE

*Partners in Crime*

Warlock/Ligosa Records

I have been ostracized by family, workmates and friends for the last three years for my like of rap. However, even I will admit that most rap is missing a couple of elements that would hook most other people – a recognizable melody or lead instrument (such as a keyboard or guitar), and recording quality that's at least on par with the majority of bedroom-produced readers' tapes I receive every month.

Enter Hostyle, produced by Chris Barbosa, participant in MT's 'Urban Grooves' parable this past August. Pristine production, high-polish keyboards (that occasionally sound more like they belong in a Madonna tune – but it works), and some kick-ass power guitar join the more typical heavy rapping, turntable work, and occasional TR808 drum machine. The rest of the drum machine grooves are thoroughly def – some of the best samples I've heard. Warning: the, er, "message" of the lyrics will give you a heart attack (although they're meant in fun). – *Yung Dragen*

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If we decide to use your patch, you will be justly rewarded with a free year's subscription to MT (a \$20 value!). Beginning with this issue, Patchwork will also start including one patch from established patch vendors, to give you an idea of their sounds and to give them a chance to reach more potential customers. We think it'll be a good thing for all parties involved; hope you like it. (Interested patch vendors should send their work to the same address listed above.) Happy programming.

**YAMAHA DX7S**  
*StringIn*  
TP Waters, New Orleans, LA

This is a deep and dramatic string patch which TP created to emulate the theme from the British TV series, Casualty. It's a dead ringer, and usable for monophonic lead lines as well as for up-front chordal work. Keep this one around for those times when you need impact - it won't merge well into a musical backdrop. ■

DX7S										Voice name :	Foot control 1		
ALGORITHM										Key mode	FC1-CS1	On	
Algorithm	2	Mode	HZ	R	HZ	R	R	R	R	Key mode	On1 POLY	PM depth	0
Feedback	7	Coarse-Fine	1.000	1.00	3.467	1.01	5.04	7.07	7.07	Unison detune	5	AM depth	0
Osc key sync	OFF	Detune	0	-2	-7	+4	-1	-7	-7	Pitch bend		EG-bias	0
Transpose	C3	E G DP	1	2	3	4	5	6	6	PB mode	NORM	Volume	0
L F O		Rate Scaling	2	0	1	1	3	6	6	Range	2	Foot control 2	
Wave	TR1	R1	40	99	39	96	90	53	53	Step	0	PM depth	0
Speed	90	R2	41	60	42	50	88	64	64	Portamento		AM depth	0
Delay	0	R3	25	67	35	32	35	32	32	Mode	RETAIN	EG-bias	0
Mode	SINGLE	R4	49	9	51	11	10	9	9	Time	40	Volume	99
Pmod sens	1	L1	84	82	94	91	97	70	70	Step	0	MIDI IN control	
PM depth	31	L2	98	90	97	94	92	89	89	Random pitch	2	PM depth	0
AM depth	4	L3	99	92	99	95	84	90	90	Modulation wheel		AM depth	0
Key sync	OFF	L4	0	0	0	0	0	0	0	PM depth	60	EG-bias	0
Pitch E G		Output Level DP	1	2	3	4	5	6	6	AM depth	0	Volume	0
Range	80CT	Scaling mode	n	n	n	n	n	n	n	EG-bias	0	Performance name	
Velocity	OFF	Output level	48	89	83	86	83	78	78	Breath control		Voice No	
Scaling	0	Break point	A1	C8	F3	A1	C3	E4	E4	PM depth	0	FS	POKAMEN TO
R1	94	L-curve	-L	-L	+L	-L	-L	+L	+L	AM depth	0	CS1	OP3 EG RAT4
R2	67	R-curve	-L	-L	-L	-L	-L	-L	-L	EG-bias	0	CS2	OP3 EG RAT4
R3	95	L-depth	0	5	0	0	0	0	0	P-bias	+0	Total Volume	88
R4	60	R-depth	0	0	0	0	8	0	0	Alter touch		EG Forced damp	OFF
L1	50	Sensitivity DP	1	2	3	4	5	6	6	PM depth	0	Micro tuning	EQ UAL
L2	50	Key velocity	3	0	3	0	0	0	0	AM depth	0	Key shift	0
L3	50	A mod sens	0	0	0	0	0	0	0	P-bias	+0		
L4	50												

