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MUSIC TECHNOLOGY

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MILES DAVIS

Live

WIND SYNTHESIS

Fearless Learning

REVIEWS

Korg M1

Minimoog

AKG ADR 68K

Forte Mentor

Akai/Linn MPC60

PREVIEW

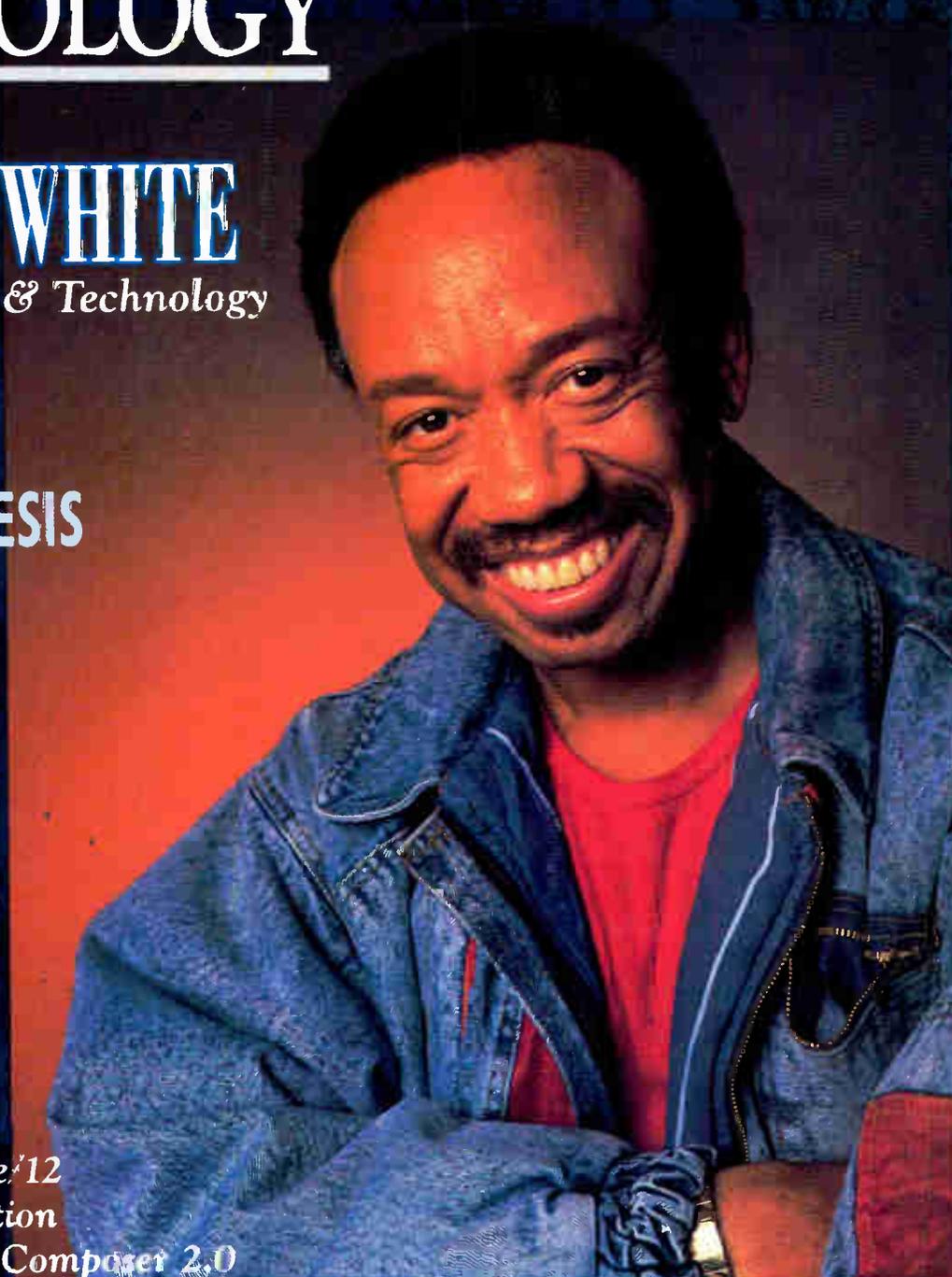
Beetle Quantar

COMPUTER NOTES

Drumware GenWave 12

Sequencers vs. Notation

Jim Miller Personal Computer 2.0



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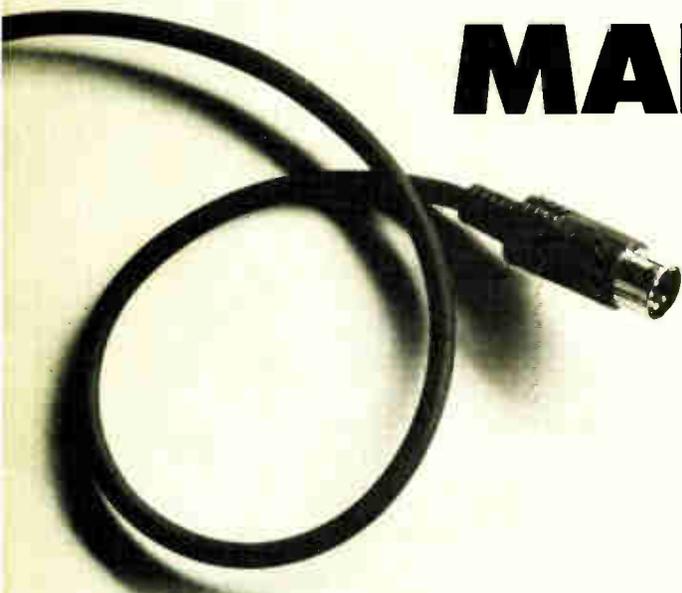
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A Glimpse

WE ALL THINK about it, many of us worry about it and a lot of us are hopeful for it, but we can never truly know what the future holds in store for us: personally, professionally, musically or technologically. We can make some educated guesses about where things are headed based on what we've seen come before and what's going on now, but there's still always that twinge of uncertainty which keeps us from claiming that we know what's going to happen. At the same time, though, it's that twinge which keeps life interesting - which keeps us motivated to continually learn and discover more. And of course, it's also that same twinge that, paradoxically, makes us want to know even more about the future. Plus, nobody said that there wasn't any hope for a glimpse . . .

If we do start to make some discoveries about the current technological state of affairs, then we generally use that knowledge to make even further predictions about the future. The urge to learn even more and to try to deduce from that knowledge seems particularly strong among those who are involved with or interested in the latest technology. People who are working with computers and other types of technology often have a good grasp of where science has taken society and where it's likely to take it in the future. And whether you're eager to accept it or don't want to admit to it, musicians and artists of all types are starting to fit into that group. Computers are becoming the tools of choice for many types of people and, consequently, the future of music, computers, video, film and other areas have become inextricably linked. Computers are tied to music, video is tied to computers, music is tied to video, and film is tied to video and music. Right now the crossover between these areas may only be partial, but I think they're bound to become even more tightly entwined.

One of the chief reasons for this is that the working tools for these various areas are

starting to become one and the same. Whether you're a computer specialist, graphic artist, video artist or a musician, the ultimate goal nowadays is to have a personal workstation. And disparate though the final results of these various types of individuals may have been in the past, the means for working with the raw materials is becoming surprisingly similar. Actually, in a certain sense, the final products of these various individuals are becoming closer. As a result, there's starting to be more and more overlap and collaboration between the different areas - both in terms of the work being produced and in the means of getting the work done. Each group of individuals needs their own specific set of tools, but now the musician's are starting to look a lot like the computer specialist's or the video artist's.

The trend is bound to continue because developments like CD-ROM, CD-V (Compact Disc-Video) and CD-I (CD-Interactive - which combines audio, video and computer programming into a single format) are bringing new types of communication tools and new types of media to present our ideas, our knowledge and our expression. Artists of the future will need to be at least conversationally literate in a variety of different areas to be able to take advantage of this emerging technology and to present their works in a form that general consumers will soon see as commonplace. Just as CD audio brought higher sound quality to living rooms across the world than existed in many professional recording studios, so will CD-I and other technologies like it undoubtedly bring a new art form into households before many artists even begin to understand the tools for producing it.

Information about these new technologies and their various interactions is going to be increasingly important, and we have the unique opportunity of growing together as things become more complex. The future of music and art in general is getting to be more fascinating all the time. ■ Bob O'Donnell

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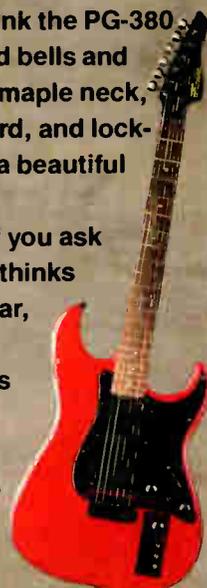
Of course, if you do tap into an external source, the PG-380 also has an on-board MIDI converter. So you can blend guitar, internal synth and any external sound source.

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IN THIS ISSUE

C
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T
E
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T
S

MUSIC

On Stage 22

Miles Davis – The Man with The Horn – is also the man with a competent, hi-tech band. Here's his stage setup and a review of a recent gig.

Earth, Wind, and Fire 38

Can rhythm and funk survive in the eighties? With a handful of samplers and hired guns, you bet. Can the eighties deal with the message, too? Good question . . .

Larry Fast 58

The fingers behind Synergy, Peter Gabriel, and countless others talks about how accepting technology and merely using it (instead of living in fear and awe of it) makes it easy to Electronically Realize Rock Orchestras.

Richard Burmer 99

Distinguished by his impressive manipulation of samples, synthesist/composer Richard Burmer discusses his emotional landscapes of sound.

REVIEWS

KMX MIDI Central and Merge/Select 16

A pair of very cost effective MIDI patchbays fall under inspection.

Sound Process Digital Sound Synthesizer 26

We're finally starting to see the advantages of software-based instruments. This alternate operating system for the Mirage keeps the sampler part while adding a Roland D50.

Korg MI 32

"Workstation" is the buzzword of the year. Korg's new wundermaschine attempts to fit into that category, and just might pull it off with an onboard sequencer, drum samples, reverb, and another variation on that LA sound . . .

Forte Mentor MIDI Master Controller 50

Having a hard time getting excited about another MIDI mapper? So did our reviewer, until he realized it was something completely different . . .



Off the Record 63

The Grusin brothers get together and compare notes with a battery of synthesizers and drum machines, while a group of Minnesota composers show there's something else going on up there besides Prince.

Beetle Quantar MIDI Guitar Controller 30

Like turning lead into gold, a number of companies have been trying to make a guitar/synth controller that works. Maybe, just maybe, all has finally come to those of us who waited . . .

Akai/Linn MPC60 66

After Linn Electronics went nuclear, Akai hired the talents of Roger Linn to design the next Linn 9000. Sans bugs, it appears that he has done precisely that.

STUDIO

AKG ADR 68K Reverb 108

Cheapo reverbs haven't made the expensive ones go away. And, miracle of miracles, the more expensive ones are better. This cave-in-a-box also features MIDI and 16-bit stereo sampling.

**COMPUTER
NOTES**

Computer Newsdesk 73

IBM owners never had it this good! Big Blue dominates the new software release and update scene.

Micro Reviews 78

The MIDI Mouse CZ editor/librarian, a simple sequencer for the IBM, and a language to let you write your own MIDI applications get this month's once-over.

Music Notation 80

Previously the province of the very rich or major publishing houses, the computer revolution is tearing down the walls of standard notation and giving the booty to the rest of us. New writer Wheat Williams gives a comprehensive survey of the magic.

**Jim Miller's
Personal Composer 2.0 95**

It has been said that pioneers are the ones with arrows in their backs. Personal Composer for the IBM was one of the earliest and buggiest sequencers available. Not only has it gotten cleaner, it has gotten more comprehensive.

TECHNOLOGY

Minimoog 28

Starting our miniseries on the Classic Synths of Yesteryear, we look at the most famous (that's still in service) - Moog Music's Minimoog.

Wind Synthesis 44

Each new instrument requires learning a new technique. Wind controllers require overcoming some fears and learning a few tricks to get more expression than those percussionists (yes, piano players). The tricks are here, kids.

PROGRAMMING

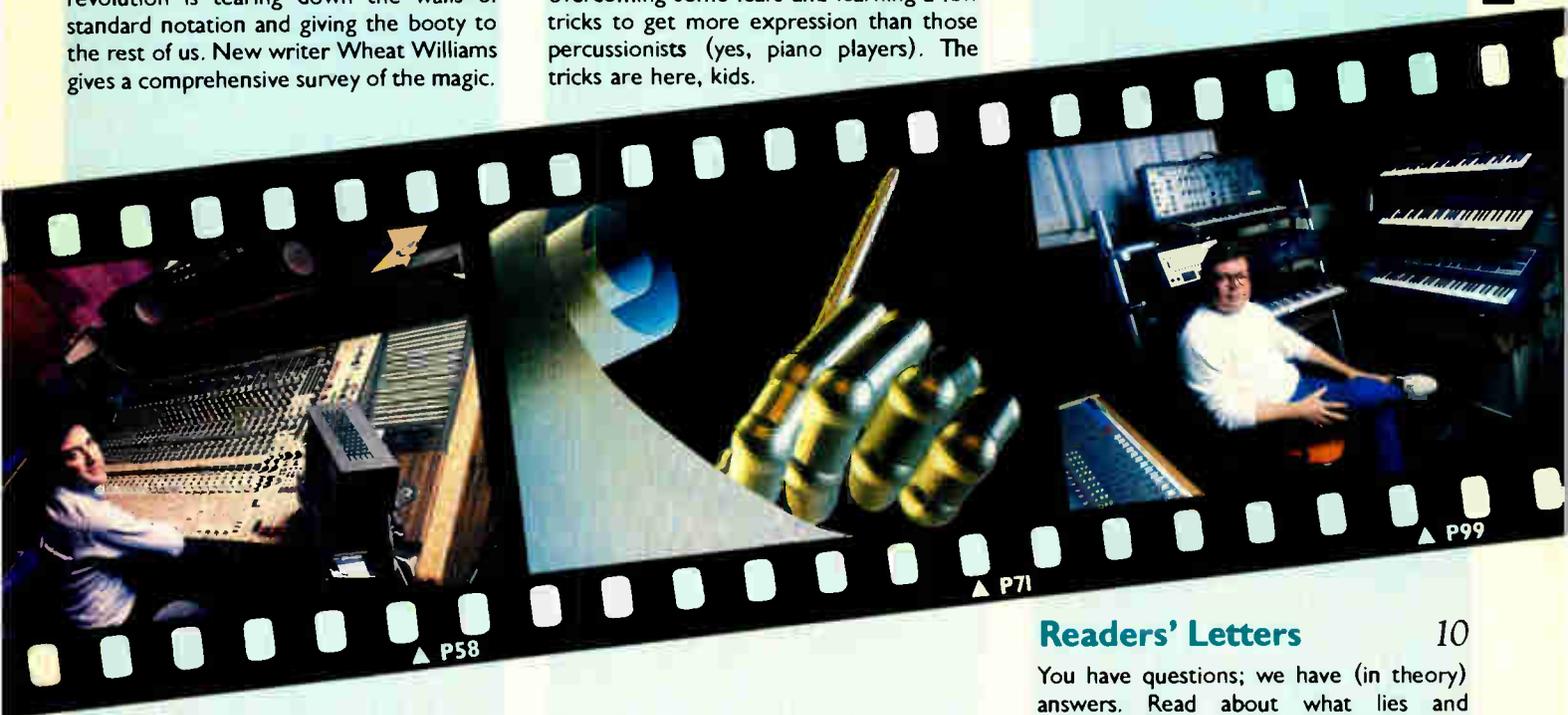
Patchwork 106

New sounds for the D50 and TX16W are announced, for the Emax reviewed, and patches for the HR16 and TX81Z are thrashed and burned for your enjoyment.

REGULARS

Newsdesk 7

Sample a sound and put it anywhere in space. Or go to a museum and learn about sound and music in the first place.



Southworth One-Step 86

A simplified MIDIPaint? Well, yes, but some things have been added, too . . .

**Drumware
GenWave/I2 90**

Sample editing comes to ST owners with this package that has all the standard features (along with one or two new ones) while supporting several samplers at once.

**Synthesizer Sound
Systems II 103**

More beautiful noise - this time, in modular form - is covered in this final installment.

SAMPLING

Vocal Sampling 18

Okay, the original Fairlight vocal samples are still cool - but horribly over-used. Time to warm up those vocal chords and get some unique sounds for yourself.

Readers' Letters 10

You have questions; we have (in theory) answers. Read about what lies and innuendo we perpetuate this month . . .

Readers' Tapes 54

His brain now thoroughly infiltrated by Los Angeles smog, Yung takes the gloves off and plugs into feedbacking DDL's while slamming more MOR.

Perspectives 85

The world is not made up of facts - opinions abound! This month we start a regular column where anyone can feel free to bash "conventional wisdom." For our inauguration, Travis Charbeneau suggests that we don't need standard notation anymore.



FINALLY, 8 TRACKS IN THE PALM OF YOUR HAND.

Others have tried. But 8-track capability on a standard audio cassette remained elusive. Until now.

Introducing the remarkable new 238 Syncaset® from Tascam, the company that invented portable, multi-track recording.

If you've been working with a 4-track for pre-production composing or demos, the 238 doubles your capacity right now. Running at 3¾ ips, and taking advantage of Tascam's proprietary head technology, the rack-mountable 238 gives you sound you won't believe was recorded on a standard audio cassette.

But the 238 doesn't stop there. It's fully synchronizable with MIDI/SMPTE time codes, it's got a serial port for computer interfacing and it's designed with open architecture for software upgrades.

Add to that the advantages of full-function remote control, auto punch in/out, shuttling capability and dbx II noise reduction, and you've got a machine that just about does it all.

If this all seems a little too good to be true, talk to your Tascam dealer. To understand how good the 238 Syncaset really is, you'll just have to try your hand at it.



TASCAM

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NEWS DESK

LOST IN SPACE

New from Spatial Sound Inc is the Spatial Sound SPI Spatial Sound Processor. This little baby can take up to four signal source inputs and place them in two- or three-dimensional space, using up to eight speakers. Two joystick controllers are used to locate sounds in anything from a normal stereo setup to observatory-like sound systems.

Up to 500 positions can be divided in 30 sequences of up to 99 steps each, including five pre-programmed sequences (random, circle, swing, figure of eight and arch). Real-time trajectory recording and step-time editing are both possible. MIDI implementation allows programs to be assigned to MIDI Program Change numbers and can be used to send system exclusive dumps of status speaker sets, programs, and sequencer patterns.

The suggested retail price is \$2895 plus shipping. An information package is available for \$5, a user's manual for \$35, and a demonstration cassette for \$10.

MORE FROM Spatial Sound Inc, PO Box 1111, Mill Valley, CA 94942. Tel: (415) 457-8114.



SAMPLING FOR EVERYONE

Just in time for the summer trade shows, Dynacord has announced two new products, the ADS keyboard sampler and the ADD-two 16-bit digital drums and sampler module.

The ADS offers 16-bit stereo sampling at 20kHz bandwidth (44.1kHz), with 1 megaword of RAM (2 megabytes), which sample selection, three envelope generators, two LFOs, variable start and ramp generator. The logic matrix enables one parameter to modulate nearly any other.

The ADD-two carries forth the tradition

of the ADD-one, acting as a 16-voice 8-channel drum sampler. The unit provides a 44.1kHz sampling rate, a 3.5" disk drive, a sound editor, digital signal processing and a can be extended into 4 megawords (8 megabytes). In addition, a SCSI port is provided to connect a 20 megabyte hard disk. The unit can use the Dynacord sound library and supports MIDI sample dump. "Sound Fusion" allows up to eight different sounds to be superimposed and fused to create a new sound, and a "Loop-smoothing" function is provided for perfecting loop points. Editing features include pitch, dynamic panning, dynamic programmable eight-channel mixer. The 1 megaword RAM can be expanded to 4

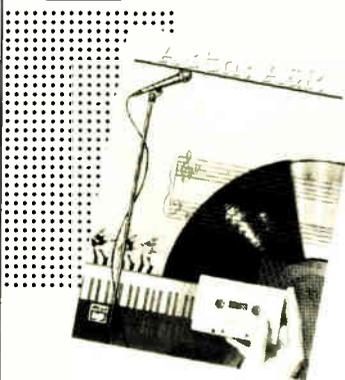
megawords, and there is a SCSI port as well. Sounds can be allocated to any of the eight trigger inputs, and editing capabilities are provided by three envelope-curve generators, two LFOs, a crossfading function, and digital delay on each channel. Multisamples can be recorded or subsequently generated, and parameters can be accessed via MIDI. The Trigger Rate Follower permits modulation of other ADD-two parameters in relation to a pulse sequence.

The suggested price of either the ADS or the ADD-two is \$4995. Each, that is.

MORE FROM Drum Workshop, 2697 Lavery Ct., #16, Newbury Park, CA 91320. Tel: (805) 499-6863.



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STEREO SAMPLING

Adding to their already well-established line of digital samplers, Akai introduced the new 16-voice S1000 at the NAB Show in Las Vegas. Taking its place alongside the S900 and S700 at the upper end of the Akai sampler line, the S1000 is compatible with S900 disks.

The S1000 is a true 16-bit stereo sampler, with stereo inputs and outputs, utilizing either 44.1kHz or 22.05kHz sampling rates, and yielding 23 seconds of monophonic sampling and 11.5 seconds in stereo at the 44.1 rate. Memory is expandable to 8 megabytes, offering a maximum sampling time of 92 seconds in

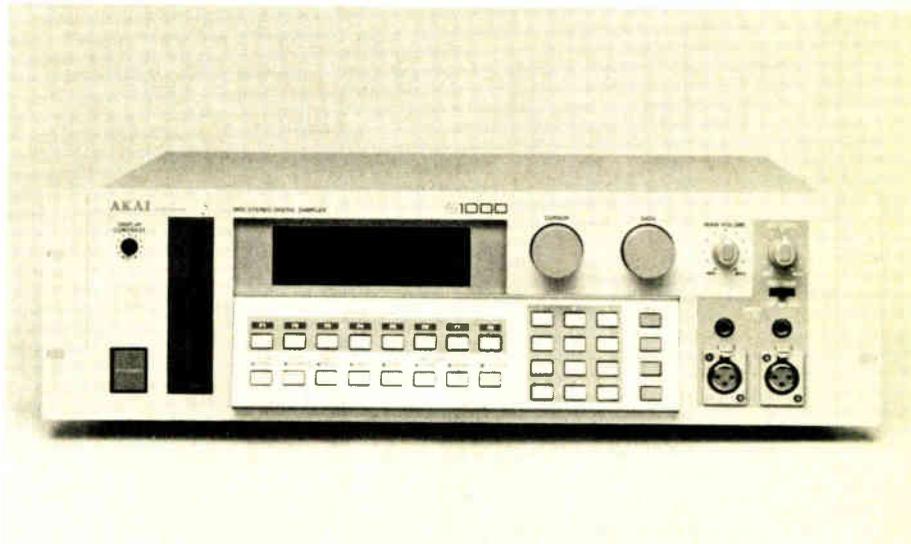
mono and 46 seconds in stereo at 44.1kHz.

The backlit LCD displays the waveform of samples, and a "zoom-in, zoom-out" feature lets you examine selected portions. A loop window graphically shows the loop points, and up to eight points are possible.

The unit has 16-voice polyphony and in addition to the stereo outputs, the S1000 has eight assignable outputs. There is also a MIDI input monitor that shows which channels have MIDI activity and graphically displays velocity data.

The suggested retail price was not set at press time, but should be in the \$5-6,000 dollar range.

MORE FROM Akai Professional, PO Box 2344, Fort Worth, TX 76113. Tel: (817) 336-5114.



SEEING IS BELIEVING

A rare educational (and fun) opportunity to explore the workings of sound resides in a new exhibit at The Franklin Institute in Philadelphia from now through September 4. **What Makes Music?** is a touring exhibit which aims to examine the relationships between science and music by providing 20ft keyboards for dancing out songs, as well as the more standard xylophones, computers, drum machines and piano soundboards. The emphasis is on

hands-on participation, with performances on the Kurzweil 250 and laser shows at the Fels Planetarium on Thursday, Friday and Saturday nights.

After its stay at The Franklin Institute, the exhibit will begin a two-year national tour to seven other major science museums in Charlotte, NC; Fort Worth, TX; Los Angeles, CA; St. Paul, MN; Chicago, IL; Columbus, OH; and Boston, MA.

MORE FROM The Franklin Institute, 20th & the Parkway, Philadelphia, PA 19103. Tel: (215) 448-1200.

FEEL YOUR WAY AROUND

Ever wanted to move your MIDI data around after you've sequenced? This one may be up your alley. Future Lab has announced the development of the Feel Factory, a MIDI mixification box which allows you to manipulate MIDI data forward and backward in real time. The device has eight faders, each of which can be assigned to either a MIDI channel or an individual MIDI note number or a range of note numbers. "Feel algorithms" can be accessed, allowing you to pick, say, a

Motown feel or a New York dance groove by utilizing specific time modulations for each sound. The preset algorithms can be modified and saved as new user presets, which can be recalled either manually or via SMPTE cue points read by the internal reader/generator.

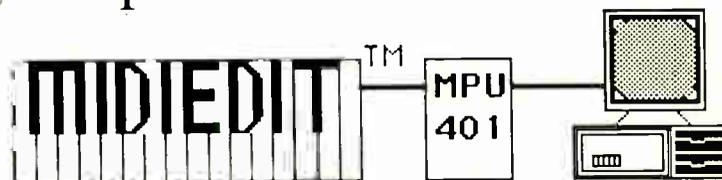
A cartridge slot is provided for future feel algorithms, and a port is provided for a "feel analysis device," which will enable you to sample a feel from an existing audio source and save it as a preset.

The suggested retail price is \$650.

MORE FROM Future Lab, 1032 N. Sycamore, Hollywood, CA 90038. Tel: (213) 461-8992.

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READERS' LETTERS

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

Dear Music Technology,

Just a note to thank you folks. A few months back (MT October '87), I sent you a letter asking for a mention of my now defunct campus radio show, Waveforms. Music Technology printed the letter giving my address and a brief blurb on the show.

I'm sure you know that you have a sizeable readership, but you'll never guess who replied to me upon reading the Readers' Letters that month. Warren Sirota and Michael Boddicker both sent in tapes of original material, and Michael's office wrote saying that I should call if I wanted an interview. Not being one to pass up an opportunity like that I called and enquired about an on-air telephone interview. Michael was gracious enough to absorb the costs for the 20-minute conversation from LA to Montreal, and we set it up for the following week's show. He would call me on-air and we would do it live.

It was fascinating for the listeners and for me to be able to ask Michael Boddicker all these questions. His comments and insights into acoustics, composition and the music business were so inspiring I transcribed a recording of the interview into article form for CRSG's program guide RearGarde.

Thanks Music Technology and thanks to Warren Sirota and Michael Boddicker. WaveForms ("ahem . . . a weekly sampling of 20th century music and sound") is in retirement now after 2½ years so that I can pursue my own spare-time studies in electronics and music. Music Technology will definitely be on the curriculum!

**Michael Gericke
Montreal, Canada**

Thanks for the feedback Michael, glad we could be of assistance.

Dear Music Technology,

I wanted to let you know that I find your magazine really helpful. I periodically go back over old issues just to keep track of all the info you pack in.

As a suggestion for a new feature that you might incorporate, I think it would be nice to see one page where people could send in their ideas for things that they would like to see, big or small - techno wish-list - maybe the industry would notice these things, as I am sure that they pay attention to MT already. Here is an example from me: lots of us use computer sequencer software (Mark of the Unicorn Performer, in my case), but computers are fragile and expensive beasts to take on the

road. I see the need for a disk-driven 16-channel sequencer without editing features - basically a sequence player or slave-type unit - that would simply record the computer sequencer's info onto its disk and play it back exactly as it was loaded in. This unit could be stripped down to play, record, bank loading, MIDI channel selections for tracks (if necessary), eject - something very simple. We already have all the editing functions in our computers. This certainly would be inexpensive.

Thanks for a great handle on the new instruments.

**Roman Orest
Starbuck, MN**

First, specifics: having a unit just to play back sequences composed elsewhere is precisely the idea behind onboard sequencers such as the one on the Emax (of which there is a rack-mountable version available). The Roland S50 and S550 also have an alternate operating system that turns them into sequencers (see reviews of both the Emax SE and Roland S550 in this issue for other details about these instruments). On the other side of the coin, several rack-mounted computers are available, such as the ones from Mellotron (see Computer Newsdesk MT April '88). Off the top of my head, I'd be curious to see how the public would treat a rack-mounted device simply for sequence playback - I bet it wouldn't be much cheaper than a computer, and many shop for sequencers by their spec sheets these days.

As far as a general forum for product ideas, well, this Letters page is a start. We're also going to start moving around from reporting on products to suggesting them every now and then, so stay tuned.
- CM

Dear Music Technology,

Your May, 1988 editorial strikes a tender nerve, and one that is particularly appropriate at this point in the evolution of electronic music. The lack of innovative and challenging music being produced in basements and garages across the country is not a peculiar accident, in my opinion. As one who has kept one of those basements occupied for the last 15 years, I must frankly admit that my own music becomes more and more bland as technology marches on.

How can this be? How is it possible that a musician and composer that has more

technological marvels piled in his lap every year can become less creative? I think that the answer lies in the fact that the average basement composer is going through the same evolution that several notable bands went through a few years ago. DEVO and Human League come to mind immediately. Both recorded first rate, cutting edge music initially; DEVO with their first Stiff album and their first major release, and Human League with their first singles and 'Dignity of Labour' EP.

As these, and other bands prospered, their cheap, home-made and in some cases, self-designed music-making equipment was replaced by Prophets, Fairlights and the like. Certainly innovation is possible on these instruments, but the user is not required to think in innovative terms when using them. Top 40 music just gushes out of them, whether you want it to or not. It's nearly uncontrollable!

Now that technology has put instruments like these into the hands of every interested electronic musician, a similar story unfolds. Musical "accidents" become few and far between. We have access to microtonality, as a for-instance, but it's only from within a most contrived, conventional environment. Interaction with unpredictability is missing. We are writing algorithmic composers, random patch generators and programmable variations generators to fill the gap, but they are far, far too limited and contrived themselves to provide the missing ingredient.

The irony here is obvious. As the instruments we design to free us from this unchallenging sameness become more and more sophisticated, the designers are, possibly unconsciously, directing us away from inspired innovation.

I suspect there will always be some brilliant minds that will rise to the occasion and provide all of us with the kind of music your editorial cried for. Thank God for them. In the meantime, there is a part of me that is secretly hoping that my computer blows up as soon as I finish this letter.

**Charles Williamson
Columbia, MO**

Well Charles, all drastic notions aside, we think you bring up some interesting, valid points. Many of today's new instruments do seem specifically intended for the production of popular, mainstream music (some of which we do like quite a bit, by the way) but we think that may be changing. As more and more people involved with different genres of music start using the latest gear to produce their

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music, they will start demanding features that will prove beneficial to them. As you mentioned, access to microtonality is a case in point, though we think you ought to be a little more thankful that something like that is even available – two years ago it was practically unheard of on electronic instruments. The future should prove even more promising. Any other comments out there?

Dear Music Technology,

MT is a particular help to me, an ex-patriot making music in the land of the rising sun. We're often the first to see some of the new goodies, but having to work through a difficult second language, the last to figure out what they do! Your well-written reviews make my purchase decisions easier.

So here's a question for your technical staff. I'm using an Akai MPC60 to control a Yamaha DX7s and TX8Z (Akai MIDI out – DX7s MIDI in – DX7s MIDI thru – TX8Z MIDI in). Whenever I hit Stop on the Akai or exit step edit mode, some kind of disable message is sent to the TX8Z. That is, it ceases to make sounds until I hit Play/Perform twice. (Once to enter the adjacent mode and once again to return to where I was.) This only affects the TX8Z, not the DX7s. Two extra buttons to push every time I overdub or playback! Dang my sushi, it slows me down! Any suggestions?

Jim Slick
Tokyo, Japan

PS: PC Receive on TX is Off. I've tried filtering out all messages except note on/off from MPC60.

We gave Roger Linn a call, and he said in the original version of the software that the MPC60 would send out continuous controller values of 00 for three MIDI controls (mod wheel, breath controller, and expression pedal) when stopped (also, if MIDI clocking was enabled on that MIDI out port, a song position pointer was sent). Since some synths assigned main volume to the expression pedal (most Rolands, and some Yamahas), it would in essence kill them. Version 1.1 of the MPC60's software no longer does that. I know you said you filtered out all MIDI messages except notes, but that's the only thing we could think of.

The other potential problem is with the MIDI thru port on the DX7 corrupting the data. Try placing the TX8Z in front of the DX7 in the MIDI chain. But whatever you do, try the new Akai software! – CM

Dear Music Technology,

Thank you for the inaugural issue of MT. I've been buying it every month since along with Keyboard. I use these publications for equipment information for purchase and operation. I save every copy for reference.

In the December '87 issue Readers' Letters section David de Coup beautifully described color and its effects on the eye. He got a silly assed answer from the art director.

I agree with him. Many of your issues are miserable to read. Even more important to me
MT JULY 1988

– I spend \$35 or so a year with you, can't you save me some reading time? I've mentioned it on the phone to your offices – put a caption under every picture. If I see a picture with a legend, I'll make it a point to read the article generally. If there is no explanation, I'll skip the article.

Examples. April '88 pages 47-49: beautiful if you're selling a Christmas brochure for Bullocks. I cannot subject my eyes to this. I'd like to read the story about Tom Dolby.

Pages 16 and 17 – two pictures of equipment. Are they synths, drum machines, samplers, sequencers or what! A legend under each would save me a lot of time and help months later as I run through for reference purposes.

April '87 page 55-58 – nice Easter colors, hell on the eyes, never did read the article, often wondered if Nick is the son of Doug Kershaw.

I suggest you submit some of this to the medical department at UCLA or SC for their evaluation.

In the meantime, I regret to say no more MT purchases until I see legends on every picture and readable colors.

W Weeding
Studio City, CA

Well, Mr Weeding, I'm sorry to hear that you don't like the look of some portions of our magazine. In our defense, however, I must say that we strive here at MT to produce an entertaining magazine – both from a written and visual point of view. We use artistic photos, put color over complete pages and do other types of creative layout that gives our pages the distinctive look that they often have. Of course, like most creative endeavors, some ideas work better than others and we've certainly fallen prey to occasional overworkings, but I think you'll find that a vast majority of the artwork nicely compliments the text it is meant to accompany. As for your suggestion on captions, it's a good one up to a certain point, but putting captions on every single photo will sometimes only clutter up a page. In the case of the Korg products you mention in the April issue, their names are in the title of the article. The bottom line has to be a clean, informative display of information. Don't give up on us yet. – BO'D

Dear Music Technology,

Thank you for your May '88 article on multitasking. It is great to see articles appearing about this wonderful yet misunderstood subject. The article did contain several misconceptions, however, that I would like to clear up.

