

# MUSIC TECHNOLOGY

APRIL 1988  
USA \$2.95  
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## THOMAS DOLBY

*Brash Grooves from the Scientist*

## THE CHRISTIANS

*British Soul*

## RE-SAMPLING

*Old Becomes New*

## ALL ABOUT ADDITIVE

*Building Blocks of Sound*

## COMPUTER NOTES

*C-Lab Creator & Lyre FDSOft*

### PREVIEWS

Akai MPC60

Korg M1 and S1

### REVIEWS

Alesis HR16

Sting EW2 Wind Controller

Obfuscator MIDI Desktop Controller





# MUART™

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DIGITAL CORPORATION

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Port Washington, NY 11050 USA  
(516) 944-6789



The SPIRIT™ Sequencing Software is an enhanced version of Robert Keller's acclaimed 48 track PC II redesigned to accommodate MUART™'s four ports.

*"The 48 track PC II has the best note-event editor I've seen on any sequencer to date."*

MUSIC, COMPUTERS & SOFTWARE, August 1987

*"The simplicity of 48 Track PC II's screen design belies its extensive range of functions — so extensive, in fact, that there's no way we can describe them all here."*  
Ted Greenwald, KEYBOARD MAGAZINE, August 1987

The MUART™ 4-PORT MIDI interface, including the SPIRIT™ Sequencing Software comes complete and ready to install. No additional purchase is necessary. For more information, contact your local Mellotron® dealer. Suggested retail price: \$695.00.

Circle 11 on Reader Response Card

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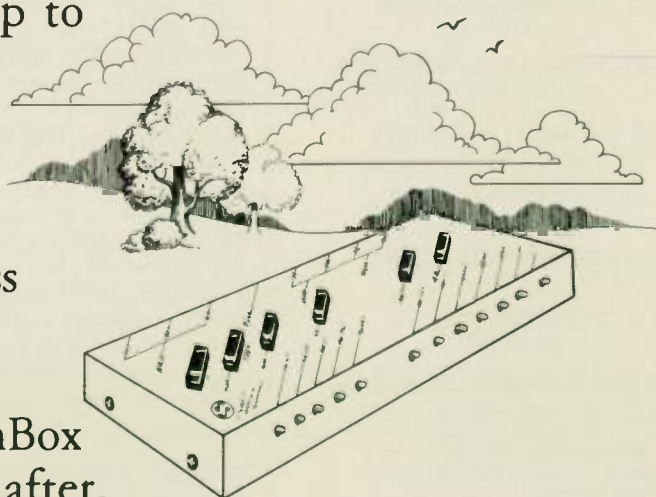
Once upon a time, Southworth Music Systems invented the JamBox/4™. Never before had a synchronizer done so much and cost so little. Not only did it let you SMPTE lock your MIDI sequencer to tape, but it let you position anywhere on your tape and lock up in less than a second, and stay locked for hours. As if that weren't enough it came with a built-in MIDI merger that let you record four MIDI instruments at the same time. And it let you filter out the MIDI you didn't want.

Everyone said the JamBox would only work with a fancy professional tape deck. They were wrong. It worked great with any tape recorder, even a home VCR.

But, alas it only worked with the Apple Macintosh™. The people using Performer™, and Q-Sheet™, and Cue™ and MidiPaint™ were all happy. But the people using the IBM PC, Commodore, Atari and hardware sequencers were all sad because they still had to spend thousands of dollars for a sync box that couldn't do nearly as much as the JamBox.

This made the people at Southworth sad too. So they worked night and day in their workshop to find a way to make a new JamBox that could work with any computer or hardware sequencer. They invented the JamBox/2. And it cost even less than the JamBox/4.

Pretty soon everyone had a JamBox and they all lived happily ever after.



**SOUTHWORTH  
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World Radio History



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# EDITORIAL

## Confessions

I DON'T KNOW about you, but occasionally I get to the point where I'm just sick of MIDI equipment. I don't want to see it and I don't want to hear it. I turn it all off, walk away, turn on some of my acoustic jazz records, and let Wynton Marsalis and friends speak to me in a way that technology has not yet.

Now don't get me wrong; I eat, sleep, drink, dream and breathe hi-tech musical equipment and I love it, but there can be too much of a good thing – as Socrates (or some other great philosopher) so nobly pointed out. In fact, if you deal with the stuff for a living, you can get to a point beyond burnout that some people may refer to as psychotic, though I prefer to think of it as creative release. If you've ever been overwhelmed by technology, perhaps you can share in the sentiment of wanting to slowly dismember synths by gently ripping off the individual knobs and sliders. Or perhaps you've thought about prying out LCDs and cutting them into artistically shaped little pieces. Unfortunately, they don't maintain their glow when they've been destroyed, so it's not quite the same as squishing lightning bugs.

If you have ever given thought to any of these suggestions, or perhaps even done some of them, then you've probably realized the importance of having lots of knobs and other parts on the instrument in question. (By the way, there's no need to see a shrink, as your friends or loved ones may suggest; it's a perfectly normal reaction to an overload of technology... I think.) I mean if you're going to really destroy something, it's much more fun if there are more things to destroy. When I'm done with a piece of gear I want to see lots of parts (without having to stoop to the level of completely crushing large pieces).

And this brings up a commonly accepted fallacy regarding old analog synthesizers. People will try and tell you that they like the

old beasts because of their unique sounds, but that's a load o' bull. Have you ever seen how many knobs, buttons, sliders and other assorted goodies there are on those suckers?! It's a synth destroyer's heaven! The DX7, on the other hand, is supposedly frowned upon by certain people because it sounds too thin. In reality, its *shape* is too thin and it doesn't have enough loose parts. Speaking of which, the real reason the DX7II is so popular is because they replaced those stupid membrane switches, which provide no tactile feedback and can only be destroyed *en masse*, with regular buttons, which can be broken individually.

Of course, similar principles can be applied to other products as well: computers, wind controllers, signal processors and other things you can think of are all fair game to receive the creative energy of your release (you'd be amazed at how well non-velocity sensitive drum pads respond to a sledgehammer). Just remember, it is April and it's only money.

On a slightly (but only very slightly) more serious note, MT is very pleased to welcome Chris Meyer to its editorial staff in the position of *Technical Editor*. As many of you may be aware, Chris, who is the Technical Chairman of the MIDI Manufacturer's Association (MMA), has been a regular contributor to MT since its inception. We look forward to having more of his written contributions in both MT and our sister publication H&SR, as well as access to his technical expertise. Chris comes to Music Maker Publications from Digidesign where he served as Resident Cyberpunk (officially) and a Software Engineer (unofficially). We'd also like to wish a formal farewell to Senior Editor Rick Davies who has decided to take on the life of a freelancer. We wish the best to them both. ■ Bob O'Donnell

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# Maxi Mix for mini bux.



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—Glen Rapoza, Manteca, CA.

*"I value the price-quality ratio. Looked at many other brands. I feel this is the best value."*

—Livonia Assembly of God, Livonia, MI.

*"I think the BK-1632 is a real hot board. It is built very well. It is a great unit for all our applications. It has great control and versatility."*

—Steve Marino, Lake Elsinore, CA.

*"For the price it couldn't be beat."*

—Merv Myera, Garnders, PA.

*"This baby is beautiful!"*

—Ronnie T. Fellela, Barrington, RI.

*"It's an excellent board for a very good price."*

—Brian Dawson, Midland, MI.

These enthusiastic user comments tell us we chose the features that are important to working musicians, and you'll find them all in the other three BK 32 boards, our 8-, 12-, and 24-channel models.

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## MUSIC

### Readers' Tapes 18

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### The Christians 30

This British pop/soul trio has used low-end technology to propel them to the top of the charts. Keyboardist Henry Priestman discusses their intriguing road to success.

### On Circuit 38

While the On Stage columns featuring the likes of Sting and Pink Floyd have received tremendous response, perhaps their instrument setups are a little beyond your means. Check out this new feature, focusing on bands playing in club venues (and consider how your band would look in this spot!). First up: LA's hottest club band, The Bonedaddies.

### Carl Stone 84

Though unfamiliar in the pop music circles, this avant garde composer/performer has been using creative electronics (and making a living at it!) for over 20 years. Travel the past into the future with a man truly on the cutting edge.

### Off the Record 91

Examined this month are the latest from Man Jumping and the Deviates. Believe me: you don't want to miss this.

## REVIEWS

### Akai MPC60 14

Sampler, sequencer and drum machine, all rolled into one. Without a doubt it's convenient and handy, if all the functions fall into place. Our in-brief review is just the stuff to whet your appetite.

### Alesis HR16 26

Here's the one you've been waiting for: MT's review of the long-awaited 16-bit drum machine. Although it's packed with features that tempt even the most die-hard anti-beat boxers, there are a few areas of concern.

### MIDI Desktop Controller 34

MIDI controllers have become available for instrumentalists of every shape and variety, but the average non-musician Joes of the world have been ignored. Our exclusive review and interview with the developer of a revolutionary new product talks about bringing MIDI to the masses.



MT APRIL '88

### Thomas Dolby 47

In conjunction with the release of his first record in four years, the enigmatic British man of Science has a lot to say on the subject of live playing and the role of technology.

### Korg M1 and S1 16

The Professional Performance Series from Korg is designed to give the corporate image a lift while offering uncompromised performance in a workstation environment. This in-brief preview of the M1 Music Workstation Keyboard and the S1 Production Workstation may have you looking to consolidate sooner than you expected.

### Sting EW2 MIDI Wind Controller 92

Wind players take note: another entry into the hotly contested controller market has now surfaced, complete with great feeling keys and a flexible means of control. The question is, is it worth the price?



# COMPUTER NOTES

## Computer Newsdesk 64

Software catalog, sampling program, MIDI interface . . . IBM, Mac or Atari. For the latest in your musical computer needs, be sure to check these out.

## Micro Reviews 66

For a quick peek at some recent offerings, take a look at these brief reviews. Programs covered include a voice editor for the ESQ1, drums for the Macintosh, and a new windows environment for the IBM.

## Passport Master Tracks Pro ST 71

This in-brief look at a newly ported 64-track sequencer for the Atari reveals the creative possibilities offered by a slick, professional package.

## Lyre FDSOft 72

The remarkable synthesis program from a relatively new Canadian company offers additive synthesis and resynthesis capabilities for the IBM and compatibles. If you've got a sampler, this just may be the one.

## User Groups 76

When you need information on computer hardware or software, applications, bugs, peripherals, or really anything having to do with data processing, perhaps your local computer store is not the best place to go. Take a look at what your local user group may provide.

## C-Lab Creator 78

A bit ahead of us on programs for the ST, the Germans have come up with a monster of a sequencing package offering a number of nifty manipulative maneuvers.

## Opcode D50 Librarian 82

Mac and Roland enthusiasts will no doubt be delighted with this new librarian, which also provides some fun patch-randomizing functions for your system.

# TECHNOLOGY

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Whether you're looking for the upper-crust in synthesizers, the sleekest of stands, or the latest in modules, you'll find it right where you always do. Here.

## All About Additive 22

Part One of a two-part series on this rapidly growing method of synthesis examines the basic physics of sound and describes how an additive synth nicely coincides with this theory.

## Sound Reading 53

Three books on the famous DX7II are compared and contrasted, and graded according to the reward gained from the time spent.

# SAMPLING

## Re-sampling 42

Re-sampling samples that are bad to begin with may seem a little like beating a dead horse. But, if you're aware of the possibilities this process affords, you may think again.

# MIDI

## MIDI Processors 59

The conclusion of our two-part feature looks at the more esoteric applications you can create with some of the more sophisticated processors. This stuff is wild . . .

# PROGRAMMING

## Patchwork 88

Readers are at their best this month, offering patches for the TX81Z and the ESQ1. Patchware includes a review of sounds available for the D50.



# NEWS DESK



## EAT YOUR HEART OUT, CADILLAC!

In a surprising move from the company famous for quality samplers and modular synths, E-mu Systems has announced the possible availability of the Emax Brougham. Produced as a result of popular demand from E-mu's distinguished customer base, features include a WoodGold front panel finish and GoldenTouch keyboard, with gold tone keys (fluorescent, glow-in-the-dark keys will soon be available), and a Simulated Stereo SurrOUND speaker system.

Through extensive market research, including Focus Groups held in Ramada Inns throughout the greater Xenia, Ohio metropolitan area, E-mu discovered increasing needs for features such as the Removable CassDisk cartridge storage system to reduce those critical floppy seconds; the Labelight system for illuminating the WoodGold front panel in those moody, low light situations; and the built-in SampleStand system for profes-

sional, on-the-spot, sampling techniques.

Questionnaires distributed at the American Society for Lounge Musicians and Road Crew Flag Holders for a Better Tomorrow Convention held in Yuba City, California were not collected, but perhaps would have revealed requests for features like the removable CoinCase magnetic system for income management and the removable AshDrink system for flexibility in performance consumption.

Each Emax Brougham is autographed by his eminence, Riley Smith, and comes complete with a specially created performance disk containing one preset and 409 sequences. The retail price is totally confidential.

All capitalized words in this news feature have been trademarked, so don't try using them anywhere else.

**MORE FROM** E-mu Systems Inc, 1600 Green Hills Road, Scotts Valley, CA 95066. Tel: (408) 438-1921

## ANOTHER LYNC IN THE CHAIN



For keyboard players who're sick of hiding behind their synth racks, Lync Systems has introduced the LNC4 MIDI Controller, an updated version of the LNC1.

Increased capabilities include programmable control on each of four outputs, including channel number, program number, keyboard velocity response, transpose amount, volume level, low key limit, high key limit and MIDI controller number. While the LNC1 could control eight sound sources, the LNC4 can handle 32.

To appease your need for color, Lync provides controllers in black, red, blue, orange, yellow and ivory. The suggested list price is \$1325.

**MORE FROM** Lync Systems Inc, 14 Walker Way, Albany, NY 12205. Tel: (518) 452-0891

## MATRIX INTERACTION

The Matrix 1000 from Oberheim is the newest addition to the Matrix Series of synthesizers, a six-voice module with 1000 sounds on board (800 pre-programmed sounds in ROM and an additional 200 in user-loadable RAM). The sounds in RAM



are programmable via MIDI from the Matrix 6 or 6R or any Matrix 6-compatible patch librarian/editor.

One of the more unusual features is called "Group Mode," which allows up to six of the units to be hooked together to produce a 36-voice instrument. A single Matrix 1000 can be used with a Matrix 6 or 6R to create a 12-voice instrument with this rotate function. Transpose, Fine Tune, MIDI Mono and Unison Select controls are also provided.

On-board patches include: 195 keyboard sounds, 118 string sounds, 130 woodwind and brass sounds, 239 synth sounds, 119 brasses, 74 lead sounds and 125 effects/percussion sounds.

The suggested retail price for the one rack space unit is \$575.

**MORE FROM** Oberheim-ECC, 2015 Davie Avenue, City of Commerce, CA 90040-1704. Tel: (213) 725-7870

## ALESIS REVERBERATING AGAIN

The Microverb II should be hitting the shelves about now, offering 15K bandwidth and 16 new reverb programs from the company that's making reverb (and a few other things) truly affordable. If you've seen the original Microverb, you've also seen the II - with the addition of the word "Medium" wedged between "Small" and "Large."

Program settings include medium room, medium/large room, medium plate/softer delayed attack, low diffusion vocal room and endless space. The Price? A mere \$199.

**MORE FROM** Alesis Corp, PO Box 3908, Los Angeles, CA 90078. Tel: (213) 467-8000



## 8-TRACK CASSETTE UNLEASHED

The company who delighted the world so many years ago with the first 4-track cassette recorder is likely to do it again with the Tascam 238 Syncaset, the first 8-track available in the States using standard audio cassettes.

Features include 3 $\frac{3}{4}$ ips tape speed, full-function remote control, auto punch in/out, auto rehearse, dbx II noise reduction and FSK and SMPTE compatibility. A serial connector for external computer control is



The Tascam 238 is the first 8-track multitrack cassette recorder available in America.

standard and the machine boasts an open architecture for possible software updates. Tascam also plans the release of the 11Diizer synchronizer, providing possible integration with MIDI instruments and SMPTE machine synchronization.

The suggested retail price for the Tascam 238 Syncaset is \$2295.

**MORE FROM** Tascam, 7733 Telegraph Road, Fontebello, CA 90640. Tel: (213) 726-0303

## LISTEN AND LOOK

Structured/Adaptive is the phrase coined by Roland to describe the synthesis method being used in several new instruments. The method was developed as a result of studying the characteristics of percussive keyboard sounds. The latest product to implement the technology is the P330 Digital Piano Sound Module.

The P330 is a single-space, rack-mountable unit offering three concert grand piano, two electric piano, harpsichord, clavichord and vibraphone sounds. Tremolo, chorus, built-in EQ and



6-voice polyphony are the featured specs, along with an easy-to-read LCD display and headphone jack.

And, if you'd like to take a look at MIDI note-on messages from the P330 (or any other MIDI'd instrument, for that matter), Roland offers up the A110 MIDI display. Any one or all of 16 MIDI channels may be viewed simultaneously, and a Hold indicator lets you see when the damper pedal is being used. There are also five MIDI Thru jacks for hooking your gear up.

The P330 has a suggested list price of \$1395; the A110, \$395.

**MORE FROM** RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040. Tel: (213) 685-5411

## FZ1 GETS BOXED

Casio has announced the availability of the FZ10M, a 4U-sized rackmount version of the FZ1 sampling keyboard. The unit comes standard with two megabyte memory capacity and XLR mix output/mic inputs.

Sampling rates of 36, 18, and 9kHz are available, yielding 29.1, 58.2, and 116.4 seconds of sampling time, respectively. The 64 voices can be organized into eight banks of presets, selected from the 16-bit

samples, preset waveforms, additive synthesis, hand-drawn waveforms and cyclic waveforms. Editing capabilities include 8-stage rate and level DCF and DCA envelopes, eight separate loop points, crossfade loop, truncate, reverse write, cross-write, velocity split/overlap and reverse. Still only 8-note polyphony, but what the heck. You can't have everything.

The suggested retail price is \$2499.

**MORE FROM** Casio Inc, 570 Mt. Pleasant Avenue, Dover, NJ 07801. Tel: (201) 361-5400



## NEW FRONTIERS FROM BUCHLA

Buchla and Associates, one of the creators of the modern electronic musical instrument, has announced completion of their newest creation, the Buchla 700. It is a multitimbral 12-voice machine with a flexible voice structure. Each voice has four oscillators that can be interconnected in a variety of configurations. Several synthesis techniques can be combined, including frequency, amplitude, and timbre modulation, additive and subtractive synthesis, and dynamic waveshaping (changing the wave-table without glitching). The user may design his or her waves by direct entry of numbers or assisted drawing with line bending and curve fitting. Custom phasing and panning circuits reputedly provide unusual depth and imaging in the acoustic field. Up to six modulators and 15 envelopes (with up to 96 segments) may be summoned up per voice. Individual points of the envelopes may be modified by input gestures.

The 700 has three MIDI In, three MIDI Out, and one MIDI thru jack. In addition, the unit itself has a variety of position and pressure-sensitive surfaces arrayed as potentiometers, flywheels, trackballs, switches, and ribbon controllers. Four control voltage inputs and outputs are

available, as well as an envelope follower output (all good news for those still wrestling with modular systems). In addition, there are two footpedal and two footswitch inputs, a pair of signal inputs (one which can be modulated and processed, the other which is mixed with the 700's output), a pair of control outputs (sync, etc), stereo audio outputs, and 12 individual miniphone outputs. Two RS-232 ports allow communications with external computers, terminals, printers, and plotters.

The 700 itself is a 68000-based computer with 1Meg of RAM, running MIDAS VII (the latest revision of Buchla's instrument control environment). In addition to running and editing the voices, MIDAS has a SMPTE-lockable sequencer, allows comprehensive score editing and display (music plus gestural control), microtuning (1 cent resolution, with a number of macro editing commands to cut down on keystrokes), and library management. A 3 $\frac{1}{2}$ " disk drive is onboard. The 700 also features a large high-resolution LCD and an EGA 64-color monitor connection. To cap it all off, it fits under an airline seat - 18"X15"X5", weighs about 20 pounds, and draws only 30 watts.

The 700 is available now and lists for \$7800.

**MORE FROM** Buchla and Associates, PO Box 5051, Berkeley, CA 94705. Tel: (415) 841-3661



# READERS' LETTERS

Send any question or comments that you may have to: Reader's Letters, Music Technology, 7361 Topanga Canyon Blvd., Canoga Park, CA 91303.

Dear Music Technology,

Congratulations on the great cover shot of Neil Peart on the February '88 issue of Music Technology.

I noticed in the photo that a small black box appeared underneath each cymbal. I have never seen these in other photos of Neil's setup and would like to know what they are.

Also, Neil mentioned new cymbal mics in the Rush article. Is it possible to get some technical information on the system?

Thanks for your time and I look forward to hearing from you!

P Healy  
Quincy, MA

Good eyes, P. None of us had even noticed those "small black boxes!" They are, in fact, the new ZMCI Zildjian cymbal mics, being used by an increasing number of drummers (Alan White also likes 'em). We hear through the grapevine that a new magazine called Rhythm will be reviewing them in the near future, but if you need something before then, contact Zildjian (near your home town, eh? That's interesting) at (617) 871-2200. Tell them Neil sent you.

Dear Music Technology,

How excited I was to see that first issue of MT with Peter Gabriel looking out and the word "Music" twice as big as "Technology."

Back in those ancient days you had a distinctive magazine with an editor (Rick Davies) who seemed interested not only in the great British jazz/pop scene (and its relatives) but also in striking a balance between music and technocratic insanity. And, as a special bonus, there were Stuart Catterson's distinctive illustrations to juice things nicely, thank you. Together they presented America with an interesting, even exciting alternative to the technological hell-hole into which Keyboard et al were pushing us.

And now, as '88 dawns, we readers are treated to the offerings of a new editor who in February devoted 72% of his precious editorial space directly to technoid junk. (Even the latest "Roland Users Group Magazine" devotes only 67% of its editorial space to technology dominated articles - that's how low you have fallen.)

And that's not even the worst of it - of the four "interview articles" you do run, three turn out to be little more than free promos for manufacturers. Yes, the names are there -

Rush, Erskine, Pink Floyd, but now they are reduced to playing coat-hook for lists of their equipment.

The bottom line is that 94.5% of the February issue is devoted to advertising and the interests of advertisers. Only 13 pages in the entire issue are dominated by something other than equipment (two of those are Table of Contents pages, and, of course, even on these Letters pages advertisers frequently promote their wares).

Oh, now I get it - while our backs were turned, you sold-out to GPI, and Bob O'Donnell is really no more than Dominic Milano cloned.

Let's be clear here. I own a studio full of the latest music hardware. This is no disgruntled acoustic musician speaking. I'm just a guy who subscribed to a once-classy magazine called MUSIC Technology (a magazine that actually had some music-oriented content), and now you (in the great Nixon/Reagan/Bush tradition) are turning that honest name into the Big Lie. Thanks a lot, Music Maker!

Ronald Adams  
Lexington, MA

Your letter distresses all the editors here, on a number of levels. First, one of the things we always try to remember is that the creation of music is the only reason for the technology. And no one here is a gearhead pure and simple; we are all musicians utilizing technology in our own fashion in the creation of more music.

However, MT is a technology (interpret, equipment and applications) publication. As much as I'd like to interview great artists who have nothing whatsoever to do with technology, that will have to be saved for another day. Most MT readers (determined by readers' surveys) are decidedly interested in what equipment a band or musician is using to create the effects they do. We don't offer them up for the advertisers benefit; that has never been the intent. We include them (amidst discussions of songwriting techniques, philosophical approaches, backgrounds, and hopefully personality insights) so that you know what works for them and what doesn't. If that's not what you want, perhaps this isn't the right magazine for you.

Give me a call. I'd love to discuss it more fully. - DP

And for the record, Stuart's illustrations are still an important part of the magazine.

Plus, Dominic is a lot taller than I am. - BO'D

Dear Music Technology,

The review of Rush's Hold Your Fire done by Adam Ward Seligman brightened my entire day! Finally, someone has dared to contradict these plastic techno-gods. I have listened to Rush for years but while their technique is impressive, I still remain unimpressed.

I could never be moved by a band who plays odd notes in odd ways for the sake of doing it - rather than because they have something gutsy or thought-provoking to express through their music. Peart's lyrics whine on in the all-too-familiar drone of armchair politicians and liberals who complain about the injustices of society and world affairs but refuse to ever get their hands dirty - or ride a subway train through the South Bronx.

It's as if Rush has put permanent anti-perspirant under their musical/emotional sweat glands.

Their fans present an even greater problem because Rush devotees as a general whole are convinced that Rush songs are the end-all-and-be-all of music. I have met more than my share of Rush-influenced musicians who refuse to play anything other than Rush covers or Rush-like music. I've met many hard-headed, unyielding musicians in my life but these people are extraordinarily tunnel-visioned. To inform them that their attitudes are musical suicide is a complete waste of time.

Perhaps Rush should stop pointing the finger at those who can't communicate and look in the mirror. Popular music is about accessibility, isn't it? But I suppose the young musicians/listeners of today have forgotten all about that, or never learned it. Check out all the latest furor in the guitar magazines. They're finally realizing that all this emphasis on speed and technique has produced a bunch of musical illiterates who excel at fast passages and complicated chord changes but fall apart when asked to improvise on a 4/4 I, IV, V progression.

Perhaps in our search for technical perfection we've become so EVO, we are now DEVO.

M Guerriere  
New York, NY

Everyone's got a right to their opinion. Thanks for writing. - DP

Dear Music Technology,

I enjoy your publication very much and find it very informative and nicely laid out. In the premiere issue (with Peter Gabriel on the

MT APRIL 1988



“



”

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► cover) was a piece called "Mono Mode Part I: CZ Series" (Getting the most from mono mode). After reading this article word for word at least 20 times, I am still unable to get my CZ101 into multitimbral mode. I am using a Korg SQDI to run the CZ. It seems that the CZ is not able to hold onto the patch number of previous patches. This is very frustrating as you may know. It seems there is a problem with "MIDI program change."

Can you help me?!

**Brad Mercier**  
Fresno, CA

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Brad, the problem could be that you are not recording the program changes on different MIDI channels. However, a friendly call to Casio resulted in a little CZ software history lesson. There are three revisions of the CZ101 ROM out there. The second had an anomaly in mono mode where the lower voices take on the character of the last voice edited. Resetting the CZ to the first voice (either by reselecting it, or hitting the solo button twice) after sending it the program changes cures this. The most recent ROM can be had from your local Casio service center for a nominal fee. To find out where that may be, call Casio at (201) 361-5400, extension 453. — CM

#### Dear Music Technology,

Congratulations! Thank you for finally addressing the professional (or soon-to-be professional) film and/or video composer. Will wonders never cease!

Needless to say, I was so impressed by Chris Many's February article on Picture Scoring that I've included a check for a year's subscription to Music Technology Magazine.

Kudos to Chris, and to all of the editors involved in having the chutzpah to address some of the many formidable challenges faced by today's composers. Please, let this article be only the beginning of a regular monthly column!

In addition to owning a Macintosh computer, 2.2 version of Performer Sequencer Software and 2.1 version of Composer, I have a Casio FZ1 Sampler and an OB8 synthesizer. I've been looking into SMPTE vs MTC formats and frankly, I am confused.

Would it be possible to have Chris run a series featuring a detailed analysis comparing the advantages of using a format like Q-Sheet, Auricle, and Cue with or without a sequencer software program like Performer?

Also, I recently purchased a JL Cooper PPSI for MTC. Could you please describe how it could be used in the above mentioned setups?

Ultimately, I would also like to see a guide to:

1. Basic setups of various hardware/software situations.
2. A walk through the jungle of 3/4" syncing with the above.
3. Detailed explanations of all of the parameters involved in technically executing hardware and software hook-ups, including all of the necessary peripheral equipment for 3/4" composing to timecode.
4. And lastly, reference material and/or names and numbers of support groups where people like me can get as much accurate information

as they can get their hands on about the technical problems of film and video scoring.

I realize that I am asking for a lot, but please believe me. Chris' column will prove to be an invaluable community service to thousands of composers like myself, confused by the plethora of incomplete product information.

The real problem that has yet to be addressed is the fact that film composers need integrated hardware/software systems. In order for us to get the equipment that we need, we need complete system information, not just a lot of information about one component of that system.

Thank you, and good luck.

**Paul Mason**  
Sync-Tank Productions

Thanks, Paul. You have some terrific ideas, some of which can be addressed here and others that will indeed be considered for future articles. You might want to check out our sister magazine Home & Studio Recording, which deals more often with studio applications pieces of all sorts (of course, we don't want to lose you as a subscriber, either!)

In response to your dilemma, Cue, Auricle, and Q-Sheet cannot be used in place of sequencers like Performer. Music is composed first on the sequencer. Then, Cue and Auricle provide a tempo reference to drive these sequences to sync them up with picture. Q-Sheet loads a sequence composed on another package and plays it back itself locked to SMPTE, but does not allow reprogramming tempo changes as Cue or Auricle would.

The JL Cooper PPSI may be changed to MTC function by opening it up and changing a marked jumper inside the box. In this mode, the PPSI takes SMPTE timecode and converts it to MTC (MIDI Time Code). Programs like Cue, Auricle, and Q-Sheet then take this in over MIDI to keep sync with the SMPTE coming from the master. Hope this helps a bit.

#### Dear Music Technology,

Occasionally your product reviews travel dizzily into esoteric depths and detail, yet at the same time leave out absolutely essential information. Your review of the Kurzweil 1000 (MT February '88) was such a case.

In a playback instrument like this, where the sound sources are fixed forever, the information most essential to a potential buyer includes the following:

1. What specific sounds are in the unit? "... Grand Piano, Strings, Choir and other rich acoustic instruments ..." [in the PX] leaves quite a bit to the imagination. What types of bowing or pizzicato effects are available for the strings? Is the choir male, female, mixed and/or children? What are the other rich acoustic instruments?
2. What specifically is the quality and character of each sound? Are the loops seamless? Besides trumpets, what other sounds, if any, are flawed? I shouldn't have to track down a previous review (if one exists) of the K250 in order to get this information. Not everyone has had first-hand experience with Kurzweil products.

3. How many audio outputs are available, and how can they be assigned? One would expect several outputs on a multitimbral unit in this class. If stereo outputs are all that are provided, it could be a serious limitation. Whatever the actual number, it was certainly worth mentioning.

These suggestions are intended in a friendly way to help make your reviews a bit more user friendly. Hope they are helpful.

**Richard Emmet**  
Portland, OR

Thanks for the constructive criticism Richard, we can certainly use it from time to time to keep us on our toes. The points you bring up with regard to the 1000 review are legitimate, though I think we gave a bit more info on the sound quality than you are suggesting. For those interested, the 1000 series instruments all have stereo outputs.

#### Dear Music Technology,

Thank you for publishing the best music magazine around!

I subscribe to Electronic Musician along with Music Technology and I find Music Technology to be far superior. When I subscribed to both magazines, I vowed that I would read both, decide which was best, and cancel the other. Since I am not sending you a cancellation with this note, guess who won.

I am a lead vocalist/keyboardist/guitarist/bassist/(wanna be) drummer for my band Agent. My keyboard gear consists of Roland's Jupiter 6, D50, JX8P, MT32, MKB200, Mirage Rack Sampler, TR707, MPU401, Compaq portable computer and Passport Master Tracks PC software. I do a lot of sequencing with Master Tracks, but I find it cumbersome to carry the computer with me on the road. (It barely survived a three-foot drop six months ago).

Can you give me some information on an inexpensive "dedicated" sequencer that I could use as a "playback" unit for the MIDI performances I compose on Master Tracks? I would worship your pages forever if you could! Note capacity seems to be my biggest concern. Thanks.

**Ralph Asena Jr**  
Stockton, CA

Well Ralph, there are certainly a number of good dedicated hardware sequencers on the market which should fill your needs. You might want to look at the new Alesis MMT8 (reviewed last month), or at Yamaha's QX5 (see review in MT January '87). If note capacity is a major concern, you may want to look at a hardware sequencer with a built-in disk drive — though they tend to be a bit more expensive — such as Roland's MC500 (see review in MT inaugural issue), or their new MC300, Yamaha's QX3 (see review in MT October '87), Kawai's soon-to-be-released Q80, or Korg's new SQD8. Another possibility is to give consideration to adding a MIDI system exclusive recorder like Yamaha's MDF1 to one of the previously mentioned units. Good luck in your search. ■



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Bob O'Donnell  
*Music Technology Magazine*



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# I · N · B · R · I · E · F

## Akai MPC60

### MIDI Production Center

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Photography Rosemarie Rousselle

**The first fruit of labor to materialize from the well-publicized connection between Roger Linn and Akai is this combination sampling drum machine and hardware sequencer. Have the ghosts of the Linn 9000 faded away?** *Preview by Bob O'Donnell.*

THE IDEA OF combining several products into a single box is becoming *de rigueur* in the musical instrument industry today. The workstation concept has taken hold, and more and more manufacturers have started to produce combination machines which are intended to be more efficient and more cost-effective than a series of individual instruments.

One of the first commercially available products to have these kind of multiple functions was the Linn 9000. Introduced in 1985, the 9000 met with mixed reactions because, while everyone loved the idea of the machine, the software within it had a number of bugs which led to some major problems and, eventually, to Linn's surprising demise.

The new Akai MPC60 (previously called the ADR15) – which was designed by Roger Linn in conjunction with Akai – is a direct descendant of the 9000, and in many ways bears some strong resemblances to it. The basic idea is the same; that is, it's a sampling drum machine and sequencer which can generate and sync to SMPTE timecode. (Actually, it's closer to the Linn MIDISTUDIO – which never made it into production – where the sampling, disk drive and SMPTE features were all supposed to be standard.) It also has the same touch- and pressure-sensitive pads and a number of other features carried over from the 9000.

The biggest difference, and undoubtedly the biggest improvement, is the enormous 320 character LCD which makes working

with the MPC60 a much simpler, much more intuitive task. Each of the function buttons on the front panel of the MPC60 has at least one screen of information dedicated to it, so a great deal of data – including entire paragraphs of explanation when you press the Help button – is readily available. Considering that the unit is intended to be the center point from which you run your MIDI system, this sort of "friendliness" and ease of operation is even more important.

The MPC60 is called a MIDI Production Center, but as it has pads on it and knowing how musicians react to them, the obvious thought is "drum machine!" And when you start whacking those pads with your fingers, you should hear some pretty high-quality sounds (as long as some decent samples are loaded – it doesn't have any permanent onboard sounds). The MPC60 has a fixed sampling rate of 40kHz, which gives an 18kHz bandwidth, and uses a special 12-bit non-linear data storage format for reduced noise, even when samples are tuned over the possible range of a fifth up or an octave down. Eight individual outputs and a stereo pair are available on the back panel to listen to those sounds and the MPC60 even has its own mono send/stereo return effects send for processing the sounds with an external reverb (or whatever). Up to 32 sounds can be loaded into the machine and up to 16 of them can be played at once.

Sounds (and sequences) are stored on the built-in 3½" floppy drive. The standard unit

can hold 13.1 seconds of samples, but a memory expansion board will be made available which can double that amount. At the moment there are no plans to support hard disk storage – it seems the RS232 port on the back of the MPC is intended for other purposes. The MPC does support the MIDI sample dump standard, however.

Of course the MPC is also a dedicated MIDI sequencer, and that portion of the memory can store 60,000 notes. It can be divided into 99 sequences, each of which can support 99 tracks, and 20 songs, each of which can hold 256 parts. As you would expect, the MPC60 supports real-time and step-time recording, and with the help of the LCD, step-time recording and editing is a much less tedious task than you may be used to. Complete information on up to four events can be seen and altered at once. In addition to standard note and velocity info, the MPC60 can record and display all MIDI controllers as well as tuning, level, panning and effects send level changes for every sound loaded into the sampler – one of the benefits of system integration.

The MPC60 has two record modes, Record and Overdub, which allow you to do linear or drum machine style programming on either drum or synth parts. In addition, the machine has a work loop feature which will repeat through a certain section as many times as you need until you get it right. You can also set a number of autolocate points for quick searches as well as points for automatic punch in and out. Tracks can be individually shifted in time and quantized and/or shuffled during or after recording, though the 1.0 version of software has a "crashable" bug involving the shuffle function (which should be fixed in version 1.1). Tracks can also be transposed, copied, deleted, inserted and merged.

As mentioned, the MPC reads and writes SMPTE, but it can also sync to MIDI Time Code – though it doesn't generate it – MIDI Song Position Pointer, MIDI clock, FSK, 96 pulse sync and quarter note clicks. The MPC has two MIDI inputs and four independent MIDI outs, but it can only support one set of 16 MIDI channels, in spite of its large number of tracks.

All told, the MPC60 is an impressive looking, impressive sounding machine. Despite some frustrating oversights, its all-in-one workstation approach is an appealing one. But whether it's truly worth its hefty price tag is a question that will be answered in a full review in another issue of MT.

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#### SYSTEM REQUIREMENTS:

- Apple Macintosh Computer
- 1 Megabyte of internal memory
- Imagewriter, LaserWriter, Linotype typesetter, or any PostScript printer.



# Korg Professional Performance Series

## MI Music Workstation, SI MIDI Production Workstation

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The company's newest products were the rage of the recent NAMM Show, and for good reason. Our report fills you in on some of the details. *Preview by Bob O'Donnell.*

SOME PRODUCTS HAVE the ability to make or break reputations for an entire company and its product line. Witness the Yamaha DX7, and the Linn 9000, respectively. Korg seems to be acutely aware of this phenomenon and is now working hard to change their image from a second line company which produces decent, inexpensive gear to a front line leader producing cutting edge, professional products. The DSSI and DS8 were steps in that direction, but the new Professional Performance Series products could represent a giant leap forward.

The reason for the fuss is that, based on the initial specs, Korg is putting together a line of instruments with very impressive price/performance ratios. In other words, these suckers are pretty hip. The apparent flagships of the new line, the MI and SI, are particularly noteworthy because they're each capable of a number of different functions and can truly be called "workstations" – though they approach the central workstation idea from different angles. The MI is an all-in-one MIDI studio incorporating a keyboard synthesizer with a built-in, phrase-based sequencer, drum sounds (which can be sequenced into patterns like a drum machine), and two programmable multi-digital effectors (MDEs), capable of creating reverb, chorus, EQ and delay effects. The SI is a stereo sampling drum machine/sequencer which combines 16-bit stereo sampling, 1 Megaword of 16-bit drum sounds in ROM, and a 150,000-note hardware sequencer with sophisticated editing functions.

For those of you looking for everything in a

single package, the **MI Music Workstation Keyboard** (labeled the 731 – its working project name – in the photo) is bound to be of interest. The instrument's sound generation method is not unlike the approach taken in the new Kurzweil 1000 series – a large amount of sampled acoustic and digital synthesis waveforms are stored in ROM and can be altered by a series of digital filters and amplifiers. In the case of the MI, a massive four Megabytes (two Megawords) of 16-bit samples and DWGS waveforms are available and this amount can be increased via a cartridge slot dedicated to additional PCM samples (no user sampling is available). Included in ROM are 80 multi-sampled acoustic sounds, 30 DWGS waveforms and four drum kits with up to 30 sounds each. Up to 20 additional samples/waveforms can be added with one of the credit card-sized cartridges (they hold 256 Kilowords), so the MI is open to future expansion – a nice touch.

The MI is 16-voice polyphonic in single mode (splits, layers and other combinations are also possible) and can play up to eight different timbres at once with dynamic voice allocation. Four polyphonic outputs are available and any sound or sounds can be sent to any of these outputs for individual processing. Of course that may not even be necessary because of the MI's two internal signal processors, either of which can be used on any of the synth or drum sounds. Both MDEs are completely programmable and the processors can be used separately or together and in series or parallel. If all that

isn't enough, the MI also has microtuning capabilities.

Once you've got all the sounds and processing together, the MI lets you turn it all into multitimbral music with the on-board eight-track sequencer. Any of the tracks can play internal sounds or can control external synths over MIDI. The basic note capacity is 2500 notes but this can be expanded up to approximately 7500 notes with a RAM card – the cards can also be used to double the number of onboard programs from 100 to 200. The 61-note keyboard on the MI is both velocity and pressure sensitive and the instrument's control capabilities include things like velocity crossfading and pitch-bends via aftertouch. Basically, there's enough here to keep you busy for a while.