**YAMAHA TX81Z**  
*Diamonds*  
Jim Fellows, Angel City Audio  
From Angel City Audio TX81Z  
Library, Vol. III



VOICE NO./ NAME										Diamonds			
ALGORITHM										5			
FEEDBACK										2			
FREQUENCY										0.75	1.49	1.50	5.00
OSC. WAVE										1	6	1	1
DETUNE										0	+3	0	+3
OUT LEVEL										99	96	99	86
EG										15	15	31	31
DIR										0	31	8	5
D1L										11	13	8	12
D2R										0	13	7	7
RR										6	5	5	2
EG SHIFT										OFF	OFF	OFF	48
SCALING										0	2	1	2
LEVEL										0	0	0	0
SENSITIVITY										3			
AMPLITUDE (0-3) (ON/OFF)										OFF	OFF	OFF	OFF
EG BIAS										0	0	0	0
KEY VELOCITY										0	5	5	5
LFO										triangle			
WAVE										triangle			
SPEED										20			
DELAY										15			
P MOD DEPTH										49			
A MOD DEPTH										28			
SYNC										ON			
FUNCTION										POLY			
MODE										POLY			
P BEND RANGE										2			
PORTAMENTO										FULL			
PORTAMENTO TIME										0			
FC VOLUME										0			
FC PITCH										0			
FC AMPLITUDE										0			
MW PITCH										35			
MW AMPLITUDE										0			
BC PITCH										0			
BC AMPLITUDE										0			
PC PITCH BIAS										0			
BC EG BIAS										0			
MIDDLE C										F2			
REVERB RATE										OFF			

The first of our professional patches is a combination voice that's extremely sensitive to velocity. The timbre itself is a sort of percussive flute blended with a bell. Jim warns against changing any of the parameters by even one setting at risk of creating sonic slop - the frequencies used here are a delicate balance of "detunedness." The patch also works with the DX11 but because its keyboard only puts out velocity levels up to 110 (instead of the full 127-level range), you may need to adjust the velocity sensitivity settings to make it sound right. ■

MORE FROM Angel City Audio, 2 Liberty Pl., Middletown, CT 06457. Tel: (203) 347-5166.

# PATCH WARE

**NEWS:** If you happen to own the **Techman MMS (Music Magic Synthesizer)** card, then you might happen to be interested in some samples for it from **Audio/Pfeil**. Although the MMS does not have sampling capabilities, it is capable of holding up to sixteen 16K, 12-bit samples. In Jeff Pfeil's Volume One you will find 168 samples which he describes as "mostly percussion," as well as a series of piano attacks. Most of the audio was sampled at a rate of 36K. Volume One consists of six AT-compatible 1.2Meg disks (\$75) or twenty 360K disks (\$80), with a \$3 p/h charge (\$7 overseas). For more info contact: **Audio/Pfeil, 408 Minnaqua, Suite 4, Prospect Heights, IL 60070. Tel: (312) 392-1408.**

Out of the sonic state of **Technosis** comes a couple of new sets of patches for the **Ensoniq ESQ1 and SQ80** - the **ESQ Proselect** and **SQ80 Masterpatches**. This company is known for *unique* sounds, previously displayed on their **ESQ Psyche Shriek** package (see review MT December '87). The Proselect patches are focused on pop/rock/funk/dance sounds, such as 'Mo' Beef,' 'The Fly,' and five Hammond organs. Masterpatches is geared towards orchestral instruments, DX sounds, new age and percussion sounds, including 'Skinny' and 'Puppy.' The ESQ Proselect is available on Voice Data Cas-

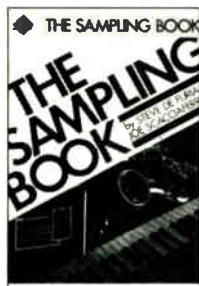
ettes (\$25), 3½" diskette (\$25), ROM cart (\$35), EEPROM cart (\$55), RAM cart (\$90), or you can provide the RAM and they'll fill it for \$20. The SQ80 Masterpatches are available on 3½" disk (\$25) and RAM cart (\$85). You can get both sets on a RAM card for \$105. Contact: **Technosis, 3960 Laurel Canyon Blvd., Suite 353, Studio City, CA 91604-3791. Tel: (213) 656-3515.**