First of all, Mr. Newquist states that multitasking "requires a great deal of RAM. No, 512K won't do . . . You need at least 2Meg of RAM to operate Multifinder . . ." Well, my 512K Amiga multitasks fine. Maybe certain computers need lots of RAM (the Macintosh was not originally designed for multitasking), but not all. It's true that more RAM is desirable, but it is not a requirement.

Mr. Newquist's major error was about " . . . another concern in multitasking – different applications from different developers." This statement is wrong in every sense! A true

multitasking computer runs any programs simultaneously, regardless of origin, unless the programs were intentionally written to forbid it. If your computer doesn't do this, then it is not multitasking. Mr. Newquist's concerns really are about interprocess communication, where several programs must actually interact, not just run simultaneously. This is indeed an area of concern and research.

I was happy to see some mention of the Commodore Amiga in your article. I use and maintain IBM's, Macintoshes, and VAXes every day, but the Amiga is still by far my favorite computer, and its approach to multitasking is elegant and powerful.

I really enjoyed Mr. Newquist's analogy of the President's press conference, and the article as a whole was well-written. Music Technology is still my favorite magazine – keep up the great work!

Daniel Barrett
The John Hopkins University
Baltimore, MD

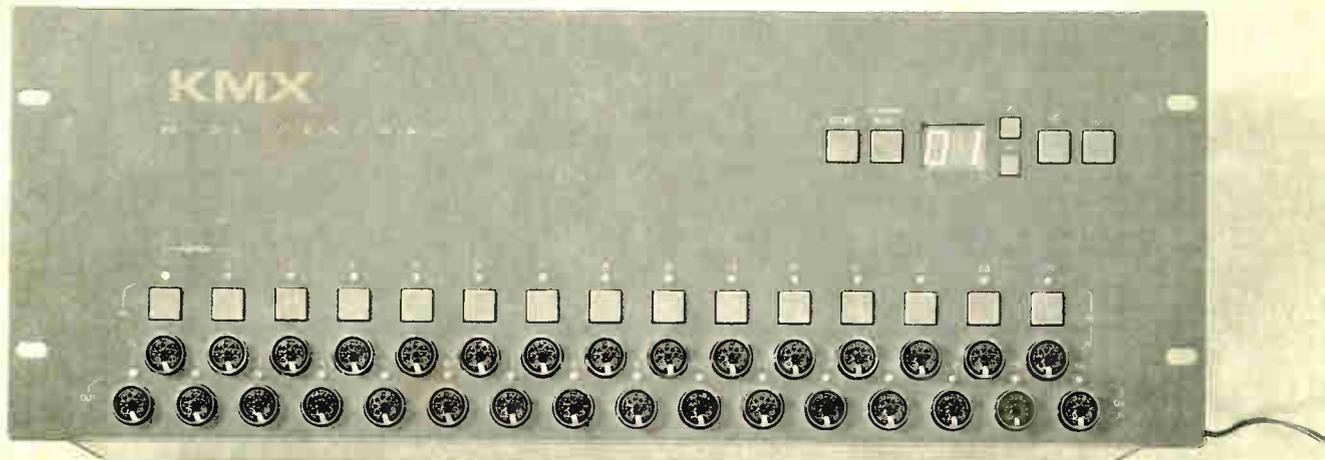
Harvey Newquist replies: First off, thanks for the nice letter. It reassures me that my lonely nights slaving over a hot PC with a pitcher of cold margaritas has not been in vain. Second, let me reply to your two points. As for the first one, my designation of 2Megs of RAM was specifically for using Multifinder on the Mac II (that's why I had it in the paragraph describing Multifinder). The mention of "all areas regarding micro multitasking" was simply a reference to the fact that a machine with 128K of memory is not optimally suited to multitasking. The reference to 512K in particular was about other Mac configurations. In the future, to make these distinctions more lucid, you may be forcing me to use more commas and parentheses.

Your second point is valid in terms of true multitasking, but remember, the whole article dealt with the emergence of multitasking on micros in music. I wasn't addressing the possibilities of multitasking expert systems on a DEC PDP11 or the problems of multitasking vector-based applications on a Cray XMP. However, certain types of program structures do allow for faster operation in multitasking, and often similar coding structures are standardized (as much as this can be possible) throughout a company's product line. Thus, it's often the case that the package in the multi arena which is the "odd-man out" can slow things down. Again, bear in mind that our subject matter is music, micros, and to a lesser extent, MIDI, and if things slow down, things screw up. Some of the packages I referenced thereafter did have some features that related to interprocessing, but at that point we get into the dreaded "Battle of Semantics," where interprocessing, multi- nesting, interprocess communication, multiprocess communications, and other polysyllabic terms start crossing over very fine lines of distinction.

If you still have more questions, give me a call (via the magazine) and we'll do margaritas. I'll buy. ■

I · N · B · R · I · E · F

KMX MIDI Central and Merge/Select



The first two offerings from this new company present some viable options for the age-old problem of MIDI interconnections. *Review by Chris Many.*

MIDI SWITCHERS ARE not new. However, a 15-input, 16-output MIDI patchbay with programmable memory for a retail price of \$449 (the MIDI Central) is. Up until now you'd pay at least twice that amount for a similarly configured MIDI switch box.

The unit itself is rack mountable (however, we're talking about four rack spaces here). The reason it's so large is that everything is on the front panel, including the 31 MIDI ports, 16 buttons and all the programming functions. Because the MIDI ports are on the front, you have complete accessibility for easy plugging in/out of MIDI cables. Of course, if you're in a studio situation where you don't really need to change cables that much, the aesthetics may leave something to be desired, but it's a minor trade-off. (Another unit is on the drawing boards now that moves the ports to the back – however, it's going to cost more. It seems the primary reason they're on the front is that the unit only requires one circuit board when it's set up this way, and that keeps the cost down; to the tune of a hundred dollars or so. To place them on the back will require a second board, boosting the price as well).

The truth is, a lot of people will find having the MIDI ports on the front very convenient, even if you don't do a lot of patching and unpatching. It's nice to be able to easily patch in the horn player's WX7 for the session you just hired him for and have him play a special or favorite patch on your synths. And I'm sure music stores will love the ease of having this kind of cable accessibility.

As stated above, there are 15 Ins and 16

Outs, with MIDI In ports 1 and 2 functioning as MIDI mergers as well. Programming is very simple. Through the use of arrow buttons (up, down, left and right) you select the Out you want to route, then press the button over the In you want it controlled by. Red LEDs light up showing you which Outs and Ins are connected, making adjustment quite easy. You can disable any routing by repressing the In button, and simply select a new In to route to. Each configuration can have any number of Inputs simultaneously controlling any combination of the 16 Outs.

Once you've got a setup you want to save, just press the store button: it will flash for a second or two, and then save the setup to whatever memory location you selected when it was flashing. There are 99 presets available, and while this may seem like overkill for even the biggest MIDI setups, you'll never have to worry over running out of storage room. It's also a big plus for live situations as presets can be recalled remotely from keyboard patch changes, thus allowing preprogrammed routings to be used.

The MIDI merge feature functions fine, allowing input from two keyboards at once. It won't merge two different timing signals, and accepts timing data from the first input that sends a MIDI Start command, filtering out timing data from the other input (a cute trick). Merging is done on the first two MIDI input ports, so you'll want to reserve these for the two controlling synths you think you'll want to use most. Although, because all the MIDI ports are all facing you on the front, it's simple to just plug the controller you want to

use – no need to look around back and hunt through a tangle of wires.

KMX's other unit is the Merge/Select – a 2-In, 8-Out Thru box with merge. Each of the eight outs can be selected to work with either input or a merge of both of them. LEDs show the MIDI activity for the two input channels. If you don't have all that many synths, this is a good unit to start with, especially if you can't see shelling out even \$450 for a MIDI switcher.

Having 16 MIDI Ins and Outs available may seem like a lot, but I found myself pulling out a few old synths and controllers that had fallen into disuse and patching them in. It was too much of a pain before when I was using a 4 In/8 Out patcher to have to MIDI up a drum machine, guitar controller or an OctaPad when the Ins were normally filled with keyboards. Now everything is a potential controller for every synthesizer and it's made life much easier. Hooking up MIDI'd multi-effects units and attaching reverb or delay to specific synths is another use. Although it doesn't send patch changes à la a Mapper-type device, just being able to engage and disengage an effect to synths through preprogrammed patch connections is helpful.

Both units are very straightforward and easy to learn and use. The retail price puts comprehensive MIDI patchbays within the price range of most pocket books, as you can figure a 20-30% reduction on the street. Here's another good example of a great value for your money, and if you need a MIDI switching system, or looking to upgrade your current one, KMX is an excellent choice. ■

PRICES MIDI Central, \$449; Merge/Select, \$179
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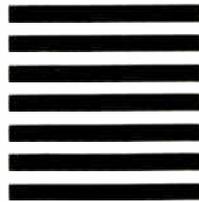
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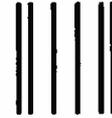
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A Vocal Chord

PART ONE

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Illustration Sophie Laurence-Jones

If you're tired of hearing – and using – the same old vocal samples but have found making your own to be harder than it sounds, this two-part series on sampling vocals could add a new dimension to your sound library. *Text by Tom McLaughlin.*

THE HUMAN VOICE is probably the most versatile musical instrument known to mankind. Not only is it capable of song and speech, it can also produce a multitude of sounds that are not part of any language as we know it. Clever beastie that he be, man can also mimic much of the world around him, including members of the animal world, machines, weather, many musical instruments and sound effects.

Unlike the majority of sounds that make up our standard musical palette, the voice is extremely difficult to synthesize with any amount of realism using commercially available additive, subtractive, FM or digital synthesizers. I thought I'd come up with some reasonable approximations using a Jupiter 8, Oberheim 4-voice, Moog series 12 and DX7, but these paled by comparison to the "oohs" and "aahs" of Isao Tomita's recorded choirs. A more thorough understanding of the voice and its synthesis was in order . . . or so I thought. The bubble burst when I discovered Tomita "fine-tuned" his analog vocal constructions with a vocoder.

Things changed quite dramatically when the sampled voices and choirs of the eight-bit Fairlight I, Emulator I and PPG

Waveterm A appeared on the scene. Although they sound somewhat crude by today's 12- and 16-bit standards, and part of my brain still told me I was hearing electronically produced sounds, another part told me that these sounds were definitely of human origin.

Using sampling technology we can extend the range of the human voice beyond all known limitations (from sub-basement baritones to supersonic sopranos) or have our sampled vocalist sing ridiculously long notes without having to resort to mundane things like breathing. But before we get into the actual considerations involved in sampling vocals, let's take a look at the voice itself.

Vocal Ranges

Female:

High	Soprano
Medium	Mezzo Soprano
Low	Alto

Male:

High	Tenor
Medium	Baritone
Low	Bass

Vocal Registers

LIKE OTHER ACOUSTIC instruments, each voice has several distinct registers, each with its own characteristic tonal qualities. From low to high these are: the "growl register," "chest register," "head register" (or "falsetto"), and the "whistle register."

The growl register is difficult to sing a consistent pitch in, even for classically-trained singers. Using this register, sounds as low as only a few cycles per second can be made. It involves relaxing the vocal cords to such an extent that the only sound possible is a low growl of ambiguous tuning rather than a musical pitch. Funnily enough, it's easier to produce growl register tones while inhaling.

The chest register is the richest of all the registers and is what most people find themselves singing and speaking in. It uses a large percentage of the middle and upper body as a resonator to produce its distinctive "golden" tone. The warmth and sonority of the chest register thins out and becomes more pure and "silvery" as singers reach their upper range, using less of the chest as a resonator and more of the throat and head cavities to produce falsetto

or head register notes.

At the upper end of the falsetto register in women, children and some men, we find the whistle register: the shrill squeals sometimes emitted by young children while playing. Due to the skill involved, only the most talented of singers can produce these piercing, whistle-like tones with any degree of musicality.

Jimmy Somerville, Kate Bush and Olivia Newton-John have vocal ranges that border on the whistle register (if my burnt-out tweeters are anything to go by), and bass singers in '50s vocal groups often reached down into their growl registers to hit notes so low that the pitch was inferred rather than actually sounded. However, despite their obvious dramatic value, little use of the growl and whistle registers has been made in modern or classical music. Maybe with sampling technology enabling us to record difficult performances (filtering and manipulating them to taste) and replay them with the greatest of ease, we'll be hearing more of these vocal registers in film scores and popular music in years to come.

Vocal Multi-Samples

AS BEAUTIFUL AND musically useful as they are, the current palette of copied and re-copied "oohs" and "aahs" are beginning to wear a bit thin. The odds are that somewhere along the line these came from the famed Fairlight II stock library (and my hat goes off to whoever made that sample for their contribution to sampling history), but there must be more to sampling than "lifting" ready-made multisamples. I find myself listening and playing "spot that sample" with TV commercials, and nine times out of ten I'll recognize the vocal paps as coming from the Fairlight, Emulator, Mirage or Prophet library.

Sure, it takes a bit of time and effort to record, sample, edit, tune, loop, map, trim and tweak a set of vocals, but at the end of the day it'll be yours - and there won't be another set exactly like it in the world. I like that idea.

Since ensembles seem always to be in demand, let's take a look at how you can create your own. But keep in mind that most of what follows pertains to solo vocal samples as well.

Multitracking

IT IS POSSIBLE to sample a voice by plugging a microphone into a sampler and going "aah," but I find it preferable to pre-record onto tape first. Among other things, I can "audition" recordings before I sample them, making sure enough level is getting into the sampler and, if need be, varispeeding the recording to alter the pitch. Besides, there's really no reason why a vocalist has to be present for what is basically pretty boring stuff for all but a
MT JULY 1988

sampling lunatic.

Those of you with access to a multitrack tape recorder with a varispeed control, a microphone and a mixer, have within your reach all the tools necessary for turning a solo vocalist into a vocal ensemble. The trick is to record multiple passes of your vocalist singing the same sound onto tape and record each pass at a slightly different speed.

Although "tracking" a vocal line several times at the same recording speed smooths out slight flaws and inconsistencies in the voice, on playback the voice comes out sounding like one big voice - nice as the effect might be, it still sounds like one singer. If you vary the recording speed for each pass, you'll be shifting the formants of the singer's voice up or down, and the net result will resemble several people of different sizes singing together rather than just one voice. Samples of vocals recorded in this manner will also have a wider playback range before they start sounding strange, as the human ear and brain will have several sets of vocal formants to deal with.

To help further the illusion of an ensemble, try doing something different on each consecutive pass. Things to think about are:

1. Using different EQ settings.
2. Changing mics and/or positions.
3. Having your vocalist sing with another coloration, in another style, or indeed like another person if possible and appropriate.
4. Varying parameters on the reverb if you're using one (it's a good idea to), or using a different "room" type for each pass.
5. Employing a digital delay, or dedicated effects unit, to produce a mild chorus or ADT effect. This will help to thicken and exaggerate your "ensemble." Care needs to be taken to keep any modulation to a minimum to aid future looping.
6. Anything else you can think of - every little bit helps.

Microphones

WITH THE EXCEPTION of a few laboratory-quality microphones such as those manufactured by Bruel & Kjaer, you'll rarely find a flat frequency response across the entire audio spectrum in a microphone - with good reason too. Just as it's impossible to find the "perfect" snare drum to do justice to every conceivable song, microphones can't be expected to record every instrument with equal precision.

In general you should use as good a microphone as you can get your hands on. Microphones intended for vocal use will have a gentle lift in the bottom end for warmth, and a boost in the upper end for presence and intelligibility, like the old standard Shure SM58. Most microphones have certain peaks and dips in their frequency response, some due to physical

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limitations, others actually built into their design, which, along with other factors, are responsible for their "character."

Give some thought to the overall sound you want your vocal samples to have. If you have a choice of microphones at your disposal, go through them all and get to know them if you don't already. Line a few of them up and route them through a monitoring system set dry and flat, and take a good listen to a friend or willing soul singing through each of them, making a mental note of each individual microphone's sound for future reference.

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Have your singer move closer to and further away from each microphone to get an idea of how it deals with The Proximity Effect. As you get closer to most mics, the bottom end response is enhanced, and everything else for that matter, so it sounds fuller and richer. Although regarded as attractive on lead vocals, the fullness imparted by close-miking can often render group and background vocals very thick and mucky. This is especially true when multitracking solo or small groups of vocalists on tape to create the effect of a large ensemble as we're doing here. You might be surprised at how it all adds up.

As most vocals recorded for subsequent multisampling will be used in a supportive role in relation to the overall mix, I like to treat them as background vocals from the start in terms of microphone choice and

placement. As I said, this involves having the singer sing further away from the microphone than they would normally and equalizing the vocals to be somewhat lighter and thinner than a lead vocal. "Lighter and thinner" does not mean pushing more top end with your EQ but rather rolling off a little bottom end - try cutting frequencies below 200Hz.

If I'm after an airy, breathy vocal sound I'll go straight for a PZM microphone (the cheapo-cheapo mics sold by Radio Shack are good for this sort of thing) as their inherent frequency response and coloration usually leaves very little work to be done in the EQ department. For nice warm "humming" samples, I've had pleasant results from AKG D202s and Shure SM57s.

Although I haven't used every microphone around (who has?), here are some personal favorites for vocals, along with the qualities I associate with them:

- **AKG D202:** Deep and warm
- **Neumann U87, U47:** Warm, round and transparent
- **Shure SM57, SM58:** Rich and "rocky"
- **AKG 414, AKG 451:** Crisp and clear
- **PZM's:** "Breathy" but thin-ish

Register Transition

CLASSICAL SINGERS SPEND much time and effort training their voices so that

there is a smooth transition between the chest and head registers. The area where these two registers overlap is sometimes referred to as the throat register, but is actually a mixture of the above two registers. For the most part though, you'll be working with vocalists who have a clear distinction between their chest and head registers. When making a multisample of a solo vocalist and, to a lesser extent, vocal ensembles, this transition area can stick out like a sore thumb.

Something that came back to me from my days in the school chorus was that if a vocalist sings an ascending scale, the chest register is carried up into what would ordinarily be the falsetto register. Conversely, if a descending scale is sung, the falsetto register is carried down into the range associated with the chest register. Although this has a lot to do with the individual performer, it's a useful technique to be aware of when sampling voices (and certain other instruments, especially woodwinds, reeds and brass). When creating a multi-sample, a vocalist can be recorded singing both ascending and descending scales with the best takes of each note chosen for their contribution to a smoother transition between registers.

With group vocals, identical pitches can be mixed/merged from the ascending and

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descending scales, giving you not only a larger sounding group, but also a smoothing effect between vocal registers.

Pitch Guide Track

SINCE FEW SINGERS have perfect pitch, it will make their task infinitely easier if you provide them with a reference track to listen to on headphones as they do their overdubs, both for timing and pitch. For pitch reference a good guide is a simple synthesizer waveform, maybe the first few harmonics of a triangle or heavily filtered square wave. But there's no reason why you couldn't use a vocal sample or sampled vocal waveform, as long as the pitch is consistent from beginning to end. If it takes your fancy, you could mix a little of this reference pitch in when taking samples of your recordings. It should help to beef up your ensemble, and will provide the ear with a central pitch if your vocalist's pitch is shaky.

The count-in to notes is a special case with vocalists. They need a pitch reference before they're to hit a note. To kill two birds with one stone, try using the pitch reference sound you're working with, and give it a percussive envelope with your VCA. Make up a sequence of four, evenly-spaced pitched "clicks," a sustained note (at least two seconds long, preferably three or four) followed by a second or two of

blank space for your vocalist to breathe (they need to do this from time to time). Copy and transpose this sequence, in semitone intervals, so that you end up with a master sequence, covering both ascending and descending scales, spanning your singer's entire vocal range. Commit this pitch and timing reference sequence to one track of your multitrack tape recorder and you're all set to start recording your vocalist. If you intend to do this on a regular basis you could copy this reference sequence onto cassette, so you don't have to set things up from scratch every time you want to record vocals for multi-sampling.

Although you won't end up using every single semitone from this sequence in your final keyboard mapping, there will be more than enough takes to choose from to whittle the group down to those that sound best.

Vibrato

IT SHOULD GO without saying that one of the major prerequisites of a useful vocal sample is the absence of any vibrato. Vibrato-less samples generally give better "keyboard mileage," and besides, samplers more often than not have provisions for adding vibrato later. This can be tailored to the project at hand rather than having to make do with what's there to begin with.

Unfortunately, losing vibrato is not the easiest of tasks for many vocalists. It's not as simple as leaving the mod wheel alone; serious vocalists spend a lot of time developing their vibrato and may rely on it to help shape their individual "sound."

The odds are that what you need as a sample will sound cold and lifeless to your singer, and you'll have to spend some time coaching them to sing a clear consistent pitch while retaining the tone color and characteristics of their voice. Some singers might not even be aware that they're employing vibrato at all. If you're having problems, you could take a sample of their voice and play it back to demonstrate how comic sampled vibrato can sound when played back as little as a third or fourth above the original pitch.

If you communicate your needs to your vocalist and make him or her feel involved from the start, you might be pleasantly surprised at how much more productive your session will be. Play back what you've recorded every now and then, and see if your vocalist is pleased with the results. If he or she feels they can do it better, give them another go - it's quite like conventional recording really.

Next month we'll go into trimming, looping and mapping these vocals. We'll also take a look at some of the more bizarre applications of the sampled voice. 'Til then, happy recording. ■

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On Stage

MILES DAVIS

Pantages Theater, Hollywood, CA

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The Man with the Horn is back with a revamped live line-up and still no fear of mixing jazz and electronics. *Text by Chris Meyer.*

I PERSONALLY CONSIDER jazz as the music where boundaries are supposed to get challenged and pushed back. Therefore, I find it rather puzzling (okay, I'll admit it – offensive) that some jazz musicians have a closed-minded attitude towards the form: feeling that it should not embrace technology; that it should not change at all. Fortunately, living legend Miles Davis cannot be put into that group.

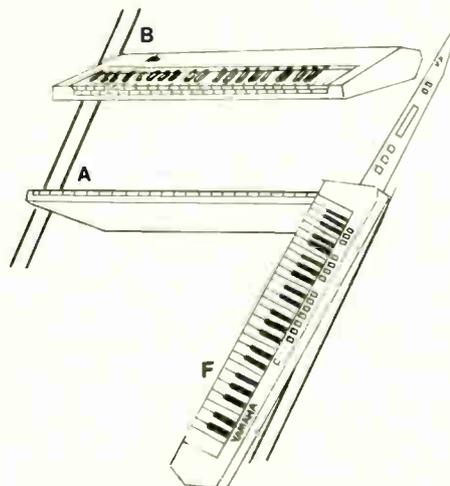
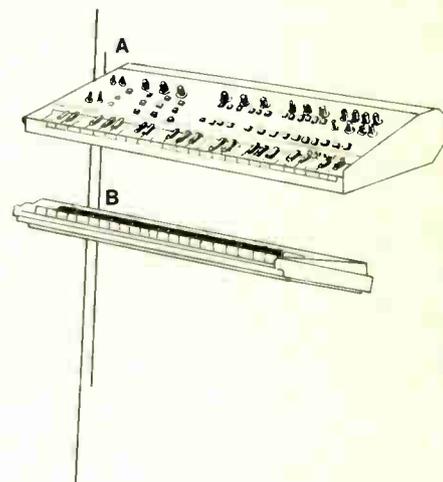
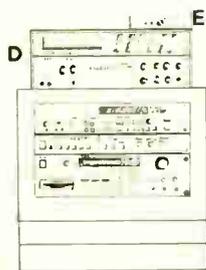
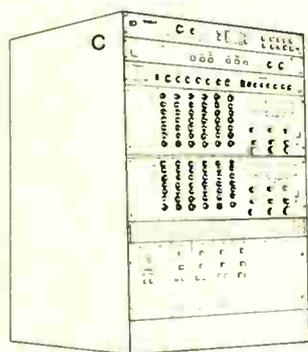
Miles has been pushing the boundaries of jazz (and his musicians) for some time. All except the last few albums have been based on studio improvisations, spliced and mixed

together after the fact. His concerts are still that way, with Miles directing his band (either by waving them into the spotlight, hitting a chord cluster or blasting a note to show them which way to go, or playing by their sides on stage) around familiar frameworks of known songs. The recent show I caught in Hollywood was no exception.

Davis' keyboard playing is more sparse than his trumpeting, often consisting of the aforementioned chord clusters on organ or an Oberheim OBXa. This time around, a Yamaha DX7 has taken over the role as his main keyboard, with the OBXa being used

for sustained notes. Miles will hit a chord, and latch it with the Oberheim's front panel "hold" button. He will then fade it in and out with its own volume control – either raising the volume to goad the band on, or for choruses, such as on his cover of Scritti Politti's 'Perfect Way' (the Oberheim let him down on the latter, with the old analog oscillators drifting out of tune over the course of the song, and Miles not managing to turn it down all the way several times before he had to hit a note on his trumpet).

Regular live keyboardists Robert Irving III and Adam Holzman (see Fents interview, MT May '88) stayed in a background, atmospheric role for most of the show, acting as supporting characters to metaloid lead bassist



Robert Irving III

- A Yamaha DX7
- B Roland D50
- C Rack includes:
Yamaha DIS00 DDL
2 Yamaha M100 mixers
Yamaha compressor/limiter
Yamaha TX416
- D Rack includes:
Akai S612 & disk drive
Korg EX8000
Akai ME20 MIDI apreggiator
Akai S900
- E Roland MMX with custom input selector
- F Yamaha KXI

Miles Davis

- A Oberheim OBXa
- B Yamaha DX7

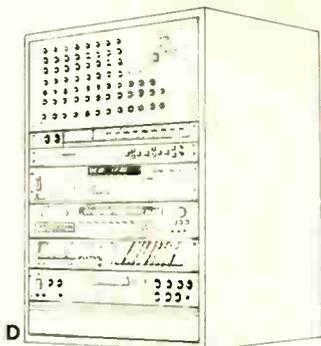
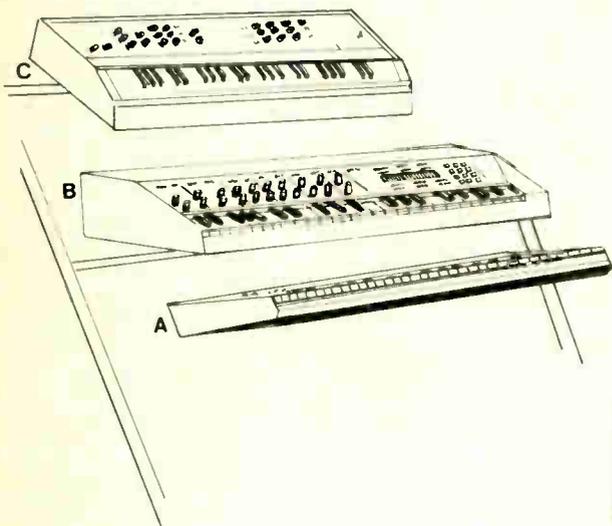
Marilyn Mazur

- Diagram not shown:
Roland Octapad
Sequential Prophet 2000
Custom stomp pad (trigger)

Foley (who sounded amazingly like a lead guitarist), saxophonist Kenny Garrett (who is obviously still shy of Miles, playing very softly whenever Davis was nearby), and speed bassist Benny Rietveld. Adam often doubled the bass on a trusty old Minimoog. Both Robert and Adam stepped out for a solo on remote keyboards, Adam especially impressing with regular changes of patch during his round. Helping Robert and Adam flip layers and roles were volume pedals for each keyboard and Roland MIDI thru boxes modified by tech Chris Danley for switchable masters (so different layering arrangements could be set up). Robert's new toy was an Akai ME20 MIDI arpeggiator, which he is starting to experiment with for effects to

replace the arpeggiator on his old Korg Polysix. Drummer Rick Wellman was augmented by percussionist Marilyn Mazur, who used a large selection of struck toys and a few sampled sounds (and hit the mark well over 90% of the time with sound selection) to make sure things never fell into too comfortable a groove.

And the show? A wonderful experience. Improvisation never clicks 100% of the time, but this worked easily through the majority of the show. Miles was obviously in a genial mood, and a relaxed feeling overlaid the cross between jazz, funk, and electronic music (Adam and Robert often used unusual timbres) for the nearly three-hour (!) concert. A recommended experience. ■



Adam Holzman

- A Yamaha DX7
- B PPG Wave 2.3
- C Minimoog
- D **Rack includes:**
 - Biamp 8838 mixer
 - 2 Roland MMX's with custom input selector
 - Yamaha TX7
 - Yamaha SPX90
 - Matrix 6R
 - Akai S900
 - Akai S612 & disk drive
- E Yamaha KX5

Illustration Brent Heintz



Photography Rosemarie Rounseville



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SoundProcess Digital Sound Synthesizer

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Photography Rosemarie Roimsettville

Triton's new Operating System turns your tired Mirage into a brand-spankin' new synthesizer. Review by Mihai Manoliu.

HOW WOULD YOU like to turn your Mirage into a multitimbral synthesizer capable of mixing wavesamples with single cycle "synth" waveforms? What if you could have up to 48 different patches in memory at any one time? Would you be happy you own a Mirage? You bet. The new SoundProcess Operating System may just make you fall in love with your Mirage all over again. You can now have the power of a multitimbral sampler capable of basic additive wavetable synthesis. Sound expensive? You may just be surprised.

I Hear Voices . . .

SOUNDPROCESS USES AN innovative voice architecture that allows you to combine wavesamples with user-defined waveforms to create a rich tapestry of sound. This fusion between the realism of sampling and the diversity/sustain capacity of synthesis has proven to be a powerful force in current music technology. Recent keyboards like the Roland D50, Kawai K1, Ensoniq's own SQ80, and most recently Korg's M1 (see review this issue) have used this approach very successfully. One difference between these machines and SoundProcess is that their waves and wavesamples tend to be permanently set in memory and cannot be defined by the user. SoundProcess, on the other hand, like the SE option for the Emax, not only allows you to define your own waveforms, it can also read both wavesamples and

waveforms from MASOS (the Mirage Advanced Sampling Operating System) disks; your whole Mirage sound library can thus provide you with a source for Patches. The unlimited sound possibilities inherent in this approach should be quite obvious by now. Ensoniq apparently also liked this independently developed operating system – so much so that for a certain period of time, SoundProcess will be a standard addition to the new Mirage.

It is important to realize that SoundProcess is not intended to replace the Mirage sampling operating system. By defining a new voice architecture, SoundProcess transforms the Mirage into a different musical instrument with a whole new set of capabilities and limitations. Although wavesamples and waveforms can be read from MASOS, SoundProcess does not have any user sampling capability. The on-board sequencer is also no longer active because all available resources are used for sound generation. Finally, wavesamples longer than 64 pages are not possible; these long samples would have to use the memory needed for other SoundProcess features. The strength of this new operating system lies in the power to combine complex samples with the efficiency of synthesis, thereby giving you access to 48 different Patches without having to load more sounds.

The SoundProcess Patch architecture is organized around two pairs of Oscillators whose output is mixed and shaped by a

resonant filter and its envelope and a Patch volume parameter (see Figure 1). Each Oscillator can be set to one of 16 possible wavesamples or 56 available waveforms, depending upon which one of the eleven Algorithms was chosen for the Oscillator pair. Each Oscillator can also have its volume and frequency chosen independently, and the pair is modulated by a volume envelope and a keyboard tracking parameter. More specifics on Patch programming later.

A Program is defined as a combination of Patches and their split points across the keyboard. There are 32 Programs available to the user, each of which can have up to six split points. SoundProcess boots up with Program #1 selected. You can now choose the top key and Patch numbers for the first split by entering values into Parameters 00 and 01 respectively. Parameters 02 and 03 give you the top key and Patch numbers for split two, etc . . . through Parameter 11 for the sixth split point.

The program interface is simple enough to learn for anyone familiar with the Mirage – though the Mirage has never won any awards for its interface. Even so, a total novice should have no problem getting around after a few days with SoundProcess. One important point to remember is this: always make sure you are listening to the Program, Patch, or Oscillator you are currently editing. It is easy to forget that the Program you are listening to is playing one Patch while you are actually editing a different Patch. You could easily keep wondering why there is no change as you alter Parameter values only to discover that you have totally thrashed your favorite Patch when you finally get your Program to play it. This can happen to veteran Mirage users as well as novices, so always double check that you are listening to the object of your edit.

The confusion will continue to be a problem until a visual interface (i.e. software editing program) is developed. However, given the power (and price) of SoundProcess, I expect we will not have to wait too long. For those who are interested, the complete MIDI specs are included as an appendix to the manual.

Patch programming can be rather tedious, but the results are well worth the effort. Even experienced programmers may have to use some trial and error and develop new techniques. The results I achieved by using trial and error during a limited time were surprisingly productive (considering that programming is not my career choice). Also, any frustration is easily forgotten when you hear the results in a musical environment.

SoundProcess can store Wavesamples that are either 16 or 32 pages long. Through a creative choice of Algorithm, a 64-page Wavesample can be played.

MT JULY 1988

Waveforms can be created using Parameters (19)-(30), which allow you to define the relative amplitude of the first ten Harmonics, and the amplitude of the resultant wave calculated from the Harmonic levels. Waveforms of one, two, or four page length can be loaded from MASOS disks.

Did You Say Algorithms?

THE KEY TO success with SoundProcess programming is to have a working knowledge of the eleven Algorithms (not of the DX variety). The choice of Algorithm governs how the two Oscillators in a pair play the Wavesamples or Waves assigned to them. There are four Modes that combine in different ways to give eleven Algorithms. Continuous Mode will repeat a single-cycle Waveform (typically producing a static pitch) or it will repeat the selected Wavesample continuously. This is the only Mode that can play Waveforms; the other three Modes are for Wavesamples. Loop Mode repeats only the section marked off with the Wavesample Looping Parameters (56)-(58). One-Shot Mode triggers the Wavesample only once, stopping at the

end or at an earlier point set by a Loop Marker inside the Wavesample. Timed Re-Trigger Mode plays the Wavesample from the beginning; an internal clock can be set by Parameter (83) Re-Trigger Time, to start the Wavesample again. This cycle can be repeated indefinitely or a fixed number of times set by Parameter (84) Repeat Counter. Re-Trigger time can be set in 10msec increments within a 2.5 second range.