If you've already got enough synths, but you're looking for a way to control it all from a central point (and wouldn't mind a 16-bit stereo sampler being thrown in with the deal), then the **SI MIDI Production Workstation** is probably more up your alley. The SI combines the features of a sampling drum machine – including 16 velocity-sensitive pads, one Megaword of internal drum sounds and another 512K (expandable to 2Meg) of RAM for user-sampled sounds – with a disk-based 150,000 event hardware sequencer. The drum machine portion includes eight individual outs as well as a stereo pair, and an update board will allow you to add four more individual outs and digital I/Os. The SI also has two trigger inputs, two MIDI inputs (which can be merged internally) and two sets of MIDI

MT APRIL 1988

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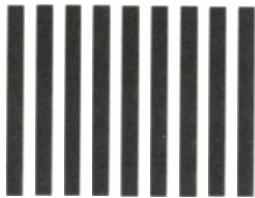


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outputs.

The sampling portion of the SI offers some interesting options. In addition to having a continuously variable sampling rate – from 2.1kHz to 44.1kHz – you can select the degree of quantization you want to use – either 4, 8, 12 or 16 bit in mono or stereo. As a consequence, the amount of available memory in a basic unit can vary from three minutes at 5kHz using 8-bit mono samples to three seconds at 44.1kHz using 16-bit stereo samples; the choice is yours. The SI is 12-note polyphonic, has a multi-level digital amplifier envelope (but no filtering), can play samples up three octaves and down as far as you can go, and has the ability to both playback and sample at the same time (for resampling tricks).

Now all this sampling capability is fine and dandy, but how do you go about editing the sounds? Well, if the 80-character LCD isn't good enough, how about a monitor and an IBM XT-compatible ASCII keyboard? Sure enough, following in the well appreciated footsteps of Roland's high-end samplers, the

Code, MIDI clock, and MIDI Song Position Pointer. The internal resolution is an impressive 192ppqn and the tempo range is 40-300bpm.

Speaking of tempos, one of the nice features of the SI and QI is their ability to easily create and store constantly varying tempo maps. They can also store mutes and up to 10 cue points per song. You can use the cue points for punch-ins, which can also be done manually, for autolocating or for rehearsal loops. In fact, looping can be done in play or record mode and in record you can either choose an "add/merge" mode for drum machine-style programming, or an "erase/replace" mode for tape-recorder style recording. Obviously some thought has gone into this machine.

The SI also supports note and event editing and will play back notes as you manually step through them. Filtering, three types of quantizing, transposing and transformations (ie. changing pitch-bend info into aftertouch) can be performed either on an entire song or only on a specific section. If that's not specific



SI offers the option (included with the previously mentioned option board) of hooking up these peripherals for easier sampling and sequencer editing. In fact, as it turns out, the SI is basically an IBM XT compatible which will be able to run a variety of programs. The operating system – which was developed and written in the US – is loaded from disk and can be easily updated and can even be stored, along with sample and sequence data, on a hard disk via the SCSI port which is also included with the optional board. (I get the feeling this might become a rather popular option . . .)

The sequencer portion of the SI, which will also be sold separately as the QI, can take full advantage of the monitor and keyboard option, so the unit is basically a dedicated music computer. The 3½" floppy can store up to 150,000 notes and can load and save sequences while it's running (!) – a feature referred to as "virtual disk operation." The sequencer contains 16 tracks and each track can have 16 parts, all of which can be simultaneously recorded. The SI also reads and writes any form of SMPTE and can simultaneously sync to SMPTE, MIDI Time MT APRIL 1988

enough, you can even select ranges of notes you want affected by these editing operations.

The SI sequencer can take advantage of the built-in merging feature and can also rechannelize any part on any track to the MIDI channel of your choice. Finally, the SI (and QI) can also function as MIDI SysEx recorders for storing patch information from synths, sample dumps and any other SysEx data.

Korg has got some serious new products here with which to entice us. The company has clearly done their homework in terms of putting together the most requested features and most important functions into impressive looking packages. If these instruments turn out to be the first of a new generation of workstation wonders, this stuff could start getting really interesting. I think it might. ■

**PRICES** MI, \$2200-2300 (tentative); SI, \$2500 (tentative); QI, \$1800 (tentative)

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# READERS' TAPES

MUSIC

Reviewed by Yung Dragen.

THE PSYCHIC AND physical afterglow of this year's Winter NAMM found me seated in an Indian restaurant with Tapehead (my opposite number on H&SR) and other various and sundry Music Maker personnel. A meditation broke out at our end of the table over what was the point of jazz. I co-led the argument that jazz's purpose was to stretch boundaries and challenge. Tapehead backed off from this on the grounds of how awful it sounds when it fails. My editor thought we were all crazy and wanted to enjoy jazz just for being enjoyable.

A few days later, I tried to apply these paths of thought to readers' tapes. The yang in me quickly shouted that the purpose of independent music is also to stretch boundaries and to challenge the constrictions of popular music. The yin in me countered that the real purpose of these pieces of plastic and magnetized rust is to prove that people are having fun. But how do I accommodate both as a reviewer?

First up this month is a three-song demo by hard rockers **The Bang!** (Michael Barberich, Barry Calvagna, and Rob DeMartino). Their bottom-heavy but well-mixed songs cut a style similar to a cruder Def Leppard and are delivered with the appropriate amount of faked angst. 'Sex in a Bottle' is devoid of keyboards and is the most honest song here; 'Maybe in the Night' features a few synth pads and FM chimes that are too light for the heaviness of the guitars and drums, while 'M.I.A.' features a grandiose stacked synth intro with the guitar mixed back throughout to make room for the synths and thin horns.

Why is so much heavy metal uninspired? I guess there's some unresolvable conflict between being heavy and trying to be cute enough to pick up girls (I remember laughing at Loverboy's video 'Gangs in the Street,' where they appear in an alley with red leather jackets and full perms). Motorhead, Black Sabbath, and Led Zeppelin weren't confused; their clarity shows in the effectiveness of their music. Also, when will a heavy metal band find a way to use synths in as primal a manner as guitars? The closest examples I've heard are a pair of new wave acts – Ultravox and Gary Numan's Tubeway Army.

Second up is a demo of the yet-to-be completed album *Foreign Affairs* by **Pegasus Project**. The Project consists of Doni Helms on vocals and Jim "Esh" Eshleman on everything else (DX7, Mirage, Polysix, and Oberheim drums, with an Akai MG1212, SPX90, and ADA MFX4 for recording). Esh writes that, "The concept for this project is to hit on a middle-of-the-road pop category using a softer, fuller synthesizer production

and writing approach." Indeed, the programming and production is very tasteful. Many extra points go for the synth bass and Doni's voice, with a couple off for the tempo (drop it just one or two more bpm), dryness (just a tad more reverb, please), drum mix (back off just a hair), and sax sample (the performance was good, though). The lyrics are nice if innocuous; but if you're going to use a sound effect to augment a song (there's a train sample in 'India'), weave it throughout instead of tacking it on the end. Closest stylistic reference is a slightly more invigorating Christopher Cross.

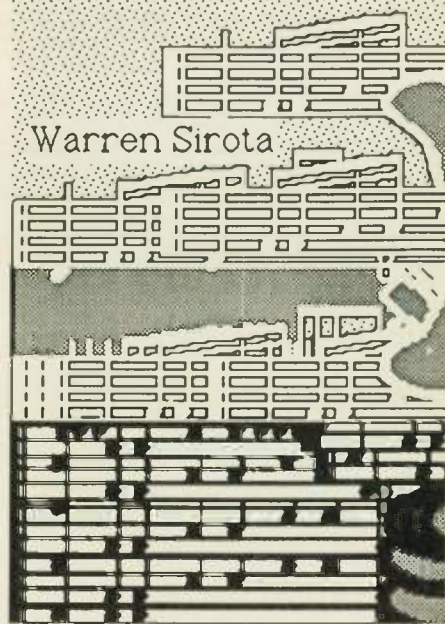
Would I own a Christopher Cross album? No, but that's me. These guys have been paying their dues (working together for four years, winning the 1985 Georgia talent contest, and doing commercials and jingles to eat), and just need an appropriate label to stumble across their karma.

Our third stop on The Wheel of Tapes this month is a ten-song demo by **Wendell Ing**. Wendell included with his tape a very nice letter to Titus Levi of *Keyboard Magazine*. Titus – if you're reading, Wendell likes your column.

Wendell credits himself with badgering his parents into buying a piano at age seven. He won a couple of talent contests, took up and dropped out of law, and ended up in Hawaii by 1970 playing with various pop/rock groups. The '80s find him writing for choreographers, being periodically nominated for best Instrumental Album in Hawaii's Na Hoku Hanohano awards, and living in Volcano Village with his wife, three kids, an ESQ1 and a Mirage. Wendell describes his style as ranging "from techno pop/rock to mellow new age jazz with overtones of classical, blues, oriental, and other influences." I'd strip that down to new age with jazz, classical, and oriental overtones. The timbres and style remind me very much of early '70s electronic doodlings along these lines, with thin filter wah basses, white noise snares, and a general lack of weight. The timing changes are nice, but the occasional raggedness of timing is not. There are occasional flashes of inspiration, like the marching mood of 'City Limits' and the bubbly hook in 'Maybe Tomorrow,' but in general I enjoyed this tape a lot more if I ignored it and used it as background music. I get the feeling that Wendell has gotten caught in a time and objectivity vacuum. I admit to having liked (and even played) this style of music ten years ago, but the world has grown past it. Am I, the eastern philosopher, going to say someone has gotten too beatific for their own good? Maybe, just maybe . . .

Leave it to a Taoist guitarist to save us. **Warren Sirota** (author of the "Electronic Guitarist" column for *Guitar Player* magazine) presents *Tales From My Other Life*, a collection of improvisations on guitars, synths, and various objecting effects devices. The tape comes with a "user manual" that humorously and unpretentiously describes the motivations and actions behind each

## Tales from my other life



Warren Sirota

piece (and assures us that "All the musicians are fine human beings").

The first piece, 'The Animal World,' "reflects my yearnings to communicate with other species." Warren attempts to communicate with whales on a mixture of amphetamines and helium, puppies, crickets, and rocks (!!!) with a guitar synth, TX7 and PCM70, and jams with some frogs in Vermont on guitar (with Brian Lehrer on flute). The first four are interesting spacey movements; no one was listening to each other in the fifth. 'Ping-Pong Avalanche' is a live "structured improvisation" using the above instrumentation plus a CZ101. It is mainly a thoughtful avant exploration of certain figures (slow and fast) played with much inflection and feel. 'Home, Home on the Moon' is a disposable improv with Warren and fellow guitarist Howard Barkan being fed through a pitch shifter, "at the end of a long and strange session . . ." The final piece is 'War Movie' – a dark, occasionally spikey soundscape performed with much knob-twiddling on a pair of Voyetra 8 synthesizers. It reminds me a lot of *Atem/Alpha Centauri* period Tangerine Dream.

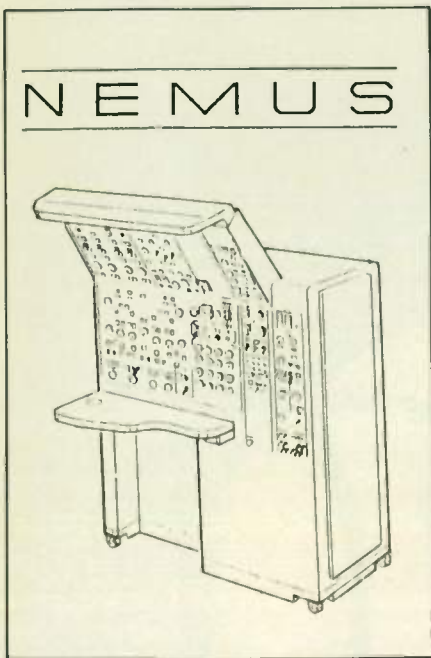
I guess I view avant garde and jazz as having parallel paths – I want them to challenge and stretch me without too much pretension. Warren Sirota qualifies.

Last up is the **NEMUS** (Northwest Electronic Musicians) sampler from Seattle, Washington. With their variety of styles, samplers seem better suited for independent labels and individuals shopping for names to look for as opposed to repeated listenings. Unlike most samplers that tend to illuminate some self-indulgent local scene, NEMUS seems to be a workshop dedicated towards some talented musicians learning their craft. Half the 14 pieces fall into the instrumental easy listening category, with the other half consisting of a pair of pop tunes, some avant

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meanderings, and a pair of tone poems. Instrumentation ranges from an Arp Odyssey to a Kurzweil K250 (with a bias towards the lower end). The recordings all lean towards the low-fi, but don't offend. Personal favorites include Steven Fox's 'War Against Dust' (in the style of an '80s electropop tune, but it sounds amazingly fresh), Doug Haire's 'Transit' (I'm a sucker for processed tapes), Gary Mula's 'Quimeshi' (a tone poem of guitar synth washes and natural sound effects), and Bernard Kron's 'Quartet' (a hybrid of an insistent rhythm pattern and ambient neo-classical washes). Only the last two came vaguely close to changing my life,



but all involved seemed to be relaxed and having a good time.

So where do I fall on the issue of jazz, readers' tapes, and playing the role of a minor god? If home artists are objective, lack pretension, and are enjoying themselves, they certainly have my blessing. But stretch me a little bit, and you have my thanks. ■

#### Contact Addresses:

**The Bang!**, c/o Michael Barberich, 22 Morris Street, Amityville, NY 11701.

**Pegasus Project**, c/o Jim Eshleman, PO Box 1101, Macon, GA 31202 (tape costs \$8)

**Wendell Ing**, PO Box 545, Volcano, HI 96785

**Warren Sirota**, c/o Digital Arts and Sciences, PO Box 27472, Oakland, CA 94602 (tape costs \$7 ppd)

**NEMUS**, 101 S. Spokane St, Seattle, WA 98134 (tape costs \$6 ppd, and a newsletter is available)

Send your demotape, along with some biography/equipment details and a recent photo if you have one, to: Reader's Tapes, Music Technology, 7361 Topanga Canyon Blvd., Canoga Park, CA 91303.

*This will be Yung Dragen's last Readers' Tapes column. In conjunction with Sony's recent purchase of CBS Records, Yung has been named vice president of A&R at CBS. We wish the miserable poser good luck in his new career.*

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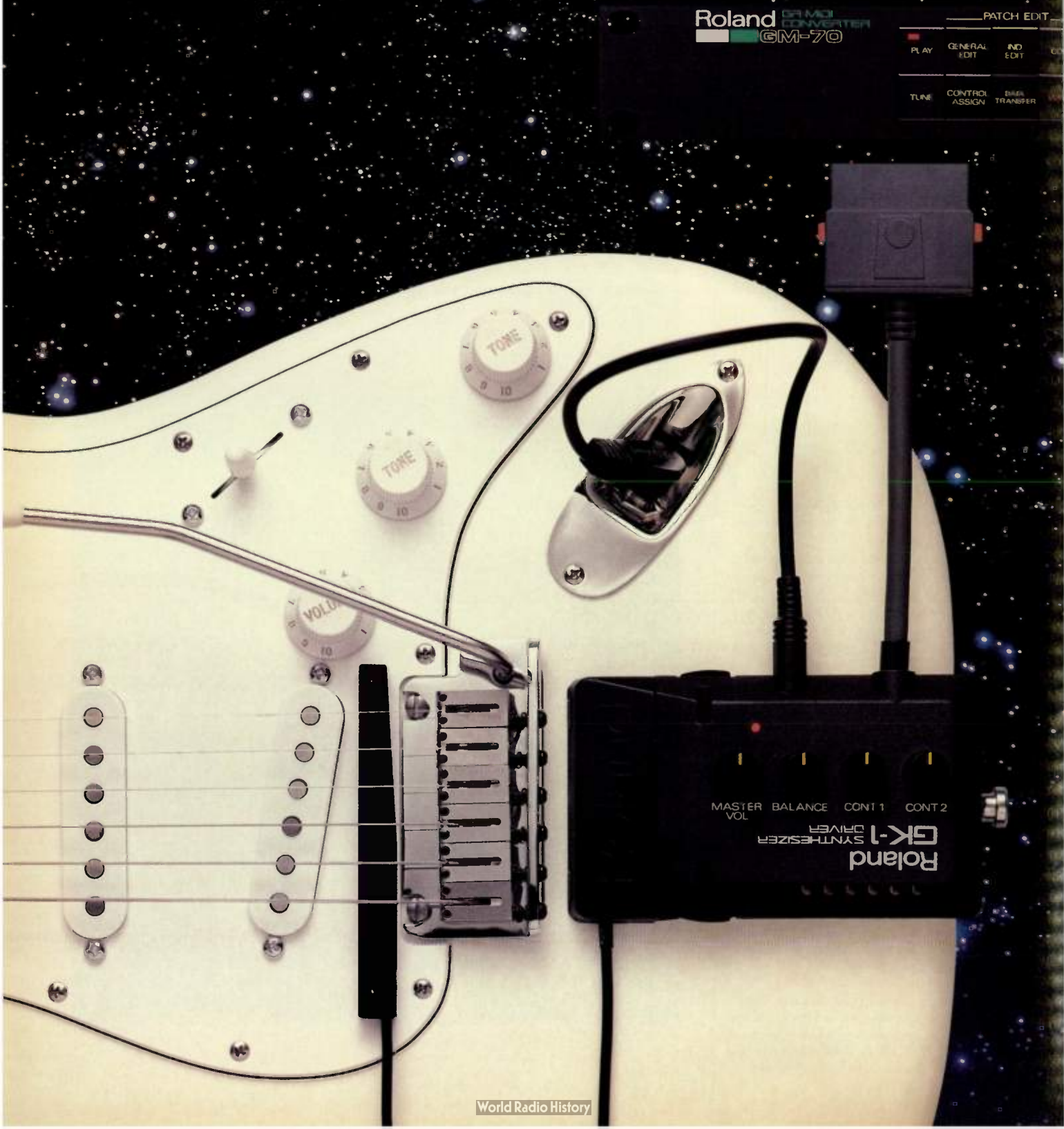
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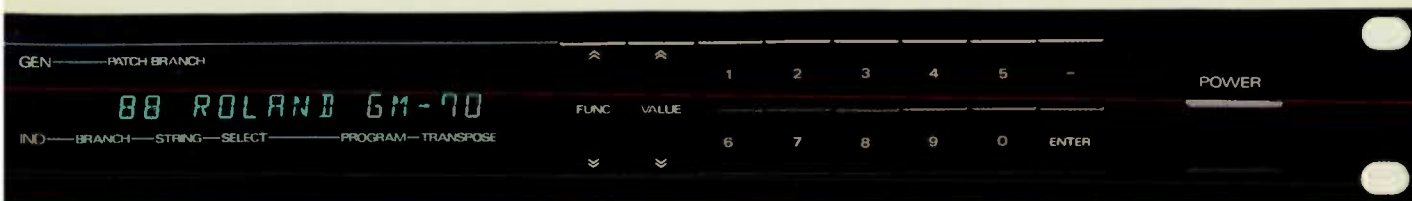
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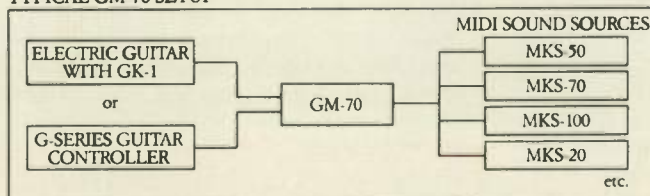


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# ALL ABOUT ADDITIVE

## *part one*

Illustration: Toby Goodner

**Confused by all the recent buzz surrounding additive synthesis? The first article in a two-part series describes what it is, examines the theory behind it, and explains how its power separates it – and its related companion resynthesis – from other synthesis techniques. Text by Chris Meyer.**

**H**ERE'S A ZEN-LIKE question: What is sound made of? Broken glass and dust from the shelf? A poncho? The same cosmic "stuff" as fire and water?

Would you laugh if I said a sound is made up of little bits of sound? It is, and the process of manipulating sounds by altering these "bits" – known as *additive synthesis* – is what this first article is all about, with the machines that work this magic being examined next month.

### Pitch, Frequency, and Timbre

LET'S START WITH the common terms "pitch" and "frequency." We tend to use them interchangeably. Low frequencies/pitches are, well, low, and high ones are, er, high.

To separate them, you have to get a handle on the concept of *timbre*. Try this experiment: say the word "Hawaii" very slowly, taking pains to keep the same pitch (in other words, in a monotone). The pitch stayed the same; why did each syllable sound different? Because each syllable had a different timbre – in other words, each one was built from a different combination of sound-stuff to make them sound different. These different combinations of sound-stuff can be distinguished by the different frequencies present. For example, the last syllable ("eeee") has higher frequencies present than, say, the first one ("huhhh"), even though they have the same root pitch.

How would you describe the timbre of a sound? "It has a lot of high end?" How about "It has a lot of high frequencies?" The latter is more accurate. Although a sound may appear to just have bands of energy in certain parts of the audio spectrum, it actually tends to be built from

a large number of discrete frequencies.

So, a "sound" (we'll stick with a sustained one, like the "huhhh," for now) can be broken down into combinations of frequencies. The "pitch" of the sound (the lowest one present) is referred to as the "fundamental" frequency (as in the foundation of a house), and the other ones are all related to it (like the walls of a house tend to "relate" to the foundation they're built on).

### Harmonic Frequencies

TO FIND OUT how those frequencies are related to the fundamental, take a look at the way a guitar string produces sound. It's tied down at two ends. When plucked, it tries to move or vibrate. The most obvious movement is the entire string trying to swing one way and then another – or at least as best it can, being tied down (see Figure 1). This big movement produces the fundamental frequency of the sound. A second movement is where the top half is trying to swing one way and the bottom half the other, with the middle acting as a pivot (see Figure 2). This produces a frequency twice that of the fundamental. Those of you who play guitar know that by touching a string over the 12th fret (the half-way mark) and lightly plucking one side, a pitch (or "harmonic") is produced that is one octave above that of the open string. This is called the "second harmonic" (the fundamental is the first harmonic), and is indeed twice the frequency of our fundamental.

A third movement of the string is with the middle going one way, and parts of the string on either side going the other around pivot points placed at third-way marks along the string (see Figure 3). This relates to the harmonic produced at the

seventh fret (oddly enough, the third-way mark), which is an octave and a fifth above the open string. It works out to three times the fundamental frequency, and is in fact the third harmonic. The process keeps going up the scale. The fourth harmonic is produced by the string dividing itself into four equal sections and vibrating (the harmonic at the fifth fret, for those with their guitars out by now), and is four times (two octaves) above the fundamental (Figure 4). And so on.

This behavior is not peculiar to guitar strings alone. Anything that vibrates has a certain relationship of frequencies between its fundamental and its harmonics. For example, pipes – organ pipes, wind instruments, etc – build up patterns very akin to the captive string. This relationship is referred to as "the integer harmonic series," because the frequencies of the harmonics are integer multiples (1, 2, 3, 4 . . .) of the fundamental frequency. The physical vibrations in turn vibrate the air around them. These sound waves travel through the air, hit our eardrums, and vibrate *them* in a similar manner. Voilà – we hear a sound.

The question that remains is, if most instruments have the same harmonic series, why do they sound different? Because the relative "loudnesses" or amplitude of the different harmonics are different. For instance, take a rock 'n' roll band playing the same song. For the first mix, bring the bass way forward and cut out the cymbals and guitars. For the second mix, cut out the bass and kick drum, and really boost the cymbals and fuzz. Same components doing the same thing, but it sounds different, true? The mix is different. Likewise, different mixes of the harmonic series produce different timbres.



Figure 1.  
Open String = Fundamental  
(1st Harmonic)



Figure 2.  
12th Fret = 2nd Harmonic  
(2 × frequency)



Figure 3.  
7th Fret = 3rd Harmonic  
(3 × frequency)



Figure 4.  
5th Fret = 4th Harmonic  
(4 × frequency)



Just like the rock band in the above example could be replaced with a baroque quartet (with a resulting change in sound), some instruments have a different harmonic series than an integer one and thus sound different. The most common exceptions are vibrating membranes (drum heads, cymbals, sewer lids) – their relationship follows a series of fundamental, 1.5933 times the fundamental, 2.1355 times, 2.2954 times, 2.9173 times, 3.5985 times, etc (see Figure 5).

The timbre of a sound is the final result of its harmonic series and the mix of its harmonics. From this point, it's just a small leap to work backwards and see that the timbre of any sound can be broken down and described in those terms.

### Relating to Synthesizers

A SYNTHESIZER WAVEFORM is also very similar to the vibrating guitar string. A sine wave is an example of a perfectly pure tone – its fundamental pitch is the only harmonic present. Now think of one cycle

of a wave as being bounded on each end, like our string. Fitting one cycle of a sine wave (once up and once down between its endpoints) is the first harmonic. Fitting a pair of them in between the end points forms the second harmonic (obviously, because it's twice the frequency of the fundamental). Fitting three results in the third harmonic, and so on.

A square wave has all odd numbered harmonics (first, third, fifth, seventh, ad infinitum). They are mixed by taking an amplitude level of one over their harmonic number (ie. the third harmonic is a third as loud as the fundamental). Mixing in different harmonics at different levels produces different waveshapes, just like they produce different timbres.

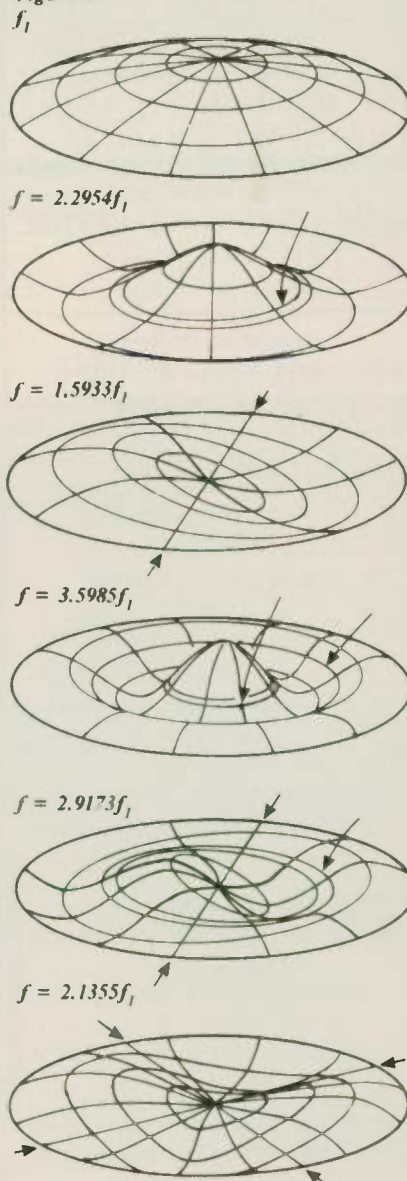
Wavetable synthesizers indeed have a wide selection of waveforms, each featuring a different harmonic mix, often recreating that of some real instrument. Some allow the user to actually choose this mix to create unique waves and therefore sounds.

## Dynamic versus Static

CONGRATULATIONS – YOU HAVE just waded through a mass of physics to get to the fundamental (pardon the pun) point of additive synthesis. By adding together pure frequencies (sine waves), you create sounds. By varying their mix and harmonic relationship, you can create different timbres – in theory, any timbre possible. And, in theory, by taking care choosing the exact harmonics and mix, you can recreate any sound.

What this does is build a steady tone of any timbre using simplistic additive synthesis. But let's face it – steady tones, no matter how decorative the harmonic series, get boring after a while. Our ears need to hear some kind of movement. For example, the suggestion I made about saying the word Hawaii slowly is not an example of a steady tone; the timbre is changing and evolving over the course of the sound. And those familiar with guitar strings (or piano strings, or whatever)

Figure 5.





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► know that they don't put out a steady tone – even if they could sustain forever, there's some subtle phasing and shifting going on within the sound.

It comes down to an issue of dynamic versus static. Only straight synthesizer waveforms are truly static; in the real world, each harmonic of a sound has a life of its own, rising, writhing, and falling with a personal identity to form the whole. Perhaps an overly poetic way of stating it, but it's true.

Three things exist that give each harmonic its individual identity. One, its frequency might be slightly detuned from an exact integer multiple (such as 3.02 instead of 3 times the fundamental). This creates a beating effect inside the sound, akin to two instruments or strings being slightly out of tune. The upper harmonics of a piano string are slightly "sharp" from their fundamental; this is why an acoustic piano has to be "stretch-tuned." The upper notes are tuned slightly sharp so that their fundamentals are more in tune with the harmonics of the notes below them. Likewise, the lower notes are slightly flat, so that their harmonics are in tune with the fundamentals of notes above them. Otherwise, the resulting beating would make a piano sound out of tune. Anyone who has tried to loop a guitar or piano on a sampler has also heard the subtle self-phasing of detuned harmonics.

A second dynamic characteristic of a harmonic is its amplitude envelope. The mix of the harmonics changes over time, therefore changing the timbre. This mix may be slow and gradual (such as the higher harmonics dying away on a plucked string) or fluctuate wildly and quickly at the very start of the sound before calming down (such as the initial bite of a horn, violin string, or snare drum). These also occasionally undulate slowly while a sound is sustaining, adding a bit of life to the sound as the timbre subtly changes. A more extreme example of the harmonic mix changing is a plucked electric guitar string first mellowing out, and then building up in the higher end in feedback. The placement of the guitar pickups, equalization on the amp, and resonances in the guitar's body pick out certain harmonics to emphasize and feed, strengthening their amplitude while the other ones naturally die away.

Third is the pitch-bend envelope of each harmonic. Before it settles down to a certain frequency, a harmonic may swing a bit wildly during the attack. This is most noticeable in horn "blips," where the pitch of the harmonics quickly goes down and then stabilizes.

## What All Do We Need Here?

NO OTHER SYNTHESIS technique has quite the power of additive. Subtractive synthesis starts with a given set of

relationships between harmonics (like the square wave) and tries to sort some of them out with a filter to create and recreate sounds. However, the basic "seed" waveforms may not have the harmonics needed (for example, a square wave lacks even harmonics), or the filter may not be fancy enough to filter out harmonics to recreate the exact mix we want or need. FM and phase distortion synthesis start with sine waves, but modulate the frequency of one with another as opposed to adding a group of them. This modulation often creates interesting harmonic series (including non-integer ones), but again the result might not include the harmonics or mix desired, and controlling this is often difficult and non-intuitive.

Wavetable machines, as stated above, have more complex seed waveshapes that may be closer to the mark. However, they have two drawbacks. One, they can not support harmonic series such as vibrating membranes (you can't fit 1.5933 sine waves into one wave without some serious distortions). Two, sounds often *change* in timbre over time, and if this change is more drastic than just a few higher harmonics appearing and disappearing, again, the filter may not be up to the task.

Additive synthesis is the technique that does give you control over every component of a sound. However, there are a few edges to this sword. One, not all "additive" machines may give you control over every aspect of each harmonic, thus restricting you from getting as much realism as you like. The aforementioned wavetable machines, for example, may let you choose only one harmonic series to start with, and you will have to use multiple oscillators for detuning, filters for faking harmonic envelopes, and pitch envelopes to give the whole sound a blip. Some machines are getting trickier, such as allowing two to four waveforms (sets of harmonics) to be individually detuned, amplitude enveloped, and pitch enveloped. Some of those gray-area "additive" machines will be explored in detail next month.

Assuming that a machine gives you individual harmonics to play with, the questions include: Do they give you enough control (such as detuning, individual amplitude envelopes, etc)? Do they even give you enough harmonics? Eight is really skimping for all but the highest frequencies or most bland of sounds; sixteen will cover the majority of cases.

The final edge of the sword is if you're indeed given all this power, *you have to use it*. Building a sound by setting the amplitude and pitch envelopes (not to mention frequency) of each harmonic is rather tedious (akin to building a sand castle grain by grain). Some shortcuts are



available, such as using FM for a few harmonics to build up larger groupings fast, using non-sine waveshapes for the individual harmonics (any non-sine waveshape has a harmonic series of its own, with its "fundamental" being the frequency of the harmonic), and treating groups of harmonics as blocks (for example, the highest harmonics can usually

Picking out all the individual harmonics and their paths from the whole is akin to being handed a city map without any street names and being asked to trace and rename all the streets. Also, real harmonics move with such complexity that it would take hundreds of envelope segments to trace them accurately. Some compromises have to be made, and the art of finding

Frames can be picked to be repeated, or read back more slowly to slow a sound down.

However, hearing your own voice say "Hawaii" that much slower may not be a weighty enough trick in your mind to justify all the hand-waving. The next degree of control after breaking a sound down is attaching performance controls to the components of a sound before it's put back together again. Imagine taking a sample of a woodwind, and having velocity or pressure actually change the harmonic mix of the sound during the attack or while it's sustaining. This is the pot of gold at the end of the technological rainbow we've seen arcing across the sky. Take any sound, study it and rearrange it if you want, and put your life back into it, without the drudgery of having to do it all by yourself.

*"Additive synthesis is the technique that does give you control over every component of a sound. However, there are a few edges to this sword."*

be treated as a block). When it comes to frequency envelopes, although each harmonic may take a separate path in reality, it usually happens so fast that bending them all quickly enough by the same amount covers the effect.

### Resynthesis

ADDITIVE SYNTHESIS IS the process of building sounds up from scratch. Learning how to do it came from studying how to break sounds down in the first place. The whole process of breaking down and rebuilding is called resynthesis.

Resynthesis is a tricky art that has been for the most part restricted to wishful laboratory thinking. Why? Part of the answer lies in the previous discussion of how hard it is to put sounds back together again accurately. Having a computer break them down in the first place is even harder.

which compromises are acceptable to the ear is a whole field of study in itself.

And what use is resynthesis, anyway? We've got samplers . . .

With resynthesis, in between breaking down a sound and putting it back together again, we can play with it. Some of the simplest forms of "playing with it" include dropping all the harmonics an octave while keeping the time evolution the same, boosting or cutting some harmonics over others. Hybrid instruments can be created by taking the upper harmonics of one and the lower harmonics of another.

Another common technique is taking a midsection of a sound and stretching it longer than it really should be. This technique is often referred to as "frame resynthesis," where the evolution of a sound is broken up into what it is made of in each snapshot, or "frame," of time.

### Class Dismissed

SO MUCH FOR the theory behind additive synthesis and resynthesis. Next month, the machines that are currently available will be examined, accompanied by discussion about what each one gives you in this field.

*The author would like to acknowledge the great influence Wendy Carlos has had over him and this field in general over the last three years.*

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# Alesis HR16 Drum Machine

**A drum machine that sounds like a drum kit – no, really it does . . . and it costs under five hundred bucks, honest. The trouble is, when you give folks what folks want they don't believe you.** *Review by Nicholas Rowland.*

**T**HE SPIRIT OF the Alesis HR16 has been with us for such a long time now, it still seems something of a miracle to encounter one "in the flesh." Yet almost because of the delays (something to do with a ship mined in the Gulf war, I believe) this drum machine seems to have already earned itself Significant Musical Product status – the sort of thing that most instruments only achieve after they've been around for several years.

And it's not surprising, given the spec sheet which has been public property for nearly a year: 49 high quality, 16-bit sampled voices with programmable tuning and panning, each assignable to 16 dynamically sensitive pads, two pairs of stereo outs, sync to tape and a comprehensive MIDI spec. All this for a mere \$449. In theory at least, that's gotta be worth waiting for.

But let's explore less familiar territory to start with: the HR16's appearance. Personally, I think its distinctive wedge shape cuts quite a dash. More importantly, the front panel is laid out in a clear and logical fashion, with functionally-related buttons grouped together and an informative 32-character LCD. There is a lid at the back of the machine which opens up to reveal a shallow compartment containing a set of instructions (albeit difficult for any short-sighted myopics to read). I found the compartment handy for other things too, like storing recording notes and preventing my gobstoppers from rolling about.

So, nice to look at, but in fact not so lovely to hold. Up close, there are some less pleasing aspects. Like squidgy rubber programming buttons which occasionally tend to stick. The volume and data select sliders are also a little flimsy. More worrying, though, are the voice buttons which, while made of a hard plastic, really don't feel as though they would survive prolonged bashing. In fact, the crash cymbal button on the review model (a

production job) had already been damaged, with the result that you needed to hit it harder than any of the others to get the loudest dynamic. I foresee long-term problems here, especially in the hands of the "I just hit 'em" school of rhythm programmers (believe me, there are plenty of them about).

Any slight disappointment felt at the rather, shall we say, questionable nature of the packaging quickly disappears when we plug the 9V AC adaptor (supplied) into the appropriate socket and begin to explore the HR16 from the inside out.

We'll start with the meat of the pre-launch publicity, all 49 of those 16-bit drum voices. Deep breath: 10 bass drums; seven snares; five toms; two open, two closed and one half-closed hi-hat; three cymbals; timbale; high and low congas; two wood blocks; two maracas; two cowbells; claves; cabasa; shaker; agogo; triangle; tambourine; handclaps; finger snap and drum sticks. The bass and snare samples include a couple of the electronic variety, so while there's nothing outrageous, there's certainly plenty of choice. This is important because it gives the HR16 the flexibility to fit in with various styles of music, from rock and pop to hip hop and electro – not always the case with drum machines.

It's a pity Alesis didn't see fit to include some more interesting percussion sounds: talking drums, tablas, perhaps even a bass sample. And I can't understand why there are two types of maracas and no muted conga or alternative timbale sound.

But, this complaint aside, with the possible exception of the claps, every single one of the voices is absolutely excellent. And while it may be a review cliché, you really do have to hear these voices for yourself to appreciate the quality of recording.

Though everyone will have their favorite, what you'll immediately notice about most of the sounds is how "live" and "natural" they are. In other words, the HR16 sounds more like a set of real

instruments close-miked than a collection of triggered sounds squashed into a tiny black box. It's most noticeable on the high frequency sounds – the cymbals and more "tinkly" percussion – which, due to the 48kHz sample rate and 20kHz bandwidth, retain all the clarity and sparkle which they normally lose in drum machines. On the double-headed kicks and toms the sample quality is so good that you can practically hear the drum heads flapping about.

Strangely enough, though, this "realism" can have its disadvantages and leads you to believe that some of the voices are weaker than they actually are. For example, a couple of the acoustic bass drum samples have captured the boominess and slightly soft attack of the real thing rather too well. Hence, if you're trying to imitate Carl Palmer shaking the foundations of Madison Square Garden with a double kick roll in 'Tarka the Otter,' all well and good. But like the real thing, if you want to translate this into a tight and punchy kick-in-the-gut, then you'll have to do a fair bit of tweaking – just as you would if you really had miked up Mr Palmer's kit. Either that or choose one of the more suitable bass drum sounds, of course.

This may sound a little unlikely, but once you have actually heard the machine, you'll realize exactly what I'm talking about.

## Kit Building

THOUGH BOTH THE manual and the LCD always refer to the 16 pads by their default voice assignments (as printed on the machine itself), any voice can be assigned to any pad or number of pads. You can even assign any one of the voices to the click function too.

Note, though, that the pad labeled Crash initially has two identical crash samples assigned to it which are triggered alternately. This is so that crash strikes will not cut off as they do when only one sample is used. Conversely, the three hi-hat pads (closed, mid and open) are





designed to cut each other off. In both cases, the intention is to make the machine sound much more realistic (and it works), but it also means that any other voices assigned to those particular pads will work in the same way too.

Having made your selection, voices may be tuned independently, over a range of +15 or -16 steps, which is actually about a fifth up and an octave down. Next comes the Mix function which allows you to set the volume (0-99) for each voice, then assign it to either one of the two pairs of

separate outputs for individual EQ and effect treatments.

Having created a Kit, it's a simple matter of saving the results with a bit of button pushing. Since you can store a completely different Kit for each pattern, and as there are 100 patterns, you can store . . . er, you work it out. And as pattern numbers (and hence different Kits) can be recalled by MIDI program change information, it means that the HR16 makes an excellent sound source for electronic drummers looking for something to plug into the

simultaneously: in step time, you have to hold the Patt key down first. Another key press and a touch on the data entry slider sets the tempo anywhere between 20 and 255bpm.

Pattern length is, not unreasonably, defined in terms of numbers of beats. The default length is eight beats though this is easily reset to a value between one and 682. The HR16 thoughtfully allows you to shorten or lengthen a pattern even if you've already recorded something into it. And if the new pattern is to be longer, you can add a period of "silence" onto either the beginning or the end of the original.