If you're an **Ensoniq Mirage** owner, it should interest you to know that **Cybersoniq** has released a second volume of crosswave, FM and Harmonic Additive wavetables, called **Synthbank Volume 2**. The package includes two disks (whole/split versions), a manual, and a patch list. The wavetables are split up into three banks: Crosswaves, which feature sampled acoustic sounds blended with synthesized looped waveforms; TX Waves, which include 4- to 8-operator sounds sampled from the Yamaha TX8IZ; and 16 Harmonic Additive Waves, created with Softsynth computer software. This new volume costs \$39.95, Volume 1 is \$32.95, and you can get both volumes for \$64.95. Also, previous owners of Volume 1 can get Volume 2 for \$32.95. For more info contact: **Cybersoniq, 295 Park Avenue South 5R, New York, NY 10010. Tel: (212) 995-0989. ■**

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# INPUT OUTPUT

Are technical questions keeping you up at night? No need to fear, MT's tech-experts are here. Send your dilemmas to: *Input/Output, Music Technology, 22024 Lassen St., Suite 118, Chatsworth, CA 91311.*

**Q** I have a technical problem that is most irritating. I create sequences on an Alesis MMT8. When they are finished, I take advantage of my Emax SE's sequence downloading feature. This way I can leave the MMT8 behind when I play live and can conveniently load my samples and sequences off a single disk and I'm ready to go. However, about 70% of the sequences I've downloaded into the Emax's sequencer suffer a rhythmic degradation during transfer. The resulting sequences in the Emax are, shall I say, "fuzzy" – rhythmically, they are not as sharp and precise as they were when played by the MMT8. It sounds sloppy and most unprofessional. Does the Emax sequencer have a lower resolution? If so, I'll have to do live sequencing the hard way: loading two sequences by tape at a time into the MMT8. It's possible I'm doing something wrong. My only guesses:

- 1) I merge tracks frequently on the MMT8, so each MIDI channel is too crammed with information while downloading.
- 2) Rather than putting all the samples on one preset, I use a supermode map (after the sequence is downloaded) to direct each track to a percussion preset, a bass preset, etc.

I would really appreciate your technical expertise on this frustrating situation.

Michael Stephens  
Denver, CO

**A** Well, Michael, there are a couple of possible explanations. First of all, yes, the Emax' sequencer does have a lower resolution than the MMT8 – 24 ppqn vs. 96 ppqn to be exact. So if you aren't quantizing your sequences, that would explain some of the problem. But if you have quantized your sequences and you're not making use of notes faster than 64th note triplets (the finest resolution available with the Emax' 24 pulses per quarter note), the resolution should not present a problem.

What's probably at fault is the Emax'

microprocessor; it's just not fast enough to maintain a perfectly consistent tempo or rhythm while it's busy playing back samples at the same time. According to the folks at E-mu, the sequencer's timing was improved upon in the software upgrade that accompanied the SE update, but since you have an SE, that doesn't help your situation.

As far as your theories go, using a Supermode map is the way you're supposed to download sequences into the Emax, so that shouldn't be a problem. However, if you can fit all of your sounds into one preset, that will take a little load off the processor in routing the incoming information to different tracks and presets. As far as each MIDI channel being too crammed, if it plays back from the MMT8 okay, then MIDI itself shouldn't be the problem; once again, you may be feeding the Emax too much information to digest in one instant, and therefore some MIDI information is getting slid to other clicks (which would sound real sloppy). Here you can help your Emax by slowing the MMT8 down as much as possible tempo-wise while transferring sequences, giving the Emax more time to read the information and bracket it off properly (you can have the Emax play back later at proper speed). Since this is for a live situation anyway, any information you can thin out (such as continuous controllers, pitch-bend, aftertouch, etc.) will also make life easier. – BO'D & CM

**Q** I have a Kawai R100 drum machine which I use to trigger my trusty old Roland SH101 for getting tight, "bouncy" basslines (at least I think they are), but is there any way I could get the R100 to trigger my Korg DS8 to use the more modern sounds that it has? Would I need some sort of MIDI arpeggiator?

The only way I can see that I could do it is to get a CV-to-MIDI converter, but I think this would be expensive and would mean using my SH101 to play the DS8 and result in a waste of one sound (the SH101's). Hope you can help.