Algorithms are various combinations of the four Modes; they apply to both Oscillators in a Pair. Here is what they do: (A-1) - both oscillators are in Continuous Mode; (A-2) - osc A in One-Shot with osc B in Continuous Mode; (A-3) - both oscillators are in One-Shot; (A-4) - osc A plays once in One-Shot, then osc B starts in Loop Mode; (A-5) - both oscillators are in One-Shot Mode, with A followed by B; (A-6) - osc A plays in One-Shot, followed by osc B in Continuous Mode; (A-7) - osc A plays in Re-Trigger with osc B in Continuous Mode; (A-8) - osc A plays in Re-Trigger with osc B in One-Shot Mode; (A-9) - both oscillators in Re-Trigger Mode; (A-10) - osc A plays in One-Shot, followed by osc B in Re-Trigger Mode; (A-11) - osc A and osc B alternate in Re-

Trigger Mode. Experimenting with the Algorithms is critical to programming SoundProcess Patches successfully, and is well worth the time. All the algorithms are graphically displayed in the manual (which, by the way, presumes a bit of knowledge about MASOS, but otherwise is quite thorough and well-written). By the time you read this a tutorial should also be included with the documentation.

You can save all the Waves and Wavesamples, Patches, Programs, and Configuration by saving a Sound Bank onto disk. A total of three Sound Banks can be stored on one disk. When a particular Bank is loaded from disk, the Mirage will behave exactly as it did at the time the Bank was saved. SoundProcess data disks are created by inserting a Mirage formatted disk in the drive and activating Parameter (17). You can also load only single Patches or Waveforms from a Sound bank by using the Disk Function Parameters (13)-(16).

MIDI Configuration is set by Parameters (31)-(53). Multi Mode On (52) enables the multitimbral capability of SoundProcess, and allows you to assign a different program to each of the 16 MIDI channels - Parameters (31)-(46). Controller information is applied only to the programs playing on channels that match the channel number of the Controller data. When Multi Mode is Off, response to MIDI information is controlled by the Omni switch (48). When (48) is Off, the Mirage enters Poly Mode; Parameter (47) assigns which channel will send/receive MIDI information in this Mode. Parameter (50)-MIDI Overflow allows you to connect two Mirages for a total of sixteen active voices.

The Patches on the System Disk offer a good representation of the depth and power of the SoundProcess approach to synthesis. Triton (the developer of SoundProcess) is working on a Sound Disk that should be available by the time this review is printed. This Disk has Patches which seem to have an even more crafted texture. Both sets of Patches include a diversity of interesting sounds; this collection can be a great starting point for your own Patch library.

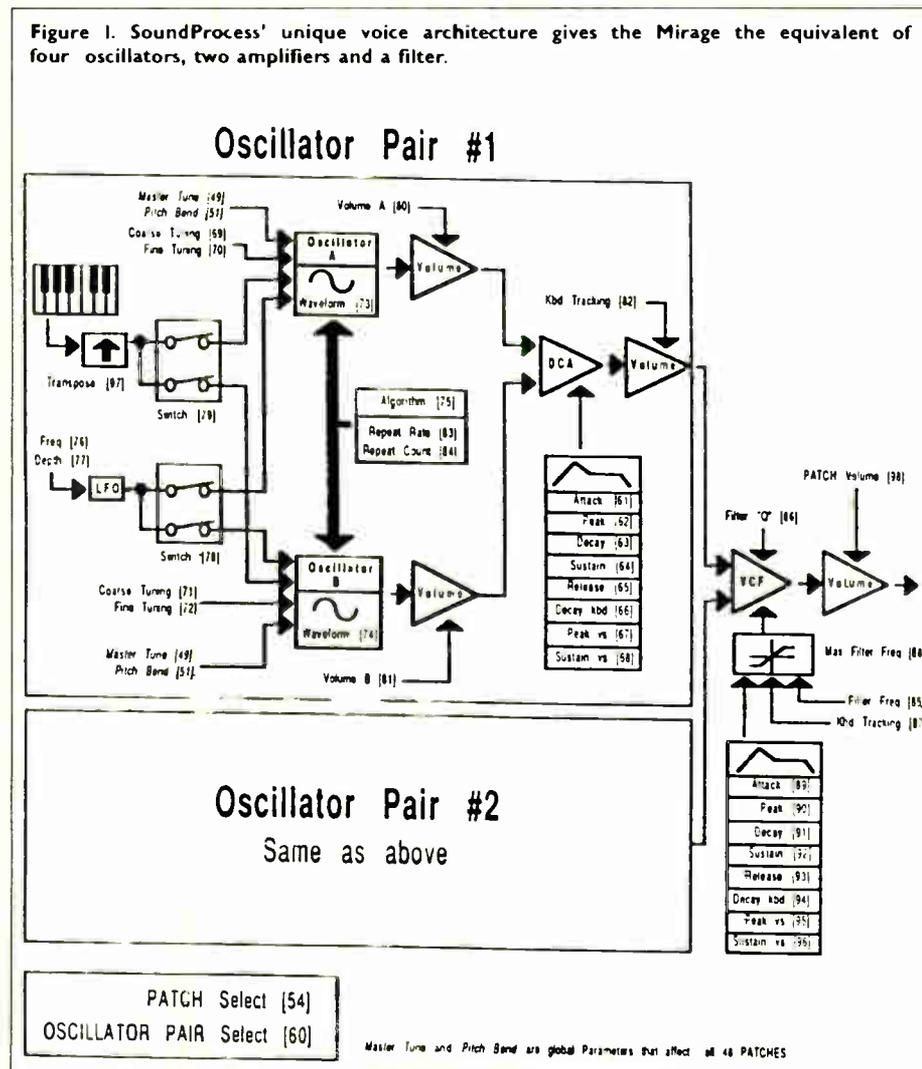
And So . . .

SOUNDPROCESS IS A worthwhile investment for anyone looking to expand the power and usefulness of their Mirage. Its powerful synthesis capabilities make the capacity for interesting sounds nearly unlimited, and the ability to access up to sixteen programs simultaneously via MIDI is especially attractive to anyone who owns a multitrack sequencer (or plans to buy one). Best of all, the price is right. ■

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Figure 1. SoundProcess' unique voice architecture gives the Mirage the equivalent of four oscillators, two amplifiers and a filter.



classic synths of yesteryear

Uncle Bob's Baby

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Photography Tim Goodyer

Successful though today's technology may be, there'll always be a place for yesterday's – especially if nothing has come along since to replace it. We start our trip down memory lane with the classic – the Minimoog. Text by Tim Goodyer.

THE MARCH OF technology rarely admits defeat. Occasionally it has a pause for breath, consolidating its position before surging forward once again. But far less common are the moments at which progress is forced to take a backward step. When that happens, it happens because a giant leap forward has sapped so much strength from the march, that a small retrograde movement is the only way things can go – at least for the time being.

The march of musical instrument technology throws up a number of excellent examples of this. Hammond could only go backwards after the B3 and C3 organs, Hohner could only do likewise after the Clavinet. Then there was Yamaha, who experienced a mild hiccup after deleting the CS80 polyphonic synth, only to bounce back with a vengeance at a later date; Roland did much the same after the demise of their TR808 drum machine.

Sadly, Moog never really recovered from discontinuing the Minimoog, the instrument that did so much not only to bolster the image of Moog as a company, but also to increase awareness of the music synthesizer as a whole.

Before the Minimoog's introduction, Bob Moog's company concerned itself with producing tailor-made, highly-complex modular synth systems like the Zoukra

Moog and the System 55 – huge, unwieldy monsters that were never going to see use by anyone other than the lucky, pioneering few. They were essentially mid-'60s designs, but they continued in sporadic production well into the '70s. By that time, however, Moog had turned his attention to producing a simpler, more usable, and more accessible synthesizer – the Minimoog.

Most sources agree the Minimoog was the work of in-house designer Jim Scott. Stories vary about when the Mini first appeared. A favorite version is that its first public appearance coincided with the first appearance of one of its main competitors, the Arp 2600. Both units were displayed at the 1971 AES convention and, according to legend, both units were finished in hotel rooms the night before. One other interesting anecdote about that first Minimoog is that it was sent to Keith Emerson over in England immediately after the convention and he instantly put it to use on the last two songs ('Tank' and 'Lucky Man') of ELP's first album. The now-classic synth solo at the end of Lucky Man was done in the first take, and Keith had to be talked out of redoing it.

As you well know, the Minimoog became a revolution, a synthesizer for the masses. Now, it's an anachronism. It's monophonic, it has no sound memories,

onboard sequencing or arpeggiation facilities, and certainly nothing as comprehensive as MIDI with which to communicate to other music machines. And in the synthesis department, its range of facilities was surpassed by the SCI Pro One (itself long since discontinued) and is now taken to the cleaners by the OSCar. But let's not dismiss its electronics out of hand; they're the main reason the Minimoog is still sought-after, why secondhand models are changing hands for surprisingly large sums, and why, as I said at the beginning, nothing is ever likely to replace it completely.

The Voice

THE FIRST, AND best-known, of the synth section's attributes is the presence of no less than three analog oscillators, all of them simultaneously available for audio applications if you didn't mind losing the services of the modulation oscillator. In fact, the latter became sufficiently favored for its fat sound for some models to be made with a fourth modulation oscillator built in. It was an elegant way to avoid compromise, but chances are you'll pay handsomely for a quad-oscillator Minimoog now – if you can find one at all.

The oscillators were well-endowed with waveform options. Each has triangular, sawtooth, triangular-sawtooth, and three different square waveforms, with reverse sawtooth instead of triangular-sawtooth on Oscillator 3 in the interests of improving modulation. Only one waveform can be selected from each oscillator at any one time, but that choice can be made *independently* of the other two oscillators, as each is a law unto itself.

The absence of a pulse width modulated waveform might appear at first to be a serious omission, but it isn't. Remember, PWM was a facility initially introduced as a sound-fattening exercise on synths with only a single oscillator (a handicap the Minimoog obviously isn't encumbered with), and in any case, Moog had the situation well in hand by allowing you to mix the different widths of square waves together.

The filter is a 24dB/octave low-pass affair, with three different keyboard-tracking rates. Both the filter and amplifier transients are permanently assigned a separate transient generator laid out in an attack, decay, sustain configuration. The sustain is the prevailing level while the key is held, with the decay taking effect again during the period after key release (!). It's certainly a little different to what you'll find on most other synthesizers, but it's easy to use, and gives excellent results.

Modulation effects may make use of Oscillator 3, which can be switched out of the mixer section and keyboard control and into its "Lo" (sub-audio) state, for conventional vibrato effects and the like.

MT JULY 1988

The modulation waveforms cover most eventualities admirably, and some great effects are easily achieved.

Need some ring modulation effects? Easy: just use Oscillator 3 within the audio range, while arranging for the modulation rate to track the keyboard if the keyboard control is switched back in; thus the higher up the keyboard you play, the faster the modulation rate.

Switching is provided to allow a choice of routing to either or both of the oscillator and filter sections, and both pink and white noise modulation are provided; either one of these can be used on its own or mixed with any of the above effects to modulate the oscillators and/or filter.

The mixer section allows simultaneous mixing of the oscillators, the noise generator and an external sound source, all of which are provided with a mute switch in addition to a level control. Unlike a lot of safer designs, the Minimoog's mixer would start overloading at around 9 on the scale to 10. There's also a master mute switch, which allows you to set up sounds on headphones without having to unplug the output to prevent your audience getting advance warning of what you are about to inflict upon them.

Now, that might be a long and impressive list of analog synth features. It doesn't explain why the Minimoog can still be found on so many album credits, however and in keyboard players' interviews. Surely anything that could be achieved over 15 years ago can be easily recreated now?

It seems not. Even when Moog themselves analyzed the sound of the Minimoog and attempted to incorporate its essence into the polyphonic Memorymoog, the results lacked the characteristic warmth of the earlier model. Impressive, perhaps, but cold, distant and featureless by comparison.

How come? Well, early Minimoogs (up to serial number 10175) had rather unstable oscillators, which some claimed added to the warmth and color of the sound as well as being a sizeable pain in the rear. Personally, though, I'd attribute most of the credit to more general imperfections within the old analog circuitry. Humorously enough, this is the same reason Sequential founder Dave Smith gives for the older rev Prophet 5's sounding "fatter" than the later ones - "They (the older ones) were never fully in tune."

The Filter

THEN THERE'S THE patented Moog filter to consider. In use, it isn't capable of giving the very bright sound Pro One owners will be so familiar with, but instead, it provides an as yet unequalled richness of texture, even using the dual audio oscillator, single LFO arrangement. At its most leisurely, the filter can be made to decay over a ten-

second period after key release - an arrangement which demonstrates that richness rather well. The filter also has a very sharp attack (it's stated as being 10msec but it sounds a lot shorter), and it's this coupled with a relatively short initial decay that helps to give the percussive funk or sequence-style bass sounds that ensure its popularity, even in today's much-changed musical climate.

The other significant factor in this area is the filter resonance - or Emphasis, as Moog would have it. With it, the filter can be driven into self-oscillation - a feature regrettably missing from many current synths. It's this, more than anything else, that's enabled Minimoog owners to generate sharp, aggressive dynamics - the sort of thing that'll still cut through a mix even when the lead guitarist is launching into his favorite solo. And with the filter on the edge of self-oscillation lies a family of sounds that sound exciting without appearing incongruous alongside today's sampled and digital sounds.

Many tried to duplicate the old Moog filter - including Moog themselves. Moog tried to remake the Mini in a never-released product called the Lyre (part of the "Constellation" series, which included the Taurus bass pedals and the also never-released forefather to the Polymoog and Memorymoog, the polyphonic Apollo). The exact same design was used for the filter, but it didn't sound the same. The difference was finally attributed to circuit board crosstalk with the way the Minimoog's filter was physically laid out (!). Talk about happy accidents . . .

On the interfacing front, the Minimoog went out of production before MIDI was even thought about, so there's nothing too complex. Instead, the traditional control standard of one volt per octave applies, but with a negative trigger voltage requirement Moog termed an S-trigger (switch trigger) that caused initial incompatibility problems as everybody else opted for the new industry-standard V-trigger. With a simple modification or pulse inverter, though, sequencer control is no problem, and the Minimoog scores here because it permits voltage control over both filter cutoff frequency (1V/octave) and loudness (over a 5V range) via quarter-inch jacks.

But Minimoog owners needn't forget about MIDI altogether. Tales filter to us of a Minimoog in the MTUK office under the control of a DX7 keyboard, complete with key velocity information, courtesy of the Jellinghaus CGX interface converting MIDI information into CV/Gate format for consumption by the Moog. Other US companies also offer MIDI retrofits. Few instruments of the Minimoog's vintage are able to acquit themselves so well when surrounded by technology of an altogether different era . . .

The Minimoog, like all commercial

success stories, proved to be an influential product. Its layout, and particularly the configuration and positioning of the pitch-bend and modulation wheels, set standards that have been widely adopted by designers ever since (being the first to use wheels for these purposes, former Moog employees wonder why they never patented it . . .). By contrast, the rotary and proportional pitch controls advocated by rival company ARP on their Odyssey have fallen into almost total disuse. The pitch-bend is detented, but not sprung to return on its release like the one on the DX7, for instance. The resulting arrangement is both comfortable and musical, as many a soloist proved in the Minimoog's heyday. Of course, that form of synth soloing, so beloved of pioneers such as Keith Emerson and Jan Hammer, has fallen foul of pop fashion. Should it ever become popular again, few of today's synths will be capable of matching an old Minimoog.

But I'm leaping ahead of myself. As the Minimoog - and synthesizers in general - grew in popularity, so Moog's designers carefully refined their product, various editions of the instrument being introduced before the final and best-known variant, the Series D, appeared in the late-seventies. There were also a number of custom-fitted, alternative features available, such as multiple - as opposed to single - note triggering, velocity sensitivity, ribbon pitch-bend (not as used by Keith Emerson, but in place of the standard wheel) and a remote keyboard. Again, if you see something like this for sale now, it won't be cheap.

The End

EVENTUALLY, THOUGH, the Minimoog fell victim to the arrival of cheaper competition (its price had fallen to under \$1800, but Moog could not make it any cheaper), and production ceased in 1981, having just exceeded the 13,000 mark. The last 25 were all handbuilt, and finished in walnut with a brass plaque bearing the serial number on the front. The final one - serial number 13,252 - was presented to Bob Moog himself.

The demise of the Minimoog coincided with the introduction of the Moog Source, a monophonic synth of totally new design and of decidedly more modern configuration. Moog denied it was ever intended as a replacement for the Minimoog, but there are many who believe that was the original idea.

The Source was the first-ever synth to employ digital parameter access. It had programmability, it had sequencing and arpeggiation facilities, it had ultra-modern styling, and it was cheaper than the Minimoog. But it did not sound anything like as good, and consequently, it did not sell nearly as well. The rot had begun to set in.

P · R · E · V · I · E · W

Beetle Quantar

MIDI Guitar Controller

R GUITARISTS ARE ALWAYS searching for new ways to express their ideas, often experimenting with techniques to get new sounds from their instruments. With the amazing growth of synth and MIDI technology, many of them (myself included) have attempted to fulfil this desire for new sounds by making use of MIDI guitar controllers. Unfortunately, though, only the extremely well-to-do have been able to find tools that really meet guitarists' requirements for "playability." Many of the less expensive systems simply don't work that well or are too complicated to really be useful.

The situation may be changing however, with the imminent release of the Beetle Quantar Controller. The Quantar is a dedicated MIDI controller that is built entirely into a Strat-type guitar – no additional boxes or converters are required. In the little time I was able to spend with a unit I found that it tracked amazingly well and responded to all playing styles (except harmonics) accurately, including muting and damping. Thanks to its onboard LED and LCD displays it's also very easy to program.

The reason for the Quantar's impressive capabilities and what sets it apart from other available systems is its method of converting notes into MIDI data. Instead of using a passive system like the pitch-to-MIDI conversion technology used in the Roland, Ibanez, Phi-Tech, Casio and other products, the Quantar uses an active system based on sonar. As a result, it can avoid the inherent limitations of the other systems, specifically, note delays. Pitch-to-MIDI systems will always have a slight delay between the time you play a note and the time you hear the synthesizer respond because the controller waits for you to pick the note, then analyzes the vibrating string to determine the fundamental frequency. It then translates that into a MIDI command to send to the synth. If it locks onto a harmonic rather than the fundamental, you get a glitch.

In the active system of the Quantar, on the other hand, the neck is constantly being scanned to determine the position of your fingers on the fingerboard. As soon as you put your finger(s) down on a note (or notes) the system can immediately determine what note it is (or they are) – before you even pick the string(s)! How, you ask? Well, lurking beneath the bridge cover is a proprietary bridge that uses special transducers to send ultra-high frequency signals down the strings – sonar technology. When you fret a note the signal bounces back off your finger and the electronics determine its exact position on the neck. The pluck only determines the velocity of the note. Because of this technology the Quantar can be set to a



Photography Rose Rounsaville

Well over a year in the making, the innovative controller from this small company may just be the MIDI guitar for the rest of us. *Review by Aaron Hallas.*

special Tap mode or a steel guitar Slide mode. String bends, hammer-ons and pull-offs are also possible.

As mentioned, the Quantar is a dedicated MIDI controller so there are no regular guitar pickups. What appears to be a pickup near the neck is a damper bridge which prevents the six similarly sized G strings (.016 gauge) from ringing when you play. It also apparently improves tracking and, if you're wondering, no, it does not affect the ability to bend strings thanks to its slippery Teflon-like coating.

The only connection necessary from the Quantar is a standard MIDI cable from the MIDI Out on the body to the synths you are controlling. Power comes from an internal rechargeable battery (up to 40 hours of continuous playing time) or externally from the optional Footpedal box. The box also provides inputs for three footswitches and one continuous controller.

Three knobs and three 3-position switches are available on the instrument. The knobs are for MIDI Volume, Velocity Range and Global Transposition. The switches are used to select between the play and edit modes, select the lead or rhythm sound and to select the power source (internal or external). The whammy bar is not connected to the strings but is used as a continuous controller. The bridge cover also has a pressure-sensitive palm pad built into it which is also used as a continuous controller.

In keeping with their goal to build a MIDI controller for guitarists, the designers have tried to keep the layout and terminology as familiar as possible. The rhythm/lead switch selects which synth you are controlling in the play mode. This means you can access two different sounds quickly, or both at once for layering sounds. The Quantar can be configured to control polyphonic and multitimbral instruments by transmitting on up to twelve MIDI channels simultaneously. Program change information is sent to the selected synth by holding the edit switch or optional footswitch and fretting a note on the fingerboard – it's that easy.

You can save up to 99 configurations, or QPatches, in the Quantar's internal memory. In addition to memorizing channel, bend range, individual string transposition and other functions, each QPatch can remember and send out up to 16 different program change messages.

Though it'll take a more thorough test to be certain, I would say that the Quantar looks to be one of the best controllers available in any price range. If you are a purist, and love the guitar too much to give it up for keyboards, then you owe it to yourself to check this one out. ■

PRICES \$1,295; optional Footpedal Box, \$100
MORE FROM Beetle Inc, 120 N. Victory Blvd. Ste. 208, Burbank, CA 91502. Tel: (888) 841-9922.

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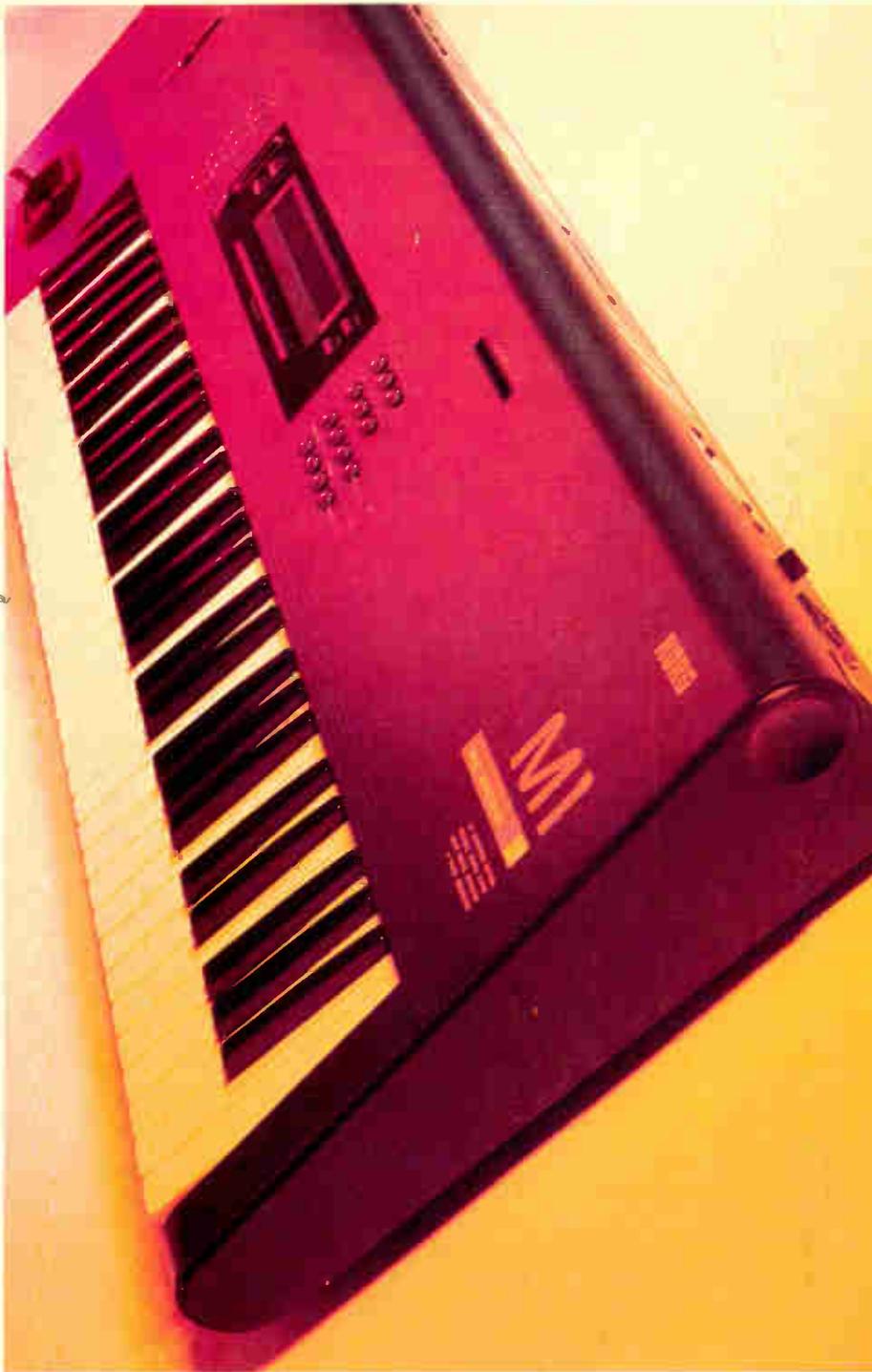
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Photography Lizzy Ellis

Korg M1

Music Workstation

Throw together everything you need for a complete MIDI studio into a nice looking box, give it a cool, trendy name and you should have a winner. Review by Bob O'Donnell.

THE M1 HAS arrived. In all of its sleek, black, rounded edge glory, the first of Korg's new Professional Performance Series of products has finally become a reality – and it seems the wait has been a worthwhile one. Staking its place in the forefront of Korg's new line, the company's new flagship synth may go a long way towards making people think twice about Korg as an econo-synth company.

The M1 is a significant product for other reasons as well. The primary one is that it (along with the upcoming Roland D20) represents the final step in an evolution of all-in-one products that started with Sequential's SixTrak, and started taking off with Ensoniq's ESQ1. The M1 combines all the components – synth, sequencer, drum machine and effects – into a single integrated machine. I'm still not convinced that this combination gives Korg the right to call it a "workstation," but it is one helluva concept.

So What Does It Do?

THE MOST IMPRESSIVE thing about the M1, from a spec-sheet point of view, is not just that it has all of these various components but that it has them in spades. The synth portion is not just a variation on analog synthesis, but a combination of sample playback technology similar to that found in the Kurzweil 1000 series, the transient attack/synth waveform synthesis method found in Roland's L/A instruments (like the D50), and an expansion of the DWGS (Digital Waveform Generator System) synthesis methods found in Korg's DW instruments. The samples and waves stored in memory – 4Megs worth – are all 16-bit. Similarly, the effects are not just a selection of three or four single presets which can be turned on or off, but are provided by two stereo MDEs (multi-digital effectors) each of which offer 33 different completely programmable effects. The two can be combined in series or parallel, and allow you to create a huge variety of sounds.

There are 44 different drum sounds with adjustable tuning and decay. They can be combined in up to four different drum kits of 30 sounds each and are playable from the velocity and pressure-sensitive keyboard. Drum sounds can be sequenced into patterns along with normal synth sounds.

The onboard sequencer has some pretty impressive capabilities that put some software packages (let alone just about any hardware sequencer) to shame. Up to 100 patterns can be stored in memory at once and these can be used in up to 10 different songs. You can record in a linear fashion or drum-machine style, quantize before or after recording, edit on the event level and even selectively erase certain controllers

MT JULY 1988

from certain measures within a track. But more on all that later . . .

Making Noises

THE MAIN PORTION of the MI, of course, consists of the synthesizer, which is 16-voice polyphonic in Single Mode and 8-voice polyphonic in Double Mode. Here, as with other portions of the machine, you'll find that the options available are logical, but extensive. Despite the AI (Advanced Integrated) Synthesis title Korg christened the MI with, the sound generating system used is basic wavetable synthesis. Because of the variety of waveforms available as raw material, however, the instrument can take on a number of different "faces."

The voice structure of the MI should be familiar to other Korg synth owners and most synthesists in general. The basic unit in the MI is called a Program, and up to eight of these can be put together to create a Combination. Each program can have two oscillators (for Double Mode), two VDFs (Variable Digital Filters), two VDAs (Variable Digital Amplifiers) and LFOs for pitch and filter modulation. The big difference with the MI, of course, is the choice of waveforms available for each of the oscillators. One hundred of the beggars await your use, including multi-sampled acoustic instruments, some attack transients and 30 DWGS synth waveforms – similar to those found on the DW8000.

Even better news than this is the fact that the MI has a card slot to allow access to additional PCM samples. In other words, instead of being a closed system like the D50 or Kurzweil 1000, the MI is completely open-ended – if you get sick of the internal waveforms you can just buy a new waveform card and get the equivalent of a new instrument. Needless to say this is *great* stuff. Korg plans on supporting this immediately and will do so with packages that include a new waveform ROM card and a new program ROM card which makes use of the new waves.

Another point which distinguishes the MI's voice structure has to do with filtering. Unlike its competition, the MI's digital filters will work on any of its waveforms, whether synthesized or sampled. Not only does this make for a more intuitive system, but it provides a lot more sonic flexibility than say, the D50.

Other voice specifics include five-stage, eight parameter filter and amplifier envelopes, four-stage pitch envelopes for each oscillator, and a delay control dedicated to the second oscillator for special effects. In addition, independent keyboard tracking and velocity sensitivity amounts can be set for the two filters and the two amplifiers for fine tuning control. One thing the MI sorely misses is any sort of dynamic panning capabilities.

The last components of any MI Program
MT JULY 1988

are the two stereo effects provided by the MDEs, which are remembered per patch. The available effects choices include (in stereo) six different reverbs, three early reflection programs, two delay, two chorus, two flanger, two phase shifter, and two tremolo programs, an equalizer, overdrive and distortion effects, an exciter, a symphonic ensemble effect, a rotary speaker effect, and eight programs which combine delay on the left channel with another effect on the right channel – either hall or room reverb, early reflection, another independent delay, chorus, flanger, phase shifter or tremolo. Most of the

Overview *"The most impressive thing about the MI is not just that it has all of the various components necessary for creating music in one box, but that it has them in spades."*

effects also have basic EQ (gain or boost at set frequencies) included as part of the up to eight available parameters. With this setup you can easily combine reverb with whatever other effect you want or, by selecting two combination effects, even get up to four different things happening at once.

The two MDEs follow the synth in the sound chain and don't know or care if it's being controlled by the sequencer or playing multiple Programs at once. A consequence of this which seems a bit strange at first, but makes sense when you think about it, is that even though they can be remembered per program, they won't be recalled when a program is used in Combination mode or in the Sequencer mode. Instead you can assign the same (or different) effects to the Combination or Sequence as a whole (unfortunately this means you cannot have sixteen different effects going at once by combining eight different programs). Actually, in the Combination mode it doesn't present much of a limitation at all, but while using different Programs in the sequencer it can cause a problem. If you do want to use the same specialized effects saved with a Program in either a Combination or a Sequence, the MI does provide simple copying procedures.

In Use

PUTTING THE MI through its paces as a synth is very rewarding. It sounds good, and though it's not the quickest machine in the world to use, it's pretty logical and easy to learn.

I'll expand upon that second comment first. As I mentioned at the outset, the MI is sleekly designed, with a minimum of front panel buttons and controls. To the user this means two things: first, it's very easy to get an overview of what the machine's various modes of operation are and second, there are a helluva lot of

software pages hidden underneath each of those modes (the Edit Program Mode has 30 pages and the Sequencer has 32, for example). You can view these pages on the 80-character backlit LCD – which has a contrast control on the back panel – by either stepping through them one by one with the Page + and Page – keys or using the numeric keypad to jump to a certain point within the range of pages.

Korg has chosen not to print the various page information on the MI's front panel (wisely, I think) and instead gives you both a group of reference cards on a ring as well as a plastic mat, both of which come in

handy when you're working with the machine. The same cannot be said of the manual unfortunately. As is common with most manuals of Japanese instruments, it contains a number of confusing typographical errors, presumes a good deal of knowledge, and doesn't present any kind of tutorial.

When you want to play a Program, you hit the round Program button and choose from the 100 available with the numeric keypad. (Unfortunately, you can't inc or dec your way through things – you have to enter a new number every time.) You'll then be greeted by a page which tells you the program name, number and location (internal or card) and eight different two-letter abbreviations followed by numbers located above each of the alphabetically named cursor keys. Confusing though they may be at first, these eight abbreviations are actually different real-time parameters which can be adjusted with the data entry slider. By selecting the appropriate cursor keys you can adjust Oscillator Balance, VDF Frequency Cutoff, VDA Level, Keyboard Tracking, Velocity Sensitivity, Attack Time, Release Time and Effect Balance quickly, easily and in *real time* – without glitches. Once you start playing with these you'll never want to go back to normal synths without these kinds of controls. Kudos to Korg for this vast improvement over existing industry standards of real-time control.

The real beauty of these functions is that they are actually macros, because each of them automatically adjusts several parameters at once. For example, the Attack Time control affects the attack time for the envelope generators controlling VDF 1 and 2, as well as VDA 1 and 2. This simplified type of programming invites even complete neophytes to tweak sounds to their own liking, and of course permits professional users to have the kind of control they've only dreamed about for their other instruments. Unfortunately, Combinations do not have these types of ▶

► controls – though you can change Programs and Volume levels within any Combination in real time.

Speaking of these Combination configurations, it's worth mentioning the various types available. *Singles* are functionally equivalent to individual Programs but are provided as a convenience if you need to change to a single Program with a MIDI Program Change command while in Combination mode (these messages only select

easy to get a nice bright piano sound from the MI – something you simply can't do on the Kurzweil.

In a positive light, some of the samples in the MI are phenomenal. The trumpet and fretless bass, in particular, are extremely realistic sounding and were much better than their equivalents in the Kurzweil. The guitar, sax and double reed samples are also very nice. One incredibly cool touch that Korg has included is that the top end

the MI, particularly when you play certain Programs softly. A sixteen-bit machine shouldn't have these problems; it seems that the MI isn't always working at full level internally.

Making Rhythms

LET'S TALK ABOUT the drum sounds. Good stuff here. Though many of the samples are somewhat short, they're all very sharp and precise. There's a good selection of kicks and snares, including some very hip gated sounds and some nice effects, like the Rap, Whip and Windbell sounds. The cymbals and hi-hats are OK, but one problem I ran into is that the closed hi-hat sound does not cut off the open hi-hat, which is a real drag.

One very nice touch about the MI's drum sounds is that they are "synthesizable." In other words, an entire drum kit can be treated as a single oscillator and be affected by a pitch envelope, and the filter and amp section of the MI or it can be combined with other waveforms to create a Program.

Drum sounds are organized into four user-definable kits. Each kit can hold 30 different sounds and each sound can have its own pitch (over a range of two octaves in 0.1 semitone steps), level, decay, panning and placement on the keyboard. You can place sounds, and the MI will fill the keys between with transposed versions of the sound (just like a sampler would).

Another nice touch is that sounds can be panned to one of ten positions in the stereo spectrum or sent to the C and D (third and fourth) outputs for individual external processing or recording. If you'd rather just use the internal effects, you can also use the effects in parallel, so that sounds going through outputs C and D get treated with a different effect than those going through A and B. Ah, yes, the benefits of multiple outputs . . .