Quantization resolutions are variable from 1/4 through 1/6, 1/8, 1/12, 1/16, 1/24, 1/32, 1/48, 1/64 to Off (in other words 1/384, which is equivalent to 96 pulses per quarter note). Again, flexibility is the key because quantization can be constantly altered for each new overdub: handy for quickly and accurately punching in a four-on-the-floor kick, then adding, say, triplet hi-hats. The click can also be quantized over the same range only this time Off does mean no sound at all.

Pad dynamics come into play where both programming methods are concerned. Eleven settings of dynamics are available: Loud, Medium, Soft and Fixed 1 through Fixed 8. As their names suggest, the first three represent different loudness

**Feel** "The wonderful Offset function allows you to simulate an effect described by grown-up drummers as 'playing behind or in front of the beat'."

stereo outs and determine which one of seven pan positions it occupies (dead center or three steps to right or left).

Using these edit functions, you can create a wide variety of "Kits" and some interesting special effects too. More melodic rhythms can be created by assigning different tunings of the same voice across several pads. Using voices like triangle, agogo and claves, you can create a "stereo" bell tree, wind chimes, castanets and other cool effects. And, of course, the panning facilities will allow you to send anything up to four voices through

other end of their trigger-to-MIDI converters. In fact, one other nice point is that even though the onboard pads only have eight levels of velocity, the HR16 will respond to 32 different levels over MIDI.

### Beat Building

THOSE 100 PATTERNS can be built up in both real and step time and when programming a pattern, you can swap quickly and easily between both methods. In the case of real time, it's a simple matter of pressing the green Play and red Record



► curves, while the fixed settings mean that the dynamics are always the same no matter how hard the buttons are hit. On the whole, the system works quite well, although when set to Medium and Soft, the buttons really have to be whacked quite hard to get the loudest dynamic. However, bearing in mind my earlier comments I'm really not sure the machine will stand up to it.

When programming in step time, the LCD shows the dynamic at which the voice has been entered. If this isn't what you want, or you want to edit it at a later stage, you're allowed to enter new values using the number keys just below the LCD. Or if you're descended from Attila the Hun, you can keep hitting the pad until you get it right.

I'm sure it goes without saying (or does it?) that the dynamics of different voices are completely independent of one another.

Erasing erroneous beats is extremely simple, as is eradicating a single voice from the whole pattern. However, beware when erasing complete patterns. Not only does the entire rhythm disappear, but, unless you've activated a function called Manual Voice/Tune/Mix, so does any voice editing you've done. This can lead to some colorful language if you've just spent an hour or so carefully building up a Kit. The way round it is just to erase the voices individually which

also leaves you with your original pattern length and quantize values.

You also have to be careful of this when copying patterns (which as in all drum machines actually means tacking one pattern on to the end of another) because the Kit of the "destination" pattern replaces the Kit of the pattern that's being copied. If you're not careful, you could end up with the right pattern and the wrong voices playing it.

### Building for Real

THAT COVERS THE basic mechanics of pattern programming: logical, easily understandable, and flexible enough to allow you to do just about anything you want. But the HRI6 has a few more tricks – aces, I should say – up its sleeve.

First of these is the truly wonderful Offset function, normally only to be found on considerably more expensive machines or some software-based sequencers. This allows you to advance or delay a voice – any voice you choose – by up to 99 clock pulses (384th notes remember) to shift it slightly before or after the beat.

What this allows you to do is simulate an effect which you may have heard described by grown-up drummers as "playing behind or in front of the beat." It's an often subconscious technique where a drummer can either push a track along, or drag it

back slightly and make it more relaxed. It's often what people really mean when they talk about drummers having more "feel" than drum machines.

Used sparingly, the offset function really does make the HRI6 groove, enhancing the natural feel of the drum sounds themselves. Overdone it sounds like a novice drummer with a greased drum stool. But even if you want strict time programs, offset comes in handy to lock in the rhythm more tightly to bass guitar or synth voices with too soft an attack. You'll also find it pretty necessary when using some of the HRI6's own voices, like the cabasa or claps, both of which have such slow attacks that they tend to make things drag a little.

As well as offsetting individual drums you can also offset a whole pattern. In either case, if events are offset beyond the end of the pattern they are then put at the beginning and vice versa.

The Swing function also helps to inject a degree of flow into the programs and is essential when creating shuffles.

Another feature which seems initially more of a convenience than anything is the Fill button. When this is held down and any voice button is pressed, the voice is retriggered at the current quantize rate and whatever dynamic level has been set. Useful for quickly setting up hi-hat patterns or military snare rolls, it's also great for

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some offbeat effects too, like soft bass drum "stabs" or chirruping crickets.

## Song Building

THE HR16 CAN store a total of 100 Songs, each of which can contain up to 255 steps, a step being defined as any one of the 100 Patterns. Given the comprehensive features available for creating Patterns, the HR16's song editing features are surprisingly elementary. They include the usual insertion and deletion of patterns (replace does both of these at once) and tempo changes can be programmed

**Flexible** *"The HR16 has the flexibility to fit in with various styles of music, from rock and pop to hip hop and electro - not always the case with drum machines."*

between, but not during, patterns. Whole songs can be looped, but it's not possible to loop parts of them which is one method that many manufacturers use to save both memory and programming time.

In case you're ever worried about running out of memory, pressing Record and Length together displays the remainder as a percentage. If things are getting desperate then you can always save all patterns and songs to tape. You can also save and load song and pattern information via MIDI.

## MIDI Building

AS WE'VE MENTIONED the four-letter word a couple of times, we might as well see what other MIDI options the HR16 offers.

The MIDI/Util button allows you to determine which of the 16 channels the HR16 will both transmit and receive on. The other option is Omni, which means transmitting on channel 1, but receiving on all channels.

MIDI notes are assigned to each pad rather than to each voice, so that incoming MIDI information will trigger whatever

your Kit setup has assigned to that pad (the display shows both the MIDI note number and the corresponding keyboard note). First though, you'll have to toggle the Receive MIDI Drums function on. And if you want information to go out, you'll have to do the same for the Transmit function.

The HR16 also accepts and transmits MIDI clock information, plus Auto Start messages. (It can also be started with a remote footswitch plugged into the rear-panel socket.) It will sync to tape through

its own FSK code. As I said above, different patterns can be accessed with MIDI program change numbers. Unfortunately you can't actually access the different patterns while the machine is running because in that state it won't accept program changes. Hence, if you were thinking of using a keyboard or sequencer to dial up the various patterns as you went along, forget it.

## Conclusions

THE HR16 IS a remarkable piece of equipment. The sounds are excellent and the programming system is extremely user-friendly, yet it's comprehensive enough to give plenty of scope to the dedicated rhythm fiend. Electro-drummers will also find it the ideal box to trigger from pads.

Admittedly, it's not perfect. The casing really isn't up to scratch, some of the voice types are duplicated unnecessarily and the song editing facilities really are too simplistic.

In spite of these criticisms I would highly recommend it, mainly because it has a very particular character which, strangely enough, stems from the fact that it doesn't sound or behave like a drum machine at all.

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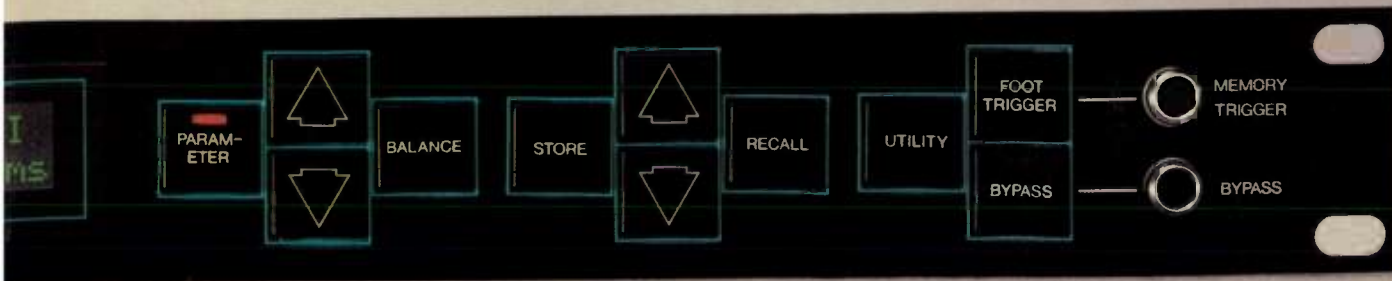
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# Fumbling in the DARK



The distinctive rattle of a Roland TR808 makes its mark on the eponymously titled debut album from new British band The Christians. Combining the tradition of gospel-like vocal harmonies with hi-tech backing tracks, the band cuts a unique path. *Interview by Paul Tingen.*

**H**ENRY PRIESTMAN, KEYBOARD player, guitarist and songwriter with The Christians, settles in his chair and then, unexpectedly, says "I'm a Luddite as far as modern music technology is concerned" – Luddites being a group of 19th century workmen who went around wrecking new machinery in factories, in an attempt to halt technical progress.

Priestman continues, explaining himself: "Really, I'm referring to my use of

technology in live situations. That's when it takes over too much – all this twiddling of knobs takes my mind off music – so I stick to a very simple setup on stage: a DX7 as a master keyboard, an S900 for some piano sounds and a Juno Alpha 1 – or was it Alpha Juno 1? – for analog sounds and that's it.

"I'm not a technobrat," he protests. "I haven't worked out how to sample, and I generally don't understand a lot of this hi-tech stuff. I play the keys, I can load a disk

and even, purely by accident, connect a MIDI cord. That's most of what I can do. These days you almost have to be an electronics engineer when you're a keyboard player, but I'm basically happy with a Hammond organ and a piano."

Priestman's continuing self-declared ignorance of all sorts of things ("I'm not a muso . . . I don't understand anything about music theory . . . I can't read music") was to be a recurrent theme during our conversation. Yet he was largely responsible for one of the more exciting recent UK album releases: the Christians' vinyl debut on Island, called simply *The Christians*.

The amiable, red-haired Liverpoolian composed all the songs and played and programmed a large part of the instruments on the record, which is a happy marriage of soul, gospel, R&B influences, traditional American black harmony singing and hi-tech backing tracks.

The record definitely sounds modern, with lots of indefinable sounds and samples and plenty of sequencing. It makes me wonder how he reconciles this with his declared "Luddite" attitude. Was the hi-tech department the producer Laurie Latham's lot? Priestman shakes his head.

"No, the Luddite thing applies to the live situation. I don't actually dislike machines and I'm not afraid to use technology in the studio. I wanted to use it, because if we'd had the band playing on the record the way we play live, it would have ended up sounding like a sub-Motown affair. The warmth and feel of that is great live, yet on record you want to be moving forward and sound modern. We consciously put sounds and feels on the record which you can't get from real playing. Laurie just helped us realize what we'd set out to do from the start: to make a record which would combine the black vocal harmony tradition with the post-new-wave-pop sensibility of today, incorporating everything we listen to ourselves: punk, reggae, soul, blues, the classics . . ."

For Priestman, the release of the Christians' album was the realization of a long-lived dream: to play his own songs. For five years he was the keyboard player with It's Immaterial – who never got around to playing any of Priestman's songs. Before that he moved from his native Hull to Liverpool to study at the art college and joined local bands as a guitarist. It was only the presence of three guitarists in one of those bands which led him to playing keyboards.

In 1983, Priestman saw brothers Garry, Russell and Roger Christian perform at Liverpool's *Lark in the Park* show. They'd been singing for years, inspired by groups like The Temptations and The Persuasions. They sang mainly for their own pleasure and public performances were scarce. Despite their non-professional background, Priestman was sufficiently impressed with



the quality of their voices to invite the brothers into the studio to sing backing vocals on a new It's Immaterial track, 'Ed's Funky Diner.' They kept in touch and later started work on a single which was never released but marked the beginning of a happy partnership.

By the Autumn of '85 the Christians was an eight-piece band doing live work, sometimes supporting It's Immaterial, sometimes headlining. A deal with Island records meant Priestman left It's Immaterial to concentrate on his own music, demoing a lot of the songs on eight-track in the winter of '86/87. A live appearance on British television in January of '87 preceded the release of their first single 'Forgotten Town.' The album was released in October in the UK and went into the charts at No. 2. The US release of the single and album was in February of '88.

Today The Christians are Garry and Russell Christian (brother Roger left in August to pursue a solo career) and Henry Priestman. The band is aided and abetted by Mike Bulger on electric guitar, Tony Jones on bass and Paul Barlow on drums as more or less regular members of the group. So what is Priestman's current role? As the album sleeve gives all the songwriting credits over to my interviewee, it looks like a dominant one. Priestman denies it.

"The strongest and most important part of the Christians is the vocals, that's where Garry and Russell are central. I sing as well, so we all chuck in ideas for the melodies and the harmonies. On top of that, Russell plays sax and there's a lot of him on the album. And both Russell and Garry are writing songs now, they've written the last two B-sides, and several of their songs will end up on the new album."

So the Christians are not a one-man band affair. The fact remains, however, that Priestman played a predominant part in the making of the LP.

**T**RACING THE SONGWRITING back leads us to eight-track demos recorded last winter - conceived, played and recorded by Priestman. He confesses to favoring Roland's old TR808 drum machine for demoing and also live: "I love the sound of it. No other drum machine has that sound. It also has a tremendous feel, so I use it for demoing, and also in various places on the album, like the beginning of 'One in a Million.'"

Songwriting appears to come relatively easy to Priestman. Working around a bassline is one of his favorite approaches.

"'Forgotten Town' started like that; it's got one bassline going through the whole lot. 'Born Again' is also one bassline, apart from the odd little bridge. I usually like to get the rhythm and bass sorted out, then the chords, then the melody and then the words."

With regard to the strong melodies on  
MT APRIL 1988

the album, Priestman's working method is a surprising one. Hi-tech rhythms and grooves are often blamed for soul-less music these days. He acknowledges the point.

"I know. It's why a lot of dance music, which is conceived this way, leaves me cold - because there's no song. All right, it moves your feet, but it doesn't move your heart and there's nothing that you end up singing. I love melody and harmony and I suppose that shows in my work, even when I don't follow the 'preferred' method of writing with just piano or guitar."

After demoing his songs on eight-track, Priestman went on to the pre-production stage with producer Latham and programmer Anthony Moore: "We'd spend days messing around with things. We wouldn't go for finished sounds so much at that stage, but rather say, 'Well we know that we want a violin-type sound here,' and use any old violin-type sound whilst going for the part."

The results of their labors were largely stored in an Atari ST, running Steinberg software, operated by Moore. With all their parts prepared and what they thought were clear ideas about the sounds, they went into a 24-track studio (Manfred Mann's Workhouse) and started laying down the tracks. Finding the proper sounds proved a laborious, yet rewarding task.

"We used a lot of Akai S900," Priestman elaborates, "with samples from a variety of

sources. Sometimes we used factory samples, sometimes we used one of Anthony's or Laurie's. On one occasion they sampled a sound of mine, which we couldn't recreate. That was a clap-type sound, which came from a demo I'd done two years before. It was a TR808, put through an amp and a ridiculous amount of gated reverb. There are some things which you can do on eight-track with low technology which are very hard to recreate in a hi-tech 24-track situation. So we had to sample that sound into the S900 and ran it off that.

"We also used more normal sounds, usually put out of range a bit. Like the instrumental theme at the beginning of 'Forgotten Town,' which repeats throughout the song, is a sampled marimba. I wanted to use real marimba there, but Laurie said 'No, it's good to sample this and keep it dead on the beat.' In doing that we discovered that it sounded better slightly out of its range."

Another, rather unlikely, machine used during the sessions was a Casio CZ101. It may sound shocking to a lot of CZ101 owners, but many of the organ sounds on the album are Preset 6, unmodified. It's a sound which is probably discarded by most people after a cursory listen.

"I really like the Casio, and especially that sound," says Priestman, clearly enjoying himself. "I also played real Hammond organ in places, but that Casio sound was used ▶



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► quite a lot. It's got character and fitted with what we were trying to do with the album: putting character in things. I have to admit that I sometimes went, 'Well, I'm not sure about that,' and Laurie would say 'Let's try it.' Normally only Prince or perhaps The Cure get away with using that kind of really lame synth sound, but it's a real hook – because nobody else is using those sounds. On 'Forgotten Town' we used another one, I think it was preset 15, the whistle sound."

Other sound sources were the DX7 (mainly presets) and a Juno 106: "You won't find me using a DX7 on its own, though. That digital sound is not warm enough for me. I always use it together with an analog sound, which makes it sound a lot better."

"I suppose one reason I use so many presets is that I can't program sounds. I just mess around with analog machines – I won't touch the DX7 – and get things from happy accidents. I really don't know what I'm doing. I'm just fumbling in the dark. I can handle analogs, because you just press things and push faders up and down. And then . . . Perhaps sounds aren't that important to me. Some people get so worked up about them, but it's like with the basslines: the tune has to be good, otherwise there's no point."

**T**HE CHRISTIANS, THE album, uses sequencing extensively, a conceptual decision favored by Priestman and Latham to help with the creation of a modern sound.

"As I've said before, it might have sounded rather old-fashioned otherwise. The band ended up playing on perhaps only three or four tracks on the album. I think sometimes they were a bit pissed off that they didn't play on the whole album, but I wanted the album to have lots of different feels. Yet most of the keyboards were manually played. What we did to combine modern tightness with human feel was that I'd play into the sequencer, say 16 bars of a bassline and then take out the two best bars and chain them. The bass part of 'When The Fingers Point' was done like that, as was the bassline of 'Born Again,' which was played on Minimoog. All the sequencing is in fact in real time and then chained together."

Another studio 'happening' that helped reshape some of the songs was improvisation.

"A lot of our best things were done during ad-libs at the end of tracks. That's why a lot of the fade-outs are so long – 'Born Again' was meant to finish two minutes earlier than it does. Garry does a lot of his best ad-libbing at the end of songs, and so do I. If we found we had something good then we'd put it in the AMS and sneak it out at the beginning or somewhere in the middle of the song. Like the opening of 'Sad Songs,' 'gone are the



sad songs . . . ' was originally an ad-lib sung by Garry at the end. That's why I think new technology is great, because without it we wouldn't have been able to do things like that.

"Laurie was really important here as well. He'd quickly gathered that we got a lot of things from ad-libbing so he always set up a spare track for us and then would just record somebody all the way through. I'd do a whole track of Hammond organ, just messing about, changing things all the time, and he'd afterwards say: 'That was a great line, let's home in on that section.' A lot of guitar, keyboard and vocal lines were invented like that. He was a catalyst for us to excel ourselves. He brought things out in Garry's vocals that I don't think anybody else could do. He also brought things out of me . . . What really helped was that we both have this reference of old music. He'd say, 'Do you remember that War album?' or 'Did you ever hear that Captain Beefheart thing?' or 'What about the guitar line from 'Have You Seen Your Mother Baby?'" I wouldn't actually copy things, but it was like a recognition: 'Oh yeah, you mean that kind of feel.'"

Priestman explains the intent of his songs. " 'Ideal World' is about South Africa – no, we're not religious. Also we're often seen as a political band, but I think that my lyrics – sometimes co-written with a friend called Mark Herman – are more moral than political. I just like to write about anything. 'Sad Song' is about a nightclub singer called Suzi Solidor, who died in Paris, forgotten and never having recorded anything. I thought that was very tragic."

Now, in the wake of their initial success in the UK, The Christians are being promoted by Island to follow in the footsteps of U2. Priestman's life is suddenly circling around promotion rather than music; he's just back from shooting a video

clip in Austria and had exactly half a night's sleep in Liverpool before being flown back to London to do a slot on Radio 1's *Singled Out*. Tomorrow he's on his way to the Netherlands, doing eight interviews in one day.

"They told me that I didn't have to do this interview if I didn't want to, but I like talking about music for a change," he says, looking in disdain at the lavish interior surrounding us. Champneys Club, a health club on Piccadilly in London, is hardly a place for a socially-aware musician to give an interview: wall-to-wall carpet, marble pillars and mirrors everywhere; a swimming pool and jacuzzi across the room and the kind of upper class atmosphere which to some people is a dream, to others a plague.

Priestman has mixed feelings about the possibility of superstar status for The Christians.

"I came into this to play music, and I'd rather not be doing all the promoting, photo sessions, shooting videos, traveling up and down Europe. It takes me away from music. Also, it interferes with your private life once you start being recognized. During the shooting of videos I usually ask to be put at the back, and I've started to wear sunglasses now because I don't want to be recognized. When it becomes like U2, where you have to have bodyguards for every floor of your hotel, I probably would consider taking a back seat and work just as a songwriter. I'd love to do that anyway. That's how it started with the Christians. Originally I wasn't going to be in the frontline, it would only be the three brothers on stage and me writing the songs at home. But then people would have said 'Oh, they're a soul band'. We wanted to challenge the stereotype: bring in the white face and it makes a difference. Challenging the stereotypes is what we are about really. That and music, of course." ■



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# Obfuscator

## MIDI Desktop Controller

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Photography Matt Isaacson

**The next wave in controllers has finally arrived. We give you the scoop on MIDI for the masses.**  
*Interview and Text by Matt Isaacson.*

**W**HEN THE FIRST synthesizers were developed, it was a natural thing for them to have been built around keyboards. Synthesizers being the all-electronic contrivances they are, the easy and obvious choice of control device for use by the player was an array of switches. And what widely-studied (and academically acceptable) performance apparatus is more amenable to implementation as a switch array than the standard piano keyboard? In fact, electronic organs had already fostered the development of such keyboards.

There things stood for quite some time – the synthesizer technology available to keyboard players advanced steadily, while remaining virtually inaccessible to players of other instruments. Happily, refinements in transducer technology, coupled with a growing awareness of large musical markets as yet untapped and boosted by a

few pioneering visionaries, led to electronic axes for others in the musical community. Electronic drums, guitar synths, and more recently controllers for horn and reed instrument players have become musically viable and added greatly to the ranks of musicians who are now able to make use of electronically generated sounds. With the widespread adoption of MIDI and computer sequencers, things might even be said to have already come full circle – the appropriate user interface is again an array of switches, namely the computer keyboard.

All of the barriers to musical expression via electronics have been pulled down, you might conclude – wrongly, however. Just as the number of those highly visible users of “the computer for the rest of us” is hugely and quietly overshadowed in the world at large by the masses who pound away daily at their IBM PC clones, so there is a silent

majority, by and large unrecognized, who remain musically dispossessed despite all of the technology which has come into existence. They are none other than the general public, the average Joes, those who have neither the time, the inclination nor the talent to play a musical instrument. Many are frustrated musicians yearning to be given a voice, and there are a lot more of them than there are of us.

### The Man

SUCH, ANYWAY, IS the vision of Hans Stanz, a northern California inventor/physicist who left his full-time job and went into the garage a scant year ago to begin development on the idea which came to him “like a news flash from God. It was awesome, totally awesome. I’d been staring out the window of my office eight hours a day for what seemed like two weeks, chewing on gum rubber erasers and



banging my head against a problem that refused to budge" – Stanz was doing classified R&D work in radar systems for a local division of NASA at the time – "the radio in my office was tuned to a local college station. A song called 'Louie Louie' came on, I hadn't heard it in years. Unconsciously I began tapping out the beat with a couple of pencils on my desktop, getting caught up in the tune and reminiscing a little about the bands I used to see as a teenager, when suddenly, *bam!* it hit me that the key to a mass-music breakthrough was right in front of me – practically in my lap!"

There must be hundreds of millions worldwide, reasoned Stanz, who, like him, spend 40 hours a week sitting behind a

*"I started wearing the protective suit back in the early days of prototyping after I noticed that my cup of coffee tended to stay quite warm for much longer than I'd expect."*

desk. If a way could be found to make that desk into a musical instrument, there would already be a vast contingent of accomplished players prepared to take advantage of it. The implications for popular music – not to mention the potential profits – were staggering, and proved more than Stanz could resist.

A few months ago, Stanz's labor bore its first fruit in the form of a working prototype. He claims he is fortunate in that his career work in aerospace tracking and ranging systems had already shown him the best path to take by the time he conceived his idea, allowing him to avoid several developmental dead ends which might have been likely paths for other inventors not so equipped. Asserting that piezo-electric pickups and force-sensing resistors are "for the birds," he explains with a hint of smugness that his system is based on state-of-the-art microwave radar, infrared and laser imaging methods, making it absolutely unique in both its design and its capabilities. A prior art search is also well under way, to determine the patentability of several key components of the system – Stanz is characteristically optimistic on this point.

## Capabilities

AND WHAT EXACTLY does this thing do? Stated in the simplest possible way, it detects the motion of objects, including hands and any other body part, on, about or above the desktop, and encodes what it sees into discrete messages which can then be used to control musical instruments via MIDI. Shades of the MIDI Theremin? Hardly. Stanz calls it the Obfuscator, a name derived as an acronym from the foreshortened technical description of the device, which is an orthogonal bipolar field-undulation-sensitive contraposed-array-triangulation omnidirectional rangefinder.

Stanz was at first somewhat reluctant to discuss the internal operation of his brainchild in any further depth, claiming that the name alone was an adequate description – "and besides, it's *what* this thing does that's important, not *how*; right?" I continued to press him, insisting that the Music Technology readership, being a forward-looking lot, were where many of his initial sales might come from, and being more technology-literate than the populace at large, were also likely to be rather skeptical in the absence of some sort of plausible explanation. He frowned, making some remarks to the effect that "these are precisely the people for whom the invention is *not* intended" and "my goal is to democratize music, not to create

another form of musical elite." At length, however, his good spirits returned, and he relented. Here's what he told me:

"The heart of the system is an array of radar elements operating in the 0.5 centimeter range. Because of the low noise levels inherent in those frequencies and the short distances being resolved, the standard desktop system operates at very low power levels, making it entirely safe for extended daily use – it's less microwave exposure than you get from a well-built microwave oven. In fact, I'm expecting the green light from UL (Underwriter's Laboratories, the product safety testing board) in the next week or so, although for some damned reason I'm having a bit more trouble getting it past the FCC. Actually, a lot of work has gone into this safety aspect." He laughed and pointed at what looked like a moon-landing suit – albeit a very reflective one, with metal screening over the visor – which stood without visible assistance in the corner of the garage. "I started wearing that back in the early days of prototyping after I noticed that my cup of coffee tended to stay quite warm for much longer than I'd expect."

"Anyway, the original design had a set of three radar elements set about the perimeters of the desktop in a triangular pattern. A single radar element emits an extremely short pulse of microwave energy, then uses the same antenna to listen for returning echoes caused by objects in the path of the pulse. In contrast to the familiar image of a narrowly directed beam emerging from a radar dish, the energy is in this case emitted in a hemispherical pattern, since we need fast response and don't know exactly where we should be looking at any point in time – that's the omnidirectional part.

"By measuring the time difference between the emitted pulse and any reflections which return, the single ▶



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▶ element can provide precise, virtually continuous information about the straight-line distances of various reflective objects from itself, but no information about which direction those reflections are coming from. However, by combining the information obtained from three such elements in a triangle layout, which do their sensing in time-multiplexed mode at several hundred thousand scans per second, the exact location of any object can be uniquely pinpointed within the plane described by the triangle, which of course is the desktop itself.

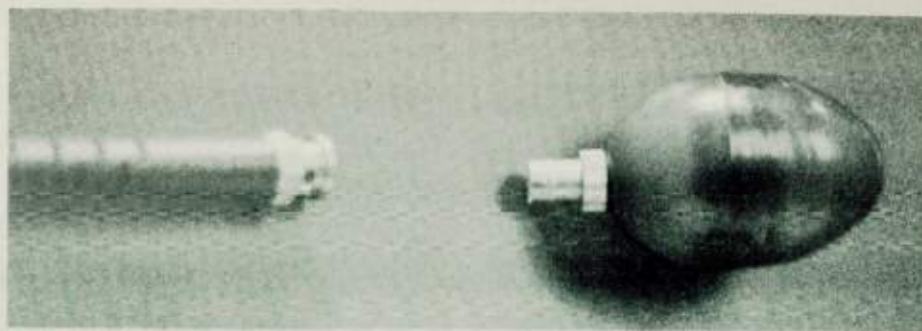
"After playing around with this setup for a couple of weeks it became clear to me that it'd be much more useful if it could also sense position in a vertical sense relative to the desktop, so I added a fourth radar element to it. Typically this would be suspended from the ceiling directly above the desktop, although if you are privileged enough to sit behind a solid oak desk instead of the usual metal kind, you can put it on the floor below the desk and it'll work just the same."

At that point, needing some respite from the intensity of Stanz's direct gaze as he spoke, my eyes flitted upwards, fixing upon a small object on the ceiling which looked for all the world like a plastic Easter egg. I glanced quickly back down at the desk about which we had been sitting. I realized that I'd been unconsciously expecting to later be taken to The Lab (or perhaps not taken) to view the prototype, but sure enough, amidst the incredible amassment of pencils, staplers, telephone, coffee cups, reference texts, trade journals, candy bar wrappers and other debris which

*"The Obfuscator senses any motion that you make – tapping pencils on the desktop or dialing the telephone – the list is practically endless, and millions of hitherto unmusical people have all of them down cold."*

one would expect to find on any busy engineer's desk, I was indeed able to spot three more of these plastic eggs. Extending from the one nearest me and disappearing under the desk was what could only have been a tiny waveguide pipe.

Stanz seemed to sense my sudden recognition. "Pretty good, no? I'd say it was a major selling point. You can put 'em inside potted plants, pencil jars, golf tournament trophies – only the plastic kind, though – and no one need ever know that you might be doing anything at your desk besides working. The Obfuscator senses any motion that you make – tapping pencils on the desktop or rolling them back and forth, dialing the telephone, flipping through your Rolodex, erasing a mistake, stapling things together, flipping through the pages of a financial report, swirling your cup of coffee, putting out your cigarette – the list is practically endless, and millions of hitherto unmusical people have all of them down cold."



"It can distinguish among these different motions, sensing direction and velocity along with position. Each activity becomes a performance technique in its own right, given that I've developed the motion-profile software which allows the system to recognize it, and a brief 'learning' session during which the system adapts itself to the personal quirks of the individual user. I might add that the signal processing electronics are capable of simultaneously tracking many separate objects within the field, so it's possible for two or more workers to work together at a single desk. Ultimately I hope to refine the system to the point where it'll separately track the fingers on each of your hands, although at the moment it seems to be necessary to at least be wearing a ring on each finger."

He then turned up the volume on an RXII drum machine in a bookcase behind him and proceeded to give me a quick demo. Tapping away at his touch-tone called forth a catchy hi-hat rhythm from a pair of Optimus speakers alongside the RXII. Thrusting the heel of his phone hand forward at the same time, he set up a thumping kick drum beat to go along with

it (I noted that he was wearing a metal bracelet on this hand).

With the other hand he began tapping a pencil on the desktop, occasionally jerking sideways to elbow the stapler or deftly shuffle a large pile of telephone messages and notes to himself. Snare drum, floor tom and shaker sounded in due order. He worked quickly up to fortissimo levels and abruptly wound things up with a huge cymbal crash performed by grabbing the telephone receiver off the hook and slamming it down again.

### I Was Suitably Impressed

SHRUGGING IT OFF ("I've been at it for years, really") he pontificated that as MIDI goes, drum machines are "the diddy stuff." Synthesizers with chords and timbral modulations make a much more impressive demo, he says, suggesting that I drop by again when his Matrix 12 is not out on session. He indicated that he is nearing

completion of a prototype laser-based add-on to the Obfuscator which will allow, among other things, sensing of pressure by way of precise measurements of the deformation of the desktop or objects which are on it, as well as an infrared-sensing option to allow synchronization of sequencers to the user's pulse rate, and the detection of breathing patterns as a performance mode (the ultimate breath controller!). He also candidly acknowledges that the real challenge in bringing the Obfuscator successfully to market is not the tracking technology as much as the development of the necessary software to make it meaningful – a point with which many of us are unfortunately all too able to agree.

Stanz is unable to offer a firm date for the introduction of the first consumer version of the Obfuscator MIDI Desktop. "No later than next Winter NAMM," he assures me. Despite this, he is more than ready to go on record with some bold predictions. "The MIDI Desktop, however enormous a market it may represent, is only the beginning. It's a small step from that to the MIDI Dashboard, which as an option might include a speed-trap warning utility, and the MIDI Lounge, with major implications for the karaoke market over in Japan. I've also got a bit of a soft spot for the idea of a true air-guitar. And that's not all." (Strangely, I was no longer surprised to hear this.)

"The MIDI application is really only a modular back-end processor for the generic sensing apparatus which the Obfuscator embodies. There's almost no limit to the things which could be Obfuscated. Expressions of deep interest are already beginning to filter in from folks in a wide variety of fields – bioengineering, industrial automation and – get a load of this – NASA!" The brilliance of his grin now had me fumbling for my sunglasses. "Sometimes I gotta pinch myself to make sure I'm not dreaming."

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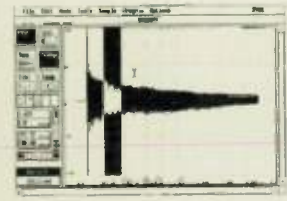
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World Radio History



COMBINING NEWS OF their forthcoming album, *A-Koo-De-A!* (Chameleon Records), along with numerous recommendations from musicians and club-goers alike, it made sense to go after **The Bonedaddys** for this first look at club life from the stage out. When it was decided that I was "it," I smiled. No complaints from me.

The Bonedaddys more closely resemble a family of musicians than a regular band. They number twenty-odd all told, though the number of guys you're likely to see on stage at any time is usually between seven and ten. Their music blends Calypso, African, pop, funk and whatnot, and like their stage appearance, it is a wild combination.

The Palomino stage, a corner affair, is not what you'd call huge, and the band had no trouble using up virtually every square inch of its surface. This of course has its pros and cons. For example, bassist **Simeon Pillich** scaled down his system to a Steinberger bass running through a 10dB pad into a Gallien-Krueger bass head driving a JBL E40 speaker in a cabinet designed by Kurt Koessler of Van Nuys, and going direct from the amp to the PA.

Similarly, guitarist **Phil Gough** came with only a Marshall 50W Anniversary combo amp with a REX50 in the effects loop. Gough's footpedals include an Aria tuner, Ibanez Compressor/Tube Screamer/Chorus combination, and a DOD MIDIPedal to select REX50 (located atop the Marshall) programs from the front of the stage. He also added a footswitch to the Marshall so that he can switch between rhythm and lead settings. The Marshall is miked, and echo is added at the PA by the Bonedaddy's soundman, Tommy.

Like Gough, guitarist **Paul Lacques**

# On Circuit

## THE BONEDADDYS

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*Review and beer by Philippe Eire.*

used a simple stomp box array (MXR distortion, wah-wah, and analog delay) into a Vibrolux combo, which was miked.

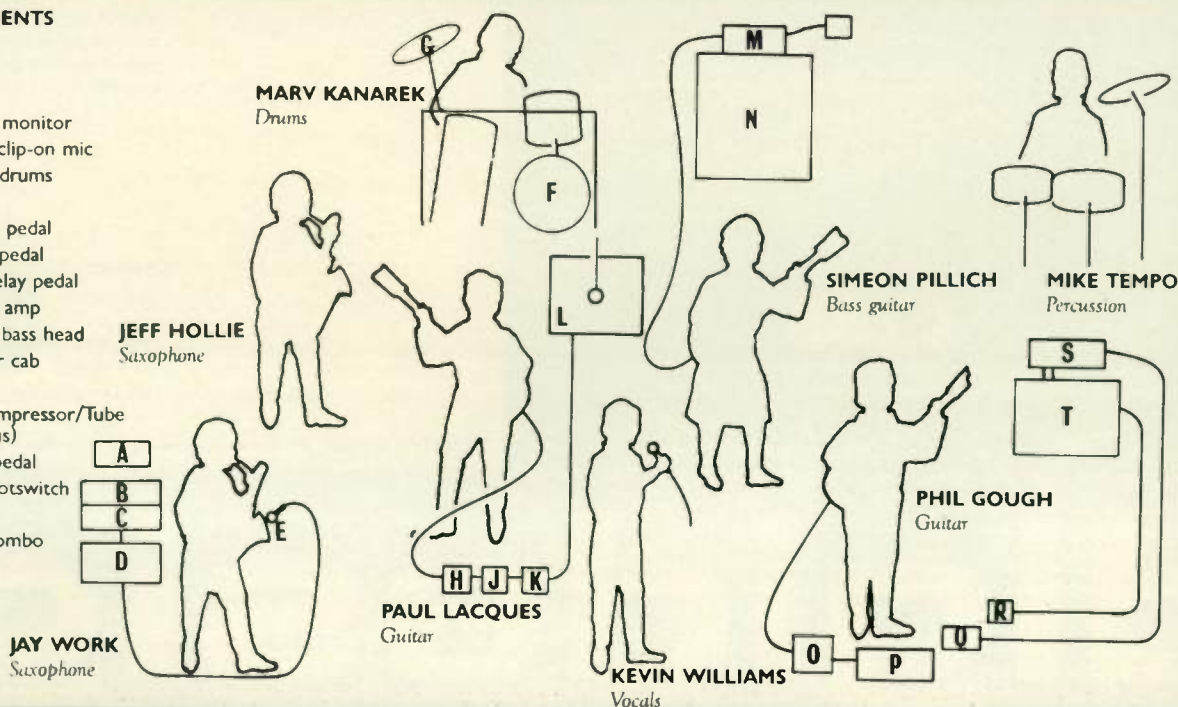
The Bonedaddys horn section consists of **Jeff Hollie** on a Selmer Mark VI tenor sax, and **Jay Work** on a Mark VI, Yamaha Low A Baritone Sax and WX7 wind controller. Work used a Sennheiser 409 clip-on mic for the saxes, and a TX8IZ running through a Yamaha RI000 digital reverb to make noise with the WX7. Both the TX8IZ and mic run through a Gallien-Krueger vocal monitor which provides the direct out for the PA mixer. Work says that, depending on the quality of a house

monitor system, he sometimes bypasses the GK and goes direct to the board with both sources. Hollie, on the other hand, shows up with his Mark VI and plays into whatever mic appears in front of him, though he plays some wah-wah and otherwise processed sax in *A-Koo-De-A*.

Drummer **Marvelous Marv Kanarek** used a scaled-down setup consisting of Canadian Ayotte acoustic drums and Sabian cymbals, though the nature of the Bonedaddys is such that head bandleader/percussionist **Mike Tempo** often traded places with him. Tempo's percussion workstation included bongos, congas, bells,

#### KEY TO INSTRUMENTS

- A Yamaha WX7
- B Yamaha TX8IZ
- C Yamaha RI000
- D Gallien-Krueger monitor
- E Sennheiser 409 clip-on mic
- F Ayotte acoustic drums
- G Sabian cymbals
- H MXR Distortion pedal
- J MXR Wah-wah pedal
- K MXR Analog Delay pedal
- L Vibrolux combo amp
- M Gallien-Krueger bass head
- N JBL E40 speaker cab
- O Aria tuner
- P Ibanez 300 (Compressor/Tube Screamer/Chorus)
- Q DigiTech MIDI pedal
- R Lead/Rhythm footswitch
- S Yamaha REX50
- T Marshall 50W combo







whistles, cymbals, a small frog, and a talking drum, among other jangly strickable objects. Three mics did the job nicely, though Tempo did from time to time re-position one mic or another to accommodate his singing or talking drum.

And who says that vocalists don't get involved with technology? **Kevin Williams** made sure that I got down the details of his main axe so that others may benefit from his research. He uses #5 nail polish from the Sak's 5th Avenue

Strawberry Collection. Believe me, it made all the difference during the show.

House soundman, Wick Woolsten, revealed that the house 24-channel Biamp board was out to lunch that night, and as they were working with a PM1000, they brought in an additional eight-channel mixer to accommodate the Bonedaddys' line-up. The mics, all supplied by the Palomino, included PL80, PL95, SM57, and EV97s.

House monitors are Yamaha cabs powered by a Ramsa with MXR EQs and Yamaha compressors. The bins are of the 15" woofers/7" drivers/tweeters variety with 244l drivers powered by BGW amps with an Arai 27-band EQ, while a DOD delay provided echo for the board.