Jim Costello  
Rockford, IL

**A** I have some good news for you: you can get your R100 to trigger your DS8's sounds, and it won't involve any further financial outlay.

All the necessary features are there onboard the R100, locked behind the MIDI Channel and MIDI Out commands. Connect the R100's MIDI out to the DS8's MIDI In, set the DS8 to Omni Off (making sure that the MIDI channels on both instruments coincide), and set the MIDI note transmit on the R100 to "on."

Tap some of the drum pads, or start a pattern playing, and you should hear notes being triggered on the DS8. You can, of course, take advantage of the R100's dynamic pads, because the drum machine can transmit velocity data over MIDI (check that MIDI velocity transmit isn't set to "off.")

If you're not getting anything, check the attack and/or release stages of the amplitude envelope on the DS8 sound you're using. The R100 (and most drum machines for that matter) sends a Note Off pretty quickly after the corresponding Note On. If your DS8 doesn't have a quick enough attack, notes will be turned off before they have a chance to sound. You'll need to experiment with the release stage of the envelope for your DS8 sound, as this effectively defines the sound's duration.

By this time you'll probably have realized two things: one, you're not getting the notes you want and two, you'll have to sacrifice drum sounds for bass notes. The first situation is easily rectified, as you can reassign the MIDI note (0-127) assigned to each R100 sound. There's no real solution to the second situation, however. If you need, say, eight different notes for your bassline, you'll have to select eight drum sounds that you can do without, set the appropriate MIDI note numbers, and turn down the volume of each sound. One other point to be aware of is that you'll need to set your R100 to Mono transmit mode. This is because Mono allows you to assign each R100 sound to its own MIDI channel – essential if only the intended R100 sounds are to trigger the DS8 over MIDI.

Ultimately it's a compromise, but you can make this MIDI note-triggering system work for you if you're prepared to start experimenting with the combination of R100 and DS8 sounds. – Simon Trask



# Updates and Upgrades

Ok, so you read the reviews of all the mods in this month's issue and you want to find out how to update your existing stuff? Read on, my friend . . .

■ **Basic Composer** has now been updated to version 4.3. The biggest enhancement in the new version is the ability to compose on a Grand Staff, or the single staff available in the previous version. Other new features include a toggle switch for playing back the notes as they're written, playback of all notes in either chords or as root only, deleting ties, slurs, crescendos, decrescendos, note beams, staccatos or tenutos with one keystroke, a help key (F1), a fourth line of annotations or lyrics, and the ability to delete the end of a line, delete a character, and move to the right and left margins while in the annotation mode.

— *Education Software Consultants, 934 Forest Ave., Oak Park, IL 60302. Tel: (312) 848-6677. The program lists for \$49.95, no update fee to current owners.*

■ **Music Mouse:** Opcode Systems has updated their Macintosh version of the program. Also, the program has been released by Aesthetic Engineering in Commodore Amiga and Atari ST versions. New features on the Macintosh update and the Amiga and ST versions include: real-time changing of MIDI output channels, real-time on-screen display of all parameters, the ability to disconnect the mouse from the music to make use of the menus easier, arpeggiation, muting for individual voices, a third form of articulation (between staccato and legato), new Octagonal mode (used by Stravinsky, Bartok and Messiaen), variable interval transposition, dual tempo controls and tempo-select switch, continuous portamento faders, and MIDI Thru.

— *Opcode Systems, 1024 Hamilton Court, Menlo Park, CA 94025. Tel: (415) 321-8977. Current owners of the Mac version can update from Opcode for \$20. Aesthetic Engineering, 175 Duane St, New York, NY 10013. Tel: (212) 925-7049. List price for the Amiga and ST versions is \$79.95 plus \$5 s/h.*

■ **S900 Hard Drive Interface Software:** Akai is now offering version 2.0 operating system software included in their upgraded hard drive interfaces, the IB101A v3.1 and IB101S v3.2, for the Atari and Supra hard disk drives, respectively. The IB101A v3.1 now lets you cascade up to four Atari hard disks, and IB101S v3.2 lets you cascade up to eight Supra drives to their S900 sampler, for tremendous storage capacity expansion. These interfaces can be used with 20, 30, or 60 MByte disks, and allow for a full-memory load time of eight seconds. Added features from the new software include crossfade looping, pre-trigger recording, real-time digital filtering via