Editing *"The editing features in the MI's sequencer puts some software packages to shame, let alone anything available as a built-in part of a hardware system."*

from the available Programs or Combinations, depending on what mode the machine is in, but won't permit you to switch from one type to another). *Layers* and *Splits* are your standard fare, and *Velocity Switch* permits you to instantly jump from one sound to another, depending on whether or not you cross the user-programmable switch point. If you prefer velocity crossfading effects, you'll have to put that together in a *Multi*, the last and most flexible type of Combination.

Multis can consist of up to eight different Programs each of which can be assigned it's own keyboard and velocity range, output level, MIDI channel, transposition and detuning, and panning. You can also program whether or not it will respond to MIDI Program Change, Damper, Aftertouch and Control Change messages (including those generated by the joystick). All in all it's about everything you should need for flexible performance or multitimbral sequencing applications.

As I mentioned above, the MI sounds good, with a lot of big, bright and breathy atmospheric sounds standing out, as well as some very nice acoustic instrument emulations. It does have its faults, however. One of the most glaring, to my ears, is that some of the multi-sampled acoustic instruments have very noticeable loops. The String Multisound, in particular, has some annoying clicks in some of its samples which are audible even in Combinations. The Piano Multisound is fairly good, but it's easy to hear where it slips into what must be a short loop, because the sound immediately loses its distinctive timbre and takes on a very plain tone. You can lessen this effect by lowering the frequency cutoff a bit, but it seems unfortunate that you should have to worry about it at all.

When I A/B'd the MI with the Kurzweil 1000 – which also has some bad loops in its samples – it stood up fairly well, but some of the more important sounds, such as strings and choir, lacked the clarity that the Kurzweil had. For my money the Kurzweil piano was a bit better than the MI, but thanks to the onboard filter, it was very

of the keyboard in some of the factory guitar patches is devoted to guitar harmonics. Très hip. Also, some of the MI's D50-type sounds and fat synth sounds are very impressive. The default (00) Universe patch is a very nice example of a big, full sound that the MI is capable of doing as are some of the Synth Bass Programs. In general, most of the factory patches on the MI are quite good, though I think they suffer a bit from too much reverb.

Speaking of reverb, the effects built into the MI are all fairly good, though I think some are more effective than others. Unfortunately, some of the reverbs are the weakest – they work fine for most synth patches, but the onboard drum sounds give away their graininess. The delay, chorus, flanger, symphonic ensemble and other related effects sound very nice and very bright, as does the very effective exciter. I didn't really care for the overdrive or distortion effects – even on the guitar patches they just seemed to grossly overload and compress the signal without giving any of the smoothness that guitar pedals do. They also brought up some quantization noise at the end of samples – a problem that lurks around the corner on



Drum sounds are sequenced into patterns or songs with the MI's internal sequencer. One point you need to be aware of is that patterns can also be used for notes - there's nothing specifically set aside just for drum patterns. So if you happen to be working with a synth sound, then go into the sequencer and start playing pattern 33 (which we'll presume was originally a two-bar drum pattern), then you're going to hear the synth sound playing back the pattern, not the drums. There's more flexibility this way, but it can be a bit confusing at first.

Organizing Noises and Rhythms

THE MI'S SEQUENCER is both one of the most impressive and most frustrating parts of the entire machine: Impressive because the recording and editing features are extensive, but frustrating because the amount of available memory is so terribly limiting. Only 4400 events can be recorded into an MI with 100 Programs and Combinations, though you can increase this to 7700 by limiting the patch memory to 50 of each type. Unless you write particularly sparse music, this works out to only a few (like two) tunes. You can also store an equivalent amount of sequence data on RAM cards, but at \$70 or \$100 a pop, that's expensive memory. The machine is just crying out for a disk drive, though even that wouldn't solve all of its memory problems because the available RAM that can be loaded into is so small. I hope that *somebody* comes up with a memory expansion for the thing, and soon. Thankfully, you can send sequence and/or program data over MIDI as a SysEx message if you have a MIDI SysEx storage device.

Actually, the memory problem wouldn't be a big deal if the sequencer was a crummy little tack on, but it's not. Thanks to the big display and the editing capabilities it's the type of sequencer you could soon want to start doing a lot of your work on. You can record in a linear fashion on up to eight individual tracks, or put together patterns drum machine style. (Using patterns, in fact, helps you make the most of the available memory because repetitions don't use any extra memory.) What's even better is that you can combine the two methods within a song and even on individual tracks. Korg has also provided a Get Pattern feature which allows you to take a certain group of measures from within a real-time recording and turn them into a pattern, if you plan on using it several times throughout a piece. The MI also supports automatic punch in and out and even has a mode for recording on multiple MIDI channels at once if you want to dump sequences from another sequencer or use

MT JULY 1988

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▶ a guitar controller.

The sequencer also has a very nice step recording feature – which is actually different from individual event editing – and permits you to sequence external MIDI devices as well as up to eight different MI Programs at once (the 16 available voices are dynamically allocated). Each track can record notes plus program changes, aftertouch, pitch-bend and any control changes. If you'd prefer – and you most likely will, otherwise you'll run out of memory in the space of blinking an eye – you can filter out some of those messages.

If all of this isn't enough, you can also input tempo changes within a track, insert and delete groups of measures, and erase just notes, just controllers or everything from any group of measures within a track. You can even quantize just notes or just controllers within a certain group of measures (quantizing controllers basically thins them out) down to the sequencer's resolution of 48 clocks per quarter. Tracks and patterns can also be copied and bounced from any point in one song to any point in another. Finally, each track can be sent to its own place in the stereo spectrum, or through the two additional outputs, and can be individually transposed or detuned.

Individual event editing allows you to do things like tone down the excessive pitch-bends in a solo, or adjust the velocity of single notes. You can also edit patterns or tracks drum machine-style, which means if you want to get rid of a particular note or drum sound, just enter the Remove function and hold down the offender while the pattern loops and it's gone. You can also record notes while the MI is looping through its pattern, which is a very nice touch. The only other hardware sequencer I know of that has these capabilities is Akai's expensive MPC60 (see the review elsewhere in this issue).

As far as synchronization is concerned, the MI sends and syncs to MIDI Song Position Pointers and sends and receives Song Select messages. If you want sync-to-tape features, however, you're going to need another box – there's nothing available here.

Other goodies included with the MI are user programmable tunings and a choice of four factory programmed tunings (including normal equal temperament, a variation on equal temperament that introduces

slight random detunings – for giving a more accurate feel to acoustic instruments – and Pure Major and Pure Minor in any of the 12 chromatic keys). Unfortunately, only one user programmable scale can be accessed at once.

The MI also has a damper pedal input and two assignable footswitch/pedal inputs for controlling a variety of different functions, including some of the real-time controls.

The Final Word

THE MI IS unquestionably a step forward for Korg. It's apparently the first product designed under the auspices of Korg USA and it portends good things for the future. The concept of a Music Workstation with all the necessary components for music making is definitely a nice one – there's something very rewarding about just plugging the audio outputs into a sound system, hitting the Start button and having everything come from one place. In fact, it makes the MI a great songwriting tool – it's even fairly portable. But the actual implementation of the concepts don't always live up to the ideals that were probably intended for it – in spite of some of the many nice details that Korg has covered with the MI. Of course, it's the first of a new breed, so there's bound to be some growing pains.

The sound quality of the MI is very good for the most part, but it's not incredible. Problems with some of the onboard samples and the clarity of the reverb prevent it from being the new killer synth of the decade, but its open-ended nature and the breadth of sounds it can produce puts it heads above most of the existing competition. The sequencer is incredible, but the lack of memory is a real disappointment.

I've been a little harsh on the MI throughout the review, but I really do think Korg is onto a winner. The hype built up around the name made me expect the world of the instrument – but once I realized what it could and couldn't do I really began to appreciate the MI. For the money, it's quite a package. ■

PRICE Korg no longer has list prices, but the MI is expected to sell in the \$2000-\$2200 range.

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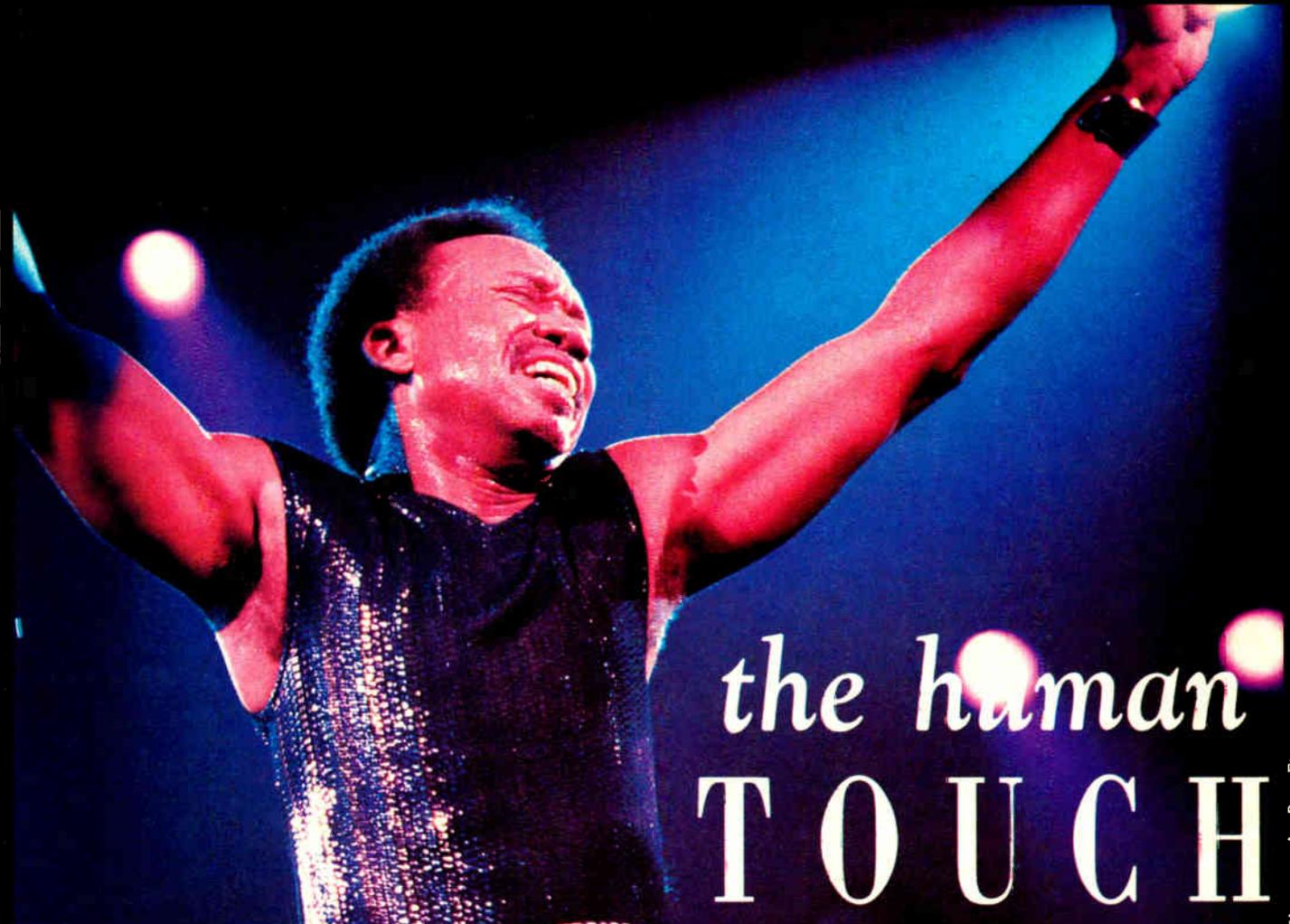
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the human TOUCH

Photography Peter Figen

Earth, Wind & Fire is back with a vengeance after a four-year break from the music scene. Maurice White, founder and producer, and Mike McKnight, programmer and keyboard tech, reveal the magic behind touching the world. *Interview by Deborah Parisi.*

“ISN'T IT A GLAMOROUS life? We've been in the airport all day. Ah, the hotels, and the traveling, then the room service. Never a home-cooked meal. It's just great. I'm really enjoying myself.”

That's how Maurice White begins a conversation, immediately debunking any preconceptions you might have that he's trapped by the dreaded Pop Star Egomaniacal Syndrome. In fact, his sincerity, compassion, and concern for the world around him transcend the grueling five months of touring he's just endured. His talk slowly reveals a tired, slightly cynical, *real human being*, open for discussing the production of Earth, Wind & Fire's latest album.

But I'm getting ahead of myself. First – what the devil is the main man from Earth, Wind & Fire doing on the cover of *Music Technology*? Isn't that some R&B band from the '70s? They did that song, 'Shining Star,' right? And 'After the Love Has Gone.' So what? They haven't been around for years.

Unfortunately, unless you're Black, or a

true devotee of Black radio stations, that is probably your perception. For some reason – and I wish someone could explain the entire situation to me – very few Black artists are being pushed to the mass market any more. Yes, we have Whitney Houston (although she's being accused of selling out her heritage); and the success Terence Trent D'Arby has recently enjoyed is encouraging. But on the whole, good R&B, when performed from the real source instead of, say, by George Michael, is sorely lacking from the playlists of pop radio stations. I've heard it blamed on the marketing direction MTV has created, and I've heard some people say that the music just hasn't kept up with the times. Maurice White blames it partly on record companies.

“It's been a mystery to me,” he sighs. “As far as the R&B market is concerned, it is one of the ones. But as far as the mass market is concerned, a lot of people don't even know we have an album out. I think it has a lot to do with the record company bureaucracy and all that. In the last three or four years, they've taken a different stand

toward commercial music.

“It's very unfortunate that happens. But now, when you're labeled as a Black group, then your promotional trip is limited for some reason. I don't know. I don't have good feelings about it.”

If you take a listen to the new album, *Touch the World* (Columbia), I think you'll be hard pressed to claim that Earth, Wind & Fire hasn't kept pace with the technological revolution. There's a real '80s sound here, in the production and in the music, featuring highly polished synthesizer leads, vocoder, tape loops and electronic percussion.

One of the more unusual characteristics of the album is the sheer number and variety of people who were involved with the project. A number of programmers are used, including Fairlight specialist Rhett Lawrence, Larry Williams (see *A Love of Sound*, MT, May '88), Preston Glass (Aretha Franklin, Kenny G), Attala Zane Giles, Bill Meyers and Dan DeSouza. Guest musicians on the album include Toto drummer Jeff Porcaro, synthesist Danny Sembello, horn expert Jerry Hay and jazz

pianist George Duke. A similar "cast of thousands" approach exists with the engineers, co-producers, songwriters and backing vocalists. But then that's Maurice White's specialty: people.

"I'm a different type of producer," White explains. "I get involved long before we get into the studio. First I go into a space where I put it together from a conceptual point of view, and I'll start being inspired to write songs. And I get out there - I find songs, I write songs - I go through this whole scene. Then my next task is to take groups of people that more or less vibrate well together and put them together in a different setting. Each song is a different story, so for each story there's a different set of story tellers. The success all depends on the communication between the people. Then, once we're in the studio, I'm the guy who puts it all together. Sometimes it works; sometimes it doesn't; but most of the time it does. Fortunately," he laughs.

"Recording is another thing," he continues. "I find that certain engineers do well at doing certain jobs. For instance, for tracking you use one engineer, and then when you get into the mix you might move on to someone else, just because of the energy. I have to totally evaluate people at all times. If I'm going after a certain pop sound, I'll call a certain group of guys; for another sound, I'll call others. It all depends on where I'm taking the music and what energies I need. And I have to be highly selective for that reason.

"I do know a lot about the technical aspects, but primarily I go for feel. That's what communicates to people's hearts. Especially now, being aware of the technology that's being used, the synthesizers and the Synclavier and the Fairlight and all that, well I'm into all that too, but I have to bridge the gap between technology and art. So that's my job - to fulfill both promises."

At the songwriting stage, White works mostly in his home studio, using an old 8-track Ampex machine, Amex console and Yamaha DX7 to create the first demos. His approach is strictly pragmatic; if it works, use it. "That's where I'm at," says White. "I

"I do know a lot about the technical aspects, but primarily I go for feel. That's what communicates to people's hearts."

don't really care about keeping up with technology - it's just whatever it takes to get the job done. Even if I have to go back and use an old tack piano, I don't care. What a lot of people are doing with synthesizers is just imitating the sound of acoustic instruments anyway. And it's very strange the way we do it. We go out and create something electronic to produce an acoustic sound. We end up going all the way around, to come back to the place we began. So I use whatever I feel. I'd rather use real horn players than synthesizers, for

instance. I want the inflections and articulations."

When the situation calls for it, however, during the recording process or for performances, White embraces the benefits of technology. The stage show is a startling spectacle, choreographed by Michael Peters of *Thriller* fame, with lighting design provided by Floyd Bennett, best known for his work with Prince. Lasers flash, glittering planets descend from the rafters, and James Earl Jones (via tape) provides a *Star Wars*-type narrative. The album itself, as noted earlier, is about as hi-tech as money can buy.

"I actually recorded the album analog," White interjects, "although I used a lot of digital instruments. But I purposely did it

"The most important thing to me is to communicate the higher thought of music and where music comes from, and to let people know that that's real."

analog because I look for certain things vocally. Recording vocals on a digital machine doesn't give me the warmth I'm looking for. Eventually I'm sure it will be there, but it's just not there yet. So I recorded analog and then mixed down to digital.

"To say it again, I approach the records from a heart space. Things are done so differently in the recording studio now, all the parts are done separately. We do the drums, and the drums are often machines. Then we lay down the basic tracks with a synthesizer, and after that we bring in certain musicians and put them on top of the track. It's really kind of sterile. On this album, there are tracks that we recorded as a rhythm section, for feel," he says. "And I'm going to continue to do a mixture of the two approaches. All of them are usable. It's just the way it's done. You've got to think about how to best present what you're trying to communicate."

White's capacity for intermingling recording techniques, electronic and acoustic instruments, and people has won him a great deal of respect in the Los Angeles music scene. During the four years

that Earth, Wind & Fire were on hiatus, he served as producer to a number of artists, including Neil Diamond and Barbara Streisand.

Another aspect of his talent, however, is knowing a great song when he hears one. The most extraordinary tune on *Touch the World* is undoubtedly 'System of Survival,' which came to him in a slightly unorthodox manner. "I was in San Francisco with Philip (Bailey, co-producer, vocalist, songwriter), recording the album with Preston Glass. We came out of the hotel one morning,

and there it was - a pouch attached to the door handle with a note on it saying, 'Please listen to this tape.' So I got in the car and listened, and it was 'System of Survival,' basically in its present state. That's the first song Skylark has ever had recorded, and of course it's a big hit. It's very interesting the way fate works." White then brought the mystery songwriter Skylark, who turned out to be a European immigrant, into the studio with him to ensure that the feel of the song remained intact. "We wanted that same feel that he had on the original demo," White explains.

'System of Survival' is indicative of the message White seeks to convey in his music - and it may be one of the reasons the album hasn't had any crossover action.

These days, it's not exactly fashionable to discuss politics, religion, or the state of the nation in songs. The tunes on the new record hit all of these topics head on, though they're interspersed with the more "acceptable" love songs and ballads. 'System of Survival' uses actual recordings of radio and television announcers discussing the Iran-Contra affair, with Reagan himself announcing, "I'm not going to tell falsehoods to the American people," and concluding with the effective loop, "I'll leave that to others - leave that to others, leave that to others . . ."

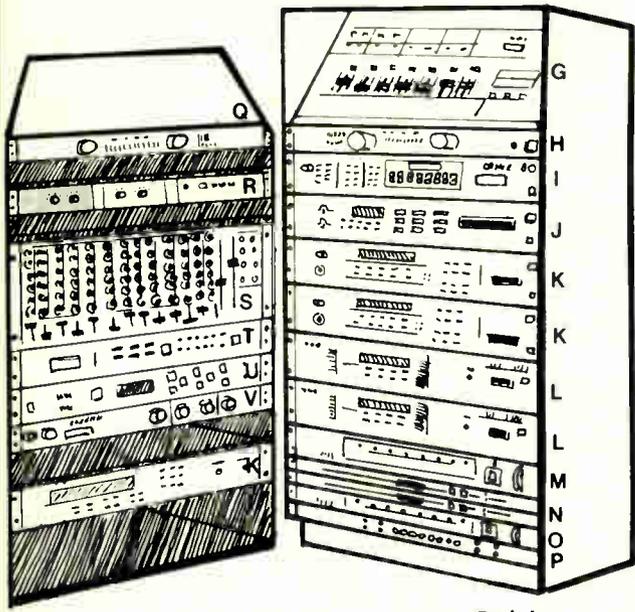
"The most important thing to me is to communicate the higher thought of music and where music comes from, and to let people know that that's real," says White. "My objective is to at least communicate some kind of high thought to people, and let 'em know that you can change things if you try. Even if I don't reach everybody. If I reach 10 people, that's good. If I can say to 100 people that you can accomplish things if you keep your faith in yourself intact, then it's worth it. Because we live in a time - the kids are going to carry the future, and it's very important for them to believe in something positive. There are issues to discuss, you know? There are things that need to be said."

And say them he does. In the title track, 'Touch The World' (written by Rev. Oliver Wells), you've got "hungry starving people searching for food as their babies die;" in 'Money Tight' (White, A. Willis, and D. Sembello), you hear "Rent is due, I'm slipping on the job/No time to think about survival." In the world seen by Maurice White, there are a lot of things wrong.

White and Philip Bailey include this explanation on the liner notes: "In our desire to make a musical contribution, we find it necessary to touch upon the ongoing issues of today, political or otherwise. We

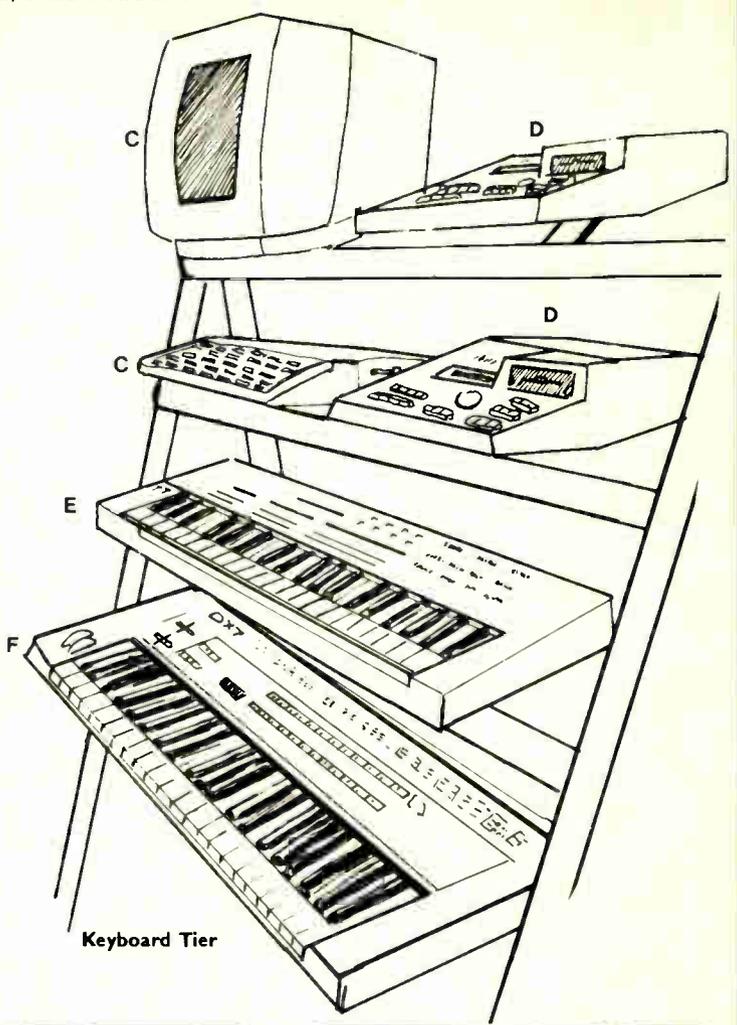
Diagram of Vance Taylor and Mike McKnight's gear for current Earth, Wind & Fire tour.

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Rack 2

Rack 1



Keyboard Tier

Mike McKnight

- A Yamaha KX88 (controller)
- B Roland JX10 (controller)

Keyboard tier:

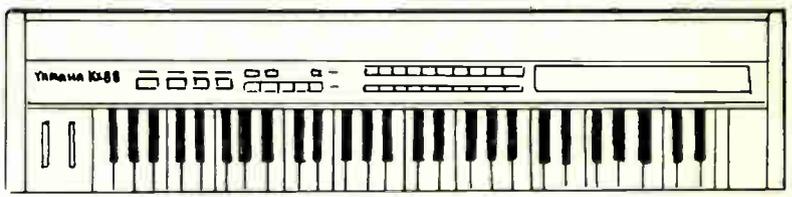
- C Atari 1040
- D Roland MC500 (2)
- E Roland D50
- F Yamaha DX7

Rack 1 (offstage):

- G Yamaha DMP7
- H Furman PL8
- I Roland MKS80
- J Roland S550
- K Roland D550 (3)
- L Roland MKS20 (2)
- M Sycologic
- N Mapper (2)
- O (Sycologic Backup)
- P Vocoder

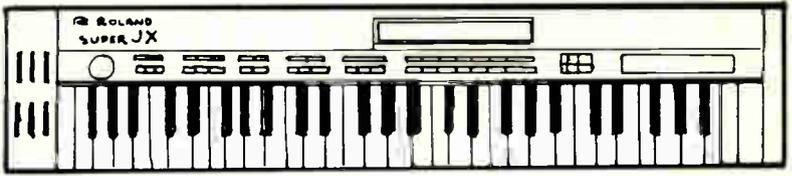
Rack 2 (offstage):

- Q Furman PL8
- R BBE 402
- S Roland MI60
- T Alesis Midiverb
- U Yamaha SPX90II
- V ADM256



A

Master Controller Keyboards



B

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WHITE'S INTUITIVE SENSE of people has really paid off on the current tour, which is scheduled to run through the first of the year. Twelve musicians in all literally rock the house during the two-hour show. Keyboards are masterfully played by

Vance Taylor, formerly with Peabo Bryson and Roberta Flack; drums by the powerful Sonny Emory, percussion by Ralph Johnson, bass by Verdine White, and guitars from Sheldon Reynolds and Dick Smith (a real show-stopper). Live horns are provided by Andrew Woolfolk, woodwinds; Gary Bias, sax; Ray Brown, trumpet; and Reggie Young on trombone.

Probably the biggest chance White took with personnel was enlisting the services of a relative rookie, Michael McKnight, to serve as the keyboard tech and programmer.

"They didn't want to hire me at first," McKnight laughs. "They had somebody else, who was a great bench tech, he worked with Yes and a lot of people, but he didn't know anything about programming. And Vance is a great player, but he knows nothing about synthesizers. He needs a musician as well as a programmer as a kind of a co-pilot, to give him sounds without him asking. They finally decided to give me a shot.

"I couldn't even get hired at K-Mart a year and a half ago," he says. "I'm serious. I

went to K-Mart and they told me to get lost. Geez, it was a mess. But then Bo Tomlyn started to call me in for studio work, as a kind of intern. I got to work with David Foster, Humberto Gatica, and on a song by Stevie Wonder and Julio Iglesias, that I hope they'll release someday; it was great. But there's this certain clique you have to get into. It wasn't in everybody's face all the time, and so they didn't get used to me. I'm hoping that now people will start taking me seriously."

McKnight's contributions to the success of the tour include roles as player, programmer, sampler, roadie and keyboard tech. "My job entails doing any MIDI work that needs to be done, any sampling, anything to do with any kind of synthesizers. On stage, I handle problems with the keyboards, and I also play string lines and things like that from behind a curtain.

"The original setup was done by someone else" he explains, "but for the most part I've completely redone everything. When I first got the rig, they were using one DMF7 mono, and every one of these modules can be run in stereo. I had a second DMF7, which was just being used as back-up in case the other one broke down. And I said, 'This is silly. What I'll do is I'll save the old mono mixes, and then if there's a problem, I'll just use one of

them. We had a month off recently, so I redid everything - put it in stereo, fixed some of the EQ'ing. I'm not sure who had done it, but some of the EQ was ridiculous. Why would you boost 15K 12dB. What the hell is that going to do except add noise? So I went through every single mix, and got the gain structure right. And now everything's in stereo," he smiles.

"On stage, Vance has the smallest amount of gear possible," McKnight continues, "because Earth, Wind & Fire don't want to be behind a whole bunch of techno-clutter. So he's got a KX88 and a JX10, as well as the Sycologic M16 remote controller. It's not a gun. Anyway, that is all

"I don't really care about keeping up with technology - it's just whatever it takes to get the job done. Even if I have to go back and use an old tack piano, I don't care."

he really has to know about. We're actually using the KX88 in very limited amounts because of the Sycologic. With one button push on it, everything in the racks goes to the correct program changes, the DMP7 goes to the correct mixes... I mean, it's perfect. And everything is routed where it's supposed to be routed. So it's pretty much foolproof, except when the Sycologic goes down, but that's only happened once, and that was pretty much human error. That's

fun during a show, repatching 16 MIDI cables in a rack. During a drum solo I had to do that one night. Very interesting," he says.

"In the racks, we have a total of four D550s, if you count mine. Then we have an S550, an S900, and the MC500 for sequencing. About two days before the first show on the tour, the guys said, 'OK, Mike, we need about 10 things sampled off 'System of Survival,' on all different machines, and we need it by tomorrow morning.' So I was up all night sampling and programming the Matrix 12 and doing all kinds of garbage trying to get it together.

"On that song, there's this newscaster

that says, 'The biggest unanswered question is, where is the money?' So what I did was to sample everything on the S550 first, 'cause I'm really into working with that machine, and then I dropped it into the S900 for Philip. When he hits one Octapad, it says, 'The biggest unanswered question is,' and he can hit that five times in a row if he wants, and the audience screams back 'Where is the money?' Then another sample says 'Where is the money?' ▶

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L-to-R: Mike McKnight, Maurice White, Vance Taylor.

► It really works well.

"I also sampled some percussion effects off the CD for Sonny, because he uses the RSF SD140, which is a nice, inexpensive sampling drum machine made by a French company. The only hard part was trying to pick those sounds out cleanly along with everything else on the track. But I eventually got it."

McKnight has had his share of nightmares on the tour, but luckily they've all been resolved without too much uproar. "I've got back-up disks spread out all over the place now," he laughs. "The stage manager has a complete set, and I've got three. Because the band doesn't want to hear, 'Oh, sorry, the disk crashed and I don't have those sounds any more.' They'd say, 'Here's a plane ticket.'

"This is probably the nicest bunch of people you could ever work with, and you can screw up once in awhile, but I wouldn't want to push it. I've had a couple of problems with the MC500, pushing the button and nothing happens, and it's always something stupid. One night I had two 500s hooked together, so in case one didn't start, I could push the other one just by switching the thru box. But one night, one of the stage hands was underneath the stage and accidentally yanked out my thru box power. I pushed the first MC500, nothing happened. So I switched to B, pushed the next button, and still nothing happened. 'Oh, Jesus,' I thought, 'Vance didn't change

the Sycologic routing on stage.' So I ran up on stage and realized that was all right, and ran back downstage. God, you know, there's 10,000 people out there, and they've gotten real silent. It took about 30 seconds, and then I realized the thru box was screwy. So I repatched and finally started the song." He pauses, silent. "I heard about that one."

But for the most part, the stage setup (see diagram for particulars) has worked well. "I do have things that I'd like to use more," McKnight says. "We have two Axxess Mappers, and those are wonderful machines. All we're using them for now is so that we can transmit on several MIDI channels at once and keep everything Omni Off, so that when we go to sequence things, it's all on separate channels. It works beautifully. But I would like to be using the Mapper for a whole lot more. We usually use one map the whole night, and we just pass the controllers through unchanged except on channels 1, 2 and 3, they ignore MIDI volume, so 9, 10, 11 and 12, the modules that are using string sounds, he can bring in with the pedal. So that's pretty cool. But we could have worked it other ways.

"The Mapper's wonderful," he gushes, "although it's a little tough to program. I had one crash on me because the battery died and somebody yanked the power cord again. And this night, the power dropped down to like 80 volts or something, and one of the Mappers just said, 'That's it.

That's not enough power. I crash.' I've learned my lesson about having power cords out where anybody can get near them.

"A piece of equipment is a lot like a person," he says. "There's a piece of machinery that the lighting guys use that we call the Anti-Christ, because it works perfectly at sound checks and rehearsals, but there are times during performances when you push the button and it won't work. And for a while Vance's rack was called Son of the Anti-Christ, because of problems I had with the MC500.

"And one night, I made some changes to the mix of a sequence during a song, and for some reason the person who had sequenced it thought he'd be real slick and turn channels off when they weren't being used, which admittedly is a good idea. But I made some changes to the mix without knowing that. Then the next night I started the sequence, and it didn't start, because Mr. Dummy, trying to fix the mix, stored it with the damn things off. About four bars into the song, something else started playing. I could see that I was getting MIDI, the modules are getting MIDI, the sequencer's running right - but there's no sound. All of a sudden I figured it out, and turned them back on.

"I wish that when there are problems it was something major," he concludes, "but every time something happens it's just plain human error. Now I check every little thing every single day. Because you know the one day you don't do it, that's when the problem will happen."

IT'S REMARKABLE THAT Maurice White provided Mike McKnight with an "earn while you learn" opportunity with something as important as Earth, Wind & Fire's comeback tour, but that's really the kind of person he is. Now McKnight is well on his way to realizing his dreams of becoming a full-time, self-employed programmer and keyboard tech in this highly competitive industry. And Skylark, the San Francisco songwriter, surely has great things in store for his future.

In keeping with the message of hope and encouragement for people struggling to get through, White has his own dream. "What I really would like to accomplish is the creation of an ongoing production facility, with a studio and a center where I can train kids to write and learn to produce," he says. "A center where I could bring youngsters in and show them the ropes. Show them the professional approach to songwriting, and the professional approach to production. Because the old guys taught me. They brought me into the studio when I was 17, and they started putting me together. I would love to be able to give some of that back. For the kids."

Kinda makes you stop and think a bit. Maybe we can make a difference. ■

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learning to apply WIND SYNTHESIS

The gloves are off – woodwind players are convinced they have a better instrument than keyboardists. And with a little work, they may find the electronic version better than their acoustic one. Text by Michael Andreas.

IF YOU ARE reading this article (and one must assume you are) you most likely fit into one of three categories: First, you are a wood instrument player thinking about getting involved with wind synthesizers. Second, you own a wind-based MIDI synth and are interested in seeing if there are any good hints contained herein. Or third, you own one of these instruments, but it has been sitting in a corner waiting for you to get up the courage to tackle it, and you are hoping that this article might offer some inspiration. So am I.