The results? Well, the Bonedaddys could put on a good show anywhere. They're a hell of a lot of fun, and their musicianship, good intent, and sense of humor make them the sort of band I wish more "serious" musicians would take the time to see. It was a casual show, the sound refined as the show went on, but that went pretty much unnoticed by the audience (which was, by the way, packed). All in all, they ended up with a quite workable setup, which literally blew the packed house away. ■

*Philippe Eire is a small, rubber dolphin which used to sit on top of Amy's Mac in the H&SR office.*

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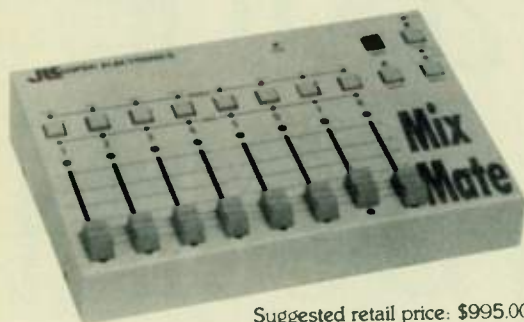
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# Re-sampling

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Some of your samples may be poor; others are simply made in a hurry – but what do you do with a sample that isn't what a sample ought to be? *Text by Tom McLaughlin.*

**W**HEN THE SAMPLING bug bites, it bites hard. If you're anything like me, not long after bringing your sampler home from the store and pulling it out of its box you will have sampled just about everything under the sun . . . probably before you've completely absorbed the instruction manual.

Chances are, though, that you've got some samples in your collection that aren't quite what you think they should be. Maybe you sampled at too low a sampling rate, and there's an ugly aliasing "undertone" present, or on second thought, you might like to equalize your favorite percussion sounds differently. Fortunately, there's an answer . . . you can re-sample your sounds.

Re-sampling can be executed in three ways: by feeding the output of your sampler back into its input; by feeding the output of one sampler into the input of another (preferably of the same type); or

by recording a sample onto tape and then back into your sampler. It can also be executed in software, but we'll leave that for another day.

To find out if your sampler will allow you to re-sample directly, put it into Record mode and hit a key – if you hear the sample currently in memory, you're off! Most samplers won't allow this, and others will only play back in one area of the keyboard and record on another.

If your sampler won't re-sample directly, you'll either have to borrow (or rent) an identical sampler, or "bounce" samples using a tape deck.

## Getting the Most . . .

**MAKE SURE THAT** the VCF and VCA on your sampler are wide open when you play back the sounds to be re-sampled. This will ensure that all the top end and level that are present get re-sampled. Check that there's enough level going to the input of your sampler to open its gate . . . otherwise

valuable attack transients may get lost. Make sure effects are properly grounded to prevent power hum from getting sampled. Pump as much level into effects as possible to achieve the best signal-to-noise ratio. Effects, especially semi-pro and effects pedals, are notorious for adding unwanted noise to a signal. Keep cord lengths to a minimum as more top end is likely to be lost with longer ones. Switch loops off – there's no reason to sample loops and eat up valuable memory space. Monitoring the new sound as you experiment will save repeating samples to get things sounding right.

Granted, you'll be adding a small amount of digital distortion and will probably lose a bit of fidelity and top end as you re-sample sounds. In many cases this won't be discernible, and in others re-sampling may be the only option open to you. The bottom line is to try re-sampling a sound, make an A/B comparison between the original and the re-sampled sample and let your ears be the ultimate judge. Executed

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with proper care, a re-sampled sound should lose no more fidelity than when mastering a multitrack tape – without tape hiss to worry about.

Here's several applications for re-sampling that I've found useful:

1. Corrective equalization
2. Creative equalization
3. Adding ambience or effects
4. Pitch correction
5. Saving memory space
6. Adjusting sample length
7. Sampling chords/rhythms
8. Simulated stereo samples

## Corrective Equalization

SEVERAL OF MY favorite samples were executed before I had a firm grasp of sampling procedures and suffered badly from aliasing. Many of these could never be recreated, and no matter how I tweaked my sampler's filter and resonance controls, I couldn't get rid of the unwanted low frequencies. I'd have to either use the samples as they stood or toss them on the scrap heap. Or so I thought.

I found that, if I took the output of my sampler and fed it through the highpass filter from a frequency-conscious noise gate (a gate with a filter in its side-chain), I could get rid of most of the offending frequencies that were lower than the given note's fundamental. You'll know you've started cutting out the fundamental when the tone starts sounding thin.

Once the aliasing frequencies were minimized I took the output from the filter and fed it into the sampler and re-sampled it. After hearing my favorite samples for so long with low frequencies that were totally unrelated to the pitch of the sample, it was quite a buzz to be able to play the samples without them – even if a little bit of fidelity was lost in the process. In some cases, getting rid of alias frequencies may be impossible, but corrective equalization can help minimize its effect.

I prefer using simple filters for corrective equalization as the signal passes through fewer circuits. In the case of removing unwanted top or bottom end this is all you really need. As mentioned above, my favorite "tool" for this is a Frequency-Conscious Noise Gate with its single highpass and lowpass filters – you can't get much simpler than that. I almost always have one of these "in line" when sampling anyway, making use of the lowpass filter to ensure that no frequencies higher than twice my sampling rate get into the sampler. Although there are supposedly internal lowpass filters on the way into many samplers, I've had occasions where aliasing occurred despite these, and feel safer setting my own top cutoff frequency.

Those of you with modular analog synths can make use of their highpass filters for removing bottom end, or you could hunt through old electronics magazines for



highpass filter circuit designs if you prefer to make your own. It shouldn't cost you more than a few bucks to put one together.

## Equalization and Vocals

WHILE I WAS on that track, I experimented with re-sampling "ooh's" and "aah's" through the highpass filter of my frequency-conscious noise gate to bring out their breathiness, trying to emulate the superb airy vocal sounds that come with the Fairlight.

By reducing the fundamental and those frequencies close to it (rather than boosting the top end with a graphic equalizer) a most interesting and useful phenomenon came to light. Not only were the results breathier and less thick than the original sample, the new samples also had far less of that munchkin quality to them when moved around the keyboard. The reason for this phenomenon, I soon discovered, has to do with "formants."

Formants are accentuated frequency bands that give the brain information about:

1. The size and shape of the "acoustic resonator" being listened to.
2. The register in which a specific note is produced.
3. With vocals, what vowel is being produced.

These formant bands stay fixed (very much like the bands on a graphic equalizer) for a given vowel or instrument, no matter what pitch is produced. For example, a male "ooh" will always have its first two formant bands around the 400Hz and 800Hz marks, an "aah" around 825-925Hz and 1200Hz.

While the ratios between formants remain roughly the same, female vocal formants are generally 17% higher than males, and children 25% higher. This helps explain the problems of transposing samples too far from their original pitch.

When you play a male vocal sample as little as a third higher than its original pitch,

you're raising its formant bands up into the range associated with children's voices; any higher and you're in munchkin territory. By reducing (but not totally eradicating) the lowest formant, the brain seems to have less information to go on and more mileage can be gleaned from fewer samples.

With a graphic or parametric equalizer, you can re-equalize samples in ways not possible with the lowpass filters provided in most samplers. You can cut out the middle frequencies of a sample, making it sound more hollow, an effect impossible with lowpass filters alone. Samples treated in this way might not sound like much on their own, but in a mixing situation they leave more room for other sounds.

With re-sampling, the bottom end of bass guitars and bass drums can be boosted while leaving their mid and top end intact, snare drums and guitars can be EQ'd so that they cut through a mix, and with either EQ, or an Aural Exciter (see below), more sizzle can be added to murky cymbals. The list goes on, but you've got the idea.

Creative equalization is a whole new kettle drum of sampled fish, anything goes. Graphic and parametric equalizers would seem to be the first things to try, but consider re-sampling sounds fed through combo amps (or even transistor radios) and DI'ing or miking them up for the unique tonal qualities they impart to sounds.

Miking up amplified sounds in a room not only adds ambience to samples, it also adds the tonal character of the room and can be thought of as natural equalization.

Static flanging and phasing alter the harmonic structure of sound by cancelling certain frequencies and creating notches in the audio spectrum of a sound – something you might not use a lot, but another tool in your bag of aural tricks.

Aural exciters add top end to a sound in a manner most unlike any form of equalization, in that they generate upper



► harmonics, even where none exist, that are actually related to those present in the sound itself. Used in moderation, aural exciters can help lifeless samples stand out a bit more. Go over the top though and you risk having a sound sizzle six feet in front of everything else in a mix. Be careful with this effect; it's easy to over-use it.

## TECHNOLOGY Adding Ambience and Effects

REVERBERATION, NATURAL OR synthetic, adds life to samples. Even a miniscule amount can add sparkle and perspective to an otherwise dull sound. Drum and percussion sounds come to life and can be re-sampled so that they all sound as though they're being played in the same room, even if the samples themselves come from a variety of sources. Orchestral samples cry out for a concert hall to play in, they're just not believable without it – but remember, as a sample is played higher up the keyboard, the room will get smaller, and vice versa.

Adding ambience to dry samples is a piece of cake. Simply route your sampler's output through a reverb device or mic up an amplified version of your sample in the room of your choice, then re-sample it.

You'll probably need to allocate more sample memory space for ambient samples. If the room is not too large you could try using higher playback rates (by transposing the sample up to a higher pitch) for a given sampling rate to fit things back into the same amount of space you started with.

Looping sounds with reverb sometimes poses a problem. The initial reflections of a room will create a repeating echo if a loop is started too early on in a sample. In some instances, this produces an interesting effect, but usually not. Moving the loop further back will help. If you have the facility, loop crossfading will minimize signs of any loop splice.

Cyclic effects such as phasing, flanging,

chorusing/ADT and so on, all add magic movement to sounds but can wreak havoc when attempting to loop sustained sounds. You not only have to find a looping point in the sound itself, but also a loop point within the effect's modulation cycle. As with room sizes, an effect's cycle will get shorter/longer as you play an effected sample higher/lower on your keyboard.

Using a *harmonizer* for static harmonization shouldn't cause too many problems with looping, because it just adds another interval above or below the original pitch. Modulated harmonizer effects, however, pose the same problems as cyclic effects mentioned above.

*Compression* can be added to samples to get as much level as possible into your machine. With a slow attack, more snap can be added to the attack portion of plucked and struck string notes.

*Fuzz, overdrive and distortion* effects can be added to otherwise timid sounds by employing effects pedals made for this purpose, or you can crank up a combo amp (many have overdrive provisions) until you achieve the sound you're looking for.

## Pitch Correction

"PITCH CORRECTION? I have coarse and fine tuning on my sampler," you might

say – and right you are. Unfortunately, these tuning controls only affect the playback rate of samples.

Pitch correction is probably the most important application of re-sampling. When you start mixing samples you'll discover the importance of samples being in tune with one another from the start. Those of you with samplers at the upper end of the market will have provision for some form of digital sample rate conversion, as on the Fairlight III and EIII, and shouldn't have any problems; but for us mere mortals, the pitch that gets sampled is what gets stored in memory. Hopefully software houses will realize the need in the mid-market for advanced editing facilities such as this and include it in more software packages – it makes mixing samples in software so much less of an ordeal. [Ed: Blank Software's *Alchemy* may be the start of this trend.]

With a reliable tuning source, you can tune samples to a common pitch with your sampler's tuning controls, re-sample them at this pitch and then mix them with the greatest of ease. The slight loss of fidelity through re-sampling is a small price to pay for the added convenience.

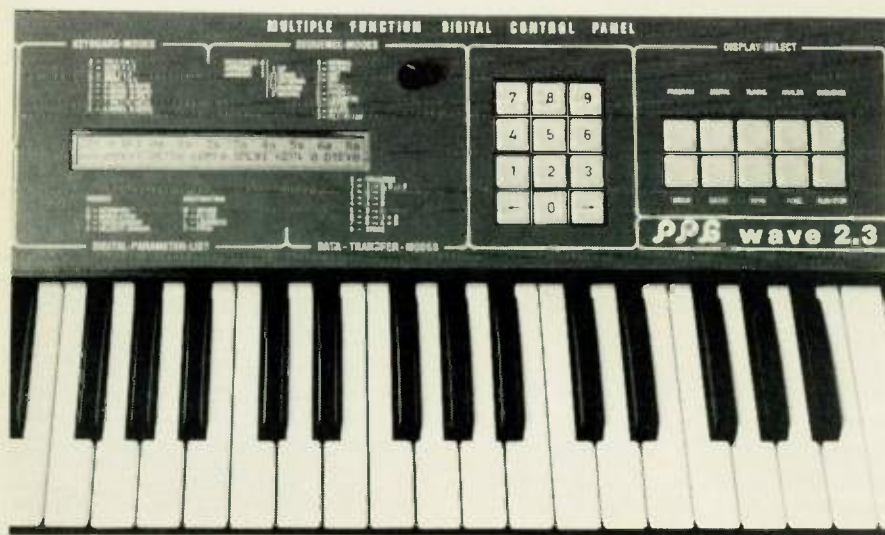
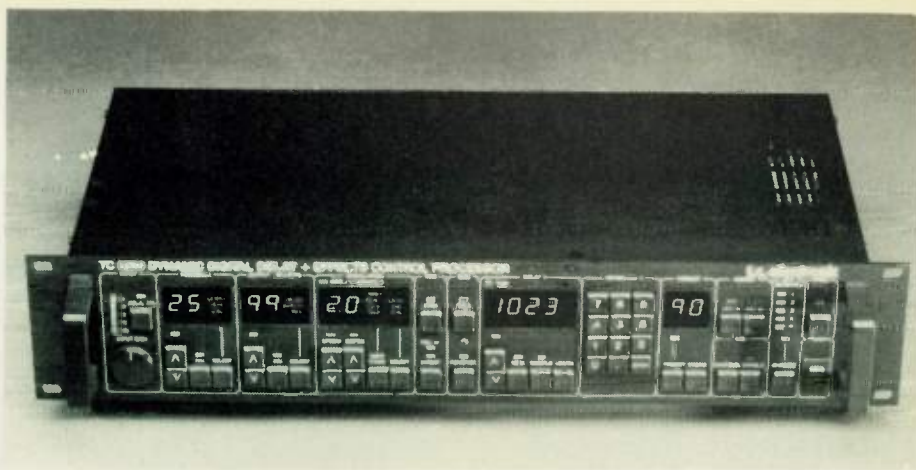
## Saving Memory Space

AS MENTIONED EARLIER, you can fit more information into a given sample memory space by re-sampling at a higher playback rate. This technique really comes into play when you're doing multi-samples and need to squeeze one more sample into your set. Go for re-sampling the lower samples first.

The trade-off is losing top end, but for many sounds this isn't too important. The only way to find out if you can get away with the loss is to try it. As a rule of thumb, you should always experiment on a floppy set aside for this sole purpose to avoid losing your original sample. If your experiment is successful, you can then copy it to your working disk.

## Adjusting Sample Length

IF YOU HAVE a sampler with a fixed loop length and have a sample that refuses to





loop without glitching, no matter where you place the loop, before you blast the floppy it's on to smithereens, try sampling it at another pitch. Loop positions, like digitally recorded sound material, only have so many notches available, and stretching or squashing the sound just might help.

### Sampling Chords and Rhythms

RATHER THAN USING up six of your sampler's voices for a simulated guitar part, you could re-sample the chords you plan to use as separate samples. Even though this may use up more sample memory space, in a sequence you'll only be using one VCA/VCF at a given time as opposed to six. Chords can be rolled up or down, either manually or with the aid of sequencing, mimicking up and down strums of a guitar. Harp and piano arpeggios and rolls can also be simulated in this manner.

Likewise, rhythms can be sequenced and re-sampled. An example that comes to mind is a castanet part I was working on. I'd only one "voice" left in my sampler and with the rapid rhythm required of the castanet, the ambience at the end of the sample kept getting cut off by the following hit, sounding quite unnatural. (If I had another "voice" left I would have alternated the rhythm between the two, thus eliminating a problem common to many drum machines.) What I ended up doing was taking my castanet rhythm and dividing it up so that each hit was coming out of a separate VCA. Then I re-sampled it, with each hit having a natural decay. Fortunately, the part required little more than the same rhythm repeated throughout the piece.

### Simulated Stereo Samples

STEREO SAMPLES CAN be simulated by re-sampling mono samples through a stereo effect. If your sampler has no provision for stereo sampling but can layer one sound upon another and send each sample to its own output, you could sample each side of the stereo effect separately. You'll have to align the starting points to avoid phasing problems with this method.

Effects that come to mind for simulating stereo from a mono source are: reverb, delay, auto-panning, phase-shifting/flanging, ADT and chorusing. Try experimenting with different effects, settings, modulation rates, or EQ on each side.

So you see, you don't have to possess the most brilliant editing software to carry out corrective or creative re-working of samples. Though it's preferable to get things right in the first place, all is not lost if you happen to change your mind about how a sample sounds once it's been stored onto disk. Re-sampling is as valid a technique with sampling technology as any in the world of audio and sound synthesis. ■

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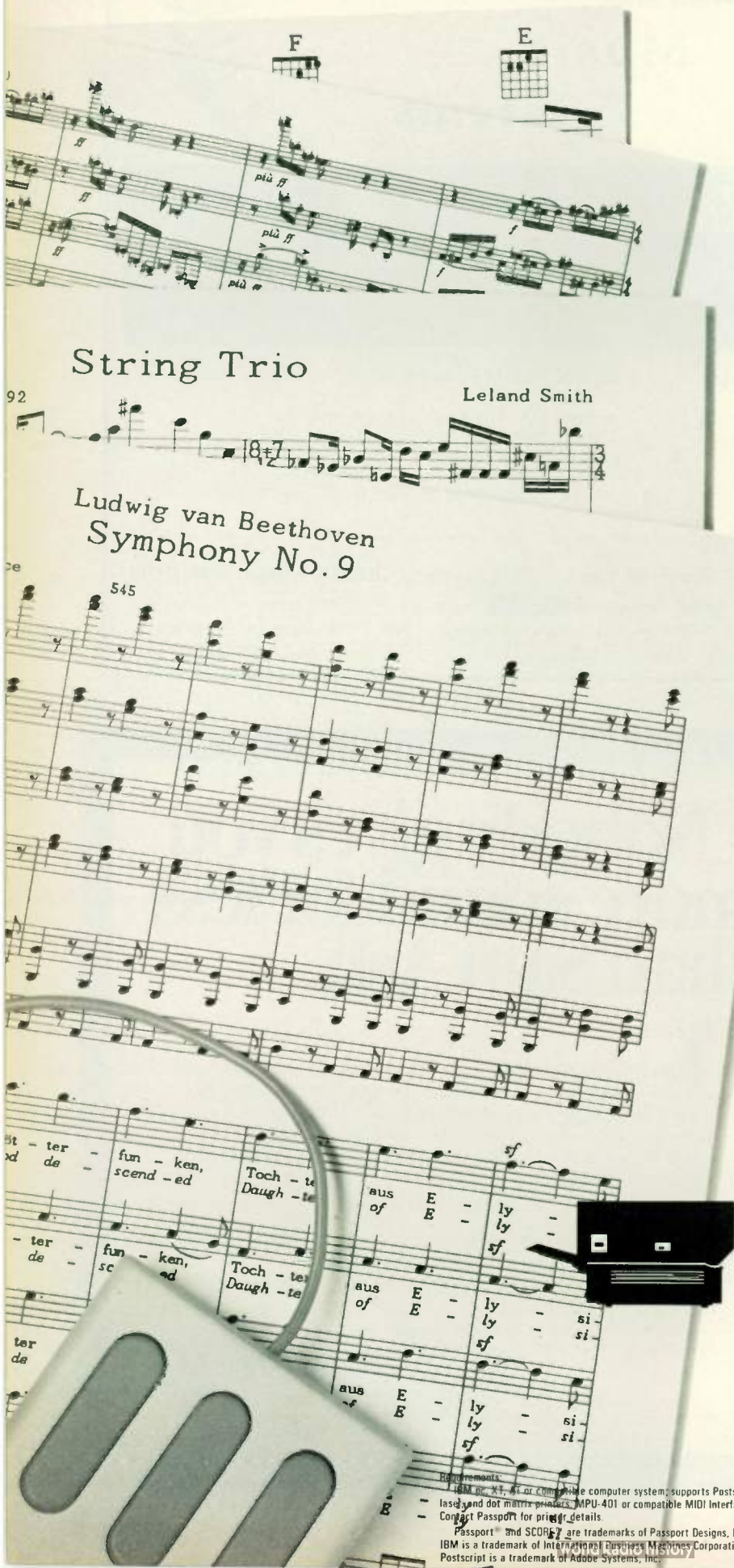
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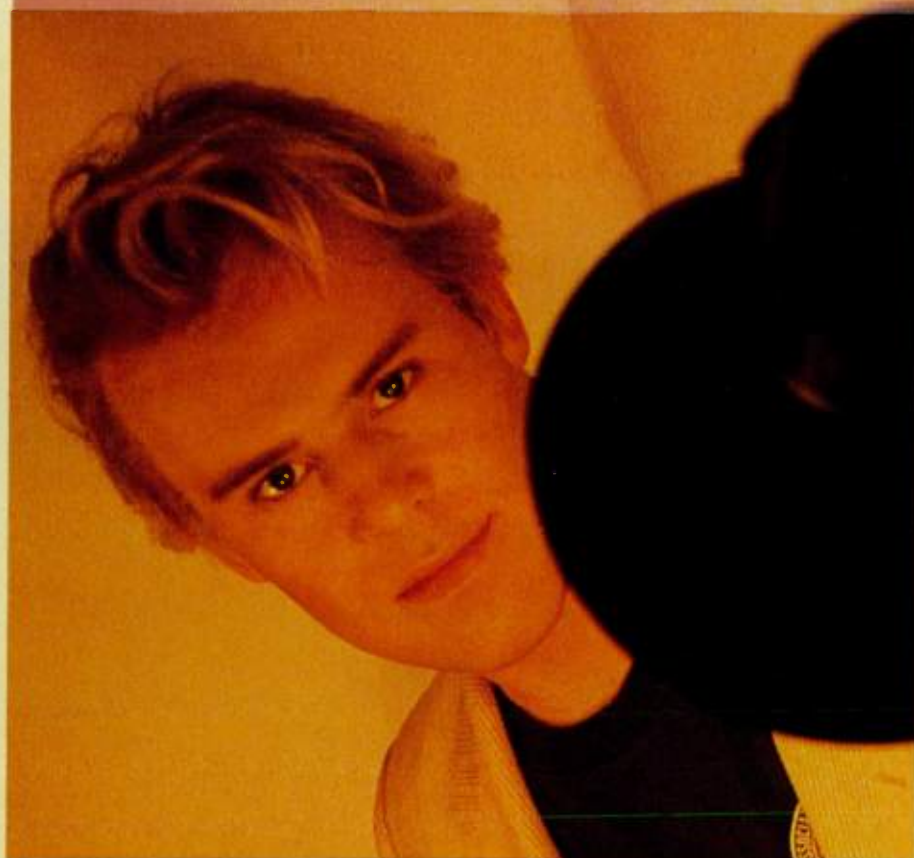
Almost four years after the release of his last album, the British rogue Thomas Dolby has done it again. His latest, *Aliens Ate My Buick*, is an intriguing combination of musical exuberance, sexual fantasy and bite-size social comment.

Interview by Deborah Parisi.

THOMAS DOLBY'S LATEST album is bound to raise a few eyebrows. As he snarls off the lyrics to the opening tune, "I don't want your love, I don't want your money, just want the key to your Ferrari," you get the odd impression that Frank Zappa has hooked up with David Lee Roth. Amazing music, impressive playing, and lyrics which can be put right up there with 'California Girls' and 'I'm Just a Gigolo' for sheer male arrogance.

And if 'Ferrari' doesn't do it, the second song, 'Airhead,' most assuredly will ("She thinks the fighting in Central America's easily solved, but what to wear to Bel Aire premieres is a problem she could never resolve, she's an airhead"). By the time you get to 'Hot Sauce,' an interesting metaphor which does not relate to salsa in any way, the picture is complete. This just ain't an ►





► album for women, at least the first time around.

It takes a serious listen or two before the little light bulb starts to illuminate the picture, and the realization that perhaps he's saying a bit more than appears on the surface emerges. Perhaps, just perhaps, he's not talking about women at all.

"This album's very brash," Dolby admits. "It gets up front and says what's on its mind. I know it'll probably offend some people, sensitive people, but it should all be taken in the spirit of fun."

"For instance, 'Key to Her Ferrari' is a real put-down of men, actually. I'm singing it in the third person, you know, it's not really me singing. It's a character singing. And I think that's more of a put-down of a certain kind of man than 'Airhead' is of a certain kind of woman. Because he's saying, 'I haven't got time for you, I just want to get in that car and drive.' And 'Airhead'—well, people will probably get down on me for that; they'll say it's insulting to women. But it's not about women. It's about airheads. But if people decide to, they can get quite down on it."

Dolby is obviously concerned about how people will interpret the sexual innuendo as well. "They might say that it's overtly sexual sometimes, and in this day and age you shouldn't be encouraging young people to . . . you know, any of that sort of thing.

But there are lots of sexual fantasies in the lyrics rather than sexual experiences, and I think that it's a good time for sexual fantasies. You're not allowed to actually do it any more. All you can really do is fantasize about it."

'Airhead' had seemed to me a rather frightening observation about people in general and about people in Los Angeles in particular. "Well, you know, I satirize things. I've always done that," he says. "And my initial impressions of Los Angeles were from the 10th floor of a Sunset Strip hotel—pink Corvettes and incredibly fit-looking bronzed people, a lot of 'Have a nice day' mentality, and not a lot of substance. Having come to live here, I saw that there was a lot more to it than that."

"We're getting into 'Pulp Culture' territory here, as far as the album goes," he continues. "It's a kind of championing of the American approach to things. I mean, it's a jibe, if you like, kind of dry and cynical, but it's definitely out of fondness. I think that the way in which civilization has come together in America in this century is much better than what's happened in Europe. Europe has just degenerated really and is left with the bitter aftertaste of 'There's no British Empire any more.' And the British don't really know how to deal with that. Here, you realize that everything's been done out of convenience. If a

building gets old you knock it down and put up a shopping mall. It makes perfect sense, and it doesn't have as much hypocrisy attached to it as the European way of life, which I was getting sick of. That's why I came here."

Dolby's move to the States is only one of the reasons it's been four years since his last album. "I don't like being in the spotlight all the time. I find that very wearing, actually," he says. "I don't like going to clubs and pushing through the crowd and saying, 'Well, I think my name's on the list,' and all this. I would much rather be a normal human being."

"After making a very big impact with *Science and Stuff*, I decided to get involved in other projects. I've always been very passionate about film, and I had visions of ending up maybe writing, maybe directing, maybe acting a bit. And I saw the best stepping stone into that as film scores initially. Plus the work on my videos, which I recently have been writing and directing myself."

"I also like producing other people, and one band, Prefab Sprout, who are absolutely stunningly brilliant, really needed me. The way they recorded at the beginning was just too eclectic. I'd say, 'Why is that bar of 5/8 in there?' And they'd go, 'What bar of 5/8?' They're wonderful musicians but completely intuitive, so I saw a real opportunity to come in and make something that would break through to people by just tempering things a bit and helping them get organized. They're enormous in Europe now, they're like every critic's favorite band."

Dolby's list of interests, ambitions and distractions goes on. "So that, and film scores and so on, and also a couple of legal wrangles. I had a set with Dolby Labs, which was very depressing, and I changed labels (from EMI to EMI/Manhattan), which is a quite complicated thing to do. It was hard to sit down and write a song when I didn't know what name it was going to come out under nor what label it was going to come out on. Once both those things got resolved, I sat down and started writing all these songs."

Musically, the songs on *Aliens* stand in sharp contrast to previous albums: much less the stark, electronic punk-style which worked so well in the 1985 hit album *The Golden Age of Wireless* (EMI), and much more exuberant and boisterous than the less well-received *The Flat Earth* (EMI) from 1984. Grooves range from big band jazz to reggae, from pop-ish bubblegum to electronic avant garde. For sheer versatility, Dolby is a force to be reckoned with.

His new band is no less than incredible—bassist Terry Jackson, guitarist Larry Treadwell, drummer David Owens, keyboards Mike Kapitan, vocalist and percussionist Laura Creamer—keeping a



strong funky live feel throughout most of the demanding tunes.

"When I first came to LA, I wanted to form a band to play in clubs on a fairly low-key basis," Dolby explains, "to try out new songs I'd been writing. The songs really needed to be performed to an audience that could listen to them and dance to them – respond to them. I wanted to try them out before I went in the studio. Also, I sang so much better after touring than I had on the album. When I listened to the last album, the vocals sounded really wimpy. And I thought it'd be good to just have the vocals broken in and the songs and arrangements broken in in front of an audience before we went into the studio.

"I decided to hire some fresh talent," he smiles, "and put an ad in the *Recycler* that said, 'Thomas Dolby requires musicians.' I got perhaps 700 replies, auditioned about 70 people, and picked the line-up from that. They were all doing different things – the drummer plays at Knott's Berry Farm in the house band. The guitarist actually supported the Pope at the Astrodome, ironically. And the bass player was from a top 40 band in St Louis, played like Holiday Inns and stuff, and he can do absolutely anything.

"Very varied," he says, "but the nice thing was that everybody was really pleased with the situation, they were really pleased to be doing the gigs. They would go home and practice before the next rehearsal, and they would not smoke or drink or be late or anything. I told them that if it worked out I'd use them on the album. And sure enough, probably about two-thirds of what you hear, with a few sounds replaced and stuff, are what we had worked out live. And then two or three other songs we kind of built up from scratch, more in the way I always used to do it."

**T**HE LIVE FEEL of this album is as disarming as the lyrics – it's startling when you stop to think about how few bands actually play together in the studio, what with multitracking, sequencing and the like.

Dolby admits that it is in part a reaction against what he had been doing before. "When I first started out making music by programming the drum machine and programming everything myself, most other musicians were like four or five guys in a room playing with each other. So I had a fresh approach to take. But during the years since then – we're talking about late '70s when I first started – it's come full circle. Now a lot of the records that you hear are the result of one or two guys programming. And my answer to that is, 'OK, well now let me have a crack at what you guys were doing then,' but with the advantage of the stuff that I've learned from what I've done

myself. It definitely has a liveness to it that is quite rare these days, because a lot of records sound like they were conceived and done in the control room.

"The last thing I am, though, is a reactionary," Dolby points out. "The last thing I'll ever say is, 'The current trend in so and so is bad.' My answer to any kind of stagnation is just to go off in another direction. If people agree with me, then they can listen to the records. But I'll never say, 'Oh, it was better back when it used to be this way.' I think that the march of progress is inevitable. You just have to keep an open mind and go with or against the flow."

Part of the flow that Dolby has gone with rather than against is the move towards digital recording. "Aliens is a combination of 32-track digital on the Mitsubishi and 16-track analog," he explains. "Most of the vocals were initially recorded onto analog and then transferred to digital just because of the certain sort of compression that we got which seemed to be warmer. I liked the luxury of 32 tracks. I also liked the fact that you can bounce stuff around on digital. You can ping pong it without any quality loss. And I like the luxury of knowing that I can be really messy to start off with and still use it tomorrow, by moving things around. You don't have to interrupt the creative flow because there's a little bit of space on track 19."

Even though Dolby used high-end recording gear, his equipment setup is pretty basic stuff. "But if you take live equipment in the studio," he quips, "engineers inevitably look at your little reverb unit and go, 'Ah ha ha ha. That's

sweet. Well, of course we won't be using that.' And in fact, on this album, if a song consisted principally of the S900, then we would usually go straight in and out of that and into the mixing desk, rather than going through the whole rack."

Dolby isn't much interested in discussing synthesizers by brand name, although the names of some popular gear – Roland D50, Akai S900, Fairlight – do pop up. Even when prodded with the thought that other musicians could benefit if they knew what he was using, he balks. "Well, the first thing to tell them is that they're barking up the wrong tree if they think it's just a question of what synthesizer you use," he says. "I only use the same machines as everyone else. It's in the arrangement, I think, in the composition of the songs. That's where the individuality of any songwriter is, and I'm just fortunate that I'm in a position where I can sort of conceive these ideas right from scratch through to the finished result, and I don't have too many other people whose ideas I have to conform to."

Eventually he does go into a description of his live gear, more to explain his approach to music than to offer an equipment list. "When I put this band together, a lot of the sounds came about from grooves that I was using in auditions," he says. "I'd give the drummer a beat, and then go to the bass player and show him a few notes of a riff, then to the guitarist . . . so in the auditions I was running around with a keyboard with a piano sound strapped around my neck. And when I started to sing I was kind of accompanying myself, you know, chordally like Elton John or Billy Joel would. And I've got another keyboard player, Mike Kapitan, on whom I ▶





► could offload a lot of the textural tasks when it came to playing live. I didn't want to play too much. I wanted to perform the songs, sing the songs, and address the audience.

"So for my live setup, I decided first that I wanted to control things from a keyboard 'round my neck, so I bought a Casio AZ1, and the smallest Yamaha (the KX5). And then I decided to build a MIDI rack, and what I put in it was a Super Jupiter module, an Akai S900 – I didn't want to take the Fairlight on the road 'cause it's too fragile, so I put a lot of stuff from it into the Akai. And I used that little Akai MIDI programmable mixer, which is great, and a couple of effects – an SPX90, and a Midifex, which I use mostly on a kind of very gated reverb sound. I also have a JL Cooper Electronics MIDI Link, which allows you to feed one MIDI program number into it and it will put out different numbers to any number of different machines.

"And that's very much the way in the studio that I'll put a sound together. It'll be a combination of a couple of different things, and its effect, and its placement in the mix. And it's the combination of all of that which makes it the sound that it is. With a flick of a switch I could go right from one perspective complete into another one. And that worked very well. About the same time," he laughs, "Roland came out with the D50, where each program is a combination of a sample and a synthesized sound and reverb and chorusing and a mix, all in one. Well, great minds think alike. But it's amazing actually, how similar a lot of the sounds are on that to what I was getting out of my rack. Like using a sample for the front end of something, and then a longer synth sound and a stereo perspective on it."

SOUNDS ARE THE essence of Dolby's music, and he offers some interesting insight into the importance of how sounds are most effectively used. One of the new tunes is spiced with a low frog-like croak, which jumps from the mix in a startling and humorous way. "If I hear a frog," Dolby says, "I notice aspects about it, you know. I might notice that a frog sounds like an Eventide Harmonizer or something like that. I listen for characteristics in sounds that remind me of something else. That sound isn't actually a frog, it's a guiro, sampled and placed differently on the keyboard. But when I heard the guiro, there was something in it that sounded reptilian to me. I look for things like that.

"It's not a question of picking out sounds and going, 'Hey, boss happening sound, man, let's put it all over so-and-so track.' It's making associations and imagining the inter-relationship of different sounds. Sometimes I hear a sound that's very extreme, and I think it's especially extreme

in relation to a certain song. Like all the sounds on a certain song are very watery, but this sound is incredibly dry, it's as dry as a mouth full of sandpaper. So I just know that this sound is going to leap out if I put it in that watery song because it's so opposite to everything else that's in there. I guess that's the knack of it."

Even Dolby's use of more common sounds – synth horns, for instance – is unusual. A little like hearing a mariachi band in Tijuana . . . "Yeah, yeah," Dolby agrees. "The weird thing is that in the studio with synthesizers, you're in control of every parameter, and so what you try and do is aim for perfection in every parameter. Then you go back to listening to real instruments, and you realize that what makes them hit home, what makes them speak to you and connect emotionally with you is the imperfection. And I suppose really, my approach to things has just evolved to a point where I can program imperfections and achieve some sort of . . . well, put some of that emotional connection back in. I mean, that's what I aim to do."

Certainly not to be overlooked on this album in terms of sounds are the vocals, which vary in their intensity and delivery as much as the kind of songs being sung. "There's more acting on this album than on any of the others," Dolby says, "from the points of view of psyching myself into a certain persona before I sing. In something like 'Ability to Swing,' I would definitely think about the persona of the character, the point of view that I saw him singing from. Is he angry, is he being snide about things, is he arrogant, you know, all of those things.

"I wasn't born a gifted vocalist," he says matter-of-factly. "I'm sometimes very envious of people who can hit notes in a beautiful tone. And I don't do that. But the flip side of the coin is maybe that I can get personality over in the vocals, and so I think you have to play to your strengths, you know. I was more concerned with that than singing the notes."

It's a bit difficult to separate persona from singer, the actor from the man. Is this reserved, articulate Englishman the same guy who donned his girlfriend's clothes at a Los Angeles club so that the audience wouldn't know they were seeing Thomas Dolby? His performances and lyrics are deliciously outrageous, yet one-to-one he is so quietly charming and unpretentious, you begin to wonder if there's some strange personality split hidden beneath the black hat.

"Yeah, a lot of people that write about me say, 'Well, I'd seen him on a video and he seemed like this really eccentric, whacky, mad, energetic guy, but I met him and he was really shy and quiet and very English and stuff.' I've never seen anybody make sense of that. I'm very reserved in real life, and I reserve my manic-ness for when I'm

in the spotlight. And that's something that I think a lot of people do – a lot of people are very different in their jobs than they are at home.

"I'd like to be understood for that, you know. One of the things I found hard in England is that the critics won't allow you to be two different people. They want you to wake up first thing in the morning and be suffering for your art. They were always very suspicious of me because they saw that what I was doing was performing. I'm squeezing a show-biz persona out of the way I really am. I pick aspects of my personality and put them up front, and that's who I am on stage. I find there's a lot more acceptance for that in America. People here realize that you are performing when you're on stage, and they don't expect a Prince or a Madonna or whatever to be like that in real life. Maybe on a fairy-tale level they do, but you're excused for performing on-stage. That's why I find this an easier climate to work in."

The inevitable question is whether we're going to get another album soon or another four years of silence. "I don't think it'll be another four years," Dolby laughs, "but I'm not really sure. My movie-making aspirations have sort of calmed down a bit. Having been here and been involved in a few movies, I've come to appreciate the artistic freedom in what I do musically compared to even feature film directors who are respected and successful. Even they have a bunch of executives breathing down their necks, and they don't really have control over the end product. And when I talk to those guys, they can't believe that I can sit here and decide when to record, where to record, what songs to record, what musicians to use, what the album cover's gonna be, what the video's gonna be, what I'm gonna wear. In the film world, you have to be a team player. I'm not sure whether I could operate under those circumstances. I actually think I'm going to carry on with the videos and do longer film things as and when it becomes possible. Cable things, or video cassette things. But I want to hang on to the control over what I do."

When it works, don't mess with it, I always say. And believe me, Dolby's new stuff works. ■



MT APRIL 1988



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# SOUND READING

Reviews by Deborah Parisi.



YOU GET WHAT you pay for. There's a maxim that doesn't always work in the music industry. A great album can cost the same as a lemon, and the newest version of an instrument, with software upgrades and better sound, sometimes costs less than its predecessor. And the same goes for the publishing industry – books and magazines with high cover prices reflect more the calculations of the publisher than the quality of the material.

So put the music and publishing industries together, and the price of a book won't necessarily be indicative of what's contained inside. But then again, it could be . . . as this month's books go a distance to prove.

On a very surface level, publishing costs are reflected in the price of these three books: the Hal Leonard book is \$10.95 and has 111 pages; Rychner's book is \$19.95 for 152 pages; and Massey's book at \$29.95 is a whopping 400 pages. If you break that down into how much they're charging per page, Massey's book begins to look like a bargain.

Of course, the owner's manual costs nothing per page; if you bought your DX from a dealer, it came with the package. And the manual for the DX7II is admittedly better than most – if you already understand something about programming, are at least familiar with the DX7, and have enough discipline/curiosity/persistence to explore the more complex features on your own.

If you're like me, however, learning is

easier and the time investment more profitable when assisted by a good text, one which offers structure, support, and a good index. Nothing is more frustrating than trying to refer back to a particular point or move ahead to a particular point without an index to direct you to the information.

Since none of these books provides an index (black marks to all three publishers!), deciding which of these books you should shell out the cash for is based entirely on one question: how much do you *really* want to know? Will you be content with learning the operational specifics of the instrument, or do you want to become a DX7II programmer. If you can be honest in your answer, you'll find a book that will give you what you need in this trio.

## Yamaha DX7II/IIFD A Complete Guide to the DX Synthesizer

Hal Leonard Publishing Corporation/  
Yamaha Music Foundation

At first glance, Yamaha DX7II/IIFD, A Complete Guide to the DX Synthesizer, looks like an extended owner's manual, with a little advertising hype thrown in to boot. (Like many owner's manuals, the authors aren't credited – usually a danger signal when no one wants to cop to the material.) Once into it, though, there's a great deal more to chew on. Editing is discussed in clear prose; fractional scaling is explained with step-by-step directions; and an "Instant Reference" guide provides 23 commonly-used functions in brief (eg. setting split point, weakening touch sensitivity, setting the MIDI channels, etc.). This book is what owner's manuals *should* be. The downside, however, is that it covers only the very basics, and more than the other two books, presumes a real familiarity with the original DX7. It won't make you an expert programmer; it will help you become a confident technician. Two Stars.