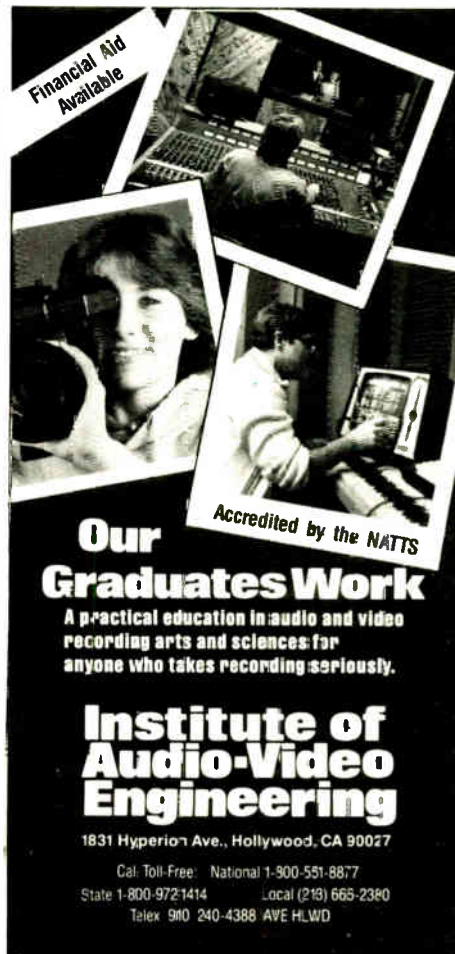
a filter envelope, and time skew for cross-faded samples.

— *Akai Professional, 1316 E. Lancaster, Fort Worth, TX 76113. Tel: (817) 336-5114. Update to version 2.0 operating software for current owners of the IB101A/S Version 3.0 will cost \$99.95. List price on the IB101A/S is \$499.*

■ **Hybrid Arts SMPTETrack and SyncTrack Official Release Versions:** Well, it took 'em a while, but apparently Hybrid Arts finally has their popular sequencing programs for the Atari ST up to the point that they originally intended. The new December '88 version for both programs includes a host of updates, as well as a few bug fixes. Topping the list of new features is the ability to record, edit and playback MIDI System Exclusive data (you can also enter it via the Event List). Real Time Track Offset lets you adjust track delays while a sequence is playing, while Silent Cueing will prevent the first notes of a sequence from playing until you want them to. Notes can be added on the graphic screen by just painting them in now and the user interface on the region editing function has been greatly simplified. The programs also now support nested chains, automatic chain recomputation (if you redefine a section), the ability to individually filter different types of MIDI controllers, and to convert any type of MIDI controller into any other, and a new song initialize feature will reset all sequence parameters without having to reboot. More grids have been added to the graphic screen to make working with sixteenth notes and triplets easier, a new flip function allows you to instantly jump between the graphic and even list screens, MIDIplexer support has been improved, Hybriswitch compatibility has been implemented and data sharing allows you to transfer sequences directly into EZ-Score+ and Ludwig, the company's new algorithmic composing program. Even more improvements have been added, but I think you get the idea.

— *Hybrid Arts, Inc., 11920 W. Olympic Blvd., Los Angeles, CA 90064. Tel: (213) 826-3777. Updates to the Official Release Versions of SMPTETrack and SyncTrack are \$15 for registered owners. The list price for SMPTETrack is \$575, SyncTrack costs \$375.*

**Manufacturers:** If you have software or hardware revisions or upgrades that you'd like MT readers to know about, please send info to: *Updates and Upgrades, Music Technology, 22024 Lassen St, Suite 118, Chatsworth, CA 91311; or FAX (818) 407-0882.*



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# READERS' TAPES

Sucking in the '80s. Reviews by Yung Dragen.

AS THIS DECADE of the 1980s enters its final year, I'm a bit surprised to hear so much that seems to have come from the '70s – especially because the results are getting more polished. I rather liked some of the tapes below, but I'm left with the uneasy feeling that I'm not hearing enough that is new. Either I'm experiencing reincarnation within this same life, or I'm just getting jaded (or maybe it's just too little sleep). Anyway, here we go . . .