Introduction

WIND-BASED MIDI'D synthesis is such a relatively new breed of beast that many wind players might find themselves wondering if it is really here to stay. They might also question whether they even have a desire to confront the technological "wall" that seems to go hand-in-hand with

synths, their technological manuals and everything from samples to software programs, I've come away with the following realizations: wind synths are here to stay; they can be as rewarding (and often – I'll go out on a limb here – more rewarding) than many acoustic instruments; and (a little further out on the limb here . . .) they can be as expressive as any acoustic instrument. True, reading all those manuals tends to give you headaches and terrible eye strain, but believe me, they are worth it. "Great," you say, "but . . ."

"Why Not Just Learn To Play The Piano?"

WIND SYNTHS OFFER access to a depth of expressiveness not usually associated with synthesizers. This is because keyboard musicians, due to the nature of their instrument, are limited in the phrasing and dynamic expression they are able to

pitch wheels, aftertouch, and especially the breath controller, keyboardists have had to re-think their approach to phrasing. For a wind player however, these are options we are all familiar and comfortable with. We also have another unique experience to draw upon, that of playing in sections with other wind players. We've learned how to phrase, bend, and attack notes as an ensemble.

So, now that we've got them, what do we do with them? That is what the rest of this article is about.

Basic Equipment

ALONG WITH YOUR driver, there are a few things you will definitely need to obtain. Unless your wind synth comes with its own voicing module (as do the EWI and EVI) you will need a polyphonic and preferably multitimbral MIDI synthesizer, an effects unit (without one, all your sounds will sound flat and unnatural – anything along the lines of a Yamaha SPX90 will work great), an amplifier, and some good speakers (refer to the two-part series on *Synthesizer Sound Systems* that started last month). Then as you expand your system, you will probably want to add (in general order of importance) the following: a small mixing console (4-8 channels), a sequencer, a sampler, more synths, a computer w/MIDI interface . . . and lots of MIDI cables.

Getting Started

IF YOU HAVEN'T already done so, sit down with your instrument and its manual and go through it. If there are things that don't seem clear at first, don't worry. It always takes a couple of days before a new piece of equipment truly starts becoming "user friendly." I found this especially true for all the wind synths I've played. After reading the manual, go back to the section on setting up the wind driver. By this time the clouds should start to part and you will be on your way. If all else fails, don't hesitate to call the manufacturer's customer service departments. I have usually found them to be the best source for specific information and always friendly and willing to help (even at times when I



Photography Rosemarie Rounseville

undertaking the study of MIDI synthesizers, computer interfaces, and the like. This is an understandable attitude. For woodwind and brass players, all this can seem like foreign territory, and unless we're talking about a Casio SKI, you don't just pick up one of these synths and start playing.

I urge you not to let these concerns scare you off. A year ago, these were the same questions I was confronting. But having now spent the better part of the last eight months immersed in the study and review of several of these wind-based

employ . . . no letters, please. Think about it. Within a single held note, a wind player has several dynamic and timbral options (ie. you can play a note and then increase its volume without re-attacking it). Due to these limitations, a keyboard musician's approach to dynamic changes and phrasing is much different than that of a wind player. Or as Sal Gallina (one of the designers of the WX7) put it, "The piano is nothing more than a glorified percussion instrument."

With the advent of electronic keyboards, sustain and volume pedals,



was certain that my questions were embarrassingly stupid).

Here are some basic "setting up" rules that can be applied to all wind controllers. Start by finding a very basic sound on your synth module (a good square wave is as nice and inoffensive as any . . . very clarinet-like). Use this sound as your home base for getting the "feel" of your instrument. Since each of the wind synths has a setting which approximates wind resistance, make this your first adjustment. Don't go overboard! If you're a sax player playing an Otto Link #10 with a #6 Rico reed . . . lighten up! Find a comfortable easy response. Later, after you've got the "feel" of the instrument, you can make adjustments to your liking.

Next, find out where the center of your pitch range is. Various wind synths offer different methods of bending a note's pitch. You have to figure out what parameters your wind synth offers and where to set these so you can play comfortably in tune. At this point, be certain to check your pitch. A mistake in setting up either your wind driver or

his/her own horns. This is a very important point and probably the one reason why so many musicians have been wary of these instruments. A wind synth that isn't adjusted correctly is a very frustrating entity and absolutely no fun to play.

Developing a Technique

THERE IS REALLY only one way to get "the most" out of these wind synths . . . practice. I'm not being flippant; there is simply a lot to learn when first undertaking the study of one of these, and hands-on experience is the best approach. Following are some suggestions on what and how to practice.

First, pick a patch timbre that you like. Be certain that this voice is set in Mono mode (the reason for this is that in Poly mode each new fingering will generate an articulation effect which causes a couple of problems: it makes executing a legato passage impossible and it calls for a technique so exact that if any two keys aren't making simultaneous contact, one or two extra notes will be generated).



voicing module can easily leave you playing in the wrong key (I spent a day and a half trying to figure out why the WX7 I was reviewing was built in the key of "G"). When properly set up, the player should feel as though (s)he is picking up one of

MT JULY 1988

Being that all these controllers employ some variation on the Boehm fingering system, I've found that the best source of studies for improving technique is in the old standbys (ie. The Universal Sax Method, Taffanel & Gaubert, Klose, etc.) I ▶

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▶ personally enjoy using Nicolas Slonimsky's *Thesaurus of Scales and Melodic Patterns* because it incorporates scales and patterns over a range of several octaves.

One of the first things you'll notice when you start playing these patterns is that with a wind synth you now have several choices as to where to make the octave switch. For instance, on an arpeggiated chord you might have four or five options. And the octave change might occur on a different note when descending the same chord. Surprisingly, it's not frustrating having to make these choices – with practice it becomes liberating. You will find that passages that might be next to impossible with an acoustic instrument are quite easy with these instruments.

The Voicing Module

ONE OF THE best quotes I've heard regarding the sounds being developed for wind synths comes from Sal Gallina. To paraphrase him, "These instruments are sculptured in their software . . . it's like the violin maker looking for the right wood for his Strad . . . the right wood for these will be in the sounds designed for them . . . the instrument itself is only the vehicle . . . the software will make these instruments 'real.'"

How do you get your software to respond to your wind controller? Here are a few hints.

It is best to have a voicing module that will respond to breath control information. If yours doesn't, then most wind synths offer the ability to send breath control (BC) information as Velocity and/or Aftertouch information. This is helpful, but you will find that most Velocity and Aftertouch sensitive timbres are limited in their expressiveness because the player has very little control over a note's volume after the initial attack. I know of two wind synths (the EWI/EVI and MIDI Sting) that have onboard VCAs (Voltage Control Amplifiers) which can add volume information to a signal after it has been processed through a voicing synth. These are advantageous and something you might take into account if you are considering the purchase of a wind synth.

If your synth does have breath control, for best results, turn your BC (or Velocity/Aftertouch) settings up to their maximum level. This will allow you the greatest dynamic control over a voice.

If you are making your own sounds, you can save yourself a lot of grief by keeping two things in mind. You can twiddle the knobs until you find something you like, but before you try to improve on your creation, *save it!* A lot of great work gets lost because you can't get back to where you've been. And, know *when* to stop twiddling. Also, take the time to really learn what your voicing module can do. Is it multitimbral (can it play more than one

sound at a time)? Can it send and receive on all MIDI channels? Does it have a true Mono mode? Is it breath controller sensitive? These are all factors which will contribute to your enjoyment of this medium.

Performance and Recording

BECAUSE WE NOW have it in our power to sound like any instrument (or thing) we'd like, it is the performer's responsibility to be sensitive to the way an acoustic musician plays an instrument. If you are playing a string patch, you have to start thinking like a string player. How do they attack notes? What kinds of vibrato do they use? How do they approach a large interval? You also may have noticed that they never run out of breath during long passages. We, however, do. I've found that with very little practice, a circular breathing technique (briefly, circular breathing is achieved by filling your cheeks with air and using the muscles in the cheeks to force air through the instrument while simultaneously inhaling through your nose) can be developed on all of these instruments. In recording situations it is very important to have this ability.

There is another advantage to thinking like an acoustic player. You gather a great bag of tricks. Knowing how to set up the resistance on a voice to make it more "horn sounding" or employing the perfect oboe vibrato on some new sound is where things start to get interesting. For me (and for a lot of my friends) the real joy of these instruments doesn't lie in making them sound like other acoustic instruments (if I want a sax sound, I'll get out my saxophone). It lies in finding new and expressive sounds that have never been heard before and in having the tools to play these sounds in ways that are totally new, yet still very human sounding. However, being "MIDI'd" also forces the performer to make some unusual adjustments in his/her playing style. As horn players, we are all aware of the fact that when we play, the sound we hear is being fed to us through our sinuses and skeleton as well as our ears. With a wind synth, you will have to get used to the sound being outside of you. This feeling of having your sound coming from "out there" is unsettling at first. So, before showing up to your first session with one of these instruments, spend some time practicing it along with a record (any of Jamey Aebersold's albums work well). For a live performance, give yourself time for a good sound check (you will need it)! And be certain you have a decent monitor.

What's Out There

IF YOU WANT a good argument, just put an EWI owner in the same room with WX7, Pitchrider, Artisyn, and MIDI Sting owners and let them have at it on the relative merits and superiority of their

instruments. In fact, each of the available wind synths has its advantages and drawbacks. The Pitchrider allows you to use your own acoustic instrument as a driver via a pitch-to-MIDI interface, but inherent in this arrangement are some of the basic restrictions of the saxophone (or whatever instrument you're playing through). The Akai and Sting both offer great response but the keys on the Akai and the price on the Sting are problematic. The WX7 is great, but only on the sounds tailored for it. And then there's the Artisyn . . . just what is this instrument supposed to look like? Some religious artifact? Ultimately, it comes down to which of these best suits your personal needs. (Ed. Note – For more info, check out the reviews in MT December '87, January, February, March and April '88.)

Buttoning Up The Case

YOU MUST REALLY have an interest in these things: you've read this whole article. So, if you would like to know more, I suggest that you contact the manufacturers. And since you've made it this far, I'll save you the bother of trying to find them. Below is a listing for each of them. Also listed is the number of the EWI store in California – it is an excellent source of information and EWI support products. And finally I am listing the number for Sal Gallina whom I must single out for thanks. Over a period of several days we spent hours of bi-coastal phone call time discussing everything we could think of regarding the practical and artistic aspects of MIDI wind synthesis. Sal will soon be releasing a series of voices for the WX7 which he describes as the "money" sounds. Knowing Sal, I'm certain they will be.

You might also want to try to get one of the video tapes Yamaha and Akai have made to demo their instruments. I haven't seen them, but they are supposed to be helpful in setting up these instruments. And if all this doesn't work for you, perhaps what you really need is the Casio MIDI Sax. At \$100, what do you have to lose? ■

For more information, contact:

Artisyn MIDI Sax: Artisyn, PO Box 209, West Lynn, OR 97068. Tel: (503) 295-1915.

EWI/EVI 2000: Akai, PO Box 2344, Fort Worth, TX 76113. Tel: (817) 336-5114.

MIDI Sting EW2: Music Industries Corp., 100 Fourth Ave., Garden City Park, NY 11040. Tel: (800) 431-6699.

Pitchrider 4000: IVL Technologies, 3318 Oak St., Victoria, BC, V8X 1R2 Canada. Tel: (604) 383-4320.

WX7: Yamaha, PO Box 6600, Buena Park, CA 90622. Tel: (714) 522-9011.

Sal Gallina, Designs In Sound, 2286 Bronx Park East, New York, NY 10467. Tel: (212) 653-1633.

The EWI Store, 17031 Chatsworth St., Granada Hills, CA 91344. Tel: (818) 366-5733.



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Forte Music Mentor MIDI Master Controller

Instead of just processing MIDI, this new box helps you add expression to your main MIDI axe. *Review by Chris Meyer.*

JADED. THAT'S HOW I feel about a lot of MIDI products these days. MIDI is great; I love it. But I spend quite a lot of time in a funk thinking too many people involved with the creation and consumption of MIDI products (sequencer folks being the biggest offenders) are more interested in esoteric specsmanship than worrying about *musically* useful additions to the state of the art. It's just like MIDI is a giant computer game you can play with music.

It's about time somebody changed that.

Philosophy

WHAT DO I want out of a MIDI master controller? More gestural control (pedals, sliders, etc) and the ability to change things quickly and easily. And some options that turn my axe into a mega-instrument - all

from one place, instead of reaching back to the rack to mess with the switcher and mapper.

The Mentor is primarily designed to set in between your master controller (be it a keyboard, guitar, or whatever) and the rest of your MIDI rig - sequencer, thru boxes, etc. It can do a lot of standard "mapper" functions (like rearrange controllers, do splits, and send out hordes of program changes off of one command), but is more designed for live performance and augmenting a performance to be recorded. The one-rack height brain is controlled by a small remote out on the end of a long cable. The remote contains all the

programming functions, plus a backlit LCD for prompting and text reminders (what's hooked up to what), a few LED's for showing which preset you're on, one-button changing between the eight presets in each bank (eight banks internal, eight per cartridge) and en/disabling of devices (each with LED feedback), and four sliders and two buttons that may be programmed to do virtually anything.

Connections are provided on the back of the brain for six footswitches (four programmable, two for preset inc/dec) and two voltage pedals (for continuous control), plus a special connector for wiring up to six more voltage pedals into

the system. These too can be programmed per Mentor preset to do almost anything over MIDI or to the Mentor itself, and allow all sorts of additional inflections to be added to a performance - for me, the single most significant thing about the Mentor. Let's breeze around and see what this thing can do.

Paths

IT'S HARD TO tackle the Mentor and describe what it does in a linear fashion. I'll try breaking it down into chunks and tackling it that way.

The very heart of the Mentor consists of two MIDI inputs, four MIDI outputs, and eight "paths." A path essentially says "take that bit of input, modify it in this way, and send it out here like this." A path screens its designated input for MIDI channel. It then checks its front panel switch (or any other switch assigned to it) to see if it's awake or slumbering. If awake, it performs its processing on the message, gives it a new MIDI channel, and passes it along to the assigned output. The eight paths are independent, and can be hooked up to any input or output. A master keyboard may be set up to control eight synth and sampler modules at any given time, or the six strings of a guitar controller could be set up as six different input devices on the same MIDI input feeding six to eight slaved synths (or partitions of multitimbral

synths). By using the paths this way, each string could be independently selected or deselected and have its own processing.

The Mentor shows one of its most considerate touches right here in the basic wiring of inputs to outputs. I think all of us get tired of saying to ourselves, "Hmmm . . . if I remember right, the Matrix 6R is on output B, and on channel 4 . . . nope, the Roland is. Uh . . . (reaching around behind the rack) C?!? I don't remember wiring it that way . . ." The Mentor has a procedure defined as "Device Installation," where you in essence tell it ahead of time "the guitar's E string is on input A and channel 3, the A is on channel 4, and so on. The keyboard is on input B and could be set to any channel. On output A and channel 1 is the Prophet 2000. The DXII is on output C, and its eight instruments are on channels 4 through 11." From then on, you call up devices as GuitE, GuitA, MaskY, P2000, etc (up to five characters per instrument) without worrying about all the little bookkeeping. Nice.

The manual devotes 16 pages to describing what the paths can do; there's no way I can relate all of that in under three pages here. Nonetheless, it would be an injustice not to give each feature at least a three-syllable description. In short, you can set per path what range of MIDI notes gets passed (down to defining which

individual keys, if so desired); if the notes pass through in normal polyphonic fashion or monophonically (including high, low, or last note priority); and whether one module gets all the qualified keys, if just odd or even keys get through, or if they are shared and rotated through other paths (ie. two synths alternating notes). Velocity can be recurved, offset, scaled (including negative percentages), and gated (the last two options allowing velocity crossfades or switches being orchestrated with other paths). A note in can send a user-defined four-note chord back out. There are key latch and sostenuto (selective latch) functions, and the keyboard may be transposed, inverted, or thrown out altogether and only one key played no matter what is struck.

Up to four controllers may be filtered out per path, or all may be blocked and only two passed. You can take two of the passed controllers and mutate them (Forte refers to this as "mapping"). This means they can be told to transmit as themselves or another type of controller, along with being scaled and offset. A controller may be set to an initial value when a preset is selected, and subsequent changes to that controller may replace the initial value, be offset by it, or any other number of permutations. Local controls (the sliders, voltage pedals, etc) may also masquerade as the normal MIDI message of your ▶

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▶ choosing, but they take away from the two controllers you may map. All of the messages that travel through a path may be delayed by up to 10 seconds, for fatter slapback and "chasing" effects.

Pavlov and MIDI

R **E** **V** **I** **E** **W** THE MENTOR HAS sixteen programmable "triggers" and eight programmable "responses." A trigger can be a MIDI switch message (hold pedal, etc), one of the Mentor's own six switches (four footswitches, two on the remote), a specific MIDI note, the action of changing the Mentor to a given preset, or receiving a MIDI program change. A response may be to turn all notes off on a given output port, send a MIDI tune or system reset command, to increment or decrement the current Mentor preset number, to advance to the next or retreat to the last Mentor preset in a programmable "chain" of presets to walk through, change flat out to a specified Mentor preset, or to send one of eight pre-programmed buffers of MIDI data (more on those in a sec).

Eight triggers can be globally linked to responses (globally, in this case, means regardless of Mentor preset number). In

Use *"Like so many functions in the Mentor, you can hand-enter each byte of a message to be sent from the remote, or 'teach' it by transmitting the Mentor what you mean over MIDI."*

addition, two more links may be defined per preset (more on that chunk in a couple of paragraphs). If the trigger is MIDI in origin, you can define which input device it's going to come from; if the output is MIDI, you can define which port it'll be transmitted through. This is how you can set up things as simple as changing presets from whatever you want, to things as bizarre as having a D# reprogram your synth.

Reprogram your synth? Well, you can if you use one of the eight buffers . . . A buffer can be up to 64 bytes of arbitrary MIDI data. Like so many functions in the Mentor, you can hand-enter each byte of the message from the remote, or "teach" it by transmitting the Mentor what you mean over MIDI. As mentioned above, the buffer can be a program dump, or any other set of MIDI data you so desire. It may be a handful of controllers, or something as simple as a program change sent to one of the slave devices without changing Mentor presets.

Exactly like but very different from buffers are "macros," of which there can be eight. They may be up to 16 bytes long, and can be loaded from the remote or over MIDI. Their twist is that any byte can be called a wildcard "data" byte. Then, in each path, you can have a particular stimulus (from MIDI - such as the mod wheel - or from the Mentor - such as a remote slider) send a macro in its place, with the

controller's value filling in the data slot. Many synths and effects devices allow their parameters to be changed in real time over MIDI. This is a way to, say, adjust a DX's operator feedback amount remotely.

Triggers, responses, buffers, and macros are not unique to the Mentor, but the fact that the Mentor also has its own sliders, switches, and foot devices to send them with is unique.

Presets and Detail Work

EVERY TIME A Mentor preset is called up, a number of initializations of the MIDI network are performed. MIDI program numbers are sent for all eight paths. Another group of eight "auxiliary" program changes may be sent for devices that don't have or need paths (such as reverbs and DDL's). Each path device gets a MIDI master volume sent to it. A Song Select message may also be sent, and a MIDI output is defined to pass along clocking information. Selecting a Mentor preset may also send a sequencer start or stop message (as may any of the Mentor's local switches). Another function of each preset is giving it a 10-character name, and giving each of the remote's four sliders a

name (to remind you what it's controlling).

There are a number of other small thoughtful touches. Each switch on the Mentor can be programmed to act as a momentary or click on/click off switch. There are MIDI activity and display pages, for debugging your system. Path and preset copy utilities abound. Each output can be switched down to half MIDI bandwidth (pause between every byte), to allow slower synths time to digest their food. There is an auxiliary MIDI input on the back of the brain for feeding the Mentor program changes without tying up one of the master controller inputs. A Mentor preset can hold off taking effect until the sustain footswitch and notes are released.

Arguments

A DEVICE GIVES you a lot; you want it to give you more. The Mentor can do most of what other mappers can do, plus a bit more; however, I kept asking for more of everything. I try to ward off that tendency by asking myself what I *really* need (or would use something for). This resulted in a number of small fights with myself.

I personally wish that more controllers could be mapped per path, or that delays could be fed to just the controllers and not the notes. One can use two or more paths per module to build up a complex processing. This, however, takes away from

the number of other paths for processing signals. Part of me immediately argues that eight paths are not enough - many people have more slaves than that (particularly with multitimbral devices). The other half of my brain says, "Really, now, when are you going to be driving more than eight slaves off of one controller in real time? How many times will you be driving even four?" Which again points up the Mentor's place in the food chain - between the controller and sequencer; not between the sequencer and the synth rack (where there would be demands for more than eight paths at once).

The left and right brain continue to duke it out. I wish the buffers were larger (64 bytes is smaller than many synths' patch dumps) and that there were more of them for reprogramming synths. I argue back that how often would I want to dump a new patch into a synthesizer live when it probably holds 64 or 100 already, and why would I expect the Mentor to do this in the first place?

The Mentor is easier to use than the vast majority of mappers (the Axxess, everyone's current favorite, is just as famous for what it can do as it is for how hard it is to do it). There was obviously a lot of effort put into making the Mentor quick and easy to use, with lots of visual feedback. Still, the learning curve is a bit slow. For one, there's no way you could figure out how to use it without the manual. The manual is lucid; it is also one of those maddening affairs where topics aren't covered in order, and every section expects you to have read every other section. There's some other strange things too. Where a list of parameters are longer than what can comfortably be fitted into a slider stroke, you keep moving the slider up and down to its extremes to go further down the list. Cute, but initially confusing.

Lastly, there is the issue of price. There is a thing I refer to as the "Synclavier mentality." Translated, that means "Yeah, it isn't cost effective, and it's got problems, but I've got the bucks, and there's nothing this complete or easy to work with." The Mentor qualifies into the junior league of that frame of thinking.

Verdict? As I stated at the beginning, I've been personally putting teeth under pillows and wishing for this type of product for a long time. I'm glad it's here. I might even scrape together the money to buy one (instead of, say, another synth module or reverb). If you want a box that's going to magnify your use of MIDI live or recording and have the bucks, go for it. I don't expect we'll see imitators for a year. ■

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READERS' TAPES

On music for the mind and dance, more MOR clones, and a little bit of rebellion. *Reviewed by Yung Dragon.*

I ALWAYS TRY to come up with some witty lead for each month's column. In the earlier days (when I was a bit more shallow and vain), it usually concerned my most recent physical injuries (which I kept getting more of, as a sort of instant karma). Then I actually started talking about music. Then I started talking about my move to LA, which is about as shallow (on all planes of existence) as one gets.

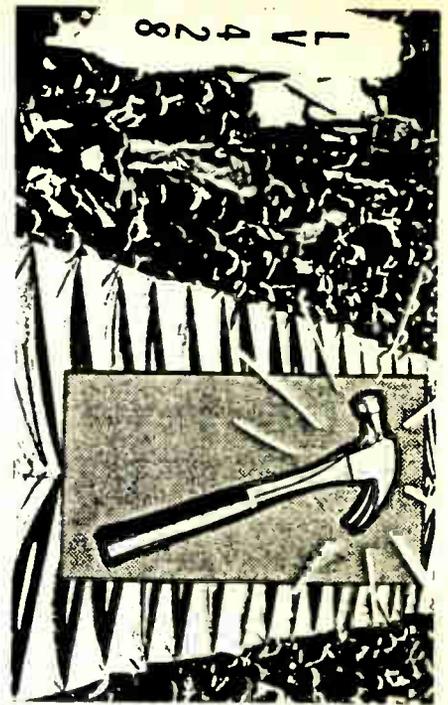
There are a couple of themes I'd like to weave this month's tapes together with. One is to carve on stone tablets and drop from on high that music from the hand (jazz, more difficult classical), heart (blues, folk), and mind (avant-garde) are all equally valid or invalid - I'm tired of hearing that timbre takes a back seat to rhythm which takes a back seat to melody. Anyone can destroy or make up for the others. I don't know what religious sect to pigeonhole musical Instant Gratification (mondo production, dance music, new age) into - it attracts just as many rabid followers, but seems to keep their attention for much shorter periods of time (a polytheistic religion if there ever was one). Comments are welcome.

Secondly, when an independent musician decides to copy or work in some style, why do they always pick the overdone ones?

(Here is where I cross over the line into being too pious, and I see the thunderclouds gathering overhead already to put me in my place.) Why do so many people copy Barry Manilow than, say, The Residents, Art of Noise, Tuxedomoon, or Chrome? But as soon as I say that, I feel like a hypocrite for telling people "You can't play *your* music; you gotta play *my* music. Nothing like a good ol' fight between the yin and yang . . .

One tape that evokes a mental reaction close to an emotion is *The Feedback Music* by **David Myers**. David states that this "represents something of a technological backlash for me . . . I've put aside my sequencers, samplers, and synths, and constructed a self-contained music system consisting of four DDL's, reverb, and a load of custom-designed and built circuitry which has produced the music on this tape." Delay lines can be put into all sorts of interesting patterns of feedback, where they whine, pray, and grumble on their own. Hooking up four of them and controlling their inter-connections makes for some interesting noise - like listening in on the prehistoric evolution of some new electronic species (simplified electric eels raise out of the murky pond and shoot across a monochrome sky).

David created all the pieces by



"improvising" live with the system and recording it to tape. Song titles such as 'Lathe,' 'Engine of Myth,' 'Prayer Cloth,' 'Jumpstart,' and 'Keen Tooth' are pretty descriptive of what is to be heard. A definite headphone trip. You can't dance to it, and it ain't easy listening, but it's one of the most fascinating tapes I've heard yet.

This month's MOR entries (and instigators of the fight between my yin and yang) are *Demo (lition?)* by **Curtis Long** and a demo by **Marty Baggen**. Marty describes himself as "a hack musician from Alaska." Working in radio and TV, Marty never saw himself as "being involved in MIDI-ized production. However, being a solo recordist with no band, it really is the only logical path to take if you want to try to put out, excuse the term, commercial music." Indeed, his material sounds a bit like it's aimed at the 40+ AM radio audience. For some reason, hints of early Neil Diamond come to mind (and Creedence Clearwater Revival, in his voice and phrasing on 'A Future Letter').

Production and arrangement is rather good, with slightly jangly guitars, sax, and appropriate keyboard pads and drum fills. Iffy are the simplistic main drum patterns, some of the keyboard voicings, and the lack of depth to the mix. Lyrics are fairly good, alternating between "I'm gonna hang onto and protect my baby" and introspective topics. Extra points for the vocal stabs on 'Inside Out.' Baggen has a humble attitude, from ". . . I'm still sitting at home trying to record something that will connect with somebody somewhere . . . at some point, I need to know if the only person I'm gonna impress is me . . ." to "P.S. As a precaution, I left the erase tabs intact." To be honest, I at first wrote this off under the blanket of 'IdontwannahearanymoreMORsoforgetit,' but for some reason, it's ended up back in the cassette deck several times . . .

Curtis mentions wanting to get published or write jingles, but his real forte lies in vocal
MT JULY 1988



David Myers

arrangements and harmonies – his are perhaps the best I've heard, particularly considering how timid his voice sounds by itself in the lead. Less successful is his lack of balance between rough-edged guitar and rubbery Juno 106 synth bass (particularly on 'Carry a Gun'). He seems much happier playing crunch than clean guitar (the contrast between raunchy and plinky arpeggios on 'The Rabidou-Wop' shows a left and right hand that aren't even listening to each other). In general, the material sounds like mid-'60s guitar pop that can still be found in motel ballrooms in the midwest. Production is too dry, and the drum machine needs to swap places with the rhythm guitar in the mix. Paths that seem to work for you, Curtis, are those of lead guitar and backing vocals – either more hard studies or an egoless participation in a band seem to be the disciplines that would best further your growth in this incarnation.

The breath of rebellious fresh air this month comes from **LV 428** and *Altruistic Ego*. **LV 428** "is a one-man unit (isn't Fostex great)" consisting of Ron "Spot" Hall, a Sequential TOM drum machine, Mirage, Roland SH101 monosynth, "various drugstore effects," and a Korg SDD 2000 effects unit. The Other Rick, who I'm currently living with, said it reminded him of early Residents; to my aura, it sounded like a cross between an adolescent Art of Noise and my favorite Dadaist, John "Plaster Falling" Bender. Sampled bits from an old radio science program about the wonders of the phonograph serve as the humorous running narration throughout the tape. The TOM lays down a nihilistic def beat throughout, with the notable exception of the new age 'Interlude Pro' and 'Interlude Con,' where Ron beats the cloud patrol at their own game with their own weapons (thunderstorms, shakuhachi flute).

Joe Poshek HUMANISTIC DANCES



a new work for
computer-based synthesizers

MT JULY 1988

'The King's Men' is a favorite with a repeating bassline that sounds like it escaped from an animation festival and sped-up chipmunk tapes serving as a backdrop to a movie dialog between a politician and a judge competing for power. The tunnel-echo processing on the voice on the other numbers grew tiresome, however. This stuff is rough and doesn't encourage repeated listenings, but there's a solid core in there. **LV 428** has switched names to Brideshead with a tape called 'Ruined Choirs' promised soon. I hope I get to hear it.

Considerably less successful is *E Wants U* by **E Power**. The concept here is good – "Basement Funk is a new type of sound that is both the product of enterprising young composers and musicians that don't wait until a major record company recognizes their talent . . . and the increasing musical technology that is becoming more and more available to artists on a shoestring budget." Unfortunately, **E Power** doesn't pull it off. The drum patterns plod, the playing is late and poor, the vocals are timid, the lyrics are all about the same thing ("I ain't macho, but I care for you, so care about me" – commendable in content, but poor in delivery), and the recordings are terribly oversaturated.

The ultimate in pretension is making up a name for yourself, trademarking it and a slogan, and then coolly being reluctant to accept it ("Though he has no great love of labels, **E Power** accepts the label of Basement Funk . . ."). The exact opposite of *Altruistic Ego*, I would say. **E**, put away the pretense and face your own music – the sci-fi/evil sound of the title track shows some promise – or you're only going to go backwards.

Several composers have claimed to be making "modern classical" music, when in reality they're only making new age. **Joe Poshek** makes no claims about his *Humanistic Dances* (originally written for a full-length ballet), so I'm willing to stand up and say he is making modern classical. The only sound sources are a Yamaha TX816 and a Roland TR707 drum machine, entered into Jim Miller's Personal Composer sequencer by keyboard and guitar controllers. The music is bright and spikey (with occasional synchronized percussion and staccato FM voices, à la much Simmons MTM music), and switches nicely between slow and fast selections. Voicings are nicely varied, including bell, English horn, voice, guitar, and harp timbres. Compositionally, he's a bit of a cross between Wendy Carlos, Synergy, and Bill Bruford, while staying lighter than all three.

In his previous life, **Joe** claims to be a solo classical guitarist, while currently filling his spare time "on the music faculty at Orange Coast College where I (co-)developed the computer music program" and by working on a new ballet based on the Arthurian tales. The cover art is even beautiful.

Along the same path towards enlightenment, but not quite as far, is **Stan Nevin** and his music for the modern dance piece *Reaching There* by **Melissa Thodos**. Recorded with a DX7II, a Mirage, "and a little

help from a DPXI," it shows promise in some of the fun rhythmic figures and gliding lead bell sound on the initial section. Unfortunately, it doesn't develop enough, and the slower movements don't serve to complete or compliment it. Of course, this is akin to listening to a movie soundtrack without the dialogue or picture, since it was commissioned to back a visual presentation. There is enough promise here to warrant hearing **Stan's** more fully composed works, if he has any.

Time to take off the long gray powder wool wig and listen to some sly pop. **Holiday Slides** (Daniel Pearl and Dominic Salerno) submitted a cassette single of their first release, *Can You Count the Brunettes?* They describe their own music as "Psycho-Vaudeville"; that's overstating the case a bit. It's closer to laid-back rock with lots of nice little breaks in the rhythm track and



arrangement and a slightly dark/looney bent to the lyrics and feel. Again, they overstate their own case, but I'll go along with their press release's closing line if this kind of music sounds attractive: "These Brunettes are definitely worth investigating."

I think I've damaged my karma enough for one month. See you next issue . . . ■

Contact addresses:

David Myers, c/o Presence Sound Productions, 228 Bleecker Street, NYC, NY10014 (tape costs \$6 ppd).

Marty Baggen, PO Box 4, Grover City, CA 93433.

Curtis Long, RD 2, Box 559B, Highland, NY 12528.

LV 428/Brideshead c/o Ron Hall & Big Paisley Productions, 123 Anderson Avenue, Reading, PA 19606.

E Power c/o Independent Music Company, PO Box 428364, Chicago, IL 60642 (tape costs \$5 ppd).

Joe Poshek c/o Poshek Productions, 838 Van Dyke Drive, Laguna Beach, CA 92651.

Stan Nevin, 265 Auburn, Winnetka, IL 60093.

Holiday Slides c/o Sincerely Recordings, PO Box 20052 Cathedral Finance Station, NYC, NY 10025 (tape costs \$4.99 ppd).

Send your demo-tape along with some biography/equipment details, a recent photo, and a new trick you've learned with grapefruit to: **Readers' Tapes, Music Technology, 22024 Lassen St., Suite 118, Chatsworth, CA 91311**. By the way, **Yung** does not work for CBS Records (hey, it was the April issue you know . . .)

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Photography Eddie Mullik

FAST FORWARD

Synthesist, composer, solo artist and sideman Larry Fast has been pushing forward with technology for well over a decade. We talk with him about where he's been and where he's heading.

Interview by Hank Bordowitz.

ROBERT FRIPP ONCE remarked that Larry Fast was one of the most impressive people he'd ever worked with: "I'll go on an airplane with a novel or some light reading. Larry Fast will take on a sheath of computer programs and start debugging them."

"I didn't know that made an impression on him," Fast laughs. "I suppose it's what passes the time in an entertaining and productive manner. I'm certainly as likely to waste time watching television or reading something fluffy. He would use the kind of traditional musical approach that requires a lot of time practicing scales, doing the musical training that makes him the great musician that he is. When you're dealing with a technologically-based instrumentation, it's really similar, poring through the computer charts and working on whatever technical off-shoots that make the instrument more musical. I'm not sure that he recognized that the parallel was closer, rather than different."

Larry Fast knows quite a bit about making music with machines. As a studio musician, he has worked with the likes of the Dream Academy, Peter Gabriel and innumerable others. As a record company executive, his Audion label has put out work by such artists as Wavestar and Wendy Carlos. As a solo artist, he has recorded his "electronic realizations for rock orchestra" under the name of Synergy, starting when he was 22, and continuing through the present, some 13 years later. Fast has been creating electronic music since before there was even a concept like MIDI, and he continues to grow with the technology. His last album, *Metropolitan Suite*, was dumped direct to digital.