## Yamaha DX7II/IIFD, A New Beginning Volume I

by Lorenz Rychner

Rychner's offering (from Alexander Publishing) is definitely a step up the pedagogical ladder. Rychner has the unique

ability of knowing what questions the user will ask ahead of time and answers them as completely as possible. The tweaking section can be invaluable if you're trying to figure out just what it is you hate about your latest efforts to edit one of the existing sounds. The Micro Tuning Tables are a blast to play around with – if you've been wondering what the fuss is with alternate tunings (just intonation and the like), these charts will let you *hear* (instead of philosophically ponder) what that's all about. The book is written in a "play as you read" style, which is great if you believe that the only real way to learn is by doing (which I do). **WARNING:** This is Volume I. Although you get to know the basics of editing, you don't get much on programming. If you don't want it, terrific; this is probably the book for you. But if you do want to become a DX7II Programmer, Volume II will probably cost as much as Volume I. Three and a half stars.

## The Complete DX7II by Howard Massey

Ever try to read *The Bible* from cover to cover? That's a little how I felt when I first picked up Massey's *The Complete DX7II* (Amsco Publications). This one has it all – a rather lengthy discourse on basic audio theory, several chapters pertaining to editing and programming, appendices on switches, voice and performance initialization defaults, compatibility with the DX7, microtuning presets . . . even three discs which hold the audio cues created in the numerous exercises. The exercises are clearly written and documented with ample illustrations (some are pretty funny!) and diagrams to help you see what you're hearing. Can there be too much of a good thing? Well, it depends entirely on your answer to the question posed earlier. If you will only be content knowing everything possible about the DX7II and are devoted enough to follow the book through, completing it will be its own reward. Unfortunately, a text of this magnitude screams for an index, and it is difficult to manage the bulk of it while you're working on the keyboard. I prefer the pragmatic approach to this extravaganza, and thus give it three stars.

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# Creative

# MIDI DATA PROCESSING ■

If your MIDI setup consists of more than a few instruments, chances are you've given thought to the idea of processing the MIDI data to open up some creative possibilities. The second in a two-part feature on the subject focuses on the more esoteric applications of some popular processors. *Text by Matt Isaacson.*

**L**AST MONTH, THE groundwork was laid for an inside-out understanding of MIDI processors. Starting with a bits 'n' bytes look at MIDI itself, the article proceeded through a discussion of the motivations and basic mechanisms of MIDI processing, and continued with an exploration of how these mechanisms are applied to some of the more basic but useful MIDI processing functions. Many of these functions, such as data merging, message filtering and channel routing, belong to the category of problem-solving and system management. They remove roadblocks which stand in the way of a fairly obvious goal or make a

Music Technology Magazine and not MIDI Processors Monthly, the discussion won't cover all of the capabilities of each machine. My apologies in advance to any who feel that a particular machine has not been done justice.

## Some Preliminaries

THE ELITE CORPS of MIDI processors offers a much wider palette of data manipulation options than their more functionally-minded relatives, and these options can be used in combinations of greater number. Looking at the most basic (and somewhat superficial) statistic, the MEP4 has four independent internal

need at least a thru box to go with it. By contrast, the MEP4, which has four fully independent MIDI outputs, has only a single MIDI input, and therefore offers no data merge capability. The MIDI Mentor is almost the exception here, with full flexibility of its two MIDI inputs and four MIDI outputs (plus an auxiliary MIDI input which exists solely for the purpose of receiving patch change commands intended for the Mentor itself).

A final generality: because these systems expand your power to perform complex, detailed MIDI manipulations, they require more mental effort in programming. You don't quite have to be a computer programmer – but it wouldn't hurt. If multiplication or the word “algebra” elicit flashes of anxiety in you, there could be some confusing times in store while using one of these machines. At the ultimate levels of their usage, each of these systems require the user to be at least minimally conversant with hexadecimal code, if only because there simply doesn't appear to be any better way of giving the user adequate control over the advanced processing functions.

## Filtering and Direct Modification

THIS IS THE bottom end of the processing spectrum. Watching for a specific type of message and then modifying some part of the message in a controlled way before it goes back out is the method which is used to create such things as multiple zones on a single keyboard, each with its own transpose. Many other things can be done by applying the same method with slight variations – here are a few examples which most of the top-end processors can manage.

The note number of a note-on or note-off message can be manipulated in ways other than simple transposition. The note range can be inverted around a specific point, so that pitches go down as you play up the keyboard. This can be impressive when combined with a non-inverted voicing. Some processors even allow the



complex MIDI system more manageable and well-behaved.

Now, stand back – we're gonna blow the lid off this thing. Before beginning, a warning is in order: this stuff is pretty darn complicated. Feeling drowsy? Brew some coffee or come back another time. Included will be a look at the many wonderful (and strange) ideas which have been developed into creative product features in some form or another. The focus will be on three of the more advanced machines: the Yamaha MEP4, the Axxess Mapper, and the Forte Music MIDI Mentor, though these are not the only devices which have some of the features to be discussed. Nevertheless, because this is

processors, while the Mentor weighs in with eight. The Mapper does not use the model of multiple equivalent internal processors. Instead, all of its processing options are lumped into a single logical entity referred to as a *map*, but the scope of a single map assures the Mapper a place in the upper echelon.

On the other hand, the heavyweights do not have the rest of the action covered. None of them can directly accept eight or even six inputs, nor do any of them have the eight-output routing matrix of the Digital Music Corp MX8 or the JL Cooper MSB Plus. The Mapper, which is middle-of-the-road with two MIDI inputs, also has only two MIDI outputs – you're liable to



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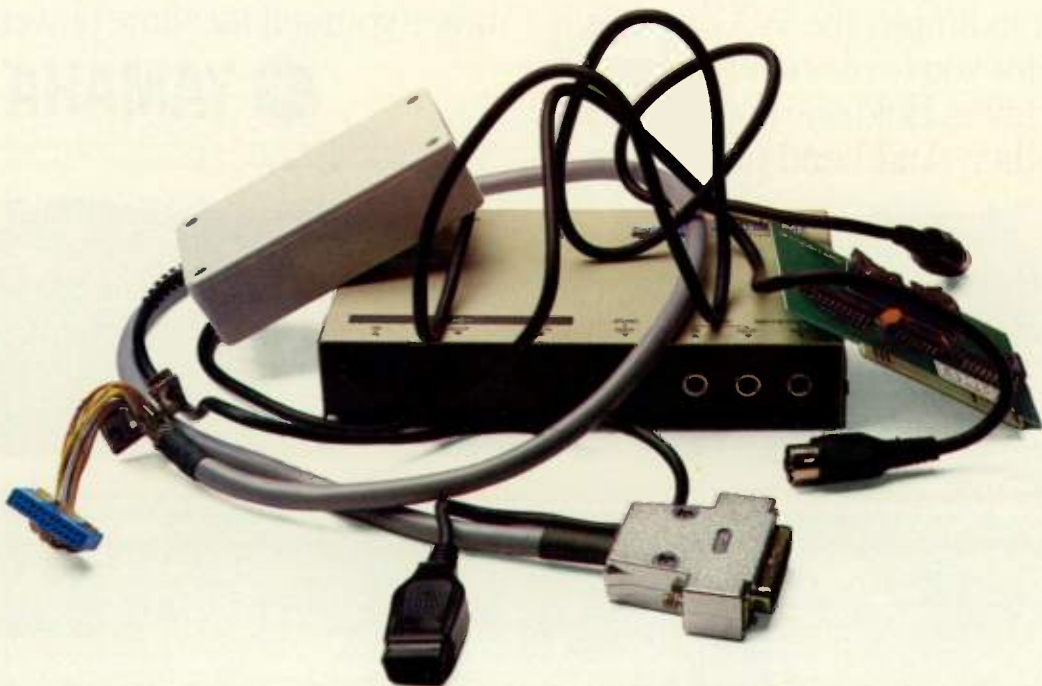
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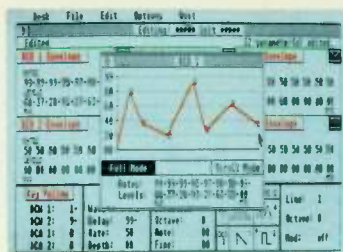
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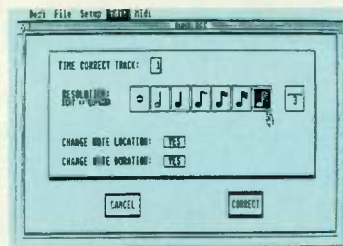
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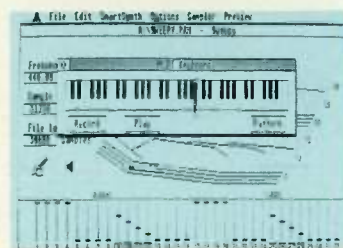
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► note number to be substituted with a fixed value in all cases, causing the same note to appear on all keys – again, very interesting in the context of layers against sounds receiving different key number processing, or none at all.

Harking back to the idea of keyboard zones which direct note messages to different MIDI channels, there are various ways in which the more advanced processors allow you to set up multiple zones directed at each MIDI channel – with optional overlaps between zones of different channels, and zones as small as a single key. Such keyboard *maps* give you the power to create very intricate channel

within the reach of a single hand.

The velocity values of incoming note events can be manipulated by means of scaling functions, offsets and transformation curves. Scaling can be used to compress a wide range of velocities into a smaller range, or vice versa. The former option might be useful when you want to decrease the velocity responsiveness of a keyboard, or more likely, of a particular patch at a particular time. An offset – simply a fixed value which is added to or subtracted from the velocity – lets you shift this compressed velocity range up or down to home in on the particular range which is of interest at that time. Although this sort

second more loudly as the velocity rises. Velocity limiting is a function whereby the processor passes only those note events whose velocities fall within the prescribed upper and lower limits. By setting up a few non-overlapping velocity limit ranges, each of which transmits to a different MIDI channel, you create a velocity-zone setup in which the sound source which is played by any given note depends entirely upon that note's velocity. The more powerful processors let you combine the velocity limits function with scaling and offsetting of velocity for those note events which the velocity limit function allows through, to create multiple velocity crossfade zones.

It should be pointed out that, although I keep referring to synths and key numbers, most of the above processing functions are also very useful when applied to other MIDI gear such as samplers and MIDI drum pads. A capable MIDI processor can simultaneously remedy the designed-in deficiencies of equipment such as the Roland Octapad – which is shy in both the number of patches it has and in the mapping options it provides – and the Sequential Studio 440 – which lacks multiple presets in the mode in which all 32 of its internal sounds are accessible via MIDI. The higher price tags of the more advanced MIDI processors are balanced out to a certain extent by both the universal applicability of such gear and its ability to forestall the obsolescence of other MIDI equipment.

Most of the techniques just described for note events can be applied to other types of events as well. For example, pitch-bend scaling can be used to obtain parallel-tuned pitch-bend on two or more synths or synth patches which would not normally track together if fed the same pitch-bend information. The inversion principle can also be applied to pitch-bend – you could have a layer in which one synth bends downward when another bends upward, while a third might not respond to pitch-bend at all. Another seldom-heard sound is that of pitch-bend quantization, in which the pitch-bend is no longer "continuous" but instead can assume only specific values. The MEP4 does this by means of the step function, which passes only those messages whose data byte value is a whole multiple of a specified number. By choosing this number carefully, one could set the pitch-bend up so that it bends only to precise semitones or quarter-tones.

It's worth noting that this is but one ►

*"The elite corps of MIDI processors offers a much wider palette of data manipulation options than their more functionally-minded relatives, and these options can be used in combinations of greater number."*

zones, specifying the action for each individual key in some cases. For example, you can create a map such that among any four adjacent keys, no two will play on the same MIDI channel – the individual notes of any chord you play are likely to each be sent out to a different sound module. As applied to single-note melodic runs, this effect is also very striking.

Beyond this, layers can be generated by cloning a note message one or more times, with variations in the note number or channel number for each clone. This allows you, among other things, to play chords from single keys. The Mentor lets you define such a chord for each of its eight internal processors, which in turn can be layered or zoned onto the keyboard in a wide variety of interesting ways. The chords follow inversion of the keyboard if used, resulting in a rather startling effect when different inverted and non-inverted single-key chords are used together. The notes of the chord may all appear on one synth, or, by splitting the chord function across multiple processors, be spread across several.

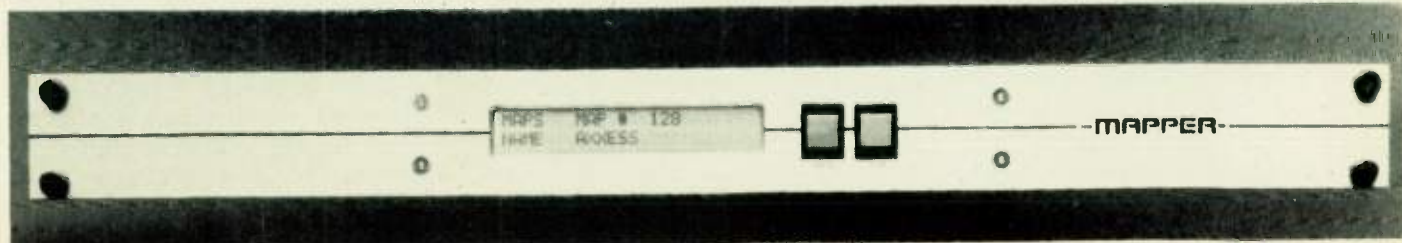
The Mapper takes this to a different extreme, allowing you to specify a different chord for every key on the keyboard, with up to sixteen notes per chord, and with each note of each chord appearing on a different MIDI channel if you so desire. A simpler subcase of this is the remapping of each key on the keyboard to a single other note, such that all keys play only notes from a particular key signature or remapping of just one or a few keys to bring all notes for a particular chord or riff

of thing can usually be handled via patch programming on each synth, it's much easier to do it via the processor, which centralizes the control. You get the most mileage out of each synth patch this way, and wind up with fewer patches to keep track of.

More importantly, functions such as these, when they can be set up to provide different responses on different MIDI channels, allow you to strike any desired balance among a number of different synths and synth patches, and to change that balance very quickly by simply calling up a different processor patch. If one synth tends to be more responsive to velocity than the rest, or you wish to de-emphasize the dynamics on one patch which is part of a layer, offsetting and scaling of velocity will do the trick – likewise if, in another case, you desire to have one patch in a layered combination stand out above the rest only when accented notes are played.

Velocity curves can reshape the velocity response of your MIDI controller to provide comfortable playing action. Instead of a linear scaling function, there may be an exponential curve or some complex shape (eg. flat in the middle range, steeply sloped at the extremes) contained in a velocity translation table. Curves with a negative slope can be used to invert the velocity response of the controller, so that harder keystrokes result in lower velocities.

Combining a negative-slope velocity curve on one patch with a positive-slope curve on another gives you a *velocity crossfade* between the two sounds, where the first sound plays more softly and the





► possible use for the MEP4 step function, which can be applied to almost any MIDI data value. An example of its application to note number: use a step value of 4 on each of the four internal processors. For three of the processors, precede the step function with a note-number offset function using values of 1, 2 and 3. At this point each processor will now respond to a different set of keys (every fourth key on the keyboard).

M  
I  
D  
I

On the same three processors, follow the step function with another offset function, this time using values of -1, -2 and -3. This balances out the effect of the first offset step and causes the output note to have the same note number as the input note in all cases. Finally, send each processor to a different MIDI channel.

*"The higher price tags of the more advanced MIDI processors are balanced out to a certain extent by both the universal applicability of such gear and its ability to forestall the obsolescence of other MIDI equipment."*

With this arrangement, the keyboard is mapped key-by-key to four different synths – chromatic runs will play each synth in rotation, while non-chromatic runs will appear more random in their assignment.

It shouldn't be too hard to see how the same feature could be used to set up layering only on specific scale values. This example also illustrates the *list-driven* nature of the MEP4, in which the action of a processor depends not only upon which processing options you use, but also the order in which you arrange them (sort of like the age-old question of which comes first, the fuzz-box or the phase-shifter). The MEP4 thus takes you the closest to programming in the actual computer sense, even though it is ultimately less powerful than either the Mapper or the Mentor.

One last example of direct message modification: any of these three units could be used in the normal processing mode to translate a single incoming patch change into one or more outgoing patch changes, each with a different patch number and on a different channel. Again, you have simple, centralized control of all of your available patches with no need to rearrange patches in any of your synths. However, the need for this is so common that, rather than forcing users to dedicate a substantial fraction of the internal processing power to this relatively simple task, all of these machines (and many less-powerful ones) provide a separate method for dealing with it (more in the section on initialization below).

## Time Tricks

STATED AS SIMPLY as possible, the processor waits a certain amount of time before sending out the messages it has received. More accurately, the messages generated as output by the processor are

buffered (held in memory) for a specific amount of time before being passed to the processor's MIDI output. The Mentor and the MEP4 both provide for independent delay setups on each of their internal processors, and the delay (if any) is combined with any other effect being created by the individual processor (the time delay feature is notably absent from the Mapper). The obvious use of such a feature is that of slap-echo, in which every incoming note is followed by its exact duplicate a small fraction of a second later.

Not surprisingly, things can be taken much further. For one thing, the delays can be much longer – up to three seconds on the MEP4, or ten with the Mentor, allowing for the echoing of whole musical phrases, self-counterpoint and so on.

Delays can also be different for each internal processor, so that any incoming note is echoed up to three times by the MEP4 or seven times by the Mentor. Because the time delay works along with other processing options, each of these echoes can appear on a different MIDI channel, have a different pitch transpose amount, etc. Thus you can create a setup

one type of MIDI message to another) while performing some sort of processing on one or more of its data bytes using any of the methods described above. Again, looking at some examples should help to make clearer what this really means, as well as pointing the way towards other applications far too numerous to mention – including a few of your own imagining.

As one of the simpler examples, MIDI continuous controller messages can be converted to controller messages of other types: aftertouch can be used to affect pitch-bending or raise the mod wheel, or mod wheel messages can be converted to MIDI volume messages. Cloning of messages as in the keyboard note-layering case can also be applied here, allowing a single MIDI controller to generate several different control messages at the same time. Using aftertouch as a direct MIDI volume control on one synth, and at the same time as an inverted MIDI volume control on another, gives the ability to do pressure crossfading between the two synths. Alternatively, a single wheel can be set up to simultaneously generate pitch-bend, modulation and aftertouch messages.

Naturally, this is not limited to continuous controllers – switch controls can be converted as well. The sustain pedal can be redefined as any other MIDI switch, allowing control over parameters assigned



which plays arpeggios from a single key. In the case of the Mentor, using the chord feature described above, each echo could even appear as a different *chord*. Neither of these units provides for internal regenerative echo, but there's nothing to stop you from merging the processor's output back to its input with a simple MIDI cable (and a merge box, in the case of the MEP4). Watch out for runaway MIDI feedback, though!

## Message Conversion

HERE IS WHERE MIDI processing takes a big step forward in both power and ability to dazzle and bewilder. By way of plundering Lewis Carroll: "A number means only what I wish it to mean, nothing more and nothing less." The simplest form of message conversion is accomplished by altering the value of the status byte of a MIDI message (thereby changing it from

to a given switch from a master controller which lacks any assignable MIDI switches. Furthermore, it is possible to convert switch controller messages to continuous controller messages and vice versa. The sustain pedal "on" state can be redefined to generate a specific value of pitch-bend, giving you an "instant transpose" footswitch. The ability to jump directly back and forth between two values of pitch-bend is something which cannot generally be done with a pitch wheel – it's somewhat more like the sort of pitch-bending one can do using "hammer-ons" on a pitch-bend ribbon control.

But of course it doesn't stop there, because processors can perform conversions between note events and other MIDI messages. A somewhat bizarre example is that of converting pitch-bend messages into note messages, so that moving the pitch wheel causes a rapid-fire ►





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► stream of notes to be played – the note numbers can be derived in some way from the pitch-bend values which generate them, and as with key-generated note events, the note events generated by the pitch wheel can be delayed, can appear in chords, can appear on multiple channels, can appear in normal and inverted pitches, and . . . can still be affected by the pitch wheel!

M  
I  
D  
I

By now you've no doubt guessed that note events can also be converted into switch and continuous controller messages, among other things. Thus, keys can be used in place of assignable MIDI

various types – main volume is just one of the control messages possible. Among the many others are mod wheel position and sustain pedal on or off. An obvious use for the mod wheel and pitch-bend options is that of "zeroing" the wheels upon entering a new patch – ie. pitch wheel centered and mod wheel back to zero. A less obvious use is that of presetting a particular MIDI channel to a slightly detuned state by sending a pitch-bend value which is just slightly off-center – this is an easy way to fatten up a multichannel layer.

The Mentor's numbers are skewed slightly differently – you get a program

messages to perform functions such as on-the-fly synth patch edits (of course, there are many other uses for system-exclusive messages, many of which have nothing to do with synth patch editing). Both the Mentor and the Mapper provide an all-important twist, namely the ability to map some parameter of the designated trigger message into a specific byte location in the message buffer, so that the message itself can be modified in some controlled way (algebraically, or by selection of specific values from a hand-entered list) and sent out in modified form (eg. use aftertouch to modify the algorithm number of your current DX7 patch?).

The Mentor does the one-up here, allowing multiple mappings of one or more control sources into different byte locations in a message buffer – again, these locations might be different parts of a single system exclusive message, or could be in separate messages contained in the same buffer – you decide. In addition, because of the way in which the Mentor handles buffer triggering, it allows you to chain multiple buffers together in a predictable order if desired, allowing for transmission of some very lengthy messages.

The Mapper has a different trick up its sleeve, namely the ability to store multiple message strings within a single message buffer, kept apart by separator markers. Each time the message buffer is triggered, the next message string in rotation is transmitted. Thus you can have a control source which redefines itself each time you use it.

This seems like the place to mention that all three machines provide some degree of MIDI monitoring – a direct hexadecimal readout of MIDI messages on the display – on either the input or output end, to assist in tweaking your processor patches or for general system debugging.

## Th, Th, Th, That's All Folks

LOOKS LIKE WE'VE run over our allotted time, kids. For the sake of completeness I should mention that if you're interested in MIDI delay effects but can't afford any of these processors, Akai makes the inexpensive ME10D MIDI Digital Delay. Digital Music Corp's MX8 also has delay capabilities that can be split over two MIDI channels as well as some basic velocity crossfading and velocity limiting functions. Finally, the MX8, the Voyce LX4 and LX9 and the Akai ME25S MIDI Note Separator offer basic zone-creating features to add zones to keyboards (or other controllers) which don't have that capability.

As a closing thought – in the course of free hands-on experimentation with these processors, just as with patch programming on a complex synthesizer, you will undoubtedly stumble across uses which you would never think of in a thousand years. The field's wide open . . . ■

*"Using the more advanced capabilities of these processors you can do things like set up a single wheel to simultaneously generate pitch-bend, modulation and aftertouch messages."*

switches; but more interestingly, they can also be redefined to send program change messages or to set specific values of continuous controllers.

One of my favorite examples of this last one takes off from our earlier example of the use of the MEP4 step function to create four separate groups of interleaved single-key zones on the keyboard: instead of directing each zone to a different MIDI channel, a very small pitch-bend offset is layered onto each note played, with the offset value differing slightly among the four zones. The net result is similar to the sound of an out-of-tune piano. Using the same approach, one could create interesting timbral variations by sending specific mod wheel values along with each key, or get dark and psychedelic by delaying the pitch-bend of the previous example until a short time after the note event. And, although many synths would not take it gracefully in stride, it would be a very simple matter to layer a different program change onto every key on the keyboard.

## Initialization

ONE FEATURE WHICH these machines have in common is the ability to send a pre-programmed set of messages upon call-up of a patch. This information is part of the patch itself, and is used to set up various pieces of gear in the system as desired for any given patch. This is not, strictly speaking, a processing function, but is obviously an important function nonetheless. Basic stuff includes a MIDI main volume setting and a program change, allowing you to select sounds on multiple synths and set their relative volume levels all in one shot.

The MEP4 makes this function a part of each internal processor, thus allowing you to initialize up to four MIDI channels in this way. Per processor, it lets you send a program change, a pitch-bend value and two other selectable controller events of

change and volume setting for each of the eight internal processors, plus eight auxiliary program changes. Thus, all sixteen channels are covered as far as patch and volume are concerned.

The Mapper takes another tack altogether: it uses message buffers – small packets of memory which can contain any valid MIDI data. You insert any message or messages which you want to have transmitted upon selection of a patch. It goes even one step further than this, in that you can define a separate buffer containing messages to be sent out upon exiting a patch. Thus, if you did something off-the-wall in one patch, like setting all continuous controllers to their maximum values or turning on a bunch of drone notes, the exit message can restore normalcy in the specific ways necessary, so that you can go from there to any other patch without requiring the other patches to be able to do this restoration as part of their initialization. To a limited extent, by means of general-purpose message buffers, the Mentor can provide similar initialize and restore capabilities.

## Message Buffers, Event Mapping, Macros

AS ALREADY MENTIONED, message buffers are simply free-format holding spaces for MIDI messages which can be transmitted in response to certain events. Processor patch changing is just one example. To keep a long story from getting too much longer: almost any event which can be received and modified by the Mentor or the Mapper can also be used to trigger the transmission of one or more message buffers. With this capability, virtually any conceivable message conversion can be realized, subject to the limitation of the amount of memory available in the machine.

An important use of the message-buffer/event-mapping system is that of sending one or more system exclusive





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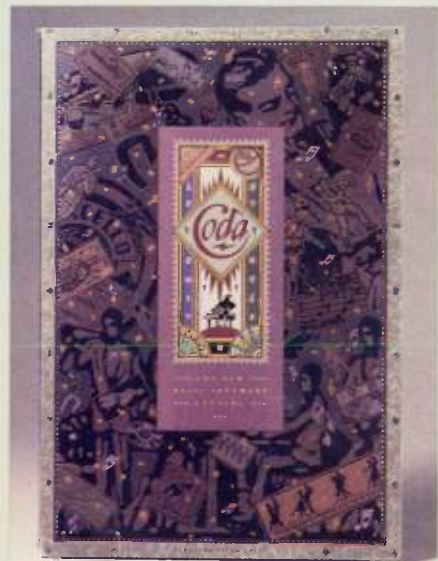
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## NEW VISIONS FOR IBM OWNERS

IBM users seem to have to wait longer than their Atari and Apple brethren for application software (is it perhaps something to do with alphabetical order?). With SampleVision for the

Akai S900 (more samplers are promised in the near future), they at last have waveform editing.

Aside from the pull-down menus, cut, copy, and paste editing, and waveform drawing that has come to be expected from such packages, SampleVision includes digital EQ, crossfade looping and looping aids, 3D Fourier frequency analysis, and an interpolation function for improving the quality of 8- and 12-bit samples. Two waveforms may be displayed at once, and a MIDI keyboard/step sequencer is included for auditioning samples from the computer.

SampleVision was created by Turtle Beach Softworks and is distributed by Digidesign (they of the well-established Sound Designer sample editors for the Apple Macintosh). It requires a true IBM-PC compatible with 640K of RAM, EGA, CGA, or Hercules graphics system, and a Roland MPU401 MIDI interface, and lists for \$495.

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

## APPLE MIDI

Ever think you'd see the famous Apple logo on MIDI cables and a MIDI interface? You will now with the release of Apple's MIDI interface for the Macintosh and IIGS computers. A single in/out device, it draws power from the computer's serial connections and therefore requires no external power supply or cables. It should be fully compatible with any MIDI software for the Macintosh or IIGS software that uses the serial ports instead of an internal card.

This is Apple's first MIDI product, and signifies their seriousness about getting into the music business. In particular, Apple hopes this

will help MIDI software penetrate conventional computer stores. It's small in both size and price - 2"x3"x1 1/4", and \$99.

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## SAMPLES TO GOLD

A new movement underway in the area of sample editors is one package covering several machines. Blank Software's Alchemy for the Apple Macintosh 512, Plus, SE, and II is one of the more exciting of these packages.

In first release, Alchemy will support the Ensoniq EPS and Mirage, Akai S900, E-mu Emax and SP1200, and IMS Dyaxis sample-to-disk system. Stereo is handled by splitting a window up into two so both channels can be edited together. Signal processing modules include spectrum analysis, resynthesis, digital EQ, automated crossfade looping and sample rate conversion. It is compatible with Sound Designer, Sound Lab, Drum File, Apple SND, and Dyaxis soundfile formats.

Alchemy also features "DAN" (Distributed Audio Network), which allows different samplers to be set up on different serial ports of the Macintosh and treated as objects. Suggested retail price is \$495.

**MORE FROM** Blank Software, PO Box 6561, San Francisco, CA 94101-6561. Tel: (415) 863-9224

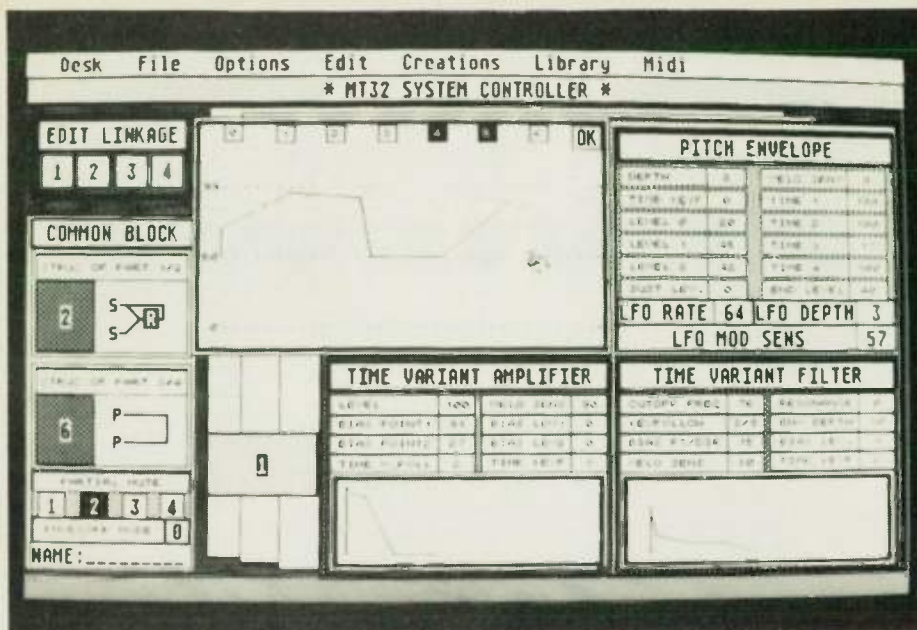
## FOUR MORE LIBRARIANS

As synthesizers get more complex, patch editor/librarians get thicker on the ground. Steinberg/Jones has just announced four more to add to their Synthworks line for the Atari ST.



Alchemy is the first universal stereo sample editing package.





A screen from Steinberg's Synthworks MT32.

Synthworks D50 displays all envelopes, filter, and EQ parameters graphically for editing via the Atari's mouse. Envelopes may be superimposed over each other for comparison – a handy feature. A random patch generator allows creation of new sounds along with slight and medium variations of existing patches (patches may also be combined). The user may store several descriptive words ("semantic relations") with each sound to aid searching. The program also includes a 10,000 note sequencer compatible with Steinberg's Pro24 files and 700 patches, and lists for \$259.

Synthworks MT32 is a similar editor for the D50's little cousin, the MT32. Functions and parameters not available from the MT32's front panel may be edited, along with setting MIDI channels per instrument, setting pan and reverb values, etc. As with all Synthworks programs, its library consists of 21 categories that can hold 100 sounds apiece, and it also has the same patch creation and combination features as the D50 version. It retails for \$199.

Not to forget Yamaha, Synthworks TX81Z serves as an editor/librarian for the TX81Z, DX21, DX27 and DX100. Various special pages address the specific parameters the TX81Z has beyond its simpler four-operator brethren. Up to four TX81Z modules may be edited and addressed simultaneously from the main display page. Patch creation and combination is included, and the package lists for \$199.

Perhaps most advanced is the version 2.0 update for Steinberg's already released Synthworks DX/TX. This update works with all Yamaha six-operator FM synths, including handling the microtonal and fractional scaling features of the DX7II and TX802. Tunings can be created per octave and copied to any other octave, or randomly generated. A waveform analysis window draws the waveform of the selected sound for helping learn FM. Envelopes, keyboard scalings, and entire operators may be copied to each other. The onboard 10,000 note

sequencer is compatible with Pro24 files, and will keep playing while edits and disk operations are performed. It comes with over 1500 patches and retails for \$259.

**MORE FROM** Steinberg/Jones, 17700 Raymer Street, Suite 1001, Northridge, CA 91325. Tel: (818) 993-4091

## A CHIP OFF THE OLD CLOCK

Just as MidiPaint begat Southworth's One-Step, Passport Designs has created a low-cost version of their Master Tracks Pro program for the Macintosh and ST – Master Tracks Jr. It's a multitrack sequencer that is operated like a tape recorder. Recording can be done live or in step-time. Sequencer features include 64 tracks, 240 clocks per quarter note resolution, and a Conductor track for selecting the meter, tempo, and beat for each measure. Song editor features include a grid display of track data and

empty/full status, cut, copy, paste, clear, and mix by measure, and regional editing of velocity, quantization, and transposition. Sequences are saved in Standard MIDI Files format, so the user can easily upgrade to a more complex sequencer later without losing all of his or her old songs.

Several demo song files are included to help a beginner get started. The prices are \$149.95 for the Mac version (\$249.95 bundled with a Passport MIDI interface and cables) and \$129.95 for the Atari ST version.

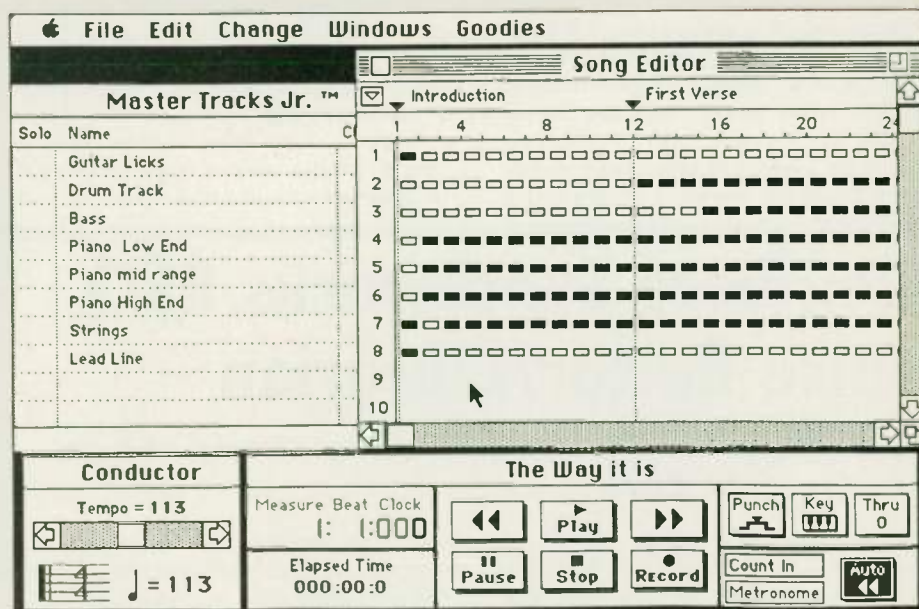
**MORE FROM** Passport Designs Inc, 625 Miramontes Street, Half Moon Bay, CA 94019. Tel: (415) 726-0280

## RACK TORTURED IBMS

Mellotron is selling a pair of their system computers as stand-alone rack-mount models. The 2000XT is an 80286-based IBM clone featuring switchable 4/8MHz processor speeds, 640K of RAM, a built-in 3 1/2" disk drive, and five IBM PC/XT-compatible expansion slots. Printer, monochrome/color monitor, and joystick ports (along with a spare serial port) are standard, along with a 90-key keyboard with a numeric keypad. The computer is bundled with MS-DOS Version 3.2, BASIC 3.20, and Mellotron's own Muart 4-port MIDI interface and Spirit sequencing and bulk dump software. List is \$2995.

For the horsepower-hungry, Mellotron's Rack AT features an 80386 running at 9 or 18MHz with no wait states, a 43Meg hard disk, and 512K of RAM (expandable up to – grab hold of something solid – 20Meg). Standard features include one serial and one parallel port, a Hercules graphics card and color monitor, a SCSI interface, two 32-bit slots, four AT slots, and two XT slots. Like the 2000XT, the Rack AT also comes bundled with the Muart interface and Spirit. Price? \$5995 list.

**MORE FROM** Mellotron Digital Corporation, 36 Main Street, Port Washington, NY 11056. Tel: (516) 944-6789



Master Tracks Jr. presents an uncluttered screen for the beginning sequencer user.





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# M I C R O REVIEWS

## Coda Music Software MacDrums

A drum machine program for the Macintosh. Review by Rick Davies.

PUT SIMPLY, MACDRUMS turns Macintosh computers into digital drum machines for \$49. All you need is a Mac 512, Plus, SE, or (I assume) Mac II and a cup of coffee (if you work my hours).

Coda actually gives you two programs: MacDrums and MacDrums MIDI, both residing on the same start-up disk. The first program turns the Mac into a drum machine, while the second turns it into a drum pattern programmer for MIDI drum voices.

The main MacDrums screen presents a 16X16 grid divided into four groups of four rows representing drum sounds, and four groups of four columns representing 16th notes. To the right of each row is the name of the instrument currently selected. Coda provides a library of 35 digitized drum sounds, and selecting a new sound is a simple matter of double-clicking on the instrument name and opening the desired new sound from the window that appears. Some of the sounds are quite good. The latin percussion instruments are the most convincing; the timbales, congas and even the guiro are also quite useful.

Below the grid is another row of 16 boxes which double as pattern selectors and playback indicators. In its default condition, MacDrums lets you record patterns consisting of one measure of 4/4 time with a mandatory quantization fixed at 16th notes. MacDrums only accommodates one time signature per song, but

more complicated rhythms can be designed with a bit of fiddling.

If you've ever worked with a Roland TR606 or TR808, programming MacDrums patterns involves merely following your instincts. Clicking on the MacDrums Trap Set icon starts playback of the current pattern and a cursor begins to scroll across the row of playback indicators. To build up the pattern, click in the grid on the row of the instrument you want to add, and at the 16th note where you want the note to play.

Now the fine print. Because the Mac can only produce four simultaneous sounds, MacDrums provides four instrument groups which are courteously shaded differently in the grid. If you place a note on a beat already occupied by another note from the same instrument group, the new note takes over. It's a limitation, but is an acceptable way of working.

Patterns can be linked together to form "tracks" (the equivalent of songs) consisting of up to 999 patterns. Tracks can repeat or not, as

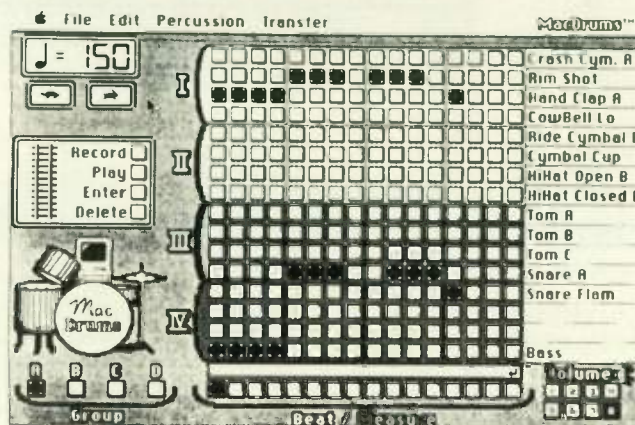
set by the tracks icon (which look like railroad tracks, incidentally).

Although MacDrums is certainly not a professional instrument, it does make a handy Mac-resident rhythm tool in those moments of inspiration away from your synth rig. Operation was so simple that my seven-year old daughter was bashing away on it in no time. The program is copy-protected, which is a bummer if you want to use it on a hard disk or with Switcher. Back-ups are \$15 from Coda, which hurts the attractive retail price. I would have liked to put it on a work disk as an alternative to those puzzle desk accessories. Oh well.

All that aside, how can you resist the MacDrums wrist sweat-band that Coda throws into the deal? Not a bad way to spend a bit of money at all.

### PRICE \$49

**MORE FROM** Coda Music Software, 1401 East 79th Street, Minneapolis, MN 55420-1590. Tel: (507) 451-1951



## Steinberg Synthworks ESQ Voice Editor/Librarian

A voice editing and storage program for the Atari ST and the Ensoniq ESQ1. Review by Bob O'Donnell.