The spirit of early Frank Zappa lives on in **Fetus Jeopardy**. Mike Wagner has assembled a cast of thousands (actually, 11, including himself, playing keyboards, percussion, bass guitars, saxes, clarinets, and all sorts of stereotypes) and spent three years to record their 12½-minute opus, *This Kind of Music*. In the best Zappa tradition, a number of characters rollick in and out who are either scared of challenging music or are busy trying to pick each other up in bars. The first-class jazz/rock instrumental breaks provide equal entertainment. Even the recording quality and mix are hot. Tapes like this are simply too much fun.

One of the most invigorating tapes that has crossed my aura lately is *Illusory Energy* by

**Avatar**. Comprised mainly of Anthony and Lynn Barker (Billy Dlouhy and Richard Carbajal add some guitar), the group was



formed "in 1981 after an intensive musical study in India. The group concept is to blend traditional rhythms and instruments from around the world (but mostly from the middle east and India) with hi-tech instrumental rock influences." Throw a handful of DXs, a Jupiter 8, electronic, acoustic, and sampled drums, a violin and a sequencer into a crucible with an esraj, tamboura, tabla, dombek, mridanga, and other such unpronounceable esoterica, mix with a couple of actual musicians, and you get a great fusion-tinged, high-energy instrumental cassette. There were so many chances for this to go wrong – as hard as I try, traditional Indian music is still alien to my ears; fusion can get so dull so quickly; most drum-machine-and-synth instrumentals are usually unimaginative and clichéd – but the Barkers combine all of these well, and place it on a higher plane to boot. I know I'm not supposed to unabashedly like two tapes in a row, but there – get them both.

Much more a mixed bag than an unusual blending is *Sacred Cow* by **Scott Snyder** (although, to be fair, Scott commented in his

letter "I tried to include some variety . . . I didn't want the tape to sound too scattered; likewise, I didn't want to box myself in"). Each tape is custom-composed of his work, with the selection being influenced by who he's sending it to. The all-electronic stuff (like 'Cosmotron') sounds, in a word, hokey. The instrumental work where acoustic guitars and zithers are blended sound rather nice, managing to lift themselves above most New Age dreck, but sometimes suffer from overly-grandiose intentions (like one of the rave-ups in 'Many Moons Ago'). The "band" songs (where a few friends are brought in to help out on vocals, drums, etc.) sound a bit like introspective early-'70's rock (not bad), with the great children's parable of 'Mr. Potatohead' being one of my favorite songs of all time. The recordings lean towards the trebly (and the Drumatix drums simply don't cut it), but it's basically nice.

So much for detailed meditations; it's time for some fast food:



– **Jack Airey**/two-song demo: Instrumental rock/fusion. Fuzz guitars; want-to-be-bombastic keyboards; chorused Squire bass. Authentic drum machine patterns on an RX15 (with the exception of an annoyingly insistent sixteenth-note hi-hat). Trailer music for a cable one-hour sports special. Check out for the good variety of guitar sounds.

– **Automatic**/one-song demo: CZ101 bass and comping, fretless guitar wandering about,



and drums sampled from CDs with a pair of SPX90s ("leaving in the excess percussion or hi-hats"). Can't decide if it wants to be dance/house/funk (thanks to the bass and drums) or a traditional late-'80's rock song (via the vocals and chord structure). I like the looseness of the drums; I wish the vocals, guitar and keyboards would all agree on what key to be in.

- **KaPOW!!!/three-song demo:** You would think that there was no way a song called 'Rap Kitty' could work; in reality, it actually does (strong drums, bass, synth lines and clean guitar breaks; vocals are passable; lyrics could be stronger and the "meow" samples louder). The other two songs suffer from weaker sounds, performance, composition (rock and mid-tempo ballad, as opposed to funk) and production (done on a four-track cassette and with a bit thinner equipment than the eight-track 'Rap Kitty').