"I was 22 when it was actually put together," he says of the first Synergy album. "I was coming right off a rock band. It was primitive technically. It was primitive musically. In a way, I'm proud it's done as well as it has over time. Most 13-year-old recordings really are embarrassingly primitive when you look back on them, and that isn't. As a composer, every time I finish a record I listen to it a few months later and ask myself how I could make those compositional decisions. I always think, 'They're so bad, I'll never make those kinds of decisions again.' The accumulation of that kind of self criticism over the years has just made for better writing. And I always know that the next one will be better."

This briefly touches on one of the many fences that Larry Fast straddles. He is a composer who got his big breaks through technology, including inventing several widgets that so impressed Rick Wakeman that the former Yes keyboardman bought them.

"Both roles are important," Fast says of the tension between composer and

technician. "They're not a new set of skills. They are not a lot different from a traditional instrumentalist knowing his instrument very well. A fine violinist really knows the grain of the wood, the creak and the resonance and the feel of his instrument, and he knows when something's gone wrong with it. An instrumentalist who's a fine pianist understands the touch of the piano, and many of them will at least understand the mechanism, even if they don't do their own work on it.

"There are a lot of parallels that have come before," he continues. "Electronic

"Electronic instruments have traditionally lacked expressiveness, and the only way to bring expressiveness in has been to understand the technology to an extreme degree."

instruments have traditionally lacked some of the expressiveness that traditional instruments have had, and the only way to bring that kind of expressiveness in has been to understand the technology to an extreme degree. I don't see the two sides as being exclusive or fighting each other, but rather being very strong compliments to each other. Being a good technician, being able to modify the instrument or just use it on all its electronic levels, is doing nothing more than serving the composer side very, very strongly. And by the same token, the composer or musical side's demands for better performance or better expression out of the instrument requires this technical knowledge. I don't think one side really wins out over the other, because they're not separate sides. They're handshaking."

Knowing his instruments has allowed Fast to do some adventurous things within the very mainstream, romantic parameters he generally sets for himself as a composer. These have ranged from using galvanic skin responses to trigger synthesizers on his earlier works, to his most daring and experimental record, *Computer Experiments*, which is composed and played entirely by computer, with Fast involved only in as much as he modified the programming.

"It's like the front end of a biofeedback machine," he says of the galvanic skin response trigger. "Especially in the early days of analog synthesis, it was very easy to use that kind of device. Anything that would put out voltage could be used to control the Moogs. It was along the lines of a Theremin or a ribbon controller. It had certain kinds of unpredictability - it wasn't quite so smooth, which made for some very gritty textures that would be nearly impossible to get off of keyboard controls. But as time has passed there are other ways to get those sounds, so the controllers have fallen by the wayside a little bit.

"*Computer Experiments* is definitely put together completely differently than anything else under the Synergy name," Fast
MT JULY 1988

concedes. "It's difficult in the sense that it's not based on structured melodies, rhythms and the more derivative extensions of western music that the rest of the Synergy records are created out of. It's something that was done as mathematical modeling of musical melodies, using the computer. The computer was making a lot of the decisions of what note would come next and when it would come and how long it would last. I didn't really play a note on the record."

An ironic outgrowth of the technology has allowed Fast to go out on tour with Peter Gabriel without really playing a note. On the Amnesty International concerts a

couple of years ago, for instance, while Fast was embroiled in the basement of his house high in the Watchung Mountains of New Jersey, composing and recording, he was also "playing" the keyboards for Peter Gabriel, by the grace of MIDI technology.

"It's an interesting comment on the ability that the computer-based instruments now have," he says. "It has created a new level of performance that exists somewhere between performers in the old days and their cheating, taking tapes around on the road with them of musicians who might have played on the album, or their own overdubs that they couldn't perform live, and absolutely performing everything live. Now there's sort of this middle ground, something I started doing early on with Peter Gabriel - playing the important parts live as much as possible, but trying to recreate the sound of the studio, and again, using computers as controllers, to create a couple of extra sets of hands, allowing me to play my own parts. The computer is obviously capable of playing a symphony orchestra's worth of parts simultaneously. That wouldn't quite be fair either."

By casting the pre-recorded tapes as "cheating," Fast opens up an interesting question in the use of MIDI and computers on stage. As much as the tapes were "cheating," isn't this playing music that was saved on another magnetic medium, in this case a floppy disk, in essence taking the "cheating" to another level?

"The only difference is that you do have control over the sounds. Sounds can be changed during the show, sounds can be modified, tempos can be modified, there is a degree of live control over it," Fast contends. "At any rate I would make sure that all parts were available and then pick and choose the ones that I wanted to work with. As long as those master disks exist, with those sounds and the music files on them, my presence isn't really required to execute that anymore.

"In the Amnesty Show, which was shown ▶



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► world-wide, there were parts I entered, note by note, part by part – the musical parts were all done in conjunction with Peter. It's his music. I don't pick his parts. I don't write his arrangements for him, but we do work the ideas out together, and it would never have been possible to have done some of those things without the work that I have put into it. We did several years of touring, using those exact sound disks and parts. Yet, all the time we were doing it, I knew I didn't have to be there. All my hard work had been done in the tour pre-production. The tour was just the fun part. When the Amnesty Show came off, and I was not invited to be a part of it, yet the parts were, it just proved the point, that what I knew was coming years before had come to pass."

THIS THEN IS another fence that Fast straddles; on one hand there's Larry Fast, the well-respected sideman; on the other hand, Synergy, the eclectic solo artist.

Clearly, he seems comfortable in both of these roles, although being the synthesist to the stars was never one of his primary goals.

"I never planned for that to happen," he says. "Just to go back to the chronology, the way things happen, an awful lot of solo artists have started out as session musicians, sidemen, and risen to the top through the musicians union, doing jingle sessions and record dates and whatever, and at some point they become stellar enough to do their own recording and release their own solo album. I went completely backwards on that. I never did a regular, formal AF of M billed session record date until I had solo albums out. It was kind of a weird

position, because I didn't know the ropes; I kind of learned them backwards. I was coming off being the producer, composer, engineer, director of my own project, to all of a sudden just being a sideman.

"Over the years it's turned into a very good training ground, and working with better known artists, who are bringing me in specifically for what I do, has given me a degree of latitude and the ability to see beyond the little ivory tower that a self-contained composer can get caught in. I was working with a whole lot of good musicians, interesting producers, rubbing elbows with the mainstream of the record business. It's important. The well-rounded individual has the better chance of not

"The mass marketing of music looks for personalities to create, and reclusive personalities have to be enormously talented in order to get through the media machine."

taking himself so seriously and going up blind alleys, especially anything as weird as the niche I have carved out for the Synergy records."

This niche has grown and expanded over the years he has been doing the Synergy recordings. When he started, they were regarded and programmed as rock records, finding favor with disc jockeys like legendary Scott Muni of New York's WNEW-FM, who would program Fast's version of 'Slaughter on Tenth Avenue' nearly weekly when it was released. Now Fast finds himself lumped, with many other electronic musicians, into a new age bag.

"Music is a really funny thing," Fast philosophizes. "it's a sort of sociological phenomenon, anyway. The mass marketing

of music, as we have it in our culture, looks for personalities to create, and reclusive personalities have to be enormously talented in order to get through the media machine, in order to be recognized. If they aren't willing to do that, then there is a danger that great music will go unheard for all the wrong reasons.

"Of course, I came into this business through the rock and roll/pop side of the marketplace, even though I was never squarely in the pop star camp. That wasn't really a goal. I have played along the edges of that, more so than let's say the more traditional, academic, classical music role.

"I suppose the other side of me is that I don't just want to be an ageing rock and roll sideman," he adds. "There is a part of me that would like to make the slow fade from the more rock-oriented world into the great middle age of being accepted as a serious composer, maybe not grimly serious, but one who gives thought to the music and reaches people on a level that doesn't require the concert hysteria and pop star-making machinery. Fortunately, as my baby boom generation has been ageing, marketing and demographics and all this record company kind of terminology as to who they sell records to has evolved with it, so there is this emerging new age market, a market for alternative instrumental music that covers the gamut from new classical works through jazz and everything in between. I think that helps me with my own image of what I want to be and do and who I want to reach.

"The traditional start of new age, the holistic health and spirituality and science that's maybe the twenty years later outgrowth of the original hippie movement, or something, I've never really been a part of that. But it has grown to encompass so much else since then, that I find myself being captured in the ever-widening ripple

effect. I can't complain about that. I think that what has happened is I'm still doing now what I've been doing for the last 12 years. What I was doing didn't have a label before: it wasn't jazz, it wasn't pop, it wasn't really classical in the strictest sense, nobody quite knew what to call it. And now, fortunately, there's this category which can encompass all of these other unidentifiable and difficult-to-market types of music which I happen to fall into."

What Fast's music does have, with the possible exception of *Computer Experiments*, is direct accessibility. "I see what I'm doing with the composition as working in the electronic medium," he proposes. "Using new sonic materials, but to work off of an existing continuum of composition, rather

than just throwing out the rules.

"I use the architectural analogy a lot, which is that the international style of architecture, the modernists, the extension of the Bauhaus school in Germany, threw out a lot of what had gone into architecture in the previous centuries: embellishment went, a lot of what was considered familiar in architecture. The glass boxes, which was a radical movement, and something that needed to be done, didn't always relate to people in general. What was a brilliant idea degenerated into a collection of ideas for other architects. In electronic music, there were some similar parallels, early on. The early explorations threw out a lot of the old rules, and I think that was important to explore. And it was radical in its origins. But as it evolved, it became music for other composers, little exercises for a very select group of academicians. It lost any kind of a massive audience.

"Now architecture has moved into a post-modernist movement where a lot of what was learned during this modernist era can be incorporated, but then the best of the old can be brought back into it and create a new synthesis of old form and new form. It can be jarring, but now they've become part of our vocabulary. These are the ones that have survived from the modernist era. And so, I'm attempting to do the same thing with the music, which is draw on a previous collection of styles and evolution, and let it extend naturally, using the new forms and the new materials."

Fast's career as an electronic musician has spanned some of the most remarkable growth in musical technology, and his position in the field has let him grow with it. His latest obsession, the Waveframe, resides at House of Music, a New Jersey recording studio which he has a vested interest in.

"I see the Waveframe as the studio of the future," he says. "For me, since it doesn't have synthesis in it yet, I'm primarily interested in using it to replace the recording console and the multitrack tape machine with an integrated MIDI recorder, so that there's one box that does everything. I've used the Synclavier in the past for scoring, and I can see from the way that the Waveframe works that it's a little more efficient and effective."

Fast's enthusiasm for his latest project - an album for Warner Brothers with a trio of super-players, Joe Sample, Marcus Miller and Omar Hakim - confirms his involvement in creating new applications for the very latest equipment available. "We're in mid-production on it now, so I don't know how it's going to end up," he says, "but Joe plays fabulous grand piano jazz improvisational work. Now what can be very difficult on an album of this nature is to create orchestrations later, after the fact, for parts that were, well, inspired on the fly when the tracks were being recorded. The
MT JULY 1988

producer, Tommy LaPuma, asked if there was a way that we could capture Joe's playing to MIDI and then orchestrate around that. And in fact, that's exactly what we did, using the Macintosh, MasterTracks Pro, locked to SMPTE, locked to the Jambox, to the 2" tape.

"When they recorded as a piano, bass and drums trio, I also took his piano part, coming off of a Forte MIDI Controller that we had fitted on the Steinway, and just took what he was doing straight to the Macintosh Plus," he explains. "We have every keystroke that he made. Now we can use the editing capabilities of the sequencer to regionalize particular areas that he played. So the low notes can become some other bass part, and we can grab just the

inner voices and give them some other sound to go with them, or we can selectively thin out parts if we want. It's a whole new approach to orchestration, and it will allow the soloist to have a tighter orchestration of what he's actually played."

"Don't look back, ever forward!" seems to be the message Larry Fast sends to the musical community. And all we can do is strive for the same level of creative success that he has achieved. ■

If you have problems finding any of Larry Fast's records in your local music store, drop a postcard to Synergy Albums, c/o Passport/Audion Records, PO Box 362, South Plainfield, NJ 07080, requesting a catalog of current listings.

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OFF THE RECORD

Reviews by Adam Ward Seligman



**DAVE GRUSIN,
DON GRUSIN**
Sticks and Stones
GRP

IT SEEMS LIKE a good time for the brothers Grusin to collaborate on a record together. Dave is the highly successful composer and record company executive who penned the delightful 'Mountain Dance' and the scores to more movies than I can mention here. Don Grusin is his equally talented brother who also has played keyboards with a myriad of artists. On *Sticks and Stones*, they share equal space driving a battery of keyboards, synthesizers, samplers and drum machines to create some very pleasing and at times very exciting music that falls into the contemporary jazz niche.

The compact disc version (all GRP product should be heard on CD to best recreate the digital recording process) has eleven tracks totalling close to an hour of relaxing and joyous music. The opening track, 'Birds with Long Legs,' really aspires to some nice heights with its constantly shifting rhythmic pull and cross melodies. Throughout the album, some very satisfying LinnDrum programming occurs, with a richness in both drum sounds and ethnic textures.

It's difficult to figure out who's playing what – both are so talented that my only true hunch is that Dave plays the acoustic piano
MT JULY 1988

on several tracks. But that's based more on what I would like to believe than on any real facts. (This being an advance CD with limited credits, the fault here is not my own. A great conspiracy exists out there for us lowly record reviewers, depriving us of basically intimate details like who did trigger that wind sound at that point in a song.)

'This Little Pig's Got the Blues' has a marvelous synth bassline and a catchy melody that begs to be recorded with a full horn section. 'Dog Heaven' is a piano duet, and it just feels right to have two acoustic pianos being played on a GRP release without MIDI processing or sequencers. 'Southern Wind' features Dave Grusin on solo piano.

In this case, *Sticks and Stones* have no words to go with them, and they don't hurt at all. Enjoy! ■

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Free Fall

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I ALWAYS APPRECIATE being warned by an editor that an album "is really weird." This usually sets off a glandular reaction of violent sweating on my part, combined with verbal flatulence. However, in the case of *Free Fall*, a

collection of five intriguing works by the winners of the Minnesota Composers' Forum competition, "really weird" isn't totally accurate. Very adventuresome, I think, and a bit self-indulgent would better describe these five composers and their art, which ranges from Steve Tibbetts' 'Four Letters,' – inspired by his latest trip to Nepal (do you ever wonder about the music that musicians from Nepal compose after visiting Minnesota?) – to Pat Moriarty's 'Out of Touch/Albert' which begins almost as free jazz and ends up restricting the quartet to a D major scale.

The concept of taking five very different composers using a mixture of contemporary instruments and techniques and letting them share an hour-long compact disc is a worthwhile one. I can't imagine listening to this one for hours every day – twice over a very sunny weekend was enough – but there are more ideas in each suite than in any three Philip Glass soundtracks, and the mental images are amazing.

Mike Olson, whose piece 'Three Days in the Arrowhead' features all electronic instruments, has very specific mental images, but states, "I would rather try to encourage personal interpretation by remaining vague and letting people come up with their own images. The important thing for me is that the listener feel something."

Henry Gwiabda's piece, 'Sinfony,' incorporates electronic instruments with a heavy amount of layering to achieve a symphonic sound. He uses samples of a reconstruction of a Mozart Cassation in D major, with text from Shakespeare's *As You Like It*. The music juxtaposes extreme opposites – electronic drum machines underneath Shakespeare, Mozart with samples. But it works very well, with electric guitar and simulated audience screaming adding to the tension inherent in the music.

John Devine's 'Stop Thinking or Get Out of the Way' features a saxophone quartet similar in energy to the World Saxophone Quartet but without their occasional forays into the avant-garde which disturb some listeners. The melody and the articulation is superb on this track, although it does feature some weirdness – normal weirdness, casual weirdness . . . it's hard to say. To hear all four members of the standard saxophone family, soprano, alto, tenor and baritone, growling and swinging together makes one wonder why more horn players aren't trying this orchestration. It truly works.

To order *Free Fall*, contact the *Minnesota Composers Forum*, Market House #206, 289 East Fifth Street, St Paul, MN 55101. ■

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Akai MPC60 MIDI Production Center

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Photography Tim Gootyer

Others have tried, but none have completely succeeded. Does Akai finally have the answer for an integrated sampling drum machine and sequencer? *Review by Bob O'Donnell.*

YOU HAVE TO wonder why. Why would Akai subject themselves to the possibility of receiving the kind of grief that the "others" have. Sure, it's a great idea to put a sampling drum machine, hardware sequencer and SMPTE-to-MIDI interface into a single box, but the history of those who have attempted such a feat has not been pretty – so why tempt fate?

Designer Roger Linn and the other folks at Akai obviously feel that it's an idea whose time has now officially come. So, after a name change, a few months delay

and a few hiccups in the initial software release (I reviewed version 1.1), it looks as though the MPC60 MIDI Production Center may actually be the product that many people have envisioned and hoped for. And then again, it might not . . .

Overview

THE FIRST THING you notice about the MPC60, which is intended to be the first in a series of products designed by Linn and produced by Akai, is its impressive shape and size. With its solid construction and vinyl arm-rest, it looks like it should be the

centerpoint of a MIDI studio. It's also laid out very cleanly, almost inviting you to work with it. One particularly nice touch is the large 320-character (40×8) backlit LCD, which can be tilted up to one of several angles or laid flat against the surface of the machine. In conjunction with the dedicated contrast control, you can see the MPC's informative display from nearly any angle.

The MPC60 incorporates an enhanced 12-bit sampler specifically designed for sampling drum and percussion sounds; a set of 16 velocity- and pressure-sensitive

MT JULY 1988

drum pads; a hardware sequencer capable of storing 99 sequences – each of which can hold 99 tracks – and 20 songs; a 3½" floppy drive for storing samples and sequences; and a SMPTE reader/generator which can convert the audio SMPTE signal into MIDI data. The various components and functions of the machine can each be accessed by pressing one of the dedicated Command buttons on the front panel. Doing so will either call up a specific software "page" on the display or a menu with a further choice of up to nine more pages.

Once you've reached the page you want, you can make adjustments with the data entry pad, inc/dec buttons or the rotary dial. You may also need to select further options or access sub-pages with one of the four "soft" keys. These keys take on new functions according to whatever software page is currently active. The system occasionally takes a fair amount of button pushing, but it's very intuitive and easy to get used to.

Linn has also seen fit to include a context-sensitive Help button on the front panel which adds a great deal to the instrument's friendliness. The MPC60 senses where you are (ie. on what field the cursor is located) and provides relevant information for that particular function when you press the Help button. It doesn't completely replace reading the very well-done, thorough owner's manual (strong points to author Roger Linn here), but it can come in handy.

The Drum Machine

MANY PEOPLE WILL look to the MPC60 as the ultimate drum machine, and in a sense, they're correct. The two main components necessary for any beat box are a sound generating source and a sequencer of some sort and the Akai machine has both in abundance – it just also happens to have some sequencer power left over for controlling other MIDI instruments.

The sound portion of the machine consists of the 12-bit sampler – no sounds are stored in ROM. Up to 32 sounds, divided into two switchable banks of 16 each, can be loaded into the MPC either en masse or one by one from disk (actually there's 34 with the hi-hat, but I'll get to that in a second). Sounds are played with the velocity- and pressure-sensitive pads, plus the hi-hat sound can be further manipulated by the Hi-Hat Decay Slider. The pads are made of a flexible rubber material that is a very comfortable surface on which to play. Plus, they're big enough for two fingers which makes playing quick, intricate rhythms much easier. These two features make the MPC60 one of the most playable drum machines around. Unfortunately, they are also susceptible to occasional double triggering, so they aren't

perfect, but they sure do feel nice . . .

The pads' pressure sensitivity comes into play when you use the MPC60's repeat feature (useful for drum roll programming, etc). The volume of each repeat is determined by how hard you press down on the pad. Consequently, programming something like a cymbal roll with a crescendo simply requires you to hold down the cymbal pad and repeat button and slowly press down harder on the cymbal pad. You can also achieve this effect with synth parts by using an instrument that has aftertouch. It's a very nice, very musical feature.

The Hi-Hat Decay slider, which was first found on the LinnDrum and then the Linn 9000, is another extremely nice feature that ought to be on every drum machine.

Drum Machine *"The large, flexible rubber pads and the hi-hat decay slider make the MPC60 one of the most 'playable' drum machines available."*

What it does is adjust the decay time of the hi-hat sample (as you would expect) as well as move between three possible hi-hat samples (hence, the 34 total samples) – generally a closed hi-hat sample, a half-open one and a fully open one, though any three sounds could be used for creative effects. The threshold for switching between the samples is adjustable so you can set this up for your own preferences, which is a nice touch. The slider can be used in real time while recording a pattern or, by turning on the nearby After button, you can overdub new decay amounts on existing hi-hat parts. It's simple, intuitive and should rid the world of all the gawdawful, never-changing sixteenth note hi-hat parts that have been the plague of drum machines since their inception. At least . . . I hope it will.

The drum sounds can be heard through stereo outs or eight individual polyphonic outs – each of which can handle any combination of sounds. One nice feature of the MPC is that retriggering any sound (except those stored in the hi-hat locations) will not cut off the previous sample. Each sound can be played polyphonically (the MPC can play up to 16 voices at once) which makes for much more realistic sounding drum patterns.

The panning and level for each of the drums placed in the stereo outs can be adjusted (in real time if you so desire) via the onboard 32-channel mixer – a nice, sophisticated touch. Changes in level and panning – which can be seen graphically on the LCD display – can also be programmed into drum patterns, which presents some very interesting opportunities. In addition, the MPC has a dedicated effects send (mono out, stereo in) mix output with its own mix and level send control. It's primarily intended to be used with an

external reverb or other signal processor, but if you want, you can also use it as a ninth individual out or as a stereo input which can be combined with the MPC's own sounds. All in all, it's a very complete, very workable and thankfully, rather quiet output structure – though some people will undoubtedly want more outputs.

The Sampler

LIKE OTHER PORTIONS of the machine, the sampling section of the MPC60 is very easy to use, but has some limitations to it. For example, the unit has a fixed sampling rate of 40kHz, which does give you bright samples, but doesn't provide you with the option of fitting more samples into RAM. It's not a big problem, but it certainly stands in contrast to the upcoming Korg SI,

which not only allows you to choose what sampling rate you want, but also what quantization level and whether to sample in mono or stereo (the MPC60 is a mono sampler).

The MPC has 750K set aside for samples, which works out to 13.2 seconds total sampling time (an optional memory expansion doubling that amount is also available). The longest single sample time, however, is 5.3 seconds. Unfortunately, no provisions for hard disk storage of samples (or sequences) have been made and none are currently planned. Considering its price and the fact that the MPC60 is being touted as a control center for MIDI studios I find this a bit shortsighted, but I guess you can't have everything.

According to Akai, the MPC60 uses enhanced data encoding when sampling which is supposed to give it better sound quality than other 12-bit samplers and in practice this turned out to be true. In listening tests that compared it with the Prophet 2002, the MPC60 had a brighter, more transparent sound with percussion samples as well as music sampled straight off a CD. Also, the MPC remained quiet to the end – there was virtually no quantization noise as samples died out. The tuning capabilities of the MPC60 are also excellent. Sounds can be adjusted up a tritone (half an octave) and down an octave in extremely fine increments of 0.1 semitones (180 possible steps).

The quality of the tuned sounds is also excellent. The unit uses a constant clock playback system which can create problems because of the interpolation that has to be done for samples to be played at pitches other than their original, but for the most part the tuned samples sound fine. One problem that did occasionally arise in some tuning ranges is that every

other tuning increment had a slight pop to it, though some people who listened to it had difficulty hearing the effect. You also have to be careful about not clipping the original sample because the tuning process used by the MPC exaggerates any original distortion in the sound.

Other than tuning, though, the MPC60 does not let you do very much with the sample at all. In fact, it doesn't even have any type of looping, so it's basically just a sophisticated sample playback device. Outside of being able to adjust the start and end points of a sample, the only editing control you have is a fade-out function which adjusts the point at which the sound begins to decay to silence. Of course, the MPC60 was designed as a drum sampler and for most percussion-oriented sounds tuning and decay may be sufficient, but forget about trying to create wild effects or even subtle variations on existing sounds with filtering, amplitude enveloping or even reversing the sample - the MPC60 just can't do them.

Getting the sounds into the MPC60 in the first place is a fairly straightforward, but potentially frustrating process. You hit the Sounds button on the front panel, which calls up a nine-item menu and then select the Sample New Sound option. You're then greeted with a message which informs you that in addition to the current sound, all sequence memory will be erased if you sample a new sound - in spite of the fact that it supposedly has 512K of RAM set aside for sequences.

The MPC60 manual claims that the sequence memory has to be used as a temporary buffer for the new sounds and points out that you are fairly warned about the impending disaster, but I still can't figure out why you should have to go through this at all. Sure, it's easy to save the sequences onto disk before you sample (particularly with the tricky little function that turns on the LED above the Disk key to remind you that you've either

Step Editing *"Step editing and recording is very well implemented on MPC60 and thanks to the large display, it's quite usable."*

sequenced or sampled something that hasn't been saved yet) but it impairs the machine's ability to operate as a multi-function integrated unit.

The MPC has a pre-record feature which allows it to capture sample transients and incorporates a peak-reading VU meter in the sampling page to set the proper levels. In addition to the 99 steps available, there's a three-position input gain switch located next to the 1/4" balanced sample input on the back panel.

Once you've recorded the sample you can name it, save it to disk and then start using it in patterns, which of course are created with . . .



The Sequencer

THE REAL HEART of the beast lies here. Once you've got the sounds into the machine that you want to work with and connected all the appropriate MIDI peripherals - two MIDI inputs are available on the back of the MPC60, but unfortunately they're not mergeable - it's time to make music. To do so, you simply call up the Main Screen via its dedicated button, make track and MIDI channel assignments and go to town. The sequencer is controlled by a series of tape recorder-like transport controls which make it very easy to work with.

The MPC60's sequencer has a 60,000-

would a drum pattern - while looping in record. Actually, the MPC60 has a Record mode as well as an Overdub mode, which means that you can either record over existing parts or simply add to them as the sequence loops around. Even if you do select Record mode, the MPC automatically switches to Overdub once you've gone through the sequence once so that you don't accidentally erase over existing parts. Speaking of erase, you can also easily do that drum machine-style by either holding down the offending key or drum pad and the Erase button while the sequence is looping.

The MPC also has an Edit Loop function which allows you to continually work on a particular section of a sequence. What's nice about it is that you can either save the changes you make while it's on or ignore them.

One unfortunate limitation of the MPC is that it can only record on one MIDI channel, which makes sending sequences over from another sequencer a slow, arduous process.

When you go to record a drum pattern one rather interesting point you'll discover is that the MPC60 basically treats its own sound generating circuitry as an external MIDI sound source, even to the point of having to assign the internal drum sounds to their own MIDI channel. The problem is that this reduces the number of available MIDI channels to 15 and presents a possible limitation that Akai seemingly could have easily overcome. The dilemma

is this: despite the fact that the MPC has four independent MIDI outputs it can only control one set of 16 MIDI channels. So theoretically, all you need is two eight-voice multitimbral devices (like the TX81Z and the MT32) and you've already overrun the capabilities of the sequencer. Now for a piece of gear that's supposed to run an entire MIDI studio and is priced accordingly, I think this is nearly unforgivable, particularly because the hardware – the extra MIDI Outs – are already there! (As we were going to press I discovered that Akai does intend to address this problem in a future software update.)

On the positive side, the MPC does have a number of nice touches for recording sequences including a programmable metronome with its own dedicated output; a Wait For key, which waits to start recording a sequence until it receives a MIDI Note On message so that you can start the process remotely from your keyboard; a Count-In function which can be turned on or off; programmable punch in and out points; and three settings for autolocating to any point within a sequence. One other nice feature is that the MPC can record small amounts of SysEx data (up to 300 bytes) if you want to experiment with some real time parameter control. Don't expect to store SysEx patch dumps from the synths in your MIDI system – which a Production Center should seemingly be able to do – however; there's just not enough memory. The MPC60 also supports two footswitches which can be used for punching in and out, erasing data and a host of other options.

The Editing

THE EDITING FEATURES on the MPC are also quite good. Each track can be individually quantized, shuffled or shifted in time by increments of a clock – the machine has a timing resolution of 96 clocks per quarter note, or a 1/384 note. The MPC quantizes in real time so that you can hear the corrections when the sequence loops around – if it's set to loop – and retains the note length of all quantized notes for a more realistic effect. Quantizing can also be done after the fact if you want to tighten up a track that was recorded without it.

The shift timing feature is particularly helpful for creating grooves in drum patterns. By recording each of the individual drums on their own track and then slightly adjusting the timing of each of them (either forward or backward), you can achieve some very realistic, very human sounding tracks. There are some limitations, though, because if notes are shifted before the start of a sequence they are erased instead of being wrapped around to the back. As the manual points out, you can avoid this problem by

MT JULY 1988

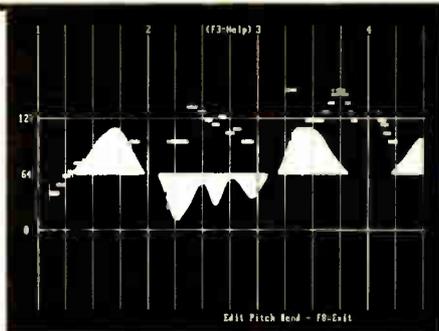
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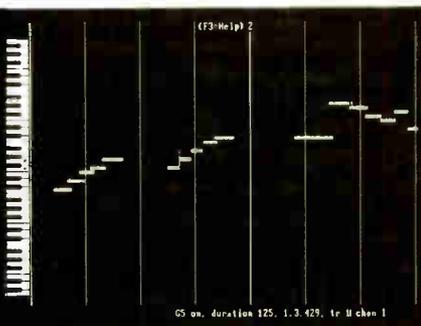


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appending an empty bar to the front of the sequence, but it's still a little frustrating. Also, the amount of available shift is tied to the quantization level, so that tracks recorded without any quantization cannot be adjusted to compensate for slow synth attacks or for improving the feel.

Entire sequences can be copied and deleted and individual tracks can be copied, deleted, merged, and appended to. In addition, the MPC allows you to selectively erase certain types of MIDI events and permits you to do so over certain segments within a track. So, for example, you could

Limitations *"The almost complete lack of sound editing features, and the inability to support multiple groups of MIDI channels, among other things are definitely problems for an instrument in its price class."*

erase all controller #31 messages from bars 3-5 of track 2 with a few simple button pushes, which is nice. The MPC also has selective MIDI filtering which allows you to filter out any type of MIDI message or any one particular controller that you don't want to record. You can also thin out continuous controllers by setting a minimum change amount on the MIDI page. With this in effect, the MPC will only record the specific controller if its value changes by more than this amount.

Step editing (and recording) is also very well implemented on MPC60 and thanks to the large display, it's quite usable. Up to four different events can be seen on the display at once and by stepping through the sequence with the locator buttons you can quickly make changes to your sequence. One particularly well thought out feature is the ability to selectively filter which items will or will not be displayed when you go into step edit mode. Another nice touch is that events are sent out over MIDI as you step through the sequence so that you can hear where you are as you work. Finally, you can also make adjustments to any drum's tuning, panning or level within a sequence while in step-time mode. This is a really nice feature which actually represents one of the strongest arguments for combining various "components" into a single machine.

The Song Mode in the MPC is very straightforward. You chain together sequences in the order you want with whatever number of repeats or transposition that you desire. One really nice feature that's included is the ability to turn a song into a long sequence. What this does is copies and transposes the sequences linked into a song and produces one long sequence which can then be edited with sequence editing controls (fine detail editing can only be done in sequence mode).

The timing controls found on the MPC are generally very thorough, but lack some niceties that would make it stand out

above the crowd. Two different tempo settings are available for every sequence; one master tempo control and one that can be stored with every sequence. The nice thing about having these two is that you can switch from one to the other when recording and then playing the sequence if you can't play your music as fast as you'd like to hear it. Tempos can be displayed in either beats per minute or frames per beat. In addition, the Main Screen has a beat counter which keeps track of where you are in the sequence as well as a real-time display (in SMPTE format) which lets you

know how much time has elapsed since the sequence, or song, started.

Tempo changes can be inserted at any point of any sequence but unfortunately they can only be instantaneous changes; you can't easily program a gradual accelerando or ritard.

The Synchronizer

IN TERMS OF synchronization, the MPC can sync to all four SMPTE formats, MIDI Time Code, MIDI clock with and without Song Position Pointers, FSK24, 96 pulse per quarter sync and quarter note clicks. The MPC60 can also generate all these formats except MIDI Time Code, which seems like a strange omission on the instrument.

The SMPTE sync on the MPC works very well. Once you've striped (or recorded) the signal on tape, you can quickly and easily zip around on the tape machine and have the MPC lock up to it in less than a second. A dedicated input level knob on the back of the instrument ensures accurate level matching and the onboard software features, such as Shift sync early, help make working with the MPC's SMPTE features simple and effective.

The MIDI features of the MPC include the ability to assign any drum to independently transmit or receive any MIDI note number. You can also turn the

MIDI soft thru function on or off and determine whether or not you want to transmit the SysEx data that the MPC generates for drum tuning, panning and level changes. Finally, the MPC supports the MIDI Sample Dump Standard, though I ran into problems using the MPC to receive samples from a Prophet 2002+.

The Conclusion

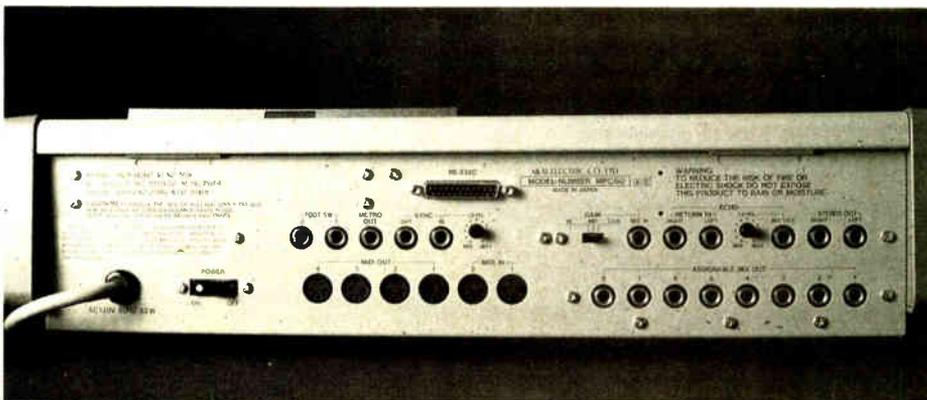
THE MPC60 IS a good machine, but it's not a perfect one. It's extremely quick and easy to use, thanks to its nice layout, and it does have some excellent capabilities, but it's also lacking in a number of important areas. The almost complete lack of sound editing features, and the inability to support multiple groups of MIDI channels, among other things are definitely problems for an instrument in its price class. On the other hand, the instrument sounds great, and as a drum machine it is nearly unbeatable in terms of playability and programmability.