STEINBERG'S SYNTHWORKS SERIES of programs for the ST, though a tad expensive, have distinguished themselves from other voice editors by offering high-quality graphics and some unique features. The ESQ1 program - 66

which is not yet compatible with the SQ80, but will be in the not-too-distant future according to the US distributor - is no exception.

The best part of the program is the cleanly and logically laid-out main screen which greets

you upon entering the voice editor mode. The bulk of it is taken up by a voice layout diagram similar to the one found on the ESQ's front panel. The beauty of the diagram is that it both educates you about the ESQ's voice structure in general and the specific patch in particular, and permits you to directly see all the parameters for a single patch, including the shapes of all four envelopes.

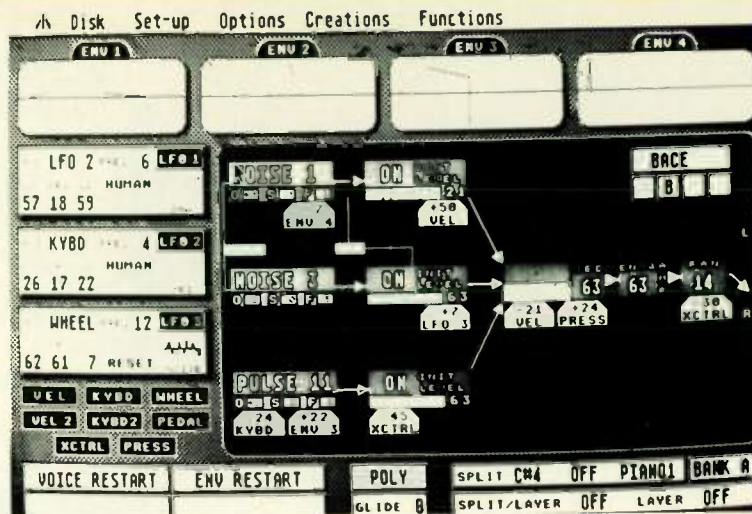
Speaking of which, to directly access the envelope parameters you simply click on one of them and an overlaying screen with both graphic and numeric representations of the envelope shape is available for quick editing. Once you've made your alterations - which are sent directly



to the synth – and closed the window, the new shape will appear in the smaller window at the top of the screen so that you can have a quick visual reference. The filter curve can be adjusted in a similar fashion, which is a nice touch.

One frustrating thing about the program is that you cannot currently play the synth from the computer (this is supposed to be added in an update); you have to play the new patch on the ESQ's keyboard. If your trusty ST isn't right next to the keyboard, this can get old, fast.

The program also has a very simple, easy-to-use librarian portion called Sound Manager which includes some unique randomizing functions. In addition to a totally random patch creation, you can produce slight or large variations on the currently active sound. You can also take two sounds and mix them together in varying degrees with the Mix Creation function, by moving a slider towards one patch or the other. I found that this works surprisingly well for creating interesting patches, though the quality of the end result is dependent on the two sounds you select to mix between. The program's Cross Creation function will create a new patch based on the parameters of up to seven patches that you want to blend together.



It's a bit difficult to keep track of the results of your editing and patch creations, however, because though the program allows you to quickly jump between four active patches, it doesn't provide you with any sort of visual clue about whether the current sound is an original or an edited version.

As for the general stuff, the program requires a key for operation and comes with a selection of patches to start from, many of which were

created with the program's randomizing functions.

Summing up, Synthworks ESQ's attractive layout invites you to program your synth – an important goal for any patch editor – and deserves high praise.

**PRICE \$259**

**MORE FROM** Steinberg/Jones, 17700 Raymer St. Suite 1001, Northridge, CA 91325. Tel: (818) 993-4094

# Microsoft Windows

A menu-driven program environment for the IBM PC.

Review by Stefan B. Lipson.



**GOOD NEWS FOR IBM fans.** Microsoft has released Windows Version 2.03 for IBM and compatible machines.

Windows is a command shell to replace the command line interface of MS DOS. The command line, the bane of working with an IBM, no longer needs to be seen by the user. That means that you don't need to sort through all of the technical documentation to make the machine do what you want it to do.

Windows makes your IBM appear to be more Mac-like. For you Mac folks, it's MS's idea of MultiFinder. The system is mouse-driven so that you point and click at what you want active on the screen. Windows makes various background software (TSRs) redundant. The need for something like Sidekick is eliminated because you can have similar tasks in another window.

Several improvements make this version of

Windows superior to previous releases. For example, improved screen management allows for overlapping windows instead of tiled windows.

Windows 2.03 allows you to reduce the size of a window in which a task is being executed. An additional feature that's particularly eye-catching: the task that is being executed also shrinks in appearance, giving rise to a dynamic icon. An animation, for example, reduced to an icon, continues to run but it appears as the size of a postage stamp. With a click of the mouse, the window returns to the specified size, as does the animation.

The system will be most effectively used with Microsoft and IBM release OS/2, the new operating system for IBM 80386 machines. With the 80386's multitasking capabilities, Windows can provide the user with the needed interface

to allow several tasks to run simultaneously in different windows.

The adoption of the Windows standard by IBM is beneficial for both users and developers. For the end user, you can expect to see programs that include a standardized interface in much the same way that most Mac applications have the same look and feel with pull-down menus. Once you are familiar with the environment and can get around a bit, the actual applications software is easier to learn. As in the Mac environment, the method by which the machine executes your programs becomes transparent. IBM and Microsoft hope that Windows will make pull-down menus and mouse-driven software the norm for IBM users.

While Microsoft's support to its developers has been shoddy for the last several months, Windows 2.03 does offer several advantages to developers, such as the aforementioned interface standards. Microsoft also provides the drivers for a number of printers and plotters. That means less work for developers and more printer/plotter options for us. It should also mean lower development costs and better software at lower prices.

Windows still eats over half a megabyte of RAM, so you'll need at least 640K available. You'll also need a hard drive, because Windows really can't be run off a floppy. Windows 2.03 lists for \$99, but look for promotions that bundle it for free with other hardware or software.

**PRICE \$99**

**MORE FROM** Microsoft Corporation, 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717. Tel: (206) 882-8080



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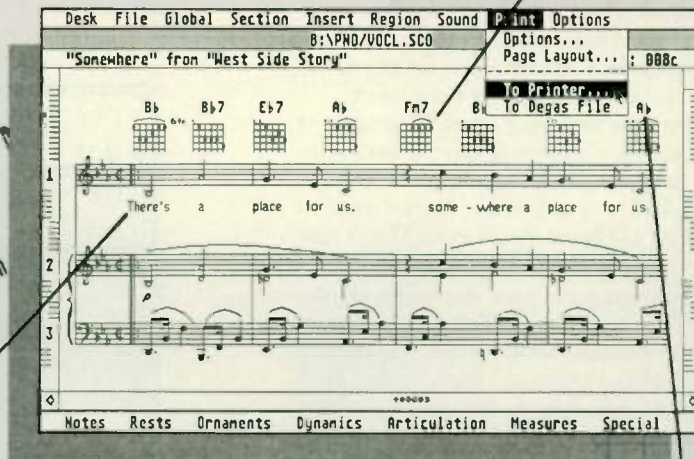
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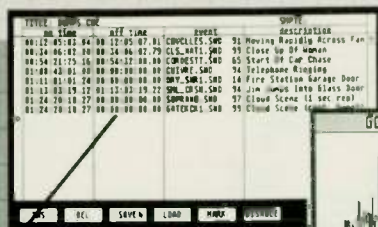
GenPatch ST, DX-Android, CZ-Android, MidiTrack ST, EZ-Score Plus and ADAP SoundRack are stand alone modules from an integrated product group that are designed to work together as a powerful digital music composing system. For more complete product specifications and prices call or write us for our new product catalog and newsletter. ADAP SoundRack was developed in association with Nilford Laboratories.



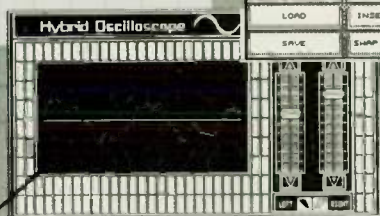
NEW UPDATE ADDS MANY  
NEW FEATURES

# ADAP

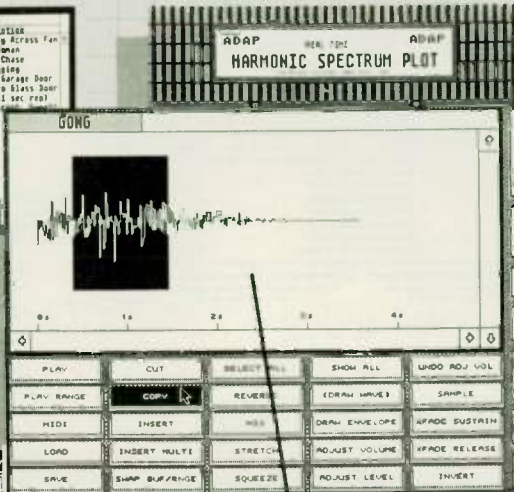
SAMPLES CAN BE CONTROLLED VIA  
MIDI FROM THE KEYBOARD SCREEN



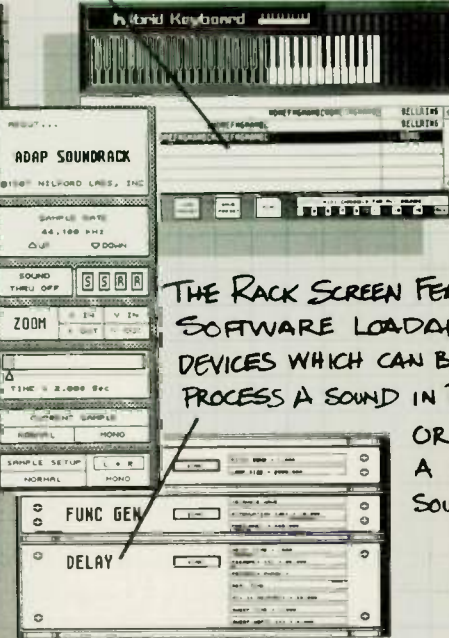
NEW SMPTE SCREEN  
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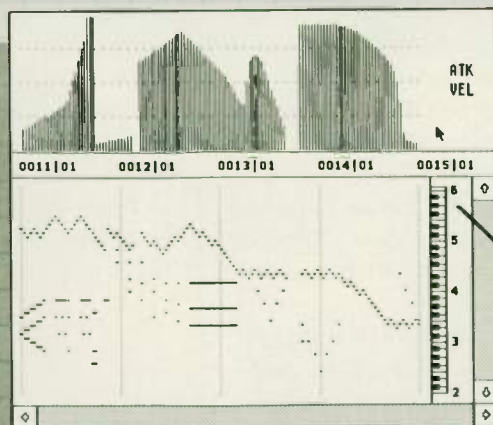
NEW UPDATE ADDS MANY  
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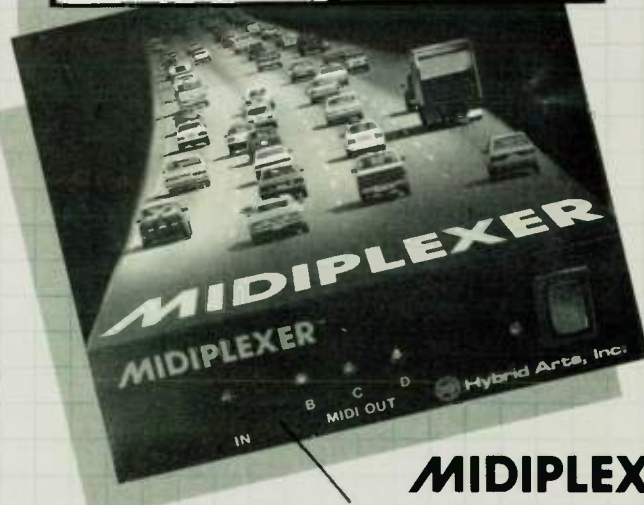
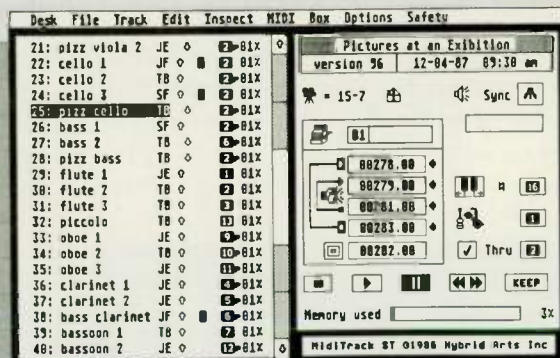


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OFFICIAL NEWS FROM THE YAMAHA USERS GROUP

MARCH, 1988.

## DX11 Synthesizer brings new sounds to its price class.

**Y**AMAHA® HAS JUST GIVEN KEYBOARD players good reason to expect more for their money—with the introduction of the DX11 FM Synthesizer.

It's an 8-algorithm, 4-operator synthesizer that lets you use 8 different waveforms to create complex sounds. And, with a polytimbral mode, it actually lets you play up to 8 voices at the same time.

The DX11 has a 61-note keyboard with velocity and aftertouch. It comes with 128 preset voices, all fully editable, and room to store 32 custom voices in its internal memory. A RAM4 cartridge gives you 64 more, for a total of 224 available voices. All voices are stored with a complete set of function parameters: everything from pitch bend, LFO and transposition settings to a new Reverb feature.



YAMAHA DX11 FM SYNTHESIZER.

It has stereo outputs and a Pan effect, which allows you to control stereo imaging by LFO, velocity or by keyboard split. Other effects are built in, too, such as a transposable repeated delay and a Chord Set function that lets you play up to 4 notes by pressing a single key.

The DX11 gives you the same microtuning function that's found in the DX7II, with 11 pre-programmed microtonal scales plus memory for 2 of your own. And it's completely compatible with voices used in the TX8IZ tone module and DX21/27/100 synthesizers.

Of course, the DX11 has an easy-to-read backlit LCD. As well as full MIDI implementation—so its eight voices can be driven remotely by a sequencer,

computer, master keyboard or drum machine.

With a suggested USA retail price of \$995.00, you can be sure the DX11 is going to be generating a lot of interest. See it for yourself at an authorized Yamaha Digital Musical Instrument Dealer.

## *E!* now available for DX7II series.

A company called Grey Matter Response has just released an expansion kit for DX7II FD, DX7IID and DX7s synthesizers. It goes by the name of "*E!*" and gives you access to an impressive host of new features.

For starters, *E!* lets you play your DX7II in Octal Mode for 8-voice multi-timbral sound, with full control over individual voice volume and octal stereo pan.

It provides a built-in sequencer that can store 220,000 events on the DX7II FD (22,000 events on the "D" and "s" models). So you can record in real-or-step-time on 16 tracks and 16 MIDI channels, and call up your sequences right at your keyboard.

You also get the *E!* engine—a 16-track MIDI mapper, velocity processor and more.

And for added versatility, *E!* increases your on-board storage to 256 single voices and 128 performances. Each performance includes Octal Mode and sequencer information in addition to normal DX7II performance parameters.

*E!* also provides increased capacity in the FD disk drive, letting you save files as large as 128K. And it has "E-Ram," which loads—as one bulk file—all your voices, sequences, MIDI map and other data.

For more information on *E!* and where you can find it, contact Grey Matter Response at 312-349-1889. The kit's suggested USA list price is only \$399.00.

# E!

**AFTERTOUCH** is a monthly newsletter filled with the latest on Yamaha products. Get a year's subscription free by writing to:  
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90622.





# Passport Master Tracks Pro

## Sequencing software for the Atari ST

Thanks to an excellent port from the Macintosh, the visual editing capabilities of this popular sequencing program are now available on the ST. Review by Mihai Manoliu.

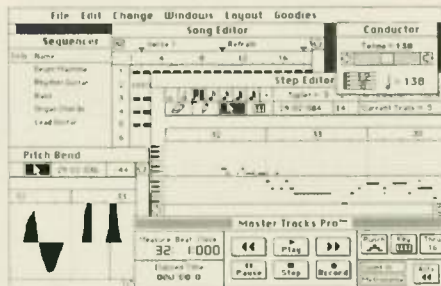
MODERN SEQUENCING SOFTWARE has reached a level of flexibility and sophistication that is sure to expand the boundaries of creative expression. At the same time, this approach has demanded a great deal of time and patience from the musical user (with frustrating and sometimes disastrous results). Leading software developers such as Passport Designs have responded to users' needs by releasing advanced packages that are easier to understand and use. Master Tracks Pro for the Atari ST is an impressive combination of powerful features and a simple interface that allows you to concentrate on the music (for more details see the review of the Macintosh version in MT July '87).

The program interface is organized into six main windows, several of which can be open simultaneously, though only one is active at any given time. The windows are: Transport – controls the play/stop/ffwd etc; Sequencer – in which you record and play the tracks; Conductor – control over tempo, meter, and beat; Song Editor – where tracks are displayed and regional editing is done; Step Editor – display/editing of individual notes of a single track; and MIDI Data Windows – display/editing of graphic plots of Pitch-Bend, Channel Pressure, Key Pressure, Modulation, Controllers, Program Changes, and Conductor Track data (more on this later).

Master Tracks Pro has all the usual features of typical software sequencers, among them: 64 tracks for real- or step-time recording; cut, copy, clear, paste and mix editing of all data; Transpose; and a Quantize function. It is the addition of other, more specialized features that makes this program so useful to the professional musician. By opening the various windows you can get an idea of some of these options.

In the Transport window you'll find a display of elapsed time, particularly useful for timing length and hit points for commercials or video projects. The measure display is divided into measures, beats and clocks. Master Tracks has a 240 clocks per quarter-note resolution, more than adequate for most professional applications. The Auto rewind returns to

playback start automatically (if it is on). Count In gives you a one measure count before recording starts. Another useful feature is the Key function which tells the program to wait until a MIDI key has been pressed and released before it begins recording or playback. An even more potent feature is found in the Goodies menu – selecting Keyboard allows you to configure your MIDI keyboard to control the Transport settings during Sequencer operation



or choose note values during step input. Also found in the Transport window is a Punch In/Out feature which can be set numerically or by using the mouse.

Master Tracks Pro supports multiple-channel tracks as well as independent looping for each track. MIDI Song Position Pointer is implemented, thus allowing for positional sync-to-tape through an external SMPTE device such as the Roland SBX80 or Garfield Master Beat. When using the internal clock, one has a tremendous amount of control over the tempo and meter of each individual measure due to the existence of a separate Conductor track – especially useful for smooth ritardandos/accelerandos and odd meters – which can be edited graphically or numerically.

The Step Editor window can be used for very precise and sophisticated graphic editing of single note events (one track at a time). The Zoom In/Out function allows for six different screen resolutions, from one pixel per clock to twenty-four clocks per pixel. One can use the mouse or a MIDI keyboard to enter duration and pitch values. For example, if the keyboard is configured for step input use, it is possible to

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enter the initial insert time using the mouse then go to the keyboard and enter all the following pitch and duration values for a particular melody or chord progression. The time cursor moves on automatically to the next insertion point, which is the end of the last note input. Thus you can step record a whole track using only your keyboard.

It is possible to fine tune individual notes by double-clicking on them, which opens the Edit Note window; you can then choose to alter the pitch, start time, channel, on and off velocity, and duration (beats/clocks) parameters. Once back to the Step Editor window, you can use the articulation command to control the expression of legato or staccato passages. An initial problem a new user might encounter is the subtle touch required to place the mouse cursor and click in the desired spot. The program helps you by providing an axis-locking feature when you hold down the mouse and move it.

One of Master Tracks' most powerful features is its graphic editing capability for the most important MIDI parameters – pitch-bend, channel and key pressure, modulation, controllers, program change, and tempo/meter on the Conductor track. The ability to change data with such ease and precision is sure to make this program a favorite of those who need subtlety of expression from their MIDI setup. Other features worth noting include: support of the de facto standard "MIDI Files;" Quantize while recording or editing; a Humanize function that can improve the feel noticeably; a Change Continuous window which allows you to map data from one controller to another and/or change the values of a controller's data; Fit Time, which can stretch or compress the length of a passage without losing the feel of tempo/meter changes (useful for commercials); and SysEx load/dump capability, which can help you manage all the data from the different components in your MIDI setup.

Master Tracks Pro is a well-designed package that can be the heart of almost any kind of professional system. It is easy to use, extremely versatile, and reasonably priced. The manual is informative and very well written. You should have no problems getting started; Passport also offers free technical support and seems very responsive to inquiries. Whether you are a newcomer to computer sequencing or a seasoned pro this package should provide you with plenty of power, pleasure, and creative options.

PRICE \$350

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





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# Lyre FDSOft

## Additive Synthesis software for the IBM PC

Busily working away up north, this French Canadian company has produced an additive synthesis program for the IBM which can also resynthesize samples received over MIDI. Can all this power be this inexpensive?

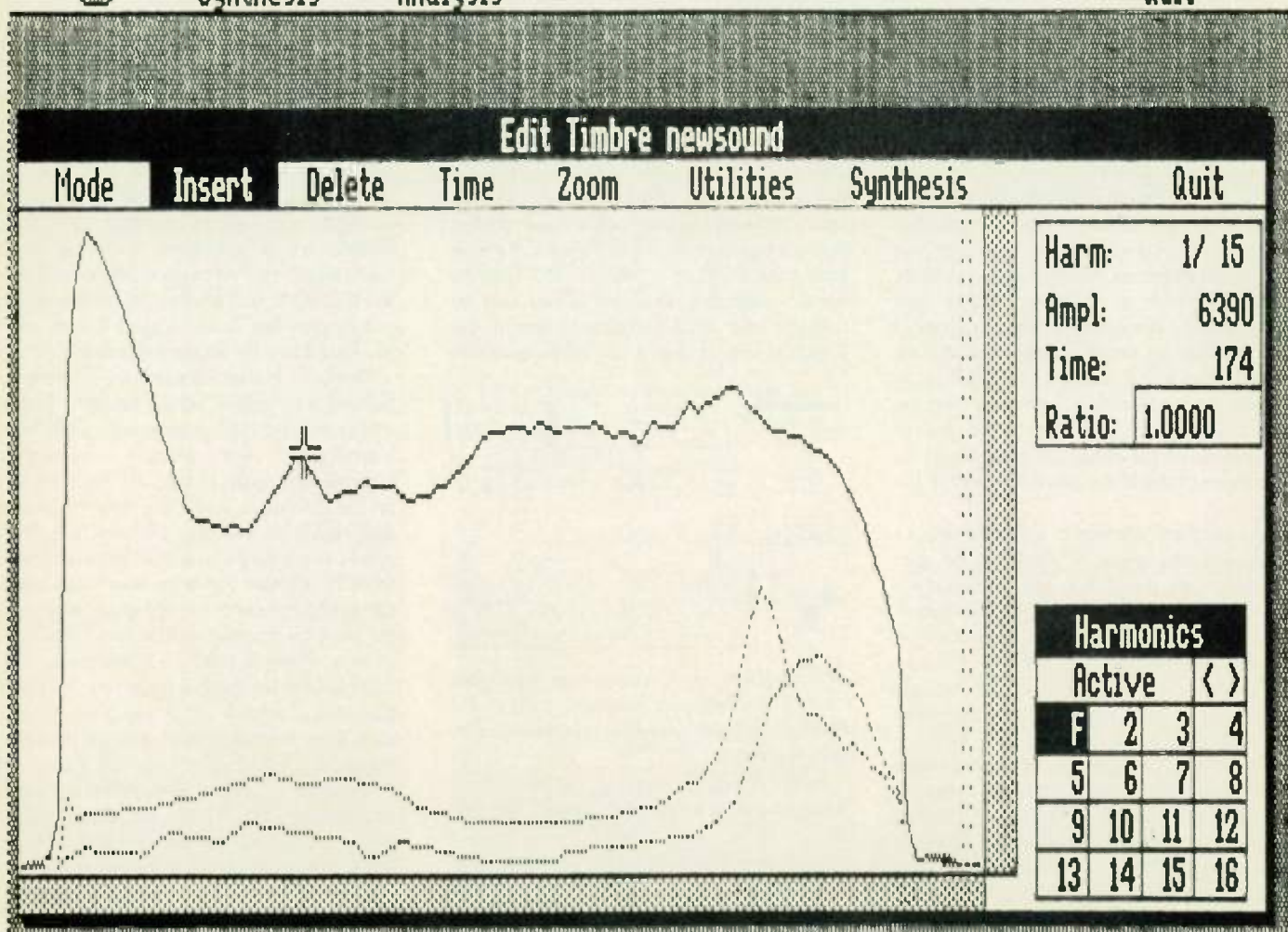
Review by Harvey P. Newquist.



Synthesis

Analysis

Quit



DEPENDING ON HOW up to date you are on the latest models of synthesizers, you are probably well aware that the technology that originally went into the old, voltage-controlled oscillators has been supplanted by a whole different world. Not only are synthesizers themselves inherently different than they were in the days of Moog and ARP, but many of them now use unique and diverse technologies to synthesize sounds. Analog-based subtractive synthesis is still around, but now you have such things as additive synthesis, linear arithmetic synthesis (Roland's D50), vector synthesis (the Prophet VS) and also the newest wrinkle in

synthesis, resynthesis.

Hardly anyone can argue that the best way to get a synthesizer to sound like something else is to sample the sound of that something else, and then play it back on the synth. Sampling is all well and good, but once you've recorded your sound source, there's not much you can do to "tweak" that sound. Trumpet sound a little cut off at the end of the sample? Sorry, you're stuck with it, unless you want to re-record your sample. That's just the way it is.

Or was. The concept behind resynthesis is the modification of that sampled sound once you've already got it where you want it. That

truncated trumpet? Modify a few parameters and you'll sound as smooth as Doc Severinson on his best nights. Maybe better.

Unfortunately, the availability of resynthesis has been pretty limited, due to the fact that it's only been found on state-of-the art (aka expensive) equipment. New England Digital has been touting the benefits of resynthesis on its Synclavier for a while now, but that doesn't do the teeming masses much good. What does do the teeming masses good is a new product from Lyre, called FDSOft. If you've got a PC, a MIDI interface, a mouse, and a sampler, add FDSOft to the system and you're ready to resynthesize.

MT APRIL 1988



Not only will this product allow you to resynthesize existing samples, but it will allow you to create new, previously non-existent sounds from scratch through additive synthesis.

## REQUIREMENTS

The package runs on IBM PCs and compatibles, and requires 640K of RAM. Because this is the maximum RAM that the motherboard on any standard PC, XT, or early AT class machines can handle, you pretty much need to fully stock your system in order to run the package. The software is contained on two floppies, so you need at least two disk drives, although I highly recommend using a hard drive. It makes life more than a little bit easier.

FDSOft also requires a color graphics adaptor (CGA) or enhanced graphics adaptor (EGA) in order to run. A standard graphics card like a Hercules board won't do it, because the software only recognizes color or color emulation cards. Plus, you need an MPU401 or equivalent MIDI interface for your PC. Oh, and you need a mouse. Now I realize mice aren't standard equipment on PCs, but without it you don't get to play with the software. It won't even boot up without a mouse. There is, however, a reason for this.

The developers have used Windows to create a Macintosh-like environment within the confines of the PC. For the uninitiated, Windows creates pop-up and overlapping windows as well as menus, and actually looks pretty Mac-like. For a more thorough description, Windows is reviewed elsewhere in these pages.

FDSOft comes on two floppy disks, one which operates as a system and control disk, the other being a sound storage diskette. Don't be misled by this second label – FDSOft doesn't actually store or modify the sound itself, but the digital patch that is the binary code of the sound, plus the parameters and modifications that you've decided upon. To get started, you simply connect your sampler up to the PC via the MPU401. FDSOft is compatible with the Mirage, Roland S10, Emax, Akai S900 (used for this review), and other products that adhere to the MIDI Sample Dump Standard, such as the Prophet 2000, and the Hybrid Arts ADAP. Getting the samples that the program creates (à la Softsynth) from your computer to your sampler is as easy as calling up the appropriate sampler from a menu list, and then clicking on Sample Out (or In).

## ADDITIVE SYNTHESIS

Let's look at the product's additive synthesis capabilities before delving into its resynthesis functions. Essentially, FDSOft allows you to create samples for your sampler by combining together between 16 and 64 sine wave harmonics, each of which can be tuned to any ratio above the fundamental. You also have the freedom to define the parameters – indeed, the actual shapes – of individual amplitude and frequency envelopes for each of the individual harmonics. This means that the user can create

sounds without ever having sampled any existing sounds. Using the mouse to determine breakpoints in the envelopes, the user actually "draws" the shape of the envelopes on the screen. To be honest, I found creating my own sounds harmonic by harmonic with additive synthesis is much more tedious than using resynthesis, but the capability is there.

FDSOft's voice architecture operates at two basic levels, and a third, more intermediate level. The first level is the analyzing and editing of Timbres and their envelopes. Once you've grouped a set of Timbres together, you have an Instrument. An Instrument is not necessarily a musical instrument, it can be the complete selection of Timbres that make up Lassie's bark. However, once you have an Instrument sound in the "real world," you can also add things like MIDI controller assignments and parameters. FDSOft won't affect MIDI commands in any way, shape or form, so Instruments are really an intermediate step on the way to the Orchestra level.

An Orchestra is a collection of Instruments (and thus their Timbres) which can be stored in groups of four for easy access and modification. You can have a whole set of different Orchestras, but each is limited to containing only four Instruments due to the PC's memory constraints. Think of this as similar to being able to store only a fixed number of sounds in the patch bank of a regular synth.

Once you have Instruments and Orchestras in order (most likely having sampled them yourself or using some of Lyre's Studio Sounds or Sound Bank Overview), it's actually a very simple matter to copy and apply Timbres from one Instrument to another, or even from one Orchestra to another. Pull-down menus allow you to move named Timbres to named Instruments or Orchestras with Copy and Save commands (used exactly like clipboard functions on a Mac). This is actually much more efficient than trying to dream up your own sounds from thin air, but some might argue that it's not nearly as rewarding.

## RESYNTHESIS

On to the next feature of the program. If you already have a sample that you like, resynthesis can help improve the quality of it. The resynthesis process involves analyzing the sampled waveform and breaking it down into individual components, which can then be reconstructed. During this process, certain non-essential waveforms are filtered out as the program analyzes critical harmonics, up to and including the 64th harmonic, if that's what you're looking for. The nice part about this feature is that some of the things that you didn't want in there anyway go away, such as extraneous hissing and white noise. However, if you were loudly making margaritas in a blender at the time you recorded your sample, that would probably still show up.

Analysis includes determinations of other components such as actual breakpoints for the envelopes within a sound and the sample's base

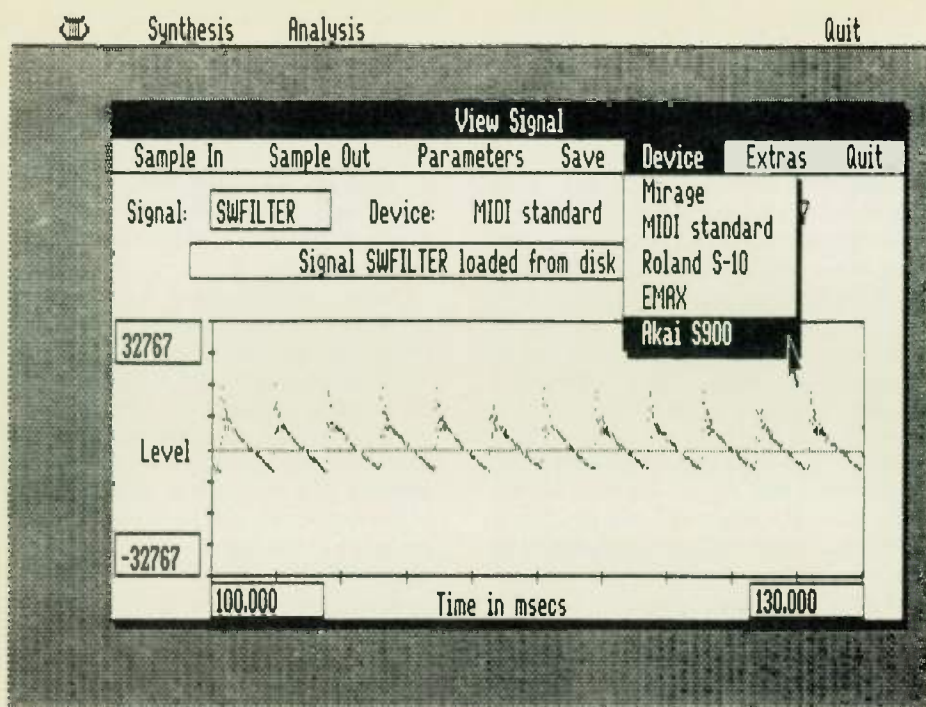
frequency. A word to the wise: it is best to know the pitch of your sample before trying to modify it with FDSOft. If you don't, you have to go through the program's pitch extraction process, which is one of the most difficult parts of the program to deal with. Out of fairness to the developers, this is by definition a tricky task anyway, but after attempting it a couple of times, I decided that I've had more fun studying for final exams.

Once analysis is complete, you have a new, streamlined version of your sample in additive synthesis format – that is, it consists of a series of sine wave harmonics with independent pitch and amplitude envelopes. In theory, this should sound as good as, if not better than the original because of the fact that the harmonics are enhanced. The accuracy of it compared to the original sample may not be as good, however, particularly if the source sound had a lot of slightly out-of-tune harmonics (or enharmonic harmonics). Analysis filters out almost all of the harmonics that aren't integral multiples (primary) of the fundamental harmonic, so you could lose certain waveforms that are enharmonic; say anything that is a fraction of a percentage away from being a true primary harmonic. In this case you have to detune some of the primary harmonics to emulate the original sound via the edit mode. If this is necessary, FDSOft has a Ratio field in the Edit Timbre window (see below) where you can actually specify the enharmonic frequency ratio over the fundamental. Simply type it in and you're back in business.

At this point you can either send the sound back to the sampler as is (again, just click on the Sample Out command), or make some modifications to the individual harmonic waveforms. If you decide on the first, a quick MIDI transfer puts you back in business. If you're up for a little more adventure, you click on the command that calls up the Edit Timbre window.

It should be noted at this stage that FDSOft is not a real-time system, meaning that you have to wait some minutes (which may seem like hours) before you are able to hear the results of your handiwork or the program's analysis. Lyre is quick to point this out to the user, and rightly mentions that it is a function of the processor in your PC. Obviously a PC AT or an XT with a Turbo board is going to be a lot faster than a standard PC. Math co-processors (like the 8087) make the machine – and hence the program – operate faster than one without it, but an 80386 processor screams past an 8088 like it was standing still. Another factor is the size of the sample that you're analyzing, and how many harmonics you want to include. A two-second sample with 16 harmonics might take two or three minutes to get through the analysis stage, and just a little less time than that to get over to the Edit stage in its new form. So be patient. It takes a few seconds for your sampler to load for the same reason, hardware limitations. It seems like nothing is ever instantaneous except the desire to have everything done instantaneously.





The View Signal window lets you see the "synthesized" sample. It can be transferred to a variety of samplers.

## ▶ EDITING

In edit mode, FDSOFT breaks each waveform envelope (amplitude and frequency) into a maximum of 128 segments per harmonic, which are actually the spaces between breakpoints. The software allows the smallest segment to be a length of six milliseconds. At this point, the PC mouse and color capabilities come into play. The amplitude envelope of the primary harmonic is displayed as a basic shape in the Edit Timbre window, with a single line and a series of breakpoints. A smaller box within that window allows you to summon up additional harmonics simply by clicking on them with the mouse pointer. One disadvantage here, though, is that you can only work on one harmonic at a time, necessitating a change of screens each time you want to play with a different harmonic (that's a concern of multitasking, but we'll discuss that next month). You can, however, view harmonics simultaneously, with the harmonics other than the one you're working on appearing in lighter colors within the same window.

Once the harmonic timbre is displayed, it's a simple maneuver to click on the kind of "tweaking" you want to perform, such as zooming into a specific section of the decay, or deleting sudden peaks within the timbre. One of the nicest aspects of this editing function employs the mouse, with which you can "click and drag" a part of the waveform to stretch or condense time, raise or lower peaks and valleys, or move breakpoints to change attack velocity, etc. You just click on the particular segment and drag it to where you want it to go. Sure beats trying to calculate differences between x and y coordinates. Plus, you get a 3D graph of your completed modifications.

And after all is said and done, if you find that you did something to the envelopes that you will regret for the rest of your life, fear not.

Click on the Undo utility and you're right back where you started.

All of this may sound rather esoteric or perhaps eccentric, but once you become familiar with harmonic waveforms, you can make your sampled sounds brighter, fuller, or even more tinny if that's what you desire. Resynthesis as implemented in FDSOFT is actually best described as a harmonic purifier, unless you want to make some real drastic waveform modifications. For instance, I took my favorite sample – which just happens to be the pterodactyl scream at the beginning of the *Jonny Quest* cartoon show – and detuned a couple of harmonics while cutting sections out of others. The finished sound resembles something between a clarinet and a howling banshee. Try sampling that direct from the source.

But I found the real value of FDSOFT to be in smoothing out glitches in my samples. The same pterodactyl scream had been truncated because I needed to avoid some dialog from one of the characters in the cartoon. No problem with FDSOFT. I just stretched out the segments between the release breakpoint and the end point, and managed to get something with a more natural fade.

The FDSOFT software is capable of creating its own sounds (whoops, digital patches) simply by copying and/or combining timbres from different samples or drawing new timbres from scratch. And interestingly, this aspect of the program's capabilities is discussed before all of the sample transfer, analysis, and editing features, which seems a little backwards. You can also do things like split your samples in a manner similar to splitting a keyboard, if your sampler will support such splits.

A number of things are irritating about the software, although most of them relate to the documentation. First of all, the manual assumes

some level of user familiarity with the Macintosh, even though this is aimed at PC users – most of whom probably aren't at all familiar with the Mac (some of the manual's revision pages were done on the Mac). And if the user is actually familiar with the Mac, there are some discrepancies that take a while to get used to. I especially kept falling in the trap of trying to close individual windows from a box in the upper left-hand corner, when on the IBM it is actually done by clicking on the word "Quit" in the upper right-hand corner. If you switch between the Mac and the PC, idiosyncracies such as this can cause unusual brain loop functions and drive you temporarily insane.

Secondly, the manual also spends a great deal of time discussing the importance of different types of timbres, synthesis, algorithms, and whatnot on the way to getting the user into the program. Even though they are important to understanding the program, all of these could have been set up as appendices or later chapters. Of the nine chapters in the manual, the user only gets into the real guts of the program in Chapter Seven.

The company also makes continued reference to its flagship hardware product, the FDSS Studio, which has more functions and capability than the strictly-software FDSOFT. The constant references back to the superior Studio product might give you the feeling you're missing something. By the way, FDS stands for Fourier Digital Synthesis, named for the 19th century physicist who first set down the concepts of harmonic analysis. It's nice to know why the product you're working with is called what it is, I always say.

## CONCLUSIONS

FDSOFT is not for the faint of heart. You do have to learn some basic techniques of waveform modification, and this includes getting a basic understanding of the physical and mathematical construction of sounds. Also, your PC has got to be as fully outfitted as a Sherman Tank in order to run the system. If you're missing any of the vital hardware components – mouse, color graphics adaptor, MPU401, 640K RAM – you don't get much out of the package. You don't even get to pass go, because the software usually sends you back to the prompt.