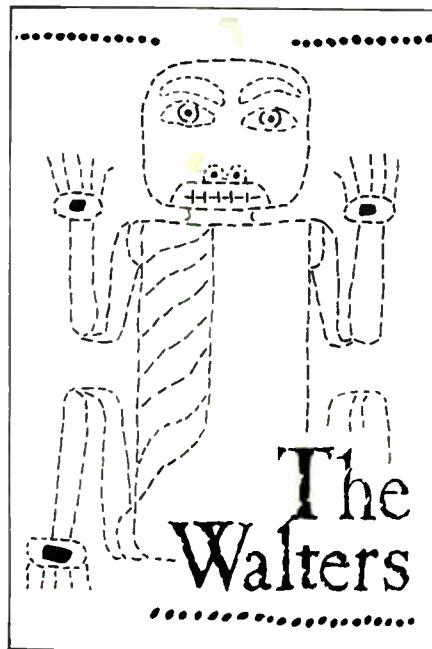
- **Rudolfi/Cellos:** Yamaha DX7 + Roland TR505 + layered cellos = nice background music. His own description - "graceful, geometric melodies; circular compositions..." - is pretty accurate. The cello playing is both sensuous and gorgeous; the synth and drum machine work is disappointing and a bit two-dimensional. This yin/yang mix looks great on paper, but on tape it sounds a bit more like oil and water.



- **Randy Klein/While I Was Waiting:** Pleasant, reverbed, spatial synthesizer improvisations. The slow cuts work much better than the fast ones (where I question the evenness of Randy's phrasing -not that I could do any better myself; but if you're going to hang yourself out on a line by talking about your Berklee School of Music education and solo piano work, you better deliver). In reality, I don't want to sound too harsh - in this world of overly busy, overwrought synth compositions, a bit of space is really nice, and this is very pleasant classical/jazz-tinged wallpaper music.

- **DA Palm/six-song demo:** Lightweight jazzy instrumentals with drum machine, bass (also from the drum machine?), and guitars. Some of the proper tricks are tried with the drum machine - like varying dynamics on fills, etc. - but the drum machine lets him down and ends up sounding just like the recording level is fluttering about. Some of the high-speed guitar noodling goes out of time with the rhythm; one should never try to show more chops than one really has (a good philosophy in general). Listen to others, Dennis; it'll give you a better idea of how to pull off what you're attempting here.

MT FEBRUARY 1989



- **The Walters/So Far:** Melodic, rhythmic, intelligent mid-tempo pop/rock by guitarist/synthesist/vocalist Manny Silva, electro-acoustic drummer John Orsi, and late bassist/keyboardist Richard Toro. The four songs show off two styles - the vocal numbers sound like a '90's update of the Eagles; the instrumentals are akin to the best of the Fripp/Summers jams. Very clean and refreshing, in performance, recording, and composition.

"This kind of music makes me feel nervous  
It makes me edgy  
This kind of music makes me feel insecure.  
Music is not something to play with,  
Something to work on  
It's what we buy at the record store  
With pictures of pop stars  
Complete with a pouting smirk..."  
-Fetus Jeopardy, 'This Kind of Music'