The integration of multiple "boxes" within the MPC is another point in its favor, but I'm not convinced that it represents the best possible value. You could piece together a component system around a computer that would have most, if not all the capabilities of it, as well as some others that the MPC doesn't have for less money than the cost of the MPC. What you would lose in portability you would gain in flexibility.

If you really need a speedy working tool, though, the MPC represents a very viable option. Being able to store all the drum sound, drum pattern and keyboard sequence information in one place is definitely handy, but again, you do have to pay for that convenience.

Akai promises that future updates will be made to the MPC's software, which is encouraging, but with the appearance of Korg's very impressive-looking and much less expensive SI looming on the horizon they had better make them with speed and assurance, or they could end up on the long end of a short stick. ■

PRICES \$4995; \$599 for memory expansion
MORE FROM Akai Professional, 1316 E. Lancaster,
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VOYETRA FLOOD

This month's Newsdesk sees a lot of product announcements for the IBM PC family. Voyetra leads the way with a slew of new updates and releases.

Biggest news is that Intelligent Music has granted Voyetra an exclusive development/distribution license for a version of their algorithmic composition package, "M," to be created for the PC. The new program will be called "M/pc," and is promised to be virtually identical to the original Macintosh version. It will read and write files in both Voyetra's Sequencer Plus and the universal MIDI file format. M/pc will require MS-DOS 3.0 or higher, Microsoft Windows 2.0 (see our micro review in MT April '88), a mouse, graphics interface, MPU-compatible MIDI interface, and a minimum of 512K RAM. Look for it around August at a list price of \$249.

Speaking of MPU-compatible interfaces, Voyetra is adding yet another - the V4001 - to their line. The V4001 is essentially an OP4001 with FSK clocking but without the fancier conversions of FSK clock to MIDI and 5V syncs. All units (including their original OP4000) are single slot cards designed with a combination of custom IC's and official Roland MPU401 parts. The V4001 is being introduced at \$199, while the OP4001 has been dropped to \$239 and the OP4000 to \$179. Also available is the new EB1/EB4 Expansion kit, which adds four additional MIDI Thrus to the above interfaces for \$59.95.

Speaking of Voyetra's Sequencer Plus series of MIDI sequencers for the PC (we were, up there earlier), all three versions have seen updates. New features include multichannel and multitrack recording (great for guitar controllers or dubbing in real time from another sequencer), track grouping (claimed to be akin to submasters on a mixing console), SMPTE calculator and running time display, selectable time base resolutions, song list playback, a note pad, and enhanced block moves. All also have a



M/pc, a version of Intelligent Music's M for the IBM PC being developed by Voyetra.

will be at "a nominal cost," and owners may still upgrade to higher levels of the program for the difference in list prices (those lists being the Sp1 for \$129, the Sp2 for \$295, and the Sp3 for \$495).

Speaking of Patch Master Plus, Voyetra has created a number of dedicated voice editors for the IBM PC: the "Sideman" series. They include editors for the DX7/711/TX7/TX816, TX81Z/DX11/21/27/100, Korg DW/EX8000, Casio CZ101/1/1000/3000/5000, and Roland D50. All include the features you would expect, including voice randomization. Files created with any Sideman program are compatible with Patch Master Plus. Each Sideman program lists for \$129.

MORE FROM Voyetra Technologies, 333 Fifth Avenue, Pelham, NY 10803. Tel: (914) 738-4500.

screen for directly linking into Voyetra's Patch Master Plus universal patch librarian program (a feature formerly available only on the top-of-the-line Sp3 version). Updates to version 2.0

GIVE THE PRO A HAND

Creative Input has just released a user handbook for the Steinberg Pro24 sequencer. Written by Geoff Ryle (product specialist at Steinberg/Jones), it includes a number of tips and tricks to get more out of this standard sequencer for the Atari ST. It is available on an unprotected disk (\$19.95) or as a disk and a hardcopy book (\$29.95). Since the handbook is sold as a disk, it can and will be updated as the Pro24 is.

MT JULY 1988

MORE FROM Creative Input, PO Box 64, 2801 B Ocean Park Blvd., Santa Monica, CA 90405. Tel: (213) 452-5362.

CANNED ALGORITHMS COMPAK . . .

. . . is a collection of over 100 procedures, functions, and routines designed to help people get started in writing algorithmic composition software for the IBM PC. COMPAK is organized into six categories: utilities, series and motif operations, probability distribution func-

tions, sorting and searching, sound/text composition, and general composition. Originally developed by Phil Winsor of North Texas State University in C, they have also been translated to BASIC by Gary Knudson of SDA. Each version costs \$29.95 (plus \$5 shipping and handling), and comes with a help file on the MS-DOS format disk along with a user guide.

MORE FROM System Design Associates, Inc., 928 West University, Suite 660, Denton, TX 76201. Tel: (817) 497-6185.

IF 64 WERE 9...

Fearn and Music has just started to import the SFX Sound Expander for the Commodore 64 and 128 from Germany into the United States. Plugging into the cartridge port, the SFX works in lieu of the 64's onboard SID chip, replacing it with a 9-voice FM synthesizer. A 5-octave keyboard for the Sound Expander costs \$145.50; Composer and Sound Editor software that allows editing and sequencing of the FM voices costs \$45. An overlay that turns the Commodore's ASCII keyboard into a two-octave musical keyboard costs \$14. The Sound Expander itself costs \$180, and a demo cassette is available for a mere \$2.

MORE FROM Fearn & Music, 519 West Taylor, #114, Santa Maria, CA 93454. Tel: (800) 447-3434 (inside California, (805) 925-6682).



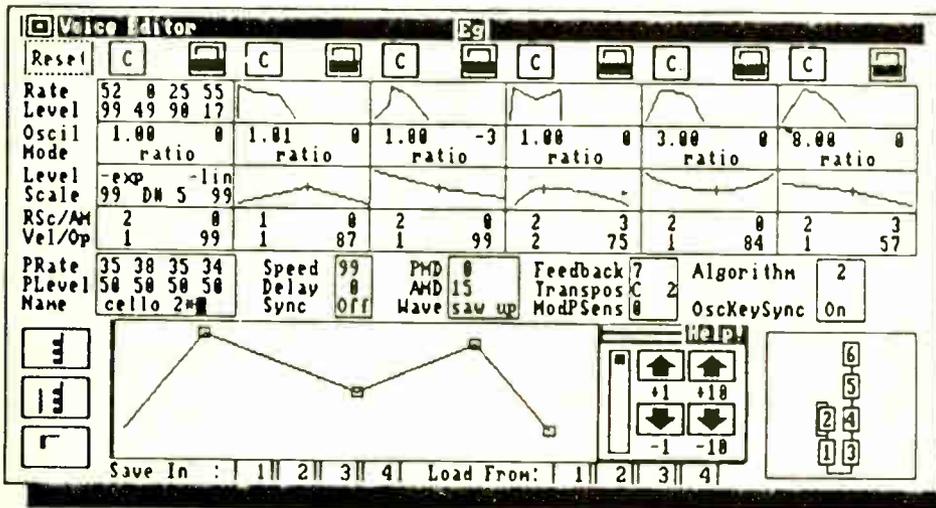
Give your Commodore 64 or 128 nine FM voices.

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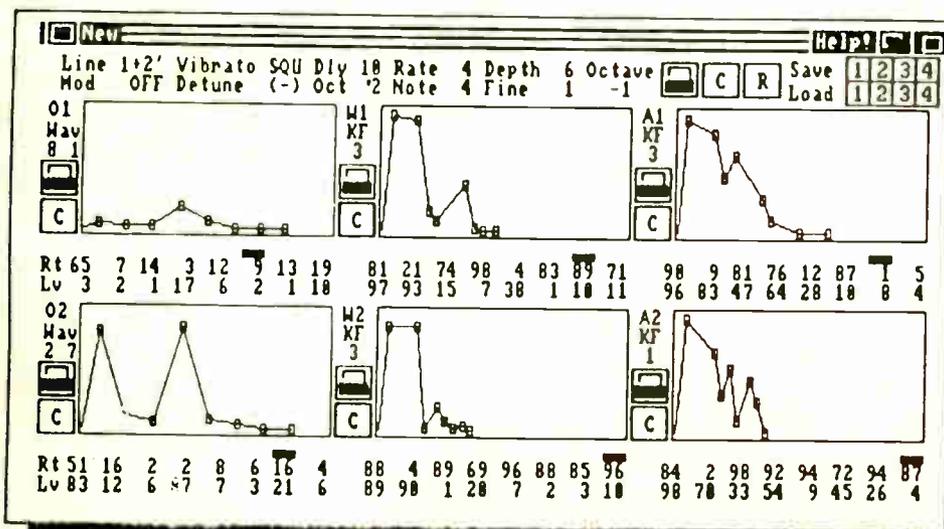
Sound Quest has ported their Master Series of editor/librarians over from the Commodore Amiga to the IBM PC family of computers. Features include graphic and numeric envelope editing, global editing of combinations of similar parameters, simultaneous editing of multiple

synthesizers, and random patch variation and generation. A generic version is available, along with specific versions for the DX, DXII, TX81Z, D50, MT32, SQ80, and CZ line. Prices vary from \$125 to \$175.

MORE FROM Sound Quest Inc., 5 Glenaden Avenue East, Toronto, Canada M8Y 2L2. Tel: (416) 234-0347.



Screens from Sound Quest's Master Series editor/librarians.



COMPUTER COMPOSING

Ravel, a new programming language produced by software developer Jim Binkley, is an interesting tool that could evolve into something important for those who have the skills and desire to make use of it. Ravel is essentially a programming language designed specifically for creating MIDI scores. It's an interpreter written in C that has a lot in common with that language. One of the intentions of its author is to provide a tool for "algorithmic composition." Toward this end, some pseudo-random functions are provided that can generate notes that way.

One promising aspect of Ravel is the incorporation of concurrency. This means that musical ideas can be defined separately from the processes that assign their notes to different MIDI channels. If desired, you can devise algorithms that spray the notes of a theme over different channels in various ways.

Two main programs are included: MOS, the MIDI operating System, and a translation program that compiles text files so that MOS can read them. The programs have a bare bones interface, but allow experienced C programmers to explore and experiment with unusual ways of producing musical events and assigning them to MIDI instruments. Ravel is available for the IBM PC and Atari ST and includes a large technical documentation reference. The price is \$30. - Ernie Tello

MORE FROM Jim Binkley, 584 SW Taylor, Portland, OR 97221.

FREE SOFTWARE

No kidding - free software. And the catch isn't all that bad. Buy a pair of Bose's Pro Roommate loudspeakers and an Apple MIDI interface, and you get to choose a free copy of Great Wave's Concertware+ (Version 4) or Terpsichore, Opcode's Music Mouse, Coda's MacDrums (reviewed here April '88), or an Intelligent Music software package. The Apple MIDI interface lists for \$99, and the Pro Roommates list for \$429 and include either a pair of MM2 mounting arms, travel bag, or powered microphone along with the deal. This special promotion is running through October 8, 1988.

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MORE FROM Bose Corporation, The Mountain, Framingham, MA 01701.



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A photograph of a printed musical score page. The title is "Quartet" by James J. Romeo. The score is arranged in two systems, each with four staves. The first system includes staves for Flute, Clarinet, Bassoon, and Percussion. The second system includes staves for Violin, Viola, Cello, and Double Bass. The notation includes various musical symbols such as notes, rests, and dynamic markings like "p" and "mf".



News

Reviews

Previews

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Technology

M I C R O REVIEWS

CZ Voice Master

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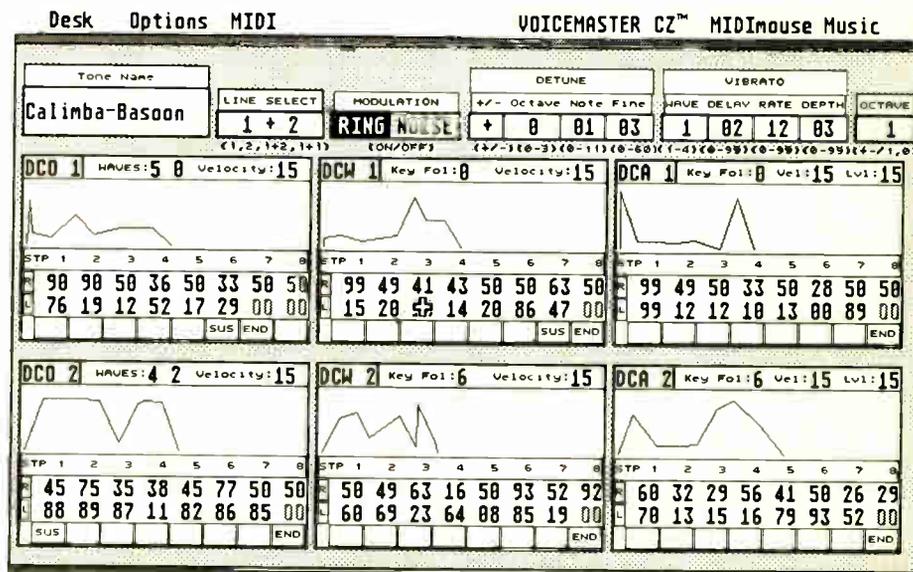
An editor/librarian for the Atari ST and the CZ series of synths.

Review by Mihai Manoliu.

MIDIMOUSE MUSIC HAS recently added a series of four GEM-based editor/programmer/librarian packages to their growing line of Atari ST software. Roland's MT32 and D50, as well as Yamaha's F801 and Casio's CZ series are supported by these reasonably priced packages. Each program provides similar features: graphic display of envelopes; simple control using the mouse and/or keyboard entry for parameter values; two or three active Banks during editing; a complete randomizing function for generating patches; and librarian functions that include Bank and Patch copy. Rather than look at all of them, this review will concentrate on a new tool for an old workhorse: the CZ Voice Master.

The program environment is separated into two main windows: the Bank Editor Screen, and the Patch Editor screen. CZ Voice Master opens into the Bank Editor, where such functions as printing, Bank and Patch copying, and MIDI setup are located. The mouse is used for all the Bank Edit Screen commands. For example, Banks can be read from disk by clicking on the Disk Icon and dragging the pointer to the name of one of three Banks available on the screen. A new screen asks you to select the source drive, and you then choose the Bank from the directory. To copy a Bank to Disk or to the CZ, one simply clicks on the Bank name and drags it either to the Disk or Keyboard (MIDI) Icons. MIDI channels for Send, Receive, and Listen functions can be set independently; this allows several CZ's to be used simultaneously, making it an easy task to move Banks between instruments.

To listen to a Patch from a screen Bank, you click on the patch name, drag it to the Keyboard Icon, and then play it from the synth. To copy a Patch from the CZ, you select it on the synth then click the Keyboard Icon and drag the pointer to the desired Patch location in a screen



Bank. Banks from the CZ can be copied by clicking on the Keyboard Icon and dragging the pointer to a Bank name: a screen opens asking for the CZ source bank (Presets, Internal, Cartridge). The simplicity of this interface makes CZ Voice Master easy to learn and even easier to use.

The Patch Edit Screen provides graphic displays of all envelopes as well as the values of all parameters. The Patch being edited is stored in a buffer, allowing the original Patch to remain intact until intentionally overwritten. The Clr Home key acts as a compare/recall key that switches between two independent buffers which can be edited. Parameter values can be copied from one Block to another; a dialog box gives you the choice of having all values copied or just envelope values. The Randomize feature allows you to select which parameters will be

randomized and the degree of randomization (0-100). Turning on the CZ1 mode reveals the extra parameters available on that synth.

I found CZ Voice Master to be a flexible, well-organized program. The 13 sound Banks included on the disk were a pleasant surprise. I had two minor annoyances: a temporary screen flicker after Disk loading operations, and the "Cancel" default in the source drive screen ("OK" would have been more convenient). A few extra features would be nice: the ability to print the envelope graphs along with the Patch parameter values, and the capacity to load two different Patches into the edit buffers so one can easily compare them. Overall, this is a solid program worthy of consideration.

PRICE \$99

MORE FROM MIDIMouse, Inc., PO Box 877, Welches, OR 97067. Tel: (503) 622-4034.

MIDI Connection Tape 'N Step

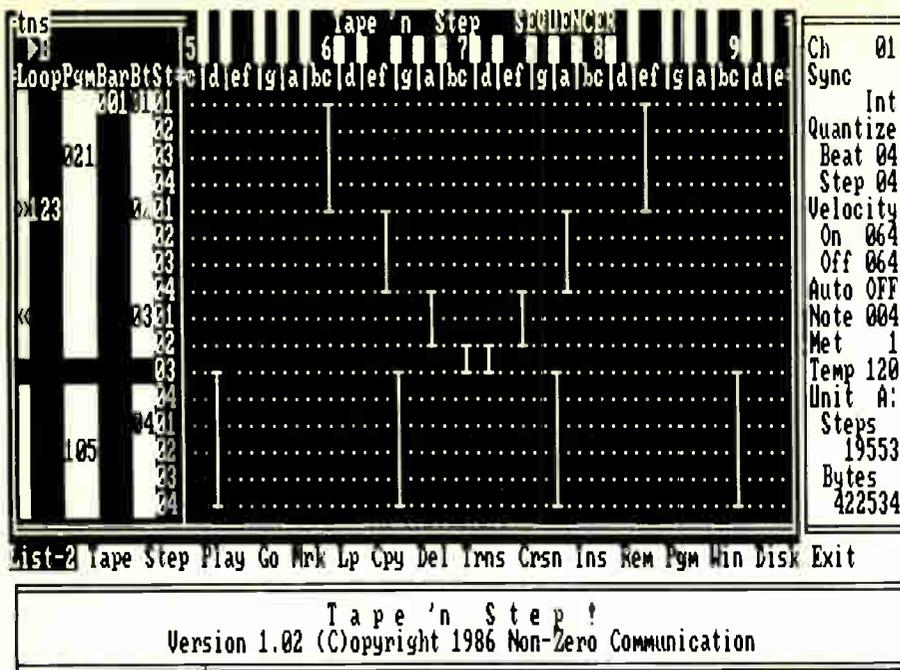
An inexpensive sequencer for the IBM PC. Review by Chris Many.

FROM ACROSS OUR northern border comes a rudimentary sequencer package for the IBM that covers almost all the fundamentals, but really brings nothing new to the field of sequencing. The slim documentation - 21 pages

of instructions on a small 6"x9" booklet - is straightforward and gets you up and running fast. The program is easy to learn and use, and provides you with on-screen menus that show you every option available.

There's a passing analogy to tape machines in the use of the term tracks. Tape 'N Step deals with a maximum of 16 "tracks," one track per

MIDI channel. Parameters such as tempo, count off, meter and MIDI channel are set before recording and displayed on the screen as you work. The main portion of screen real estate, however, is devoted to a graphic representation of the information on the MIDI channel you're working with - set up as a linear arrangement of bars, beats and note lengths. It makes it easy to



navigate around and see where you are; however, don't get the idea we're talking about any major editing here simply because it's graphically dramatized.

Music data is quantized as you play it in, and although you can adjust this factor, it only goes so far (up to 48 ticks per note). Step recording is simple thanks to the graphic display; however, editing features are minimal. Copy, delete and transposition are covered, but fine tuning the length of a note or tweaking individual note

timings are not. There's a lot of moving back and forth to the menu, and until you learn about macro programming, it's a chore (there's no mnemonic key arrangement built in - you actually have to go to the menu and step the cursor through each menu item until you arrive at the command you want).

Macros (a two-key combination which defines a string of commands, such as a series of notes, cursor movements or commands) can be built up by the user. Using such macros speeds

up Tape 'N Step's operation considerably. For example, by loading in the macro keys included with the master disk, each menu item can be accessed by pressing ALT plus another predefined key. Also included are chord file macros, to allow you to build up a simple accompaniment part.

Editing and looping are accomplished by using markers or points selected by the user throughout the song. By going through the bars and adding these markers, one can easily define loop points and set up songs, repeats, etc. Inserting empty bars is accomplished painlessly, and sectional extraction of music to disk is included so you can use your favorite rhythm tracks in more than one song. Velocity scaling (useful for crescendos and decrescendos) is also supported. There are other features (tape sync, zoom mode, tempo assignments to function keys, etc) but space doesn't permit more than a passing mention.

Although Tape 'N Step breaks no new ground, it is a functional sequencer for the IBM PC. It is easy to use and inexpensive, so possibly someone wanting to learn the basics of computer assisted music would find this offering attractive. But with nothing to set it apart from the rest of the sequencer market, Tape 'N Step should find a rough go of it in an already flooded sequencer economy. ■

PRICE \$150

MORE FROM The MIDI Connection, PO Box 282, Stn. D, Montreal, Quebec, Canada H3K 3G5. Tel: (514) 933-5127.

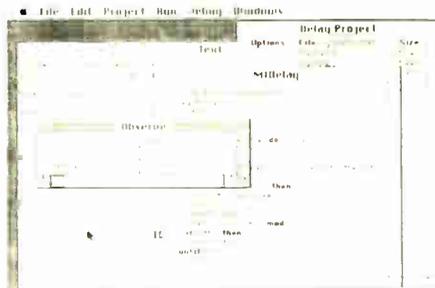
Altech Systems MIDIPascal, MIDIBasic

Programming language utilities for the Macintosh and IBM. Review by Stefan Lipson.

ONE OF THE excellent things about the MIDI protocol is that you don't have to be a programmer to benefit from what it offers. As musicians become more familiar with MIDI, however, and as computer technology continues to advance, the musician's ability (and desire) to delve deeper into the nuts and bolts of MIDI increases.

MIDIPascal offers you an excellent opportunity to get even deeper into MIDI and to write your own applications. If you have some computer programming experience, MIDIPascal from Altech systems is a great way to immerse yourself in the world of MIDI without having to do all of the bit twiddling that used to be required.

MIDIPascal is a library of functions for use on any of the Apple Macintosh computers. The library offers ten commands that can be called from a Pascal program; MIDlin(x), MIDlout(x),
MT JULY 1988



initMIDI(inside,outside), getMIDI(string,mode, count,result), sendMIDI(string,mode), incount(x), outcount(x), MIDI(x), MIDlport(n), and MIDlfilter(n,lower,upper,skipn).

All of the commands allow you to easily manipulate the MIDI data stream for any application. Although the commands do not allow for sequencing, the long-awaited version 3.0 promises time stamping to achieve that end.

The library comes on two diskettes and includes several example programs such as Bend Note and MIDlDelay. The program source code is what's important here and it is included so that you can see how the commands can be

used. While the examples are good, it would help if at least one complex example were provided. The documentation is skeletal and so the addition of a more involved example would help. Nevertheless, MIDIPascal is a great tool for creating your own MIDI software.

To use MIDIPascal you must have a .5, 1.0, or 1.5Mhz MIDI interface. MIDIPascal also requires Lightspeed Pascal from Think Technologies of Bedford, MA. The Lightspeed environment comes with excellent debugging capabilities and will help immensely in generating your MIDI applications.

To use Lightspeed Pascal you must know Pascal. If you don't know Pascal and you still want to experiment, be prepared to invest some time as you will have to get a grasp of the language before you get results.

If you know BASIC or prefer to write in BASIC, there's another option; Altech offers MIDIBasic, a similar library of commands that can be used with ZBASIC for the Macintosh. A new version of MIDIBasic has just been released for IBM and compatible machines which runs with MSBASIC. Whether you choose to write in Pascal or in BASIC, The Altech MIDI Libraries represent a great tool for MIDI devotees who have some computer programming skills. ■

PRICES MIDIPascal, \$79.95; Mac MIDIBasic \$49.95; IBM MIDIBasic, \$99.95.

MORE FROM Altech Systems, 831 Kings Highway, Suite 200, Shreveport, LA 71104. Tel: (318) 226-1702.



News

Reviews

Previews

Applications

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COMPUTER NOTATION

Music notation software has begun to have a revolutionary effect on the music publishing business and is now making its way into MIDI home studios. We look at the system requirements and the available tools.

Text by Wheat Williams, III.

IN ABOUT 1250 AD, something momentous happened in music. Modern music notation was invented. Now music no longer had to be passed down by oral tradition and human memory. Pitches, rhythms, and arrangements could be fixed on paper in such a way that any literate musician could exactly reproduce the composer's original intent when he wrote the piece. Musical composition as an art form exploded, even though music had to be painstakingly copied by hand just as it had for centuries.

The next revolution took place in 1473, the first time sheet music was printed, with moveable type, on a printing press. In 1528, the first example of music printed from hand-engraved plates, the most accurate method, appeared in France.

Would you be surprised to learn that there has been no significant change in the way music is printed and published, even until today? For more than four hundred and fifty years composers have had only two options when considering how to get their written music reproduced so that other musicians could read it and save it for posterity. They could pay a professional copyist to elaborately hand-draw their musical score using pen and ink. Or, if they were lucky, a professional publishing company would buy the rights to their work and pay to have it hand-engraved on copper plates for printing, a process that no individual composer could afford.

The good news is that the computer software industry is, as we speak, gearing up to revolutionize this process both for the giants of the publishing industry and the little guys with basement MIDI studios. Professional (or almost professional) quality sheet music printing is now within the grasp of virtually every musician, not just those lucky enough to have open agreements with major publishing houses. Today it can cost as much as \$100,000 to have all the extracted parts of an opera hand-copied for the performers; if composers can input the score into a computer while they write it, or if they can pay somebody with a fast computer setup to edit the score for them, a bundle can be saved.

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CONSIDERATIONS

If you are already into MIDI and have a computer-based sequencing system, chances are you already have enough hardware to get into music printing. Basically, all you need is: (1) a sufficiently powerful graphics-oriented computer; (2) music printing software; and (3) access to a high resolution computer printer.

• Computer Hardware

The systems of choice right now are the Apple Macintosh or an IBM-compatible computer with a graphics card, a good monitor, and at least one megabyte of memory. The new large-screen monitors for these systems, which allow the user to see one or two full pages of music displayed life-size, are great to have but are expensive. Promising programs for the Atari ST and the Commodore Amiga are also beginning to hit the market. A 20Megabyte hard disk drive for program and file storage will become a necessity very quickly if you are to do any serious work.

• Software

Printing music is an enormously complex task. Printed music must communicate to the performer the exact intent of the songwriter in an easily deciphered, unambiguous manner. The precise placement of every element of a musical score can either aid or hinder this process. And tradition being what it is, there is often disagreement between various authorities as to what correct musical notation should be. Printing music is not at all analogous to using a word processor to handle text. Since the placement and visual layout of all musical symbols is critical to their being understood by the performer, any music printing system must be a combination of: a graphics program; a page layout program; and a number-crunching, algorithmic set of computational rules for placing symbols which can be overridden in special cases.

The program must display the music on the computer screen just as it will appear on printout (this is called "WYSIWYG" notation, which is computerese for "What You See Is

What You Get"). The program must also supply a great deal of flexibility in editing the music and adding text and special symbols. And the program must provide for a means of printing out the score at extremely high resolution.

The most critical problem any program must overcome is how to input the music into the computer quickly and easily so that it can be edited. There seem to be as many ideas about the best way to do this as there are programmers in Silicon Valley. Some programs will accept data from digital sequencers - you record your music from a MIDI keyboard into the sequencer, quantize it, save the data, and convert it over to the score printing program, which interprets your music and displays it as notes on staves. This is great if you compose in real time on a sequencer and simply want to print out the music you have improvised. But this process is often disappointingly inaccurate and unsuited to certain kinds of music. It would be quite tedious, for instance, to have to use this method for entering many separate lines of part music, like in a stage band arrangement. And many musicians who want to get into score printing do not play MIDI instruments.

For instance, Larry Borden of Nashville Us AlphaComp (one of the most pre-eminent computer music typesetters in America) is a virtuoso trombonist. He typesets music as diverse as choral Masses, studio string charts for country bands, and piano sonatas. His system allows him to listen to typeset scores played back through MIDI, but MIDI is not used as a method of note entry. He points out that composers and songwriters often need to write down musical ideas that are more complex than what they themselves can play. Thus, it would be a frustrating waste of time to have to enter complicated music into a computer by playing it.

Programs that don't depend on MIDI permit you to enter music by methods that usually fall into two categories. In the first, you must learn a large vocabulary of commands you enter into the computer via its QWERTY (standard text) keyboard. You then type in lines of commands which describe the musical notes and symbols in each line of music. As you complete each line of instructions, the program displays the resulting

MT JULY 1988



music on a staff. This type of system can take a long time to learn, but it works like secretarial typing – the more proficient you train yourself to be, the faster you can create music.

In the second method, pioneered on the Macintosh but put to good use in some new Atari programs, the user is presented with a *pallette* of musical symbols in one corner of the screen. First the mouse is used to click on the place where a symbol is to be added to a musical staff displayed in the center of the screen. The user then moves the mouse to the pallette and selects the individual symbol with the mouse pointer. Some programs let the user reposition and align the symbols thus placed by picking them up with the mouse and dragging them to a new location. This kind of system is very easy to learn to use, but is quite slow in operation.

Fortunately, many score printing programs accommodate both MIDI-sequenced and manual methods of entering music, and even combine mouse and QWERTY keyboard note entry (see the table at the end). In any event, note entry aside, there are a great deal of editing operations that must be performed before the music is readable. The number of staves in a system (the number of musical parts) must be stipulated and formatted, along with their clefs
MT JULY 1988

and transpositions. Pages must be laid out and formatted. Individual notes must be grouped and beamed together. Individual parts within a single staff must be arranged so that their stems point in different directions. Notes have to be tied and slurred. Changes in tempo and meter must be entered symbolically. And, of course, if the music is vocal, text must be entered and correctly positioned according to which syllables go with which notes. All of these operations are usually handled with a combination of keyboard and mouse commands. Different programs handle these essential operations with widely differing degrees of ease and flexibility.

• Printing Devices

If you are the only person who will ever look at the music you print on your computer, a dot-matrix printer may be all that you will need. However, your output will be of poor quality and difficult to read because the average dot-matrix printer prints less than 100 dots per inch ("dpi"), producing visibly ragged results. Your music will have to be printed out in rather large size type, which means lots and lots of page-turning in performance. To approach the resolution and quality of engraved printing, and

to produce more compact, detailed musical scores, requires a laser printer.

Laser printers use a laser beam to draw images on a photosensitive drum. Areas touched by the laser beam become electrically charged, and particles of dry ink are then attracted to them by static electricity. A piece of paper is then rolled against the drum, and the ink particles are fused into the paper using heat, just like in a photocopier. Laser printers can produce output from 300 dpi on up to 2000 dpi and higher.

Laser printers are primarily set up to print either graphics (pictures) or words. Words are of course printed in many different typefaces, or fonts. It may surprise you to know that musical staves, notes, and symbols are treated as fonts (not pictures) by laser printers. Whenever you look at a font on a Macintosh screen, you are looking at a *bitmap image* of the font, in 72 dpi. There are two kinds of fonts for laserprinting: the screen version and the Postscript one.

Postscript is a computer language in which each character in a font is represented by a few lines of computer code which instructs the printer to calculate the image of the character based on mathematical curves, not bits or dots. The advantage of this is that any laser printer ▶

which uses Postscript (the Apple Laserwriter, Allied Linotronic, and others) can print out any Postscript font at the maximum resolution available to the printer - it looks great at 300 dpi, which is the resolution of the less expensive laser printers, and looks even better at 1270 to 2400 dpi, the resolutions produced by the Linotronic 100 and 300, respectively.

Most music publishing programs come equipped with just a bitmapped screen font. If you need absolute publication quality results, you need a Postscript font of music symbols which you can download to the printer before you print your score. The industry standard music font, used by many different software programs, is called *Sonata* (from Adobe Systems). Some of the newest generation of music printing software packages come with their own proprietary laser fonts instead.

First, a little daunting news: Postscript laser printers cost anywhere from \$5,000 to \$50,000. The good news is that there are print shops sprouting up all over the country which rent laser printers to computer users on a pay-per-page basis. You can create and edit your music on your own computer, then take it down to the local copy shop on a floppy disk. Laserwriter printouts are going for about fifty cents a page these days, and Linotronic output can cost \$8 to \$12 a page. Once you have printed an original for yourself or a client, you can print duplicates inexpensively by photocopying or by offset printing if you need large volume.

WHAT KIND OF SYSTEM?

What kind of music do you compose? The simplest score printing programs will only allow you to print out music of two or three connected staves, as in solo-piano or piano-and-vocal arrangements. No matter how good the output of these programs look, they are of no value to a musician unless he or she never has to write anything more complicated than a leadsheet.

At the other extreme, if you are going to be scoring for orchestras you may need a system that can display and print out systems of 16 or more connected staves. One very obvious feature needed by arrangers is the ability to take the grand score of a piece, with all the instrumental parts' staves connected into one system, and break it down into individual scores, which only show the part for one instrument. I have never seen a program that can handle this task easily and correctly, though some come closer than others.

If you want to extract parts created in your sequencer and print them out for use as studio charts by your band, you will need a score printer designed to integrate with a sequencer. Transcribing sequencer data is a very thorny problem, and no system on the market does it perfectly.

Perhaps you are a professional copyist, and people in all the above situations come to you and pay you to transform their chicken-scratched scores into legible music. In this case

composing music on the screen is not important, but rapid entry of notes is. And in any case, a score printing program should enable you to cut out and copy whole sections of music and paste them to new locations, to save you time and effort when entering repetitive parts or parts that are duplicated by more than one instrument.

The biggest weakness in many score printing programs is the way in which they handle symbols that are not part of a musical font: lyrics, score markings, and the beams, ties and slurs that connect notes. When trying out a program, find out how flexible it is in moving text around, placing it under the notes of the vocal parts, and creating variable spacing between staves to accommodate the needs of the text. Also, all printed music needs score markings for tempo and playing style, like *Andante*, *Legato*, and *Accelerando*. If the program doesn't let you type in the text of these markings and place them anywhere on the screen you wish, you won't be able to produce professionally acceptable music.

The last important consideration is sound. A few programs on the market will play back your score through MIDI or the computer's own sound generator, so that you can proofread your parts by listening to them. You can assign each staff of music in your score to a different MIDI channel, in order to listen to different instrumental parts played through your synthesizers. It's tremendously useful to be able

Vaportrailing: The Shapes of Notes to Come

Apple Computer Music Expo '88, Opryland Hotel, Nashville, Tennessee

ON MARCH 23RD, this humble reporter got a glimpse into the crystal ball of desktop music publishing. Present were representatives of all the big Mac music software companies (conspicuous by its absence was Mark of the Unicorn). But virtually all the attention was directed toward three newcomers on the scene: Utah's H.B. Imaging, Inc., with H.B. Engraver; Australia's Graphic Notes, Inc., with Fortissimo; and Coda Music Software, with a program called Finale.