But for \$250, there is no reason not to take a very good look at this package. Combining, as it does, additive synthesis and resynthesis capabilities for your sampler, it definitely deserves further investigation. A software package that straightens out the rough edges (literally) of your samples as well as giving you the opportunity to reshape existing sounds and create new ones from scratch is certainly worth the time and effort, as well as the money. ■

*Thanks are due here to Synthony Music in Scottsdale for providing sampling equipment at zero hour.*

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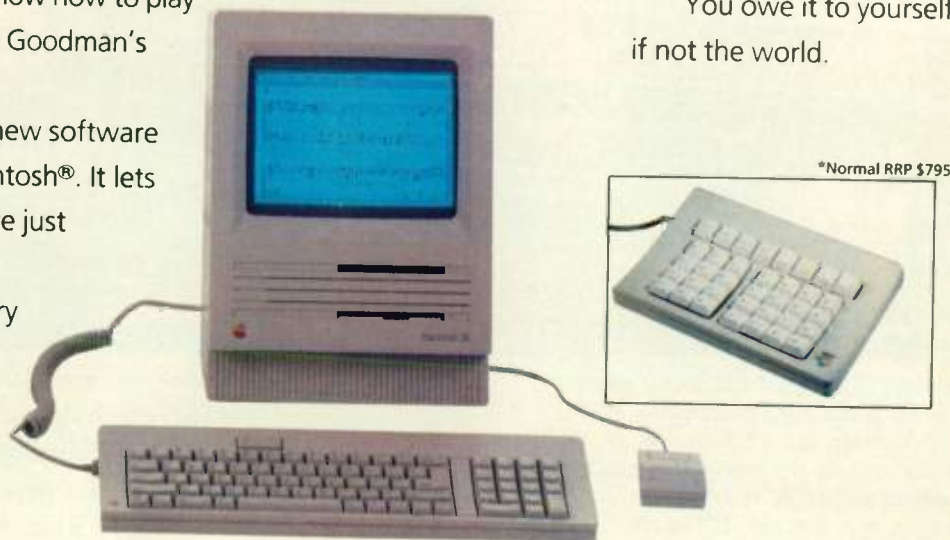
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# USER GROUPS

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Illustration Colin Cantuelli © 1988 Crystal Chip Inc.

THEY MEET EVERY first and third Thursday of the month at the Digital Music Center (DMC) on 46th Street, just off Broadway. At this particular meeting, the twenty or so people in attendance are staring at a Mac SE. The SE, wired up to a Kurzweil 250, an Akai S900 sampler, the SPI2 and a host of other synths, is running Intelligent Music's Jam Factory. It sounds great. Steve Friedman, the head of the music special interest group (SIG) of the New York Macintosh User's Group (NYMUG), is explaining the differences between Jam Factory and M, two programs for the Mac.

At the same time, only 25 blocks from the DMC, about a hundred dedicated Commodore Amiga users have gathered for their user group meeting at the New York School of Visual Arts. They are awaiting a demo of what promises to be some very hot new graphics software for the Amiga, along with a demo of Soundscape Pro MIDI studio from Mimetics.

Feel like you're missing out on something? If you haven't checked out a user group, you just might be. User groups are an excellent source

**No matter what computer you own, there is probably a user group out there somewhere which can help you take better advantage of your equipment - providing useful information on everything from music to robotics. Heck, it may even be the new age alternative to the singles bar.**

*Text by Stefan B. Lipson.*

for information, and you don't have to be a Class A nerd to participate. Computer scientists, video freaks, animators, artists, hackers, and yes, musicians come to these meetings.

Although they in some ways resemble a Jim Jones cult, don't be fooled. Many of those in attendance are anxious to share information, to compare notes, to learn, and to commune with the remarkable world of microcomputer technology.

## ORGANIZATION

Here's how the user groups work. At the most general level, the groups are geared towards a particular computer manufacturer,

such as Apple, Atari, Commodore, or IBM (and clones). These groups are further broken down to be more machine specific. The groups may break down even further into special interest groups. The SIGs focus on specific computer topics such as graphics, video, desktop publishing, or music. They may also be divided based on profession. Some cities have SIGs for lawyers, doctors and so on. There are also SIGs for particular programs such as Lotus and dBase III.

Membership to a user group, like lunch in America, is rarely free. Dues will usually run you about \$30 depending on the group, but considering what you can get out of it, it's an excellent deal and to your advantage to join.

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## WHAT YOU GET

A group usually has general meetings once or twice a month. These meetings do not cover any particular area and instead provide a good overview of available products and new developments. User groups aren't controlled or owned by the manufacturers and you can therefore get honest information about the machines that you wouldn't otherwise hear. For example, Apple's difficulty with fans in the SE has been discussed in user groups (and also on line), as has the IBM AT's propensity for eating hard drives (discussed in PC magazine, April 29, 1986). Information of this sort is not the kind that you are always likely to hear from your neighborhood dealer. People can answer your questions and helpful information may come from individuals who aren't musicians, such as hackers or others interested in some other creative microcomputer endeavor.

The general meetings are also a good source of information on peripherals; items which are to be used in conjunction with your computer, such as printers, plotters, scanners, and digitizers. Different people with different levels of expertise are generally present at the meetings and offer their knowledge when the need arises.

Many of the people at user groups take their machines quite seriously and personalize their computers in much the same way that you personalize a musical instrument. You can therefore expect to get a lot of information from people about other system add-ons such as co-processors, accelerator boards, disk optimizers, tape back-ups, and other interesting stuff. If you don't know what these things are, you'll be able to learn about them at a meeting.

User groups provide a great education just in the buzz word department alone. Software and hardware demonstrations are pretty common and they afford members of the group a chance to see a number of new products in depth. The demonstrations also let you see the product and ask questions without having to worry about a salesman trying to push it on you. In some instances, because a user group represents so many potential customers, a company will send a representative to a meeting to discuss a product and really show what it can do. In addition, some of the groups have been able to establish discount programs with different manufacturers.

There are also some very useful programs sold through user groups which are not always commercially available. You can get a lot of public domain programs and utility disks which can really help in a number of ways. Included in this are screen utilities and MIDI programs, not to mention terminal programs and games. User groups will also often sell cheap diskettes and magazines at each meeting. Some of the groups publish their own newsletter or journal. In many instances, these are more informative than more well-known magazines because they don't have to worry so much about advertising revenues or general appearances.

User groups often have their own networks

available for free which can save you money when sharing data. The user group on-line networks are usually accessible only to those who have joined the group.

User groups have also been known to organize fairs and expos, showing off the particular machine to which they give their allegiance. These will run from one to three days and often have over 1000 participants.

## SPECIAL INTEREST GROUPS

One of the best features of a user group and a SIG is being surrounded by and meeting people who don't look at you as if you are from the Planet Goofy. SIGs of course provide all the services of a user group as outlined above, but they also let you focus on a particular application with people who are similarly directed. It's somehow reassuring to be in a room where everyone understands the word MIDI to describe a computer protocol and not a skirt length. Music SIGs focus on hardware and software which is significant to musicians. Hardware is discussed as it pertains to musicians, and you can learn a lot from listening to other people's questions. It's amazing to see how many different ways people can put this stuff together.

If you really start getting into the computer itself you may want to check out the ACM, the Association of Computing Machinery. The ACM is an internationally recognized umbrella organization containing a number of exceptionally well-organized special interest groups including the phenomenal SIGGRAPH, the computer graphics group.

Surprisingly, there is not a Music SIG for the ACM but they do offer numerous others including everything from operating systems to robotics.

The user groups for all of the different machines are too numerous to list here. However, if you call the appropriate number below, the manufacturer of your machine will be able to provide you with a user group or groups nearest you. If you're interested in a particular SIG (shall we say music?), call the user group number and ask them which SIGs are supported. They will give you additional numbers so that you may find out when and where the groups meet.

A number of software packages are also available which support user groups. To find out if your program or application has an independent user group, call the manufacturer. ■

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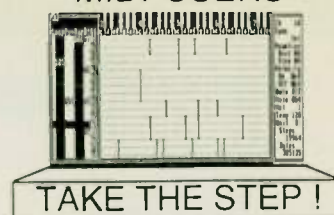
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# C-Lab Creator

## MIDI Sequencer for the Atari ST

Desk File Functions Quantize MIDI Options Edit Copy

ENR	ARRANGE	A	B	C	D	MU	TE
-	4 DX7 SysEx	1				1	
	1 Intro	1				2	
	1 Rhythm 1	2				3	
59	Rhythm 1	2				4	
117	Chorus	3				5	
121	Rhythm 1	2				6	
179	Rhythm 2	4				7	
206	Rhythm 1	2				8	
264	Rhythm 3	8				9	
291	Rhythm 1	2				10	
349	Rhythm 2	4				11	
377	-Segue 1	3				12	
419	Chorus	2				13	

STATUS	PATTERN: 2	CHANNEL
*	1 Ld Horn	TXS16 A 1
	2 Vibes	DX7 II A 2
	3 Bass	E-max A 3
	4 Solohorn	S900 A 4
	5 Rhythm	D50 A 5
	6 Orchest.	Kurzweil A 6
	7 Bagpipes	DX7 A 7
	8 BassDrum	SP1200 A 8
	9 Snare	SP1200 A 8
	10 Toms	SP1200 A 8
	11 Crash	SP1200 A 8
	12 Ride	SP1200 A 8
	13 Guitar	E-II B 9
*	14 Bazouki	E-II B 9
	15 Tamb.	SP1200 A 8
*	16 Spoons	Linn9000 A 10

TRACK: 1
CHANNEL A 1
QUANTIZE 768
TRANSPOS
VELOCITY
COMPRESS
ACCENT
LOOP
DELAY
LOWEST
HIGHEST
GHOST OF

ST owners looking for flexibility and control in a sequencing package may well be on their way with this German offering. Review by Lorenz Rychner.

MIDI SOFTWARE PROGRAMMERS in Germany produced lots of programs for the Atari ST computer when it was first released in that country, partially because the price of the Apple Macintosh there is considered out of reach for many MIDI users. By the time the ST took a firm hold in the US, German developers had gained a headstart. But many of their products have not been released here, primarily because of distribution and translation difficulties.

C-Lab's Creator, which is produced in Hamburg, has recently been picked up for US distribution by Digidesign (famous in their own right for the Softsynth, Sound Designer and Q-Sheet programs). I saw the Creator program last year in its first release version, with a dot-matrix manual written in German. It worked just fine. The current edition is version 1.3, and the manual is in English, complete with a detailed index and glossary, bound in a sturdy ringbinder that lies flat when open. The explanations are divided into a "shallow end" (subtitle: If you have never used a computer before . . .), and "deep end" where it gets serious. Nice job.

78

The Creator is a mature product, written with both the novice and the expert in mind. It holds its own when compared with the most ambitious MIDI sequencers, and it includes MIDI options that the more adventurous users will enjoy: System Exclusive dumps of Voice data; System Exclusive parameter access for programming during play - like in the good old days of knobs and sliders; fine resolution even while sync'd to MIDI clock; selective MIDI Merge; loading songs from disk while a song is playing; de-mixing of composite sequences by MIDI channels; real-time clock display; recording of events during count-in; variable quantization; selective filtering of any MIDI bytes; and many more useful features that deserve a close look.

The program uses a copy protection scheme which requires that a key be inserted in the connector next to the MIDI ports on the ST before the power is turned on. Once the program is loaded, the first screen to appear after the logo is the real-time Record/Play screen. It is jam-packed with goodies, showing all the data and user names for Arrange (song mode), Patterns, Tracks, Locator (Cue/Punch/

Loop) points, and the real-time Start/Stop/Continue command boxes that are made to look like the panel of a tape recorder - complete with fast forward and rewind. More information is available with a click of the mouse, from pop-up overlays and drop-down menus.

### STRUCTURING SEQUENCER FILES

Creator records MIDI data as events, listed in up to 16 tracks per pattern. Each of the 99 patterns can be as short or as long as the available RAM allows. While one pattern could contain all the music and control data for a whole song, it is usually more desirable and memory-efficient to use the Arrange feature, a play list for the order of patterns, including repeats and overlaps.

The total RAM contents are saved to disk as a Song. Single patterns can also be saved to disk, as can individual tracks - which are saved as sequence files - and the tracks in the patterns can contain System Exclusive banks for a librarian function.

Automatic back-ups are written to a disk whenever a filename is saved that already exists

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on that disk (the user can accept or cancel this from an alert box). This is just one of many thoughtful features in this program – it is truly user friendly. An empty song that contains the user's preferred setup can be saved to the program disk as Autoload.Son, to be loaded at the same time as the program.

The flexibility of the Arrange feature makes it possible to break down a composition in many ways. There's no need to record all the parts of the introduction into one pattern, followed by all the parts for the first verse in the second pattern, etc., as with many sequencers that force the user to work by vertical sections of a score. If the creative juices demand that the bass part be recorded in one take, from intro to coda, so be it. It can become a pattern that will play concurrently with patterns containing shorter sections. And once recorded, a pattern can immediately be written into the Arrange list, so that overdubs can be made to the groove.

It's hard to get lost because the program lets the user give everything a name, even before the recording takes place. The song name appears in the upper left corner of the screen. The left third of the screen is taken up by the Arrange list; 13 entries are visible, more can be scrolled into view, showing the starting bar, the pattern name, and the pattern number.

Four columns (A, B, C, D) are available for entering the pattern numbers. The program keeps count of the bars in each column and terminates a pattern when the next pattern in the same column starts. This makes overlaps and the running of concurrent patterns easy. In the above example, the bass pattern that runs for the length of the entire song would be entered in, say, column A, starting at bar 1. The shorter patterns that represent intro, verse, chorus, verse, break, etc., for other instruments would go into column B, in the order of their starting bars. This leaves two columns where up to 32 tracks could be active for all or part of the song

tracks for the duration of the current listing of the pattern). The latter can save a lot of memory, as it eliminates the need for copies. For example, if the chorus of a song is played three times, and the second and third time it contains a new part for added interest, only the last, fullest version needs to be recorded. When entering the chorus pattern in the Arrange list for the first time, the track(s) for the MIDI channel(s) of the yet unwanted instrument(s) can simply be muted. The same goes, in reverse, for repeats during end fades where a thinning out is often desirable.

## RECORDING TRACKS

Any pattern can be selected for recording, and any of the 16 tracks can be the first to receive data. Even before the recording, two

names can be input per track that will help to avoid confusion. The track name doesn't have to show the instrument or MIDI channel, it can be more specific about the music (ie. HighLead, FatBass, etc). The MIDI channel can be defined by number, and it can be given a name that will stay with the channel number in all subsequent patterns.

The manual suggests that this be used for the instrument, assuming that each instrument stays on the same channel for the duration of the song. The track list of a given pattern will look as informative as this example: Track 1: FatBass/D50/Channel 2; track 2: HiLead/DSSI/Channel 3; track 16: Drummix/DDDI/(blank). When the (non-existent) MIDI channel zero is selected, a blank space appears against the track. This means that the track contains data on

C  
O  
M  
P  
U

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**Playback** "The program keeps count of the bars in each of four available columns and terminates a pattern when the next pattern in the same column starts. This makes overlaps and the running of concurrent patterns easy."

containing program changes, control changes (MIDI Mix via controller #7!), SysEx data, last minute overdubs, drum parts dubbed in from a drum machine, etc.

The following changes can be entered against each listing of each pattern: Pitch Transpose (with the nicety of a disable function for selected MIDI channels, to avoid unwanted re-assignment of samples or drum machine note assignment); Pattern Delay (a time-shift either forward or backwards for all tracks in that pattern, often used with the next feature); Upbeat/Cut (a clever way of dealing with recorded events before beat one, during the count-in of a pattern); Track Mute (any or all

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► whatever channel the messages were received during real-time recording. It could be a track with data on several MIDI channels at once, like a composite drum program, or a transfer from another sequencer. Such transfers are possible on as many simultaneous channels as desired. A de-mix by MIDI channel function lets the program split the composite track into as many tracks as the incoming data had MIDI channels, or a single channel's worth of data can be extracted. These tracks can then be edited as if they had been recorded from a controller, one by one, in the usual manner.

**C**  
**O**  
**M**  
**P**  
**U**  
**T**  
**E**  
**R** For count-in, you can set up a precise amount of bars, beats or fractions of beats. Although the bell-like tone from the ST monitor is less than ideal for use as a metronome, the program takes care of this problem. Simply activate the MIDClick feature, which sends out a high note number on channel one, at low velocity. If this isn't suitable, the default settings can be changed easily. The MIDClick can be active during record only, or also during playback.

How about a remote recording feature? The following commands can be assigned to keys on the master keyboard: start, record, stop, punch, pause/continue, rewind, drop in/out, forward, select track #1, advance the track number by one – and you can select the range of keys for these commands. The program then filters out the note-on data. There should always be one or the other end of the keyboard available for this feature because the program can transpose during the recording. If the lowest octave is assigned to the remote control, simply record the bass higher up and have the program transpose the incoming notes, without the need for later editing. For drop in/out, a footswitch that's connected to the master keyboard can be used, initially defaulting to MIDI controller #65 (portamento on/off).

The locator simulates a tape transport locator, with left and right positions. The current position is displayed as bar number/quarter note/current quantize resolution/ $\frac{1}{768}$ th note. The same details are given for left and right locator positions. In addition, a real-

time counter shows elapsed time in hours/minutes/seconds/milliseconds. This information, together with the displays for sync delay, tempo and time signature, lets the user know exactly where he or she is.

As if this was not helpful enough, the program remembers up to eight locator settings that can be entered into memory with Shift and Function keys 3-10, then instantly recalled by pressing the function keys 3-10. The program will jump to those positions without further ado. And the current locator positions can be changed to reflect the current bar display by simply clicking the right mouse button.

The locator points are used for a number of cycling modes, with or without count-in, and with Autodrop (automatic punch-in and punch-out). In addition, the recorded data between the locator points can either replace the previous take or can be recorded as an overdub. Clicking on Undo removes repeated passes, one by one, although they're all contained in the same track. How can the program do this while all the events seem to be merged? By assigning different MIDI channels to consecutive takes while maintaining the output on the track's selected MIDI channel. The Undo function then peels off layer after layer, or a single take can be extracted by its MIDI channel. And a Check mode takes out duplicated notes that may result from overdubs. What's amazing is how easy all this is when you're actually doing it. The manual explains it all pretty well, and plenty of cross-references are given for features that interrelate.

Every tricky situation seems to have been anticipated, and a cure is ready. What if your master keyboard doesn't have Local Control Off? No problem, take advantage of the Auto-Off Channel feature in combination with the MIDI-Thru functions, and you won't get a MIDI loop that triggers every note twice on your master keyboard. Input filtering takes care of unwanted data, and it distinguishes between channel pressure (monophonic aftertouch) and individual key pressure (polyphonic aftertouch). But the output filter menu is separate and works independently for each track, so what came in

doesn't necessarily have to go back out.

Other recording considerations are: Quantize, MIDI Thru/Merge, Sync Delay, Clock In/Out, Start/Continue Plus 1/96 Note, No Push Near I. In brief: Quantizing (error correction) can be done during recording, and during playback. The program's finest resolution is 192 clocks per quarter note, or 768 clocks per bar in 4/4 time. At a tempo of 120bpm this works out to be 2.6 milliseconds per clock. Not the finest resolution available (some sequencers go as fine as 1ms), but still very fine indeed.

Each track can be quantized to a separate value, according to several logic systems: Quantize All, Separate Note On and Off Quantize, Note On Quantize, Musical Quantize I, Musical Quantize II. The latter may be further modified by a Capture Range, where percentages of accuracy and timeshift can be set to retain a human feel. Great care was taken to make the quantizing process reversible. But if all else fails and the damage was done despite the latitude that the program gives to the user, the Humanize function can add life back to a track that feels too rigid. Yes, you can have it both ways.

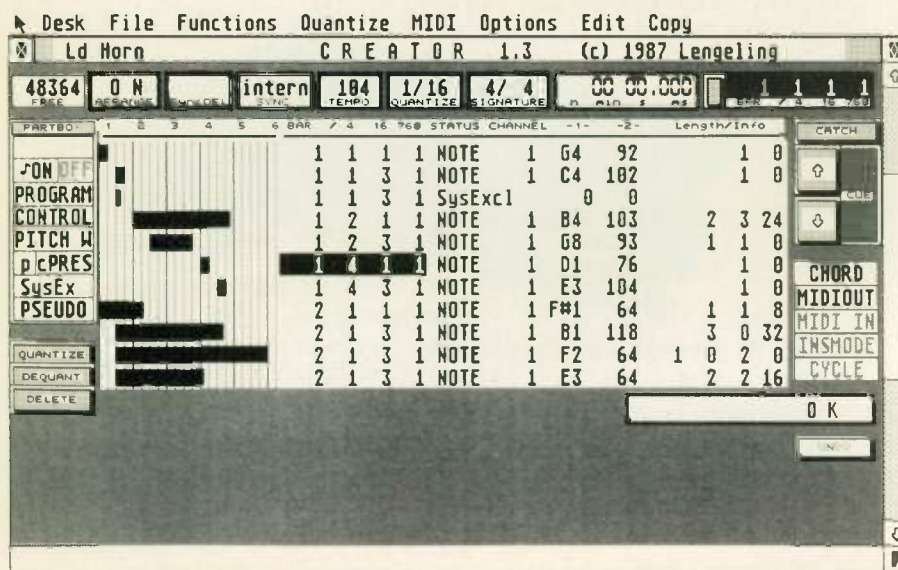
MIDI Thru/Merge can re-channelize a data stream between MIDI In and Out of the computer – just the thing for owners of the original DX7 that only transmits on channel 1. In the process, existing data from within the RAM can be merged, so that overdubs join prerecorded data going to any slave on any channel.

Sync Delay advances or delays the outgoing MIDI clock, which can prod slow microprocessors in your MIDI instruments into action ahead of time – not to be confused with track delay where individual tracks can be pushed forward or delayed by clocks ( $\frac{1}{768}$ th notes) or milliseconds. Experienced users will recognize the value of this feature for fine tuning of the feel or for digital delay effects. All MIDI System real-time messages (Clock, Start, Stop, Continue, Song Position Pointer) can be filtered out while receiving or transmitting.

Start/Continue Plus 1/96th Note is a feature that adds a clock to incoming Start or Continue commands, putting the program ahead by one clock. No Push Near I is a selective quantize feature that only affects events during count-in.

Synchronization is handled in such a way that the program retains its resolution of 768 clocks even when sync'd to MIDI clocks at the rather crude resolution of 96 clocks per bar in 4/4 time. A rather remarkable feature, this, because other programs need their own hardware interface to achieve it. Using what the manual calls Interpolation MIDI Sync, the program constantly measures the distance between two incoming MIDI clocks, calculates the tempo and inserts its own  $\frac{1}{768}$ ths into the spaces between them. A useful chapter in the manual deals with other synchronization and SMPTE-to-MIDI converter devices. A tempo-tap feature will impress those who need tempo changes done by feel, in the studio or on stage.

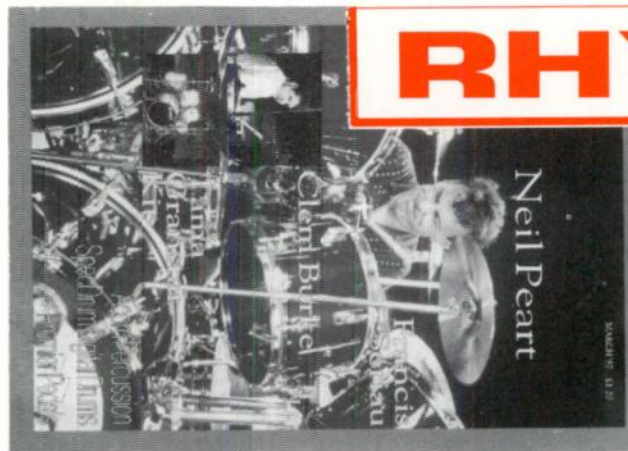
Other useful features that make the recording easy are impossible to describe in





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detail in the limited space I have. Hide is an independent muting feature affecting any desired tracks; Solo works the same as it does on mixing boards; Ghost Of is a simulated track copy that plays another track without the need for an actual copy; Loop is an alternative to the Cycle modes; Lowest/Highest can restrict the range of notes played, forming splits and zones.

## THE EDITING FEATURES

Before I get to the editing of individual events, here are some parameters that can be changed globally per track. Velocity can be dealt with by increasing or decreasing the track velocity values and by compressing/expanding the values, even to the point of switching velocity off by changing all values to a fixed velocity value. Tracks can be transposed by  $\pm 96$  semitones, separately from the transposition of patterns in the Arrange list.

Several copy, cut-and-paste, and delete functions are available, as well as Track Merge. Mixdown 16 Tracks, Demix (Unmerge) by

**Timing** "Synchronization is handled in such a way that the program retains its resolution of 768 ppqn even when sync'd to MIDI clocks at the rather crude resolution of 96 clocks per bar in 4/4 time. This is remarkable."

MIDI Channel, Extract Data by MIDI Channel, Double Speed/Half Speed, Length (Duration) Quantize, Minimum/Maximum Length, Add/Subtract Length, Delete Short Notes, Check/Delete Duplicated Notes and Events, Delete/Keep Events, Transform – these are all lifesavers when the pressure is on.

Even more detailed work is done in the Event Editor. A graphic bar display shows MIDI activity within the bar on a grid of beats and currently selected quantization values, with Note On and Duration. Then the events are listed in text columns showing bar number, beat, quantization resolution, 1/768th clocks, Event type (Note, Program, Control, etc), Value 1 (for notes: pitch), Value 2 (for notes: velocity), Length/Info (for notes: duration). Note Off is not displayed unless requested.

Program changes, Control data, Pitch-bend data, both kinds of Aftertouch, Exclusive and Pseudo Events can all be displayed in isolation. Finding a note or event is easy, the mouse can be used to walk through a track in several ways, and notes can be played one at a time. Notes starting at the same time can be played together by selecting the Chord function. Several ways of changing values, individually or in groups, are implemented. Anything can become anything else, and the screen never needs to show more data than is necessary. A bar can play in a cycle (loop), step quantizing is available, insertions can be made, and Catch brings up the event that's nearest to the current bar position display.

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Pseudo Events are internal control events that will delight the user, although they're not strictly MIDI events. Three of these can also be initiated and recorded in real-time from the screen: Tap Tempo, Track Muting, and Track De-muting. Others include Absolute and Relative Tempo, MIDI Song Select (for transmission to external devices), Sending Specified MIDI Bytes, Turning MIDI Clock Transmission On and Off at preprogrammed times. Further Pseudo Events deal with System Exclusive, where data dumps can be initiated, recorded and transmitted, turning the sequencer program into a patch librarian or into a real-time programmer. And the user can type in text (reminders, data dump bank names, bad MIDIlot jokes) anywhere in the track. A track can become a complete notepad, describing the project and setup for future reference, or instructions to the engineers if the gig disk is sent to the studio via courier.

## WHAT'S NEXT?

How about 64 MIDI Channels? A hardware attachment called "Export" adds three more MIDI Out ports, and any track can transmit through any of the four busses. This optional extra connects to the modem port on the ST. In these days of multitimbral instruments this could just be the ticket. If you have a TX802, a Kawai K5, a Korg DS8, a Casio CZ, a Korg DSM1, or a drum machine and a few MIDI controlled effects, you'll appreciate this nicety. For the record, I did not get to test this option. But it's just as well, or I would never have finished this article . . .

## CONCLUSIONS

The Creator does everything one expects from a sequencer. It does it with a minimum of fuss, and only a few of the more exotic functions have to be dealt with in the course of simple projects. All commands can be done from the computer keyboard or with the mouse, and the most used real-time record functions can be done remotely from the master keyboard. Two screens are all it takes, the rest comes your way from pop-up boxes and from drop-down menus.

The learning curve is smooth, the manual explicit, and I found myself surprised at the simplicity and logic of many functions. The only chapter that left me uncertain was the Transform feature – it allows so many choices that I got lost at first. But as always in this program, there was a way out: Quick Transform. The manual's chapters on MIDI and System Exclusive make for better reading than many other sources I've seen. Now if my editor would only let me hint about the other program that the same company is expected to release in Hamburg in the next few weeks (I have a friend there who has seen it. He said, "ve vill send you vone . . .").

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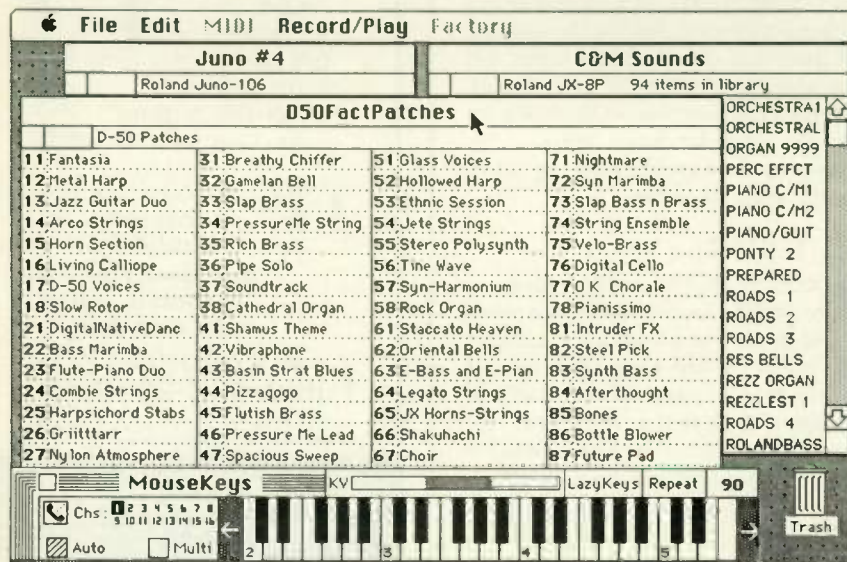
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# Opcode D50 Librarian Software for the Macintosh

The company's venerable Macintosh librarian program has a new version dedicated to the synth market's latest craze. Review by Chris Many.



PATCH LIBRARIANS COME in many shapes and sizes – from a generic patch storage program to a full-blown editor for a specific synth. Many variations exist in between, but the basic premise is that storing thousands of sounds in a computer is cheaper and more convenient than spending \$75 per sound cartridge, not to mention the ease with which you can organize or reorganize sounds. Additionally, patch generation features of varying degrees of complexity have become a standard feature on recent patch librarians, providing the capability of quickly building up the library you bought the program to organize. Opcode, who adapt their librarian program for specific synths, has created a new version for Roland's D50 and D550. In other words, the D50 Librarian program uses the same documentation as the DX7 or CZ Librarian, with a supplement for D50 use.

The program works in typical Macintosh fashion, so you can expect the usual drop-down menus, windows and point and click interface – basically a very simple, medium frills approach to patch organization. Banks are loaded in and displayed on the current patch window. By pointing to the patch you want to hear, it becomes the active patch; and by playing your synth, you'll hear the sound you selected. If you want to rearrange sounds, it's a matter of dragging sounds from one location to the other.

Reorganizing sounds from one or more banks is easy as well. Just open up a new patch window and load in the second or third bank of sounds, drag the sounds from one bank to the other and

you have a new setup. You can edit the names of the sounds to your liking.

You can also load in individual sounds from your synth, so you're not confined to the bank format; i.e. having to load in all sounds to transfer just the one or two you wanted, as some librarians would have you do.

Opcode's Librarian also allows you to create another type of file called a library, which will hold any number of patches, alphabetized by name. If you combine all of your banks into a library, it then becomes much simpler to pick and choose for building up new banks. Every patch in the library must have a unique name, so duplicate names are not permitted. The program also has a nice option that prevents duplicate sounds from being stored in the library, even if the names are different. By selecting the "No Duplicate Sounds" function from the menu, the program will search through all the sounds in the library, comparing actual patch parameter information, and if it finds one that is exactly the same, you'll be informed.

Opcode's Librarian also comes with a patch generation program called Patch Factory. While this feature does not create new sounds from scratch, it does employ randomizing and recombining techniques to make new sounds in several ways.

The Shuffler is one of the basic Patch Factory methods, requiring you to first open a bank of already existing sounds to be used as the "inspiration bank." The Shuffler then selects parameters or groups of parameters from randomly selected patches and shuffles them,

creating a new bank of sounds. For example, you might get a sound with the Attack portion of one envelope, the Sustain of another, being modulated by an LFO from another, etc. If you use a bank of flute type sounds as your inspiration bank, you'll generate new flute sounds; if you use a general bank with lots of different sounds included, you'll get more of the same. As with most patch generation programs, most of the sounds are useful as a starting point, but not necessarily a finished or useful patch until it's been mucked around a bit.

Another patch generation function allows you to create shades of sounds, going from one type of sound to another. Take a trumpet sound and shade it towards a string sound and you'll get gradient change from one sound to the other across 32 patches. Constrained random also requires two individual sounds, using the parameter values of the upper and lower limits of each parameter for the randomly generated patches. Shading and constrained random are really only available for the DX/FB01 Librarians, so I couldn't hear the results on the D50 program I was using, but you get the idea. The D50 version does, however, allow you to load and store separate patch or reverb data, as banks or individual sounds.

There's really nothing new or earth shattering in this product, which stands as a functional librarian for a number of synths. Apparently, if you have two or more Patch Librarians, you can combine them into one program allowing you to work with multiple synths (as long as they're the same version numbers). It seems a little short-sighted to ask users to buy two, three or more identical librarian programs, making sure they are all the same version number and then install and combine them together. Opcode indeed has all their librarians combined in one program under the guise of Master Librarian, but it is distributed exclusively through Synth Bank and sells for \$1000.

Overall, it's a working librarian with a few frills thrown in for good measure. None of these features are new, but all the bases are covered; so if you don't mind buying several different versions of the same program to store your sound libraries, or just have an enormous collection you want to organize, then check out the Opcode Librarians.

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Photography Ed Colver

From the earliest Buchla synthesizers to the latest digital samplers, Carl Stone has created experimental electronic music for nearly twenty years. Here he describes how he did it then and does it now, and still manages to make a living with his eccentric musical inventions.

*Interview by Lee Branst and Ed Dorobek.*

**S**HIBUCHO. DONG II Jang. Wall Me Do. No, this is not your first lesson in Japanese or Korean. Rather, these are the names of a few of Carl Stone's most representative pieces. They also happen to be the names of some of Stone's favorite Los Angeles-area Oriental restaurants.

Most importantly, perhaps, they represent Stone's sense of fun, of pricking his own balloon before it gets too inflated. In fact, on his 1983 album, *Woo Lae Oak*, Stone included snippets of reviews along with some biographical information. Just for grins, however, Stone also included one written in Danish and another that read, "Recommended for people with insomnia . . . Somebody slip that boy a Ray Campi album."

It would certainly be easy enough for

Stone to act high-falootin'. He studied at the newly-opened California Institute of the Arts with Morton Subotnick, who is known for his establishment of the first electronic music studio and making the first electronic music record, *Silver Apples of the Moon*, both in the mid-'60s. While at Cal Arts, Stone used the earliest synthesizer equipment developed by Donald Buchla. Stone's electronic music experimentations have taken him around the world, and he recently received a six-month grant to study and compose in Japan, beginning this fall.

So Stone is plenty serious about making music. On the other hand, "Music-making is a joyful activity," according to Stone, "and I try to convey that in the music." This serio-comic tension is just one of Stone's dichotomies. His compositional style revolves largely around intricately

massaging recognizable or "found" music until it becomes a broad pastiche, at times creating a feeling of floating in space.

Another example revolves around Stone's fledgling experimentalism in LA's suburban San Fernando Valley. Although he grew up playing classical piano, he became part of an "art-rock garage band that did no covers," complete with Farfisa organ routed unconventionally through Vox fuzz box and wah-wah. He loved the '60s mood of artistic freedom, but chose electronic music because, "I thought I could get perfect control."

With such a background, Stone says his desire to attend Cal Arts was only natural. "They were marketing it as 'The Citadel of the Avant-Garde.' It was the first year. A lot of artists were coming. There was an



incredible amount of facilities, money and support. I just knew I had to go."

Unfortunately, he flunked his audition with Subotnick. "I had no functional experience in electronic music and hadn't worked with synthesizers or in a recording studio. I didn't really know that much about the avant-garde tradition. He basically told me, 'Go home, listen to Stockhausen, read *Die Rhié* (Stockhausen's electronic music publication), come back in a couple of years, and we'll see."

Stone was determined, however. He took the advice of some friends who had done development work for Cal Arts. "They said, 'Just go, do everything a normal student would do, and maybe you'll get absorbed.' So that's exactly what I did. I showed up the first day, took the required courses, and also signed up for studio time."

At first Subotnick said that non-students could not sign up for studio time. The radically different days of the '60s caused Subotnick to relent, however, reasoning that it was arbitrary to let only students use the studio.

So into the studio he went, sharing facilities with about 70 others. "I worked very hard. But with 70 people using the studio, it didn't last very long. So at the end of two semesters, Subotnick decided to cut back to 12 users. To my amazement, my name was on the list. Subotnick had been observing from behind the scenes and saw that I was serious and had some talent, but had forgotten that I wasn't a student. When he sent my name down to the registrar for a full scholarship, they sent word back that I wasn't even enrolled. So he enrolled me, I got the scholarship, and I stayed there from 1969 to 1975."

While at Cal Arts, Stone developed a number of musical influences. His early heroes included such "serious" music experimenters as John Cage, Iannis Xenakis, and Gyorgy Ligeti, all of whom broadened the definitions of music while tightly controlling its presentation. Later influences were so-called "minimalists" Steve Reich and Philip Glass.

The school allowed Stone the freedom to experiment with the earliest synthesizers and sound processors. "I learned electronic music on the early Buchla synthesizer, which was one of the first voltage-controlled systems. Voltage control made it possible to put things under a kind of program control. Automation became possible. You could also control multiple parameters simultaneously. You could use one voltage control device to change not only the frequency of a bank of oscillators, but also to change the filter characteristics, open a gate, etc.

"The Buchla systems we were using were very open and flexible in terms of assigning any voltage control device to any audio device. There was no pre-disposition of one piece of gear to another. It didn't have a

keyboard. I think Buchla was philosophically very opposed to the regular black-and-white keyboard. That eventually caused him a lot of problems in the market place. But that really forced us to open our minds and our thinking in terms of what music is and how to go about making it. We were freed from the tyranny of the keyboard and had to think of new ways to control our devices."

In addition, the synths did not provide any preset sounds. "Basically you started from scratch. Nothing was connected to anything. Your task as a composer was essentially to design the system for your composition. The design came in what you connected to what and how you controlled what you had connected. You had 16 oscillators, 12 filters, and a myriad of other processors. The possibilities seemed infinite. A lot of us were overwhelmed. I found that I needed to reduce the number of choices. Even with all this fantastic sound-generating gear, I was primarily using very simple sounds – sine wave generators carefully tuned very slowly over time. The material I was doing generally had an Oriental flavor because of the time scale, the purity and the relationship to the harmonic series."

As far as control is concerned, Stone was not doing much manual interaction. "Everything was pretty much set up. You'd push a button and start a whole cascade of controls. The envelope generators, sequencers, and random voltage generators were used more as controllers. The ribbon controller that Buchla made never really did work right. We had a touch-sensitive keyboard that could be used, but it was also moisture-sensitive. When the air

conditioning would go out, we'd sweat like pigs. Then we'd touch the keyboard and Kaboom!"

STONE THEN GRADUATED, unfortunately ending his free use of a multi-kilodollar synthesizer. "There I was, a composer straight out of school with no track record and no equipment. What's a poor boy to do? So I became music director at KPFK (an extremely eclectic, alternative radio station in the Pacifica chain) in Los Angeles. I was still interested in composing and in challenging myself to make do with whatever I had available. At the radio station, that was mostly microphones, turntables, and tape recorders – no electronic musical equipment at all."

His first composition under his new constraints involved using *musique concrète* techniques on 'Harpsichord Rondo' by Henry Purcell. The resulting piece was 'Sukothai.'

"I recorded it on the left channel of my first tape recorder and also on the right channel just a little out of sync. Then I mixed that to mono and recorded it in the same way to my second tape recorder. I went back and forth until I had 1024 tracks. As the piece starts, you hear it as Purcell wrote it. Then you hear the two, the four, the eight. It gets denser and denser until finally you lose any sense of it being a harpsichord piece. All the small micro-details disappear. So you get this broad, gorgeous, harmonic expanse at the end, like you're hang-glider over the moon. This was a very critical experience, because the task was to work within limited ►





► means and somehow create something that was interesting, satisfying and musical."

**M**  
**U**  
**S**  
**I**  
**C** In 1980, Stone decided it was time for a change. "The impetus behind taped music was control. You set everything as good as it could possibly be for the best realization of your work. But then I found that there's another aspect to that, which is playback in performance. After you send the tape off, you have absolutely no control over that. So I was interested in continuing on to the next step, which was actually being present and controlling the means of reproduction in a concert setting."

He realized, of course, that no one would pay him simply to play a tape recorder. At the same time he gave up the idea of total control over the piece. "I thought maybe it would be interesting to do something live where some random factors could creep in. Maybe the results would be disastrous, or maybe they would be more interesting. So in 1981 I started using digital signal processing along with tape recorders in live performances. That was when I did my first solo European tour."

For the next few years Stone was primarily dependent on the Publison DHM 89 B2 audio computer. "The device was being marketed primarily as a studio signal processor, something that recording studios would use for mixdowns and the like. Something about it convinced me that it would be a very interesting live performance machine. So somehow I rustled up the bucks to buy one. It's a stereo digital delay/harmonizer with an auto-latch function, about five seconds of memory at full bandwidth. I was primarily using the auto-latching in live performance."