**Contact Addresses:**

**Fetus Jeopardy,** c/o Jeopco, PO Box 29032, Portland, OR 97229. Tapes are \$3.50.

**Avatar,** c/o New Edge Music, PO Box 60804, Phoenix, AZ 85082-0804. Tapes are \$8.99 + \$1.50 P&H.

**Scott Snyder,** 5701 N. Menard Avenue, #2, Chicago, IL 60646.

**Jack Airey,** 3550 Longfellow Avenue, Windsor, Ontario, Canada N9E 2L9.

**Automatic,** c/o Tony Alvarez, PO Box 218, Cypress, CA 90630.

**KaPOW!!!** c/o Wade Webb, 10529 Glenfair Street, El Monte, CA 91731.

**Rudolfi,** 862-C DeHara Street, San Francisco, CA 94107. Tapes are \$9.95.

**Randy Klein,** c/o Straight A Records, 217 East 85th Street, New York, NY 10028. Tapes are \$9.50 + \$1.50 P&H.

**DA Palm,** c/o Dennis A. Palm, PO Box 742, Gold Bar, WA 98251.

**The Walters** c/o Blair Sharp, PO Box 161, Forestdale, RI 02824.

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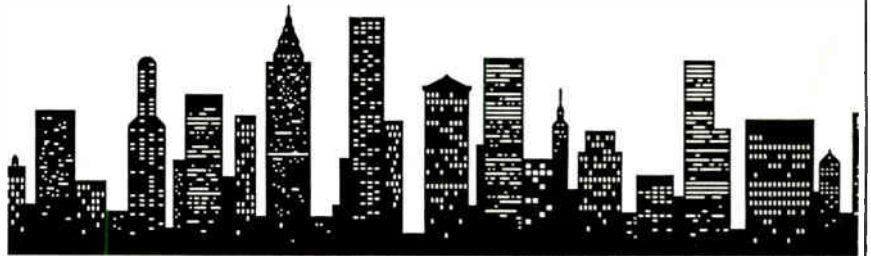
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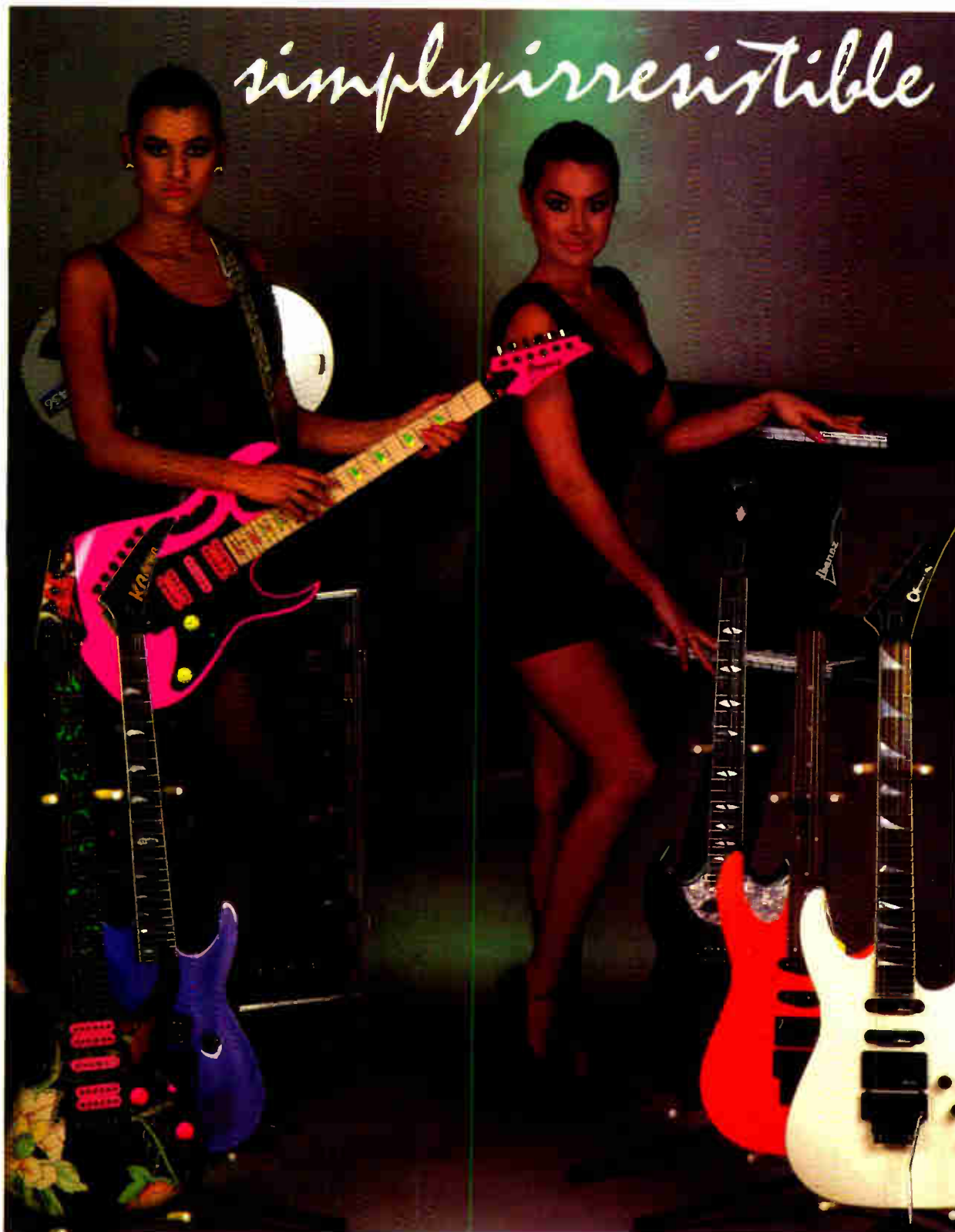
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