With the Publison, Stone created a number of pieces, including 'Kuk Il Kwan' in 1981, 'Shibucho' in 1982, and 'Dong Il Jang' in 1983. With 'Shibucho' for example, he started with a stack of popular records from the '60s. It included such hits as the Jacksons' 'ABC' and the Temptations' 'My Girl.' He then sampled the tunes in increasingly longer bits until the music could be recognizable to the discerning ear. The result was humorous, yet hypnotic.

He carried on in that vein until 1985, when the Publison was stolen. Stone decided to turn this unfortunate incident to his advantage and to change directions again. So, armed with his insurance check, he bought a Macintosh computer.

Today Stone's basic setup for live performance includes a Yamaha TX816, one or two Prophet 2002 samplers, a DX7 MIDI keyboard controller, and, of course, the Macintosh. "I'm also using my new DAT Machine that a friend brought back from Japan for me. I've actually gone back to some of the multiplicative, overdubbing techniques. Only now I'm doing that in the digital domain with two DATs or a DAT and an F1. You get some amazing results.

Because it's completely digital, there's no noise build-up, no distortion, and no tape saturation. Now I'm working on a project where I'm just developing a lot of textures using my DAT machine."

As far as software is concerned, Stone is primarily using the algorithmic program Jam Factory from Intelligent Music. "It's very responsive to real-time performance gestures using the mouse or the keyboard. It's very flexible and can yield some very interesting results. I've used Performer in some of my concerts, a turn-it-on-and-turn-it-off kind of thing. That's less interesting for me. I've also used the Opcode sequencer to store sequences or patterns and call them up *ad libitum* from the Macintosh or the DX7 keyboard. That way you're not locked into a particular form or structure. You have building blocks, a modular kind of composition available that you can build in performance. I've also had



some friends modify the code for some of the commercially available things. But I haven't gotten all the bugs out, so I haven't used those extensively in performances."

Like every other musician, Stone has a wish list for technological improvements. "My biggest complaint currently is the lack of memory in our samplers. I'm interested in either a lot of samples or very long samples. Without spending a few hundred thousand dollars for something like a Synclavier, the current state of the technology is not what I need. I do know some people that are very happy with their Mirage, but don't look at me. I think MIDI has done amazing things. I don't think anybody could have imagined a MIDI-controllable digital delay or mixer when MIDI first came out. But the fact that they exist is simply wonderful. What I would like to see – and I hope somebody out there reads this, invents it, and gives me a copy – is a MIDI-controllable DAT machine to control all of the auto-transport functions."

**O**NE OF STONE'S latest pieces is 'Hop Kim,' which is similar to some of his other creations in that it uses found musical material as a starting point. He started out with

Modest Mussorgsky's *Pictures at an Exhibition* and, "through various transformational procedures using the Macintosh and sampling, I give it completely different musical energies – Irish music, Celtic music, jazz, rock 'n' roll rhythm guitar, then give it a big push at the end." Due to his use of computers, his latest compositions have much tighter rhythmic and motific control than his pre-Mac inventions.

Besides his earlier recordings, Stone will also be featured on a compact disc due this spring. A company called Music and Arts is putting out a compilation of California electronic musicians which will include two pieces by Stone and works by Paul Drescher,

Maggie Payne, Paul Dimarinas, and Letitia De Compena. He is also involved in negotiations to record his own CD.

As to his upcoming schedule, Stone will be touring the East Coast in April, with stops in New York, Connecticut, Pennsylvania and Florida. He may also participate in a Danish music festival. Upon returning to LA, he will work on a new piece, which will be debuted in June. After that comes the Japan trip, running from October to March, 1989, sponsored by the Asian Cultural Council. He is looking forward to working in one of Japan's all-digital studios. "I also want to get hold of a portable DAT and do as much field recording as I can, both rural and urban sounds. Tokyo is the most fascinating urban soundscape I've ever encountered. There is a lot of material there for music-making."

Although Stone's compositional activities take up most of his time, he does manage a few outside pursuits. He still hosts a weekly experimental music show, *Imaginary Landscapes*, on KPFK. He also runs the



California office of 'Meet the Composer,' an organization which gives performance grants to composers. While on tour, Stone also performs related activities, like lectures, workshops, and seminars. When in Europe, he will often break off from the tour for several days and produce a show on American experimental music for a European radio station.

Thus, to be perfectly correct, Stone concedes that he does not earn 100% of his income from performances. Still, "I'm doing pretty well. I do feel blessed that I'm able to make some kind of a living without teaching or making music I'm really not interested in making. It makes me proud to think that I can make a living as a composer, but, of course, that's not the reason I compose. If the reason was only to make money, either I'd make different music or I wouldn't make music at all. I'd get into Wall Street or something."

So why does he continue to write music? "We all want some kind of ratification from the public or our peers. Maybe it's just wanting to say, 'Look, Mom, I can do it.' But we want to know somehow that we're reaching people. The desire to know that we can reach or touch people, which is an extension of having them pay to hear your music, is different from actually making music because you want people to buy it. That, to me, is a completely different impulse. I'd like people to come into contact with my music and make their own decisions."

Stone is fairly sanguine as to what the future may bring in terms of electronics and his music. "I'm almost willing to take anything that comes along. I'm confident, given my approach to music, that whatever twists and turns the technology might take, I'll be able to appropriate that and make interesting music. As computers get smaller and cheaper, as digital audio becomes more affordable, as we move toward the complete digitization of the audio chain, I just see incredible possibilities where we have complete program control over each micro-sample of sound material. I'd be happy to play in that kindergarten for a while."

Here we are, back to fun again. Stone says his music is played with the tensions of the old and the new, taking something old and making something new out of it. He says there are some extra-musical aspects to his music. He feels his use of '60s music is a reference to a social class of that era. He also feels that there are traces of irony in his work. As to that quality of playfulness, Stone says, "I enjoy making music, and I like when people get that feeling. There are times when my music actually makes people laugh. I like that too." Still, in the final analysis, Stone reduces it all to its least common denominator. "The way I prefer to listen to my music is simply music as music." ■

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# PATCH WORK

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## YAMAHA TX8IZ

### Thick Pad

Kenneth Herbst, San Antonio, TX

Actually a performance setup, Ken's suggestion is based on two voice patches - 'Ken Pad' (designed by him) and the preset 'ReverbStrg' from the internal ROM, Bank B. This is an unusually rich and useful pad sound, which Ken describes as one "which stands out from the many lackluster pads everyone is used to hearing." We agree. ■

Performance name	Thick Pad	I32--Ken Pad	B25--ReverbStrg						
Instrument	1	2	3	4	5	6	7	8	
Assign Mode	Normal		Normal / Alternate						
Max Notes (0-8)	4	4							
Voice No. (I01 D32)	I32	B25							
Receive Ch. (1-16, omni)	1	1							
Limit /L (C-2 - G8)	C-2	C-2							
Limit /H (C-2 - G8)	G8	G8							
Detune (-7 - +7)	-3	+2							
Note Shift (-24 - +24)	0	-7							
Volume (0-99)	99	99							
Out Assign (off, I, II, I II)	I II I II								
LFO Select (off, 1, 2, vib)	1	1							
Micro Tune (select)	off/on	off/on	off/on	off/on	off/on	off/on	off/on	off/on	off/on
Effect Select	off / Delay / Pan / Chord								

ALGORITHM	5			
FEEDBACK	?			
FREQUENCY	2.00	2.00	2.00	1.00
OSC WAVE	W2	W4	W1	W1
DETUNE	0	-3	+3	0
OUT LEVEL	92	58	68	68

AR	26	31	31	31
D1R	10	9	0	4
D1L	15	15	15	15
D2R	0	3	0	0
RR	5	2	11	2
EG SHIFT	OFF	12	48	24

SCALING				
RATE	2	0	0	0
LEVEL	5	21	12	15

SENSITIVITY				
PITCH	5			
AMPLITUDE (0-3) (ON OFF)	off	off	off	off
EG BIAS	0	0	0	0
KEY VELOCITY	1	1	2	0

LFO	
WAVE	Tri
SPEED	24
DELAY	6
P MOD DEPTH	16
A MOD DEPTH	0
SYNC	off

FUNCTION	
MODE	Poly
P BEND RANGE	4
PORTAMENTO	Full
PORTAMENTO TIME	0
FC VOLUME	99
FC PITCH	0
FC AMPLITUDE	0
MW PITCH	50
MW AMPLITUDE	0
BC PITCH	0
BC AMPLITUDE	0
PC PITCH BIAS	0
BC EG BIAS	0
MIDDLE C	C2
REVERB RATE	off

## ENSONIQ ESQ1

### H-to-O

Darrell Nickens, Brooklyn, NY

Ever wanted to have the sound of rushing water come pouring out of your ESQ for a little ambience? No? Well, we're giving it to you anyway! Stereo separation is controlled by note position, and the deep underwater effect on the lowest keys is really kind of nice. Thanks, Darrell! ■

FREQ	RESET	HUMAN	WAVE	LI	DELAY	L2	MOD
LFO1	13	OFF	ON	NO1	63	5	0 VEL 2
LFO2	51	ON	OFF	NO1	31	63	0 LFO 1
LFO3	33	OFF	OFF	NO1	63	21	0 VEL 2

LI	L2	L3	LV	TIV	T1	T2	T3	T4	TK
ENV1	0	0	0	0	0	0	0	0	0
ENV2	0	0	0	0	0	0	0	0	0
ENV3	0	0	0	0	0	0	0	0	0
ENV4	63	63	63	31	0	0	0	35	45

SYNC	AM	MONO	GLIDE	YC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	OFF	OFF	ON

SPL/L	S/LPROG	LAYER	L.PROG	SPLIT	S.PROG	S.KEY
SPL/L	OFF		OFF			

OCT	SEMI	FINE	WAVE	MOD1	DEPTH	MOD2	DEPTH
OSC1	-3	0	0	NOISE 1	OFF	0	OFF 0
OSC2	-3	0	0	NOISE 1	LFO 1	63	OFF 0
OSC3	-3	0	2	NOISE 1	LFO 1	-63	LFO 2 63

LEVEL	OUTPUT	MOD1	DEPTH	MOD2	DEPTH
DCA1	30	ON	LFO 2	5	LFO 2 63
DCA2	31	ON	LFO 3	63	LFO 2 -63
DCA3	40	ON	LFO 3	-40	LFO 2 -25

FREQ	Q	KEYBD	MOD1	DEPTH	MOD2	DEPTH
FILTER	0	22	63	VEL	43	LFO 1 -44

FINALVOL (ENV4)	PAN	PANMODULATOR	DEPTH
DCA4	63	8	KBD 2 24



# PATCH WARE

IF SOUNDS ARE your game, we got you covered!

First off, Hal Leonard Publishing has released their 1988 catalog listing all of their current publications, including a number on programming and sounds. Of particular interest are *Casio CZ Patches +*, featuring 32 patch charts and cassette pack; *D50 Programming & Playing Guide*, also a book and cassette package; and *Synthesizer Programming* covering basic first steps, fine points of basic patches, factory programming, additive synthesis and more. The catalog is full of interesting titles on other subjects as well — definitely worth checking out. For more info, contact Hal Leonard Publishing Corporation, 8112 W. Bluemound Road, Milwaukee, WI 53213. Tel: (414) 774-3630.

However, if you own a Mirage, Prophet 2000/2, Emax, S900, Emulator II, Korg DSSI, Oberheim DPXI or Casio FZ1 (deep breath), maybe you'll be interested in the **Sampleware Sound Library**. The 28 disks currently offered hold sounds for band (the marching variety), percussion, sound effects (car screeching, breaking glass, apple biting),

keyboards, and hip hop. Each disk retails for \$19.95 unless you want it for the FZ1, in which case it'll be \$24.95. You can get a sound library demo cassette for \$5, and there are some special deals for ordering a number as well. Contact Sampleware, PO Box 182, Demarest, NJ 07627. Tel: (212) 969-0130.

At the higher end of the sound spectrum, Optical Media International has another new product. For \$995, you can get the new **CD-ROM disc in the Sound Designer sound file format**, which works with an off-the-shelf CD-ROM drive connected to a Mac. The disc, released under the Reflective Arts International label, will contain about 2500 individual sound files. Sounds include SFX, percussion, synthesized voices, strings, piano and guitar. Any sample editing software can be used, as long as it's capable of reading Sound Designer sound files. The new Universe of Sounds disc also utilizes Apple's Hypercard software as a means of organizing and cataloging the sounds. For further info, contact Optical Media International, 485 Alberto Way, Los Gatos, CA 95032. Tel: (408) 395-4332.

Now, for you D50 fanatics out there, here are three banks of new sounds for those who would rather buy than program. Created by James Newman and marketed under the name **New Man Studios**, they're all original and each patch is fairly unique, no clones.

The Spectrum Block consists of a variety of textures, from standard organ and keyboard

patches to flutes and kalimba. Some very good programming went into duplicating Keith Emerson's analog Moog synths in this batch of sounds. The Orchestral Block contains a number of acoustic patches, the horns being the most outstanding. I personally didn't care for the string patches. Although they're usable, there wasn't anything exceptional about them. The Rock Block has all the sounds you'd expect from its title; lots of Hammonds, synths and analog and digital sounds.

Personally, I found too much reverb in a lot of the patches — annoyingly so. Overall, though, this offering really shows off the versatility of the D50, as there is a wide range of excellent analog- and digital-sounding patches, as well as straight acoustic-sounding blends. The patches are available as data sheets (\$25) if you want to enter in the data yourself; or if you send in a RAM card, James will load it for you (\$25). If you use a Dr. T's compatible D50 editor (for the ST) or Opcode D50 file (Macintosh), you can get them on disk (\$25); plus they are currently developing the sounds for ROM cards (\$89). New Man is conscientious enough to insure any cards sent to them so that if perchance it's lost in the mail, you are at least reimbursed.

Good value, if you're looking to expand your D50 library. For more info contact New Man Studios, PO Box 1235, McMinnville, OR 97128. Tel: (503) 623-2849 ■ Chris Many

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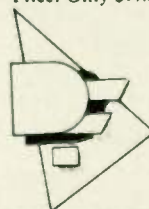


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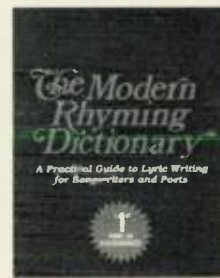
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# OFF THE RECORD

Reviews by Adam Ward Seligman



## MAN JUMPING

World Service

Editions EG

ONE OF THE symptoms of Tourette Syndrome is obsessive/compulsive thought patterns (of course, this is symptomatic of living in LA anyway). Listening to Man Jumping's second record was a jarring experience for me because I have tunes running through my head for days and this music is so complex that I was unable to make it beyond side one. Finally in desperation I called my neurologist and explained the situation to him. Dr Frankel showed once again why he is an expert in his field. His advice: "Turn the record over."

Even for those without TS (or for folks living in Kansas) this record should prove less frustrating, but still provide a listening challenge. This British sextet has six synthesizer players, several of whom double on duller instruments like bass and saxophone. Their music takes the serial concepts of twentieth century classical, mingles it with Reichian minimalism (why does every record I review have this influence?) overlays a very funky rhythm section, then as a final assault adds a jazz undercurrent of cool saxophone against the electronic reed section. To put it mildly, this record has something for everyone, with the exception of my dead grandparents who never much cared for recorded music.

World Service begins gently with a harsh guttural foreign voice chanting 'The Perils Of Tourism.' A very danceable groove comes in, which repeats for a while, then abruptly veers off before our foreign friend comes back in. The next cut, 'The Trouble Is,' is serious funk (as opposed to diet funk?) with a strong backbeat. The following song, 'The Big Swing,' manages to combine Benny Goodman with Bartok (it was at this point that I had an overwhelming urge to start the record again) and swings with synthesizers providing a big band mood.

The final song on side one, 'Something in

the City,' was very disturbing, with an out-of-time sequence from bass, against a backbeat in four, and some random ostinatos from assorted synthesizers. It was impossible for me, with eight years of rhythm studies behind me to figure this song out, or even to hum the melody, because, well . . . there wasn't one in the conventional sense. Fragments drifted in on an ebbtide of multiple synthesizers while the rhythm section did its own thing at a pulse higher than sea level. From the mountains above weird transitions occurred, while from the base of the hidden canyon various themes were introduced, hit it off and left the song in search of another party.

Side two was easier in some ways as the course of the band became clear - they wanted to do everything on one album and to do it well. With that in mind came the track, 'On The Rocks,' which featured the words of

Ludwig Koch, the first man to record bird sounds in 1889. His comments on bull finches and their individual fight against Nazi Fascism seemed like a good starting point for a fascinating but weird song that reminded me a little of Bruford's 'Fainting in Coils.' 'It's Been Fun' was a little too long.

The final track explored world views of music with a Middle Eastern rhythm section overdubbed to the basic Man Jumping theme which again reminded me of a Bill Bruford composition, 'Bridge of Inhibition,' - a rock band's attempt at electronic jazz with an Eastern motif. There's a point here - something about how British bands play music with a different set of rules than American bands. But what matters most in music is not how it looks on paper but how it makes you feel. As James Brown once said, "I feel good;" and so will you after you get World Service.



## THE DEVIATES

Dirt From Graceland

Devcorp Tapes and Tapes

THE DEVIATES ARE a twosome named Brent and Dan who play several different instruments along with some special guests like Jeffy, Mr Signal and Bert. Rather than the simplistic music of groups like Yes and Rush, this truly significant rock band chooses to explore some heavier concepts in their tribute to America's greatest contribution to world culture . . . Pollution.

The opening song, 'No Passion,' evokes memories of *Tristan and Isolde*, which was funny because I have never heard this magnificent opera by Wagner, a proto-fascist much liked by Adolf Hitler and his buddies. But the lyrics reflect serious ideas about a teenage girl who "... saw a film on Vietnam and she failed to understand/thought Charlie Sheen was really cute, liked mini skirts and go-go boots." Deep. While I like Charlie Sheen I can't figure out the reference, unless it was the new John Hughes film.

Later on in the album a world view comes out in their tribute to ELO (Emerson, Lake and Otto was my guess) which is named

'Calling Antarctica.' The group's confusion between Antarctica, an ice-filled wasteland and Australia, which I think is nearby and makes great beer, provides for a laugh or two, although the sound of the drums reflects a certain lack of imagination in programming. (I would have MIDI'd a set of Octapads to a Kurzweil, then sampled a real set of drums. At that point, having gotten the real drums into the studio, I would have played them, discarding the drum pads and sampler. Primitive, yes - but it worked for Beethoven.)

The high point of this tape (available at all fine alleys and bootleg tape stores nationwide) are the two side endings. 'Purple Rain' as sung by Elvis Presley is such a great concept you would think the King and the Prince would have overlooked one of their deaths to pull it off. But rivalry in the record business is rampant and it took the Deviates to actually do it. The final song on side two, 'Hunk O'Burn'n Boat,' is so poetic in its parody of the 'Love Boat Theme' that it brought tears to my ears. "It's love . . . without the romance . . . Isaac pours the drinks and they drop their pants . . ." Genius.

This review will undoubtedly produce a few thousand more devotees to the underground gang, so here's your question answered ahead of time. For info on the Deviates Fan Club (and possibly a free tape) contact Devo T&T, 4550 DeSilva Street, Fremont, CA 94538.

Many thanks to our friend at a not-to-be-disclosed northern synth manufacturer for letting us in on the trendiest happening in town. Happy April!



# Sting EW2

## MIDI Wind Controller



Photography: R. Kousenille

**Although it was actually one of the first wind controllers on the market, finding one of these Japanese manufactured instruments has not always been easy. Our reviewer finds that it may well be worth the search. Review by Michael Andreas.**

I'VE ALWAYS ENJOYED a good mystery, so the arrival of the unmarked package was both a pleasure and a challenge. The package itself was not unexpected, I knew that a new MIDI Wind Controller was on the way, but as for its place of origin, well that was a different story. Spyglass in hand, I examined the unadorned cardboard box, and Aha! I spied it – a small hand-stamped return address: Music Industries Corp, Garden City Park, New York. Not exactly exotic, but a lead.

The enigma continued once the box was open. There was the Sting (a very attractive instrument); but only its name and serial number were there for identification (no rank, no manufacturer, no country of origin). Even the 10-page photocopied manual had no company ID. Strange.

All this is a long-winded way of telling manufacturers that people who shell out

significant dollars on equipment need to know who to contact if any questions arise or if repair, support, spare parts, etc., are needed. *Documentation*, please!

But enough bickering, let's move on.

### The Instrument

THE STING EW2 (related to neither the vocalist nor the Akai EWI) is a quite successful sort of "low-tech" approach to the "hi-tech" world of wind synthesizers. In no way is this meant to be a disparaging remark. The Sting's designers have come up with a very uncomplicated but effective instrument which affords the woodwind player access to the wonders of MIDI without some of its technical complexities. And even though this instrument may not offer as many options as some of its competitors, it does offer an immediate familiarity which makes it quite attractive.

The EW2 is comprised of two units, a

Wind Controller and a MIDI interface. Together these function as a MIDI Driver. They have no voicing capabilities in-and-of themselves. Rather they are designed to play any MIDI-compatible voicing module (synthesizer).

It's obvious that a lot of intelligent thought went into the design of the Sting EW2. Of special note are its weight and solid design. At about two pounds (no exact weight is given in the manual) and with its real, spring-mounted keys, this unit feels like a substantial instrument. I enjoyed this, for some subliminal reason which I don't want to get into now, but I think that most players would share this sentiment.

The Controller, which resembles its non-MIDI predecessor the Lyricon (also no relation), has a nickel-plated body which sports *real* keys! Six of these are inlaid with mother-of-pearl (just like on a



real saxophone), and all the keys are likewise nickel-plated. The most enticing aspect of this controller is the fact that it feels very natural in the hands. A modified Boehm system of fingering has been employed, so any sax, flute, clarinet, oboe, etc, player should easily adapt to it. By incorporating a clever two "thumb-key" arrangement, the instrument's on-board range is four octaves. However, with the use of two foot pedals (not included), it can be transposed up and down an additional octave, giving it a practical range of six octaves.

The six keys operated with the little fingers (three keys each) function as semitone up, semitone down, and whole tone down keys, all of which allow for an extensive choice of alternate fingerings for difficult passages and what the manual refers to as "parallel shifts" (ie. moving a pattern into a new key by depressing one of the little finger keys while continuing to finger the same pattern).

The Sting's mouthpiece is its most novel feature. It is mounted to the body of the instrument on a rubber hinge which allows it to move up and down while the body remains stable. Inside this mouthpiece are two sensors. One of these (a semi-conductive moving magnet) reads this lateral movement and converts it into pitch-bend information. You bend the body down and the pitch bends down. Bend it up and . . . you've guessed it! That is, unless you would prefer to have the pitch bend up when you bend the body down - it's adjustable on the MIDI Interface module. This function can also be used to effect pitch modulations (such as adding overtones by opening up the filter with a mod wheel, etc), but more on this later.

The second of the two sensors in the mouthpiece is a ceramic wind sensor. The manual doesn't explain how it works, but I assume that this sensor detects ultrasonic soundwaves produced by the player's breath and responds accordingly. This arrangement allows the air column to actually flow through the instrument, adding to its overall natural feel.

## The Black Box

THE HORN ATTACHES to its MIDI interface via an RCA pin cable. This unusual connection arrangement can be achieved because of the way information is processed through the Interface. The Interface (a "multiplex transceiver system") splits the information from the driver into two components. Key (note) and Lip (bend/modulation) information are sent via MIDI to the synth voicing module.

The line out signal from this voicing module is then fed back into the Interface, which uses the second half of the driver's signal (wind information) to effect volume

changes in the voice. Two VCAs (Voltage Controlled Amplifiers) are incorporated in the Interface module to perform this last function. Because the wind information remains an analog signal at all times, the Sting is able to achieve a very clean, linear volume response, even on synths that are not velocity-sensitive. Another big



advantage of this approach is that the amount of MIDI data being transferred is cut drastically, allowing the Sting to boast a 2 millisecond (1/500th of a second) response time. Very impressive and helpful in avoiding MIDI delay problems.

The front panel of the Interface is pretty straight ahead: an On/Off switch, RCA connector jack, a grouping of three pots which regulate the unit's Lip Modulation functions and a transposition knob (the Sting can be transposed into the keys of C, Bb, Eb, and F). The next four pots control the Wind functions and the Master

Volume. An earphone jack (the level for which is also controlled by the Master Volume knob) is also present.

The Lip Modulation and Wind Function controls basically set the feel and response of the instrument. And even though the mouthpiece has no reed, a sort of resistance can be achieved through these controls. The first of these, the Threshold pot, adjusts the mouthpiece's bend sensitivity, or how much physical bending it will take to activate the bending effect. Directly above this pot is an LED which lights when the bend is activated.

The next knob, labeled Bend, is a depth control for the bend function. It determines how much bend will be available to the performer. By turning it to the left and right of dead center, you can reverse the direction of the bend from up to down or vice versa. The final Lip Modulation controller, the Wheel pot, allows the Bend function to control modulation wheel effects (overtones, timbre changes, etc) rather than pitch changes. And what if you want both pitch-bend and wheel modulation? Read on.

The Wind Control pots are easily understood. The Threshold knob adjusts the amount of wind pressure it will take to begin a note (think of it as mouthpiece resistance). A Wind Threshold LED is present which is activated when the MIDI Note On command is sent. The Dynamics pot sets the breath's controllable dynamic range (from 0-60dB), and the Wind Wheel Control allows the modulation wheel depth information to be controlled by the player's wind pressure, thus freeing up the Bend function for bending (in this case you can have your cake and eat it too!).

The rear panel on the interface unit is a little surprising. There are nine (!) 1/4" jacks back there, and two (!) MIDI Out jacks. (Sure, why not? Even though they both send identical information, you might have a couple of voicing modules with no MIDI Thru ports.)

Adjacent to the MIDI jacks are two footswitch ports which are used for remotely changing programs on your external voicing modules. One switch will make 16 program changes up; the other, 16 changes down. The next two 1/4" jacks are for the octave up and down switches mentioned earlier. To the left of these is the jack for the Sustain footswitch. I found this to be a relatively useless feature because, rather than sustaining a single note, it opens up the signal from the driver for approximately 10 seconds. If at any time during this period the player should change a fingering, a new note will also sustain with the first. "Great," you say, "Chords!" Well, not always. Because the technique required is so exact, your fingers must move *precisely* together or you'll end up with unwanted notes. This definitely could be improved.

R  
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V  
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► The final four 1/4" jacks connect the Interface to the voicing module. The Interface sends out MIDI information via the MIDI Out ports (all MIDI data is transmitted on channel one in MIDI mode 2; OMNI On, Mono) and receives an analog audio signal back from the synth. This signal is channelled into the Interface

R  
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W



using the Velocity In ports, and is then processed with the wind (velocity) information. As mentioned above, two VCAs in the Interface unit perform this signal processing. Finally, utilizing the Audio Out ports, the signal is then sent to your amp or mixing console. This arrangement also allows for some interesting patching combinations with the Velocity In and Audio Out lines. You can obtain any of the following: a stereo mix out, mono mix out from either Audio Out port, mono (either channel) from both ports, and (by rerouting an Audio Out signal back through the internal VCA's) you can double the strength of a mono Audio Out signal.

## Conclusions

ACTUALLY, THE STING was one of the first MIDI Wind Instruments on the market, having been introduced early last year. And although markets in Europe and Japan have been developed, this instrument has not really been pushed in

the USA. This is unfortunate, because if it were being distributed by one of the big boys, it would be receiving deservedly wider recognition. Some of the inherent problems presented by this technology have been ingeniously dealt with on the Sting. It would do well for some of the other manufacturers of wind controllers to take note of its octave key arrangement and wind sensitivity functions.

There are things that the Sting doesn't offer, however: vibrato is limited to air pressure changes (à la flute vibrato) rather than lip pressure changes (à la saxophone vibrato). As mentioned, the Sustain feature needs reworking, and (as with all the MIDI wind devices I've seen so far) key

sensitivity is a problem. Perhaps a quantizing chip could be employed to "sense" the player's intentions. Also, if the key contacts aren't kept very clean, notes will stop speaking.

The largest problem the Sting will have in carving out its niche in the market place is the price. At almost \$2000, it is comparable to the Akai EWI, but the EWI comes with its own voicing module. And the Yamaha WX7, which is also only a controller (no voicing capabilities), lists for about half of the Sting's price and comes with all the product support for which Yamaha is noted.

My two suggestions to the manufacturer are first, rewrite the manual; and second, get someone to design a case and include these in the package.

Nonetheless, if you are fortunate enough to find a Sting dealer, you should try one out. You just might find yourself enchanted by this dark-horse of the MIDI wind world. ■

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*The author would like to thank Bob Patton at the Berklee College of Music, who has taken it upon himself to decipher and rewrite the Sting manual. He was a great asset to researching the article.*

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**MIRAGE RACK** with lots of sounds, good cond, \$800. J Prieto, 3489 Ft. Independence, Tel: (212) 884-6107.

**MIRAGE RACKMOUNT** sampler, exc cond, price includes manual and 20 Ensoniq disks. Priced to sell fast.

Joey Olschner, 113 Noyes Ave., Morehead City, NC 28557.

**SOUND IDEAS CD** effects library, 3000 sound effects on 28 CD's. List \$1250, sell \$625, perfect cond. Tel: (316) 232-1896.

### SEQUENCERS

**MC500 SEQUENCER** with latest factory performance software, used only 5hrs, \$1000 obo, trades considered. Tel: (802) 864-9020.

**YAMAHA QXI** 80,000 note seq, newest version 7, home used only, 50 blank disk included, like new, \$1050. Tel: (615) 824-6391.

**YAMAHA QXI** pro MIDI seq, mint cond, \$1100 obo. Tel: (805) 541-1394.

### DRUMS

**DRUM MACHINE,** Casio RZ1, 12 PCM voices, four sampling voices, call for info, \$295. Tel: (404) 925-1191.

### COMPUTING

**APPLE IIC** with Passport Master Tracks seq and interface, monitor, imagewriter printer, 2nd drive, Appleworks, MIDI cables, \$1000 obo. Larry Levin, 435 W. Surf, Chicago, IL 60657, Tel: (312) 935-8939.

**HYBRID ARTS MIDITRACK III** system complete with Atari 130XE, disk drive, and interface, \$450 obo. Tim, Tel: (214) 328-4646.

**PASSPORT MASTER TRACKS** seq plus MIDI interface with drum and tape sync for Commodore C64/128, \$225/both. Tel: (713) 681-0661.

**PASSPORT POLYWRITER** transcription software, MIDI/4 sequencing, Grappler Graphics card and interface for Apple II/IIe, all for \$350. Call Brian at (615) 385-1327.

**YAMAHA TX7** sound module, backlight, 4x32 memory modifications, \$7450; DX100, damaged keyboard, perfect as MIDI module with sound, \$200. Tel: (203) 878-7988.

### RECORDING

**NAGRA IV-S** with center sync track, like new, under 100 hours use, \$6300. Alan, Tel: (617) 522-0968.

**STUDIOMASTER** 8:4 mixer, 2 effects sends/returns, and semi-parametric EQ, \$750. Tel: (516) 922-3958.

**TASCAM 8516B** with dbx, autolocator, \$7000; Teac model 15, 24 input board, mint, \$4000, all cables included, patchbays. Tel: (213) 876-9348.

**YAMAHA 4-CHANNEL** recorder, MTIX, 1 1/2 years old, exc cond, cost \$400, sell \$350. Dan, Tel: (213) 378-2355.

### PERSONNEL

**GRAMMY AWARD WINNING** producer seeking new talent, send photo, history, tape to Darrell Johnson, 3020 Edgehill, Cleveland, OH 44118.

**KEYBOARDIST** available, top 40, jingles, film and performance, keyboards to full production, 64-track MIDI available. Gordon, Tel: (944) 969-9682.

**YOUNG SERIOUS MALE** vocalist seeking dead-serious synthesist, samplst, and percussionist for group, à la Sylvian, Tones on Tail, Dali's Car. Call Christopher immediately at (415) 474-8897.

### MISCELLANEOUS

**EVI/EWI USERS GROUP,** Network 2000. Write: Valley Productions, Box 3220, Ashland, OR 97520 or Tel: (503) 488-2492.

**KORG DDD5** digital drums, 29 voice, touch-sens pads, \$345, mint cond. Tel: (206) 445-2001.

**LINN 9000** workstation, expanded memory, huge sound library, mint cond, \$2995; Emulator II, great library, road case, mint cond, \$2500. Tel: (213) 399-7410.

**ROLAND JX8P,** \$550; Yamaha RX17, \$185; Yamaha CS60, \$500; Mirage plus many disks, accessories, \$1400; Korg EX8000, \$700. Tel: (944) 969-5682.

**ROLAND PG800** (JX8P Programmer), \$40. Tel: (412) 795-6554.

**ROLAND MT32** synth module, \$500; Ensoniq ESQM, \$550; Roland Octapad, \$400. All equipment mint cond. Tel: (516) 673-7598 (eves).

**ROLAND G700/GR707** guitar synth system, great cond, \$1000. Tel: (609) 983-2962.

### WANTED

**CZ1000 OR CZ3000,** mint cond only. Send description to: Henry Cross, Box 18834, Washington DC 20036, or Tel: (202) 544-4468.

**D50 SAMPLES** for the Prophet 2000 also DX7 and Prophet VS. Taylor Deupree, 480 North Main St, Suffield, CO 806078.

**KORG SDD2000** digital delay, SPX90 Lexicon PCM41, 24-spc. shock mount, Anvil road case, Roland SDE3000. Keith, Tel: (504) 879-2184.

## MT FREE CLASSIFIED ORDER FORM

FILL IN THE FORM to a maximum of 18 words (one in each box), and send it to: **MUSIC TECHNOLOGY, 7361 Topanga Canyon Blvd., Canoga Park, CA 91303.** Please print clearly in BLOCK CAPITALS. Your ad will be printed in the next available issue.


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# ENLARGING THE WINDOW

*Graphic editing/librarian software for the PCM 70 Digital Effects Processor:  
a Lexicon applications brief.*

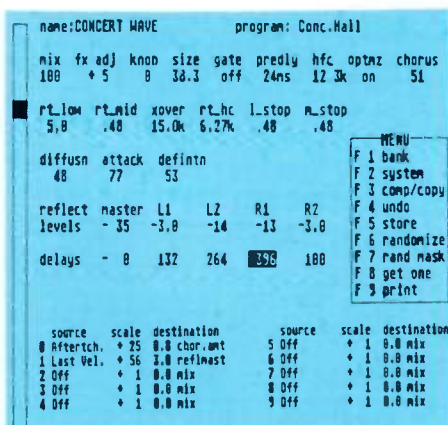
Musical technology changes: to keep up, hardware has to support evolving software that will continue to generate new functions and sounds. That's why Lexicon digital processors aren't fixed systems.

The PCM 70's MIDI implementation illustrates the value of our approach. Lexicon *Dynamic MIDI* controls ten PCM 70 parameters from MIDI sources like pitch wheels, pedals or aftertouch. It's already the most complete system of real-time or MIDI-automated parameter control, but that didn't stop us from adding MIDI System Exclusive to Version 2.0 of resident software and the new optional Version 3.01 package.

As soon as software developers got wind of our intentions, they began asking us to release the Sys Ex spec so they could write editors and register librarians. Not that there isn't ample storage space for your own sounds, or the tools to create them using the fluorescent display "window" and the soft knob. But a computer does make it easier to fully explore the PCM 70's vast potential.

We released, they wrote, and now even those of you who haven't heard a PCM 70 can see what sets it apart. Just examine these screens from Digidesign's FX

FX Designer uses Macintosh graphics to amplify the meaning of PCM 70 parameter values with informative displays. Each screen lets you edit several related parameters and shows you what you're doing. As you edit *Delay* values in this *Delay & Mix* screen, the bars move to show time relationships. They grow and shrink as you change the *Level* settings. FX Designer includes over two hundred pre-programmed registers to suggest avenues of exploration, and interfaces with Opcode Systems' PCM 70 librarian so you can store your discoveries.



The Caged Artist PCM 70 Editor widens the window to put all parameters of an algorithm on screen at once. You edit values as fast as you can move and click a button on the Atari ST (or Commodore 64/128 or Apple IIe) mouse. The other mouse button triggers a MIDI sound source so you can hear exactly what you're doing and how the sound relates to the instrument and the music you're writing it for: how chorusing spreads out a synth voice, or how BPM affects the echo delay times. In this patch, echoes and chorusing are panned to the PCM 70's two outputs, for independent mixing and balancing of the two effects.

If you're not sure what all this means, the Randomize function will explore possibilities for you: it varies the parameters you choose in the range you specify to generate new

registers. The Compare/Copy function lets you shift *Dynamic MIDI* control patches and other parameters between registers (so Aftertouch could always add more chorusing, as it does in this Chorus & Echo program). The built-in librarian holds 200 registers.

You may think you already know what the PCM 70 sounds like, but these editing programs will surprise you. Faster, more intuitive editing not only lets you tailor reverbs and delay effects faster, it will reveal capabilities you've overlooked until now.

Now that you can write more sounds in the time available, you'll need larger storage space. Computer-based editors let you store complete register banks: librarian programs from Opcode Systems (for the Macintosh), Club MIDI and Voyetra (for IBM PCs and compatibles), or Hybrid Arts (for Atari STs) give you the filing capabilities you need to rearrange your sounds in useful categories.

The PCM 70 lets you design sonic spaces and make them an interactive part of your music. The new graphic editors and librarians give you even greater freedom to explore the potential of this unique instrument. The window to new dimensions is wider now: step through it at your Lexicon dealer.

## Graphic Editor/Librarians

Digidesign FX Designer

Dr. T's PCM 70 Editor/Librarian

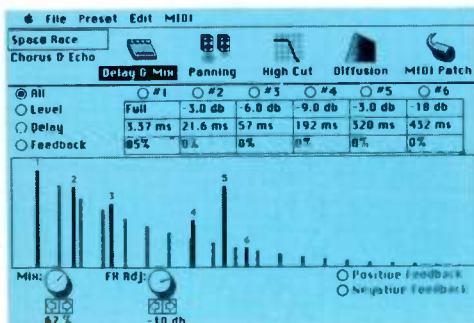
## Patch Librarians

Voyetra Technologies Patch Master Plus

Club MIDI Prolib

Hybrid Arts GenPatch ST

Opcode Systems PCM Librarian  
with Patch Factory



Designer and the Caged Artist PCM 70 Editor by Dr. T's Music Software. Each expands the PCM 70's window in a different way, revealing the unprecedented intricacy of PCM 70 algorithms. With more parameters than typical effects have programs, these algorithms give you powerful, detailed control over your sound: computer-based editors help you make the most of it.



**lexicon**

Lexicon, Inc., 100 Beaver Street, Waltham, MA 02154 (617) 891-6790



# The Shape Of Sounds To Come



Korg 707 proves good design is good design, on the outside as well as the inside. Looks count. So we created a powerful and



cost-conscious FM synth with sleek, modern lines. Chic push-button controls, performance editor sliders and pitch/mod/vol-

ume wheels make total control look better than ever. 707 is even available in special colors for maximum visual impact.

The *sounds*? 707 is multi-timbral. It comes with 100 sparkling FM sounds and 10 dynamic combination programs. 707 also reads our



popular DS8 Rom cards (400 sounds + more to come).

The 49 note velocity and after-touch sensitive keyboard feels as good as it looks. With split, layering, zones and multi-combinations for infinite variations.

707 is a *performance* instrument.



As leaders in combining analog-style programming with digital synthesis, we've built the world's fastest FM programming into the 707. Battery and/or AC-powered, 707 can be worn on stage as a solo instrument or full-



featured MIDI remote controller. Smooth-travel reversible control wheels function in two directions so you can use them on a stand or over the shoulder.

Korg 707 at \$899. Once you've heard it, you'll never see a synthesizer the same way again.

## 707



**SQD-8** The multi-channel/multi-timbral 707 becomes a compact and cost-effective 8 track MIDI studio with the powerful Korg SQD-8 MIDI Sequencer with built-in disc drive. Record in real or step-time on 8 tracks, 16 MIDI channels with easy recorder-style controls. Overdub, bounce, quantize, edit. Store sequences and program data on discs.

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**Special Introductory Offer:**

**Free 200 Sound ROM Program Card With Purchase of 707 through March 31, 1988.**

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