These high-end products ranged from semi-working shipping versions (H.B.) to outright vaporware (Coda). But ah, what heady vapors. All three companies (and some smaller interests, besides) want to convert the biggest music publishers in America to printing sheet music by computer and not by hand engraving. Each of the three programs, which should be shipping in some form or another by the time of this publication, attempt many noble, marvelous, and heretofore impossible things.

H.B. wants to create an integrated environment of programs for the professional copyist, with meticulous control over all aspects of symbol placement and page layout through a maze of screens, windows, and dialog boxes. Engraver, at \$395, has raw

power, but some people find its note entry method inflexible (via the mouse, which is too slow for this kind of work) and it is not designed for someone who wants to compose music right on the computer. First shipped in February of this year, its updates are implementing more comprehensive editing features.

Graphic Notes, on the other hand, has broken away from traditional interface protocols by inventing their own add-on typewriter keypad for the Mac, which is used in conjunction with the standard keyboard for rapid entry of notes. Music is entered and edited on a single, deceptively simple Pagemaker-like window. Fortissimo, at \$595 with the keypad, would seem ideal for on-screen composing and arranging, as long as one can afford one of those full-page display screens. However, listening to your scored music through MIDI will not be supported in the first release.

Coda, a Wenger company, wants to create the be-all and end-all of music printers, and call their product Finale to emphasize the point. The demo of the \$1000 program, slated for a nebulous mid-summer release, drew an astonished crowd. Note entry was accom-

plished by playing a MIDI keyboard and seeing the transcribed notes displayed on the screen in real time, following the player's rubato without reference to a click track.

And, of course, everybody promised that they would support sequencer transcription from the standard MIDI file format as soon as enough of their compatriots agreed on one.

So, what can I predict in the future of music publishing on the Mac? From the pie-in-the-sky prophecies of the marketing directors trying to make these miracles fly, the following picture emerged: the composing/arranging/publishing environment of the future will make use of a central computer in which various composing and arranging software modules will work off of the resources of a core music printing program. A sequencer will work interactively with score interpreters which will employ artificial intelligence. The system will study the personal traits and idiosyncrasies of the composer who uses it, and will be able to automatically arrange music in the user's own style. Other modules of the system will allow the composer to design his or her own fonts of musical symbols in Postscript, and even keep track of client billing and accounting for his time as a copyist. How much of this technology, which everyone assures me is already up and running in somebody's basement lab undergoing debugging, will be available (or even accessible to the average gigging musician with a MIDI studio) remains to be seen. See you in the jet stream. ■

to hear each part of your music as a separate voice, particularly since multitimbral synthesizers in home studios are becoming commonplace.

WHAT'S ON THE MARKET

Up until a few years ago, there was only one way to typeset music on computer. You had to sink approximately \$150,000 into a New England Digital Synclavier with the Music Printing option, and then sink another \$80,000 into an Allied Linotronic 300 typesetting laser printer. While this system is still available and in use, it is awkward, user-unfriendly, hard to learn, and obviously very costly (especially since Linotronics and Apple Laserwriters are now widely available for rental).

With the advent of MIDI and music programs for the IBM PC, Mac, Atari ST and the Amiga, however, anybody with a home computer system and a much smaller investment can now achieve similar results without having to hock his or her house and family.

• IBM Programs

The first attempts to use computers to simplify the task of engraving music started as university research projects. The IBM (MS/DOS) program Score (reviewed in Music Technology, May '88), developed at Stanford university and marketed by Passport Designs, is such a program. Though powerful, Score is geared for orchestral copyists, not composers,

The "Standard" MIDI File Format

EVER SINCE LATE 1987, everybody in the computer sequencer business has been trying to agree on a standard file format (first proposed by Opcode) for sequencer data. It is in essence already a de facto standard. When it is finally agreed upon, they say, all software and hardware sequencers and music programs will store their data in a format that will be readable by all the other programs by different manufacturers. This means, in theory, that you will be able to record a sequence in any manufacturer's program and have it readable and editable by anybody else's score printing program. The format will essentially translate musical data into standard ASCII computer files, and has provisions for noting bar, tempo, lyrics, etc. Theoretically, you could even export a sequence from, say, an IBM program to a Mac program through a modem, which

would also bypass the problem of incompatible disk-operating systems.

To date, all the major score printing software interests have pledged to support importation and exportation of data in this format as soon as it is standardized, and many companies are implementing temporary measures to allow transcription from some of the more popular sequencers already on the market. The only exception is Mark of the Unicorn, who maintain that they aren't interested in being compatible with anybody since they believe that they have the market already sewn up. But rumor has it that Unicorn is succumbing to the pressure of its own customers and will offer the standard MIDI file format as an extra option on its products in the future.

The first two companies to actually release sequencer programs that use compatible formats (though not in the final, approved version of the "Standard") were Southworth and Passport, early in the first quarter of 1988. Let's hope they all follow suit. ■

and is very difficult to learn to use.

The only software products which successfully integrate sequencing and score printing into a single program are Personal Composer by Jim Miller (reviewed this month) and Music Editor, Scorer and Arranger (MESA) by Roland, also for

the IBM (reviewed in MT, August '87). They both display sequenced music in standard musical notation automatically, and the usual graphic editing of MIDI data is also supported. Personal Composer now also supports Postscript. ▶

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GREY MATTER

► • Macintosh Programs

The current standard for composers who want to create their music on computer and then print it out is an integrated system for the Apple Macintosh from Mark of the Unicorn, consisting of Performer (a MIDI sequencer) and Professional Composer (a score printer). Music may be created in the sequencer and transcribed into the score printer or vice versa; sheet music can be converted to sequencer files. While Professional Composer has frustrating limitations as to the quality of output it can produce, it has one distinct advantage: it does what it is advertised to do, and has been used successfully by composers like Wendy Carlos and Steve Reich for some time.

For those on a budget, I happen to recommend a Mac program called Deluxe Music Construction Set by Electronic Arts. It is not fast, and formats page layout poorly, but is extremely flexible in its placement of musical symbols, supports Postscript, works with a

simple sequencer from Opcode, and is incredibly cost-effective (see chart).

• Atari 1040ST Programs

Hybrid Art's EZ Score Plus is a workable low-budget program reviewed in MT, March '88. A number of exciting and powerful new programs are appearing. Sonus' Superscore, which includes an integral sequencer and also reads files from their Masterpiece sequencer program, is the most powerful (and expensive) scoring program for the ST world. It looks to be well-suited for orchestral-sized tasks. Steinberg (marketed by Russ Jones) offers Masterscore, capable of sequencer integration and supporting a whopping 48 staves in an orchestral system. C-Lab, distributed in the US by Digidesign, unveiled Notator at the Frankfurt Musikmesse, which combines the company's Creator sequencer with an integral notation program as well.

The only limitation with the ST programs is

that the ST has only recently been made compatible with laser printers, and Postscript is not currently available. Thus, you have to rely on dot-matrix or rather low resolution laser output. Expect this situation to improve in the near future.

The accompanying chart will give you a start in deciding how to go about selecting a system. The most important thing to decide is what kind of music you will need to print. More power and more versatility cost more money. If at all possible, buy a score printing program from a dealer who will demonstrate the program for you in the store first. Find out if it can meet the requirements of the music you make. ■

Wheat Williams is an undergraduate student of music and business at Belmont College in Nashville, TN. He works as a music copyist (with a Mac Plus) for local composers, and also uses his modest MIDI studio for synthesizer programming and creating experimental electronic music.

Popular Music Publishing Software

Program	Company	List Price	Suitability	Integration	Postscript
IBM and Compatibles					
Score	Passport	\$795	Orchestral	No	Proprietary
Personal Composer	Jim Miller	\$495	Orchestral	Integral	Sonata
The Copyist	Dr. T's	\$225	Orchestral	Proprietary	Sonata
MESA	Roland	\$695	Orchestral	Integral	No
Apple Macintosh					
Deluxe Music Construction Set	Electronic Arts	\$99	Ensemble	1	Sonata
Professional Composer	Mark of the Unicorn	\$495	Orchestral	Proprietary	Sonata
H.B. Engraver	H.B. Imaging	\$395	Orchestral	1,3	Interlude
Apple IIGS					
MusicWriterLE	Pyware	\$119	Piano	No	No
MusicWriterSE	Pyware	\$295	Ensemble	No	No
MusicWriter Professional	Pyware	\$595	Orchestral	No	No
Atari ST					
EZ Score Plus	Hybrid Arts	\$99	Piano	Proprietary	No
The Copyist	Dr. T's	\$225	Orchestral	Proprietary	No
Music Construction Set	Electronic Arts	\$49	Piano	No	No
Masterscore	Steinberg	\$350	Orchestral	Proprietary	No
Superscore	Sonus	\$425	Orchestral	4	No
Commodore Amiga					
Deluxe Music Construction Set	Electronic Arts	\$99	Ensemble	5	No

Legend:

Suitability: *Orchestral:* suitable for orchestral arrangements, supports 16 or more connected staves.

Ensemble: suitable for small ensemble, supports less than 16 staves.

Piano: supports only two or three staves and therefore only useful for lead sheets and the like.

Sequencer Integration: *Integral:* integrated internal sequencer.

Proprietary: supports a separate sequencer program sold by the same proprietor who sells the score printer.

1: supports Opcode's Sequencer 2.56.

2: supports Mark of the Unicorn's Performer 2.2.

3: supports Standard MIDI File Format (see sidebar).

4: contains an integral sequencer, also converts files from Hybrid Arts and Steinberg.

5: supports Mimetics' Soundscape.

Note: Several sequencer manufacturers

market utilities which will convert their files into formats which can be read by certain score printing programs. These are too numerous to mention, and the best way to learn about them is to consult your dealer.

Postscript: The font *Sonata*, when supported, must always be purchased separately. The Macintosh version of *Sonata* lists for \$95 from Adobe Systems. *Interlude* is a Postscript font which is included in the price of H.B. Music Engraver.

perspectives

BUT ISN'T STANDARD NOTATION DEAD?

In our inaugural column devoted to presenting alternative points of view, we take a slightly different look at music notation. Opinions by Travis Charbeneau.

JUDGING BY THE protestations of some, you could conclude that it's at least pretty darn sick. An editorialist in one prominent music magazine recently came up with the following admonitions to those who think MIDI data can replace standard notation: "Bach worked out his ideas on paper first, and so should you . . . you aren't a composer if you don't write down your music . . ." and, most devastatingly, "Learn to write music. It's not any harder than doing your own taxes."(!)

I'm not sure standard notation will survive many more analogies like that. But, in any case, and like so many other traditional areas of musical endeavor, notation is indeed suffering mightily at the hands of MIDI.

It may have begun when many high-end sequencing programs chose to feature "piano roll" notation as opposed to standard. There were technical considerations behind this move, but a considerable spin-off benefit occurred. A piano roll enables you to play the screen "by ear." It illustrates space/time relationships that make sense to ear players and without which we could simply be locked out of the new technology.

But some traditionalists see this as merely catering to laziness. And, apart from moral concern, they have aesthetic objections. Some say that composing only what you can play at the computer, versus what you can hear in your mind and write down via standard notation anywhere you have pencil and paper, is a severe creative limitation. I'm not sure these folks are paying attention. The whole point with the computer is being able to compose, through step edit, slowed tempo and other non-real time techniques precisely that which we could not ordinarily pound out on the keys.

Standard note chauvinists complain that, by not writing music on paper, today's composers are treating their work like a disposable Bic. Let's look at the other side of the coin. There are a number of us who, thanks to this same technological revolution, are now

engaged in composing. No matter how talented, a significant percentage of us are not going to be able to cut through the mediocrity and commercialism which rules the arts generally (and music weaseldom in particular) to actually get our work broadly before the public. Like so many others in ages past whom old school musicians seem to admire, our only hope too lies in posthumous recognition. If the old-timers (I'm 43, by the way) don't think an awareness of that daunting probability doesn't naturally lead to a desire to preserve our work in any medium more competent and durable than antique notation and paper, they're quite wrong. (I say "antique" because MIDI not only provides more detailed descriptions of inflections, but through the wonders of patch dumps,

"Using MIDI sequencers in place of standard notation gives the composer perfect and complete control over his work and its interpretation."

allows the instruments themselves to be created and described. Try doing *that* with standard notation.)

Further, we must all recognize that one of the main reasons orchestras have always had to have a conductor is not to beat out time while looking silly, but to attempt, (often in vain) to convey to the players (and to get them in turn to convey to the audience) a unified conductor's perception of what the piece is all about. Should the composer have the misfortune to be dead (or merely in Copenhagen during a Berlin performance), his or her conceptions, crudely blueprinted in conventional notation with a scattering of vague Italian epithets, are simply not fully decipherable.

If desired, and it's a wonderfully flexible option, a fully-sequenced modern composition/performance cuts everyone out of the loop except the composer and

the audience. The composer has perfect and complete control over the work and its interpretation - and, of course, full responsibility, something our forefathers often and conveniently escaped.

And options are what this technology is really about: should you wish to see what a paper rendering will produce, you can score your MIDI stream with one of the new programs, complete with user-defined icons for things like benders and mod. Pass it around to a group of chart readers and enjoy the wonders of second-party interpretation. In essence, we are not presented with an either/or proposition.

The critics do make some valid points. If the ability to read standard notation does die, having the option to print out MIDI data in standard notation certainly isn't very meaningful if there's no one left who can read it.

However, I don't think it's the fate of our art for which so many critics of the new technology are really concerned. Perhaps they worry more for the fate of admittedly hard-earned, highly-valued skills and crafts, like acoustic instrument building, and real-time playing technique - and conventional notation, which has, until recently, always been associated with the former. While these are indeed casualties of the revolution, I believe the old crafts and techniques will be preserved, just as there are some today who can still read Latin. But the ugly truth is that they are no longer essential to the aesthetic of music. As with the bottom line in drama, "The play's the thing."

Our art, in fact, is wonderfully alive and well (if a bit schizophrenic, at present). The new technologies offer incredible possibilities, however we use or abuse them, and lots of options amounting to the best of several worlds at once, old and new. I'm quite sure that imaginative guys like Bach, Mozart and especially Beethoven would have set down their quill and staff paper and jumped all over them. ■

Travis Charbeneau is a freelance writer, composer and futurist based in Richmond, VA.



News

Reviews

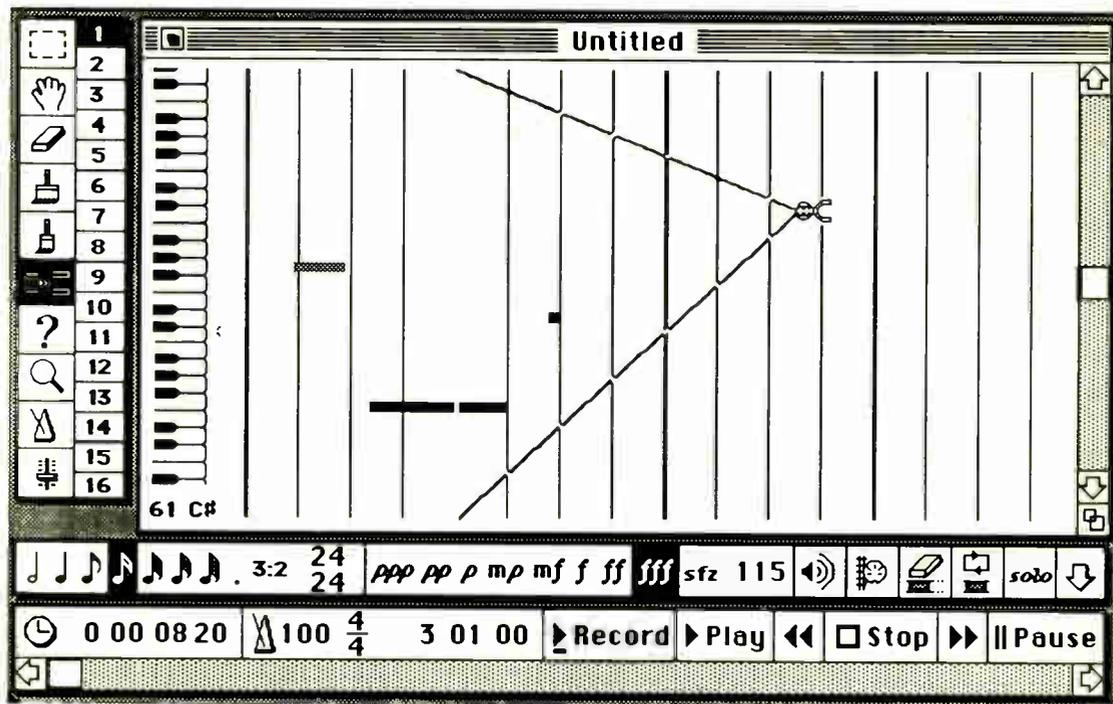
Previews

Applications

Technology

Southworth One-Step MIDI Sequencing Software

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One of the most inexpensive sequencers available for the Macintosh maintains many of the unique features found in its big brother MIDIPaint, and throws in a few refinements of its own.

Review by Jeff Burger.

SEVERAL MONTHS AGO, MT reviewed MIDIPaint from Southworth Music Systems. At under \$70, One-Step, the latest addition to their line of compatible products, is perhaps the least expensive Macintosh-based sequencing package on the market. To alleviate redundancy, I'll take a look at the basic architecture of One-Step along with the differences between it and MIDIPaint and suggest you refer to the December '87 issue for complete details.

OVERVIEW

One-Step is described by the manufacturer as being a subset of MIDIPaint. Along the way, however, they came up with additional tricks to enhance the interface they had already put a lot of work into. I'll talk in terms of the simplifications first.

The architecture of One-Step consists of a single section of 16 tracks, much like a 16-track tape deck. This is equivalent to one 16-track segment in MIDIPaint (One-Step files can be read into MIDIPaint as segments). This difference has several implications. First, where

MIDIPaint can use multiple segments to put song sections together, song elements in One-Step must be combined using traditional Macintosh cut-and-paste techniques.

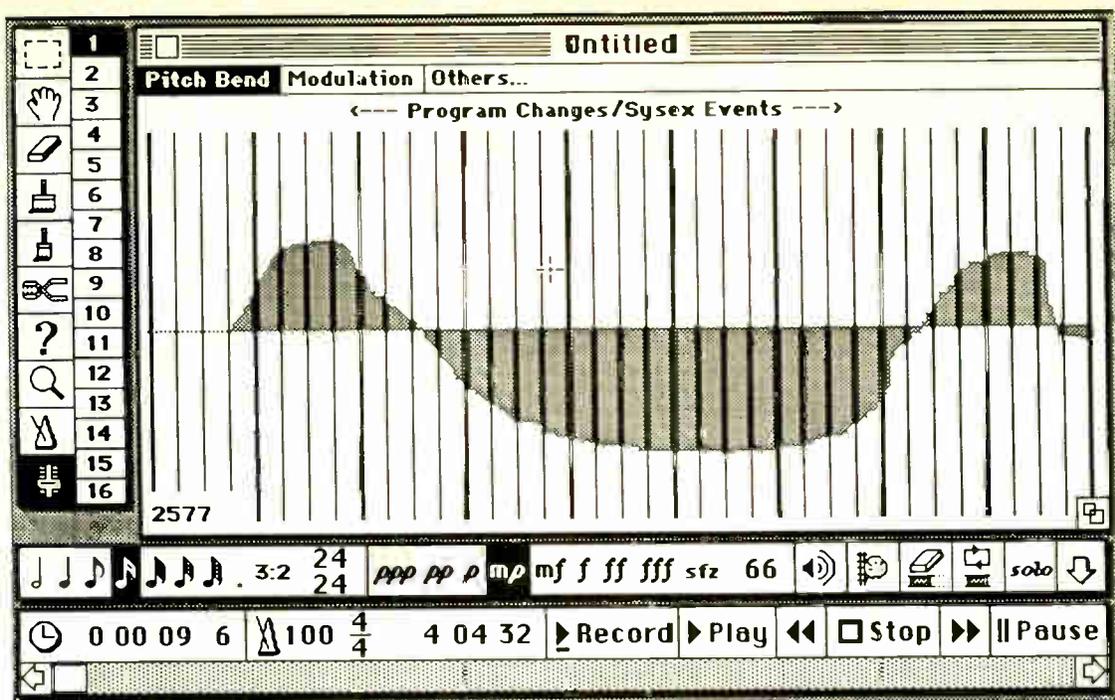
Secondly, MIDIPaint allows you to have several sections playing simultaneously to provide plenty of flexibility in combining tracks. Each MIDIPaint track can also be assigned to any of 16-channels on any of the Jambox's four discrete MIDI busses - an effective total of 64 channels! By contrast, One-Step gives you 16-tracks, period, with each track permanently tied to the matching MIDI channel number (with no provision for Jambox busses). As with MIDIPaint, this means that sending a track to a different MIDI channel involves bouncing the track. Fortunately, whether bouncing or recording, new data can be merged or overdubbed with existing data on a track. This feature can be disabled to erase previous takes.

One-Step employs only one display which is very similar to MIDIPaint's Note Editing Window. Events are displayed as horizontal bars with three attributes. First, the vertical position

corresponds to pitch. Secondly, the horizontal axis represents time and is demarcated by measure and beat lines. The left edge of an event represents the start time of a note and the length indicates duration. Finally, the velocity of the note is reflected by the shading of the bar. As you move the cursor with the mouse, the SMPTE and Measure/Beat/Clock counters at the bottom of the screen track the horizontal movements while vertical position is shown as pitches on an upright keyboard to the left of the window. As the score plays, the measures and events scroll off the left edge of the window making room for subsequent events. An improvement over MIDIPaint is that a second menu containing options that required pulling down in MIDIPaint (such as velocity values along with quantization resolution and duration) stays up at all times. This second strip also provides continuous display of additional parameters such as echo, autolocate and the erase/overdub toggle.

EDITING

The major editing options are selected from a MacPaint-like toolbox. The marquee tool can be used to select a range of events by drawing a box around them. When drawing a marquee, the Option key selects all notes from 0-127 and the Command key selects through the end of the song. Like virtually all Macintosh programs, this "selection" can then be manipulated using



the Edit menu's Copy, Cut, Paste and Undo commands or key equivalents. Unlike MIDIPaint, the selection can be click-dragged to another position and the movement can be constrained horizontally or vertically when used with the Shift key. Selections can also be made to exacting specifications by double-clicking the marquee tool icon and filling in the requester box.

Global editing commands also add a lot of power to the marquee selection technique. These options are selected from the Edit menu and each have a requester box allowing for very specific manipulation of blocks of music. The Duplicate command will place a specified number of copies of the selection immediately after it. The Move command lets you position the selection anywhere with options for transposition, measure/beat/clock and track (this is how you bounce tracks). You have the additional option of specifying that the destination or original be erased.

The Change command lets the user quantitatively alter the data contained in the selection. First, the type of data is specified (aftertouch, attack velocity, release velocity, pitch or duration). The data can then be globally altered by percentage, straight replacement value, adding/subtracting, filtering, randomizing and percentage over time. This takes the pain out of doing things like crescendos and velocity restriction.

The Quantize menu item provides impressive control over shifting the attack and duration of events, which Southworth treats as two distinct concepts (thanks guys!). Both also have "humanizing" options which let you specify which notes are quantized and by how much. You can effectively say "tighten everything within this slope range by this much." The frequency of these effects can even be specified for accents on every "nth" note.

Finally, the Remap option provides a built-in

MIDI mapper for mapping patches, MIDI controllers, channels and notes. For example, notes recorded for one drum machine might not match up to the key/sound assignments for another, and remapping provides an easy way around this common problem. Scales may be changed, and tricks like routing mod wheel to pressure may be performed. Mapping channels is also a way around Southworth's habit of tying channels to tracks. By contrast, MIDIPaint has no remapping function.

The small and large paintbrush tools are used to draw single and multiple notes respectively. The velocity and quantization adhere to the settings in the second command bar described earlier. The available quantizing resolutions are displayed as musical notes of various values. What is nice is that you can actually split your selection; the value highlighted in the top half dictates the attack resolution while the bottom half of the timing palette determines the duration. The wide paintbrush used in conjunction with these quantization options can enter a series of metronomic events very quickly.

The eraser tool does just what you would expect it to do - erase unwanted notes. The grabber tool in conjunction with the Shift, Option and Command keys is employed when you wish to move, copy or stretch the duration of a note. You can even use the grabber to move bar lines around to match SMPTE hit points or make One-Step conform to tracks that were recorded without a metronome!

Events can also be analyzed and edited numerically using the question mark tool. In addition, all editing tools work in conjunction with the magnifying glass for more exacting work. MIDIPaint's telescope tool (used for global views) has been consolidated into the magnifying glass by using Shift and the I-9 keys - which quickly zoom in and out to various magnifications.

Non-pitched MIDI events can also be displayed and edited graphically using the slider tool. MIDIPaint's editing of pitch-bend and controller data is strictly numerical, and being able to draw a curve in One-Step is a distinct advantage. System exclusive information is also supported. The other similar One-Step addition is the ability to graphically enter and edit a tempo map for the Jambox.

Speaking of Jamboxes, while One-Step works with most MIDI interfaces, like MIDIPaint it is optimized for the Jambox/2 and Jambox/4+. The philosophy of letting these hardware interfaces bear the burden of some of the overhead involved with SMPTE and MIDI is a very sound one. One-Step displays both the SMPTE and MIDI counters at all times, uniting the best of both worlds.

CONCLUSION

There's plenty more to talk about like solo, record looping and punch in/out that space just doesn't permit. The only real drawback to One-Step (especially if this is your first sequencer) is the brief and simple documentation. The bottom line, however, is that Southworth has expanded upon their simple yet efficient and powerful interface while sacrificing a bit of flexibility in architecture. If you're a song section, gated trigger, 64-channel freak, stick with MIDIPaint. If price and powerful simplicity are more up your alley, One-Step is a very impressive value for the dollar. ■

PRICE \$69

MORE FROM Southworth Music Systems, 91 Ann Lee Rd., Harvard, MA 01451. Tel. (617) 772-9471

Jeff Burger is the author of "The Murphy's Law MIDI Book" and president of Creative Technologies, a Los Angeles-based firm specializing in all aspects of technology and the arts.



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News

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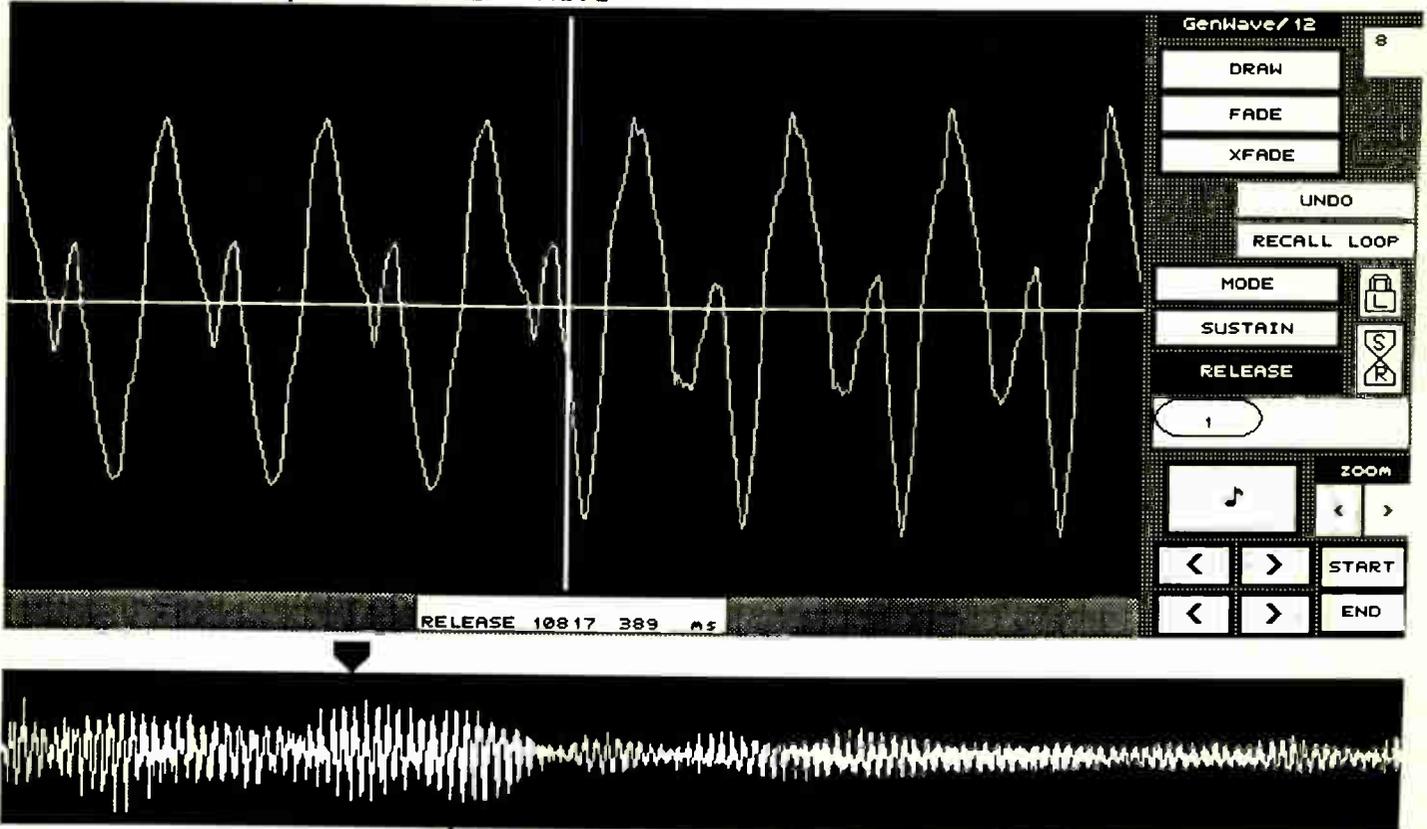
Previews

Applications

Technology

Drumware GenWave/12 Visual Waveform Editor

File Sampler Voice Wave



Envelope page.

VISUAL WAVEFORM EDITING is the one area where ST users have had to bow their heads to the Macintosh community. Now help is here, thanks to the folks at Drumware who brought you Soundfiler for the Akai samplers.

OVERVIEW

GenWave/12 comes in a sturdy ring-binder containing one disk, a hardware key for the Atari's joystick port, and a user's guide that lays flat when open. Once you've managed to squeeze the key where it belongs (next to the mouse connector), you're ready to roll. The manual wastes no time with unnecessary preliminaries - it gets you right to the useful instructions about backup copies, hard disk installation, and computer specifics. GenWave runs best on a 1040 or MEGA ST, in medium resolution on color monitors or in high resolution in monochrome. The manual draws the reader's attention to the need for correctly wired MIDI cables (no internal jumpers to pins

Atari ST folks are finally getting their due in the land of sample editing with this universal package for machines of the (mostly) 12-bit variety.

Review by Lorenz Rychner.

4 and 5, please!), due to Atari's decision to incorporate the MIDI Thru signal within the MIDI Out port.

GenWave/12 lets you import sample data from the following samplers: Akai S900, Emax, E-mu SPI200, and the Prophet 2000/2. If your sampler isn't among these, GenWave also supports the MIDI Sample Dump standard, which makes for an impressive choice. Drumware is also working on drivers for the Yamaha TX16W and Korg DSM1, and there may be others in the future.

While the sample is in the Atari's RAM, you can view and edit the waveform at various zoom sizes. You can adjust loop start and end points for sustain and release loops, redraw parts of a waveform, change the overall amplitude of the sample, apply a variety of filters to all or parts of

the waveform, change the amplitude envelope, cut/splice/merge sections of waveforms, apply different looping techniques, shift a loop of a set length along the sample, and transfer a sample between instruments while adjusting the data for the instrument's specific operating system. Many changes you make are transmitted in real time to the samplers listed on the Sampler menu (but not via the MIDI Sample Dump Standard), so that you can hear the results immediately. Other changes are heard after initiating a Send function on the computer. In addition, the FFT feature shows you the frequency spectrum in various ways and screen dumps let you print what you see. You can also select MIDI note numbers to play from the computer screen, with a click of the mouse. GenWave does all this (and more for \$9.95,

hurry, order now ... sorry, the TV's on, I couldn't help myself ...) from three screens, and practically all functions are easily done with the mouse.

UP AND RUNNING

After you boot the program from the desktop, the first screen comes up with a simple ID and a greeting - be sociable and click on "Hello" or you won't get any further. Now you're on the Loop/Draw page, ready to import a sample. But before you get too greedy and grab a sample to play with, you need to make a few quick decisions. First, you should enable the Undo function, so that any changes that were unsuccessful can be erased without having to reload the original data. While doing that, click on AutoSend to enable the real-time updating of your looping work when working with the samplers listed on the Sampler menu. From the same menu you may want to select Hi Rez for high resolution display of the entire waveform. GenWave defaults to low resolution, which takes only a few seconds to update the screen. High resolution should rarely be needed, since the magnification window gives you all the detail you need. The snail's pace of screen updates in Hi Rez mode will turn you into a coffee addict; the manual calls it, very honestly, "slow to excruciatingly slow, depending on the length of your soundfile." Anyway, it's there if you want it. The last item on this menu brings up the MIDI keyboard, where you set the MIDI note number and velocity for sample playback via the mouse from a command box on all three screens.

Now, Pull down the menu under the heading of Sampler and click on the instrument of your choice (Emax is the default selection). Set the sampler to receive and transmit in MIDI Omni On mode. Then select Request/Catalog to get a directory of the samples currently in the instrument's RAM. Depending on the sampler, this may show as a list of names, or simply as numbers. Click on your choice, confirm it with a click on Okay, and your screen fills up with the sample waveform. You have six voice buffers available, although the sixth should normally be reserved for the Undo (backup) function.

The Loop/Draw page displays an entire sample along the bottom edge, stretched from left to right in a window covering about one sixth of the overall screen height. Above and below it you have narrow strips where pointers for start (above) and end (below) points can be grabbed with the mouse and shifted from left to right and back. Sitting above this window, filling the far right of the screen, are 20 small boxes that activate the various functions you perform on this screen. The largest section of this page is taken up by the magnification window, where you work on selected portions of the waveform for looping and redrawing. While in looping mode, this window is divided by a cross, where the horizontal line represents the wave's zero-crossing, and the vertical line marks the loop splice point, with the loop end on the left and the loop start on the right. When looping is not selected, only the vertical center line is shown. Numerical readouts below the magnified sample

portions always show which sample positions you're working on.

LOOPING

The perfect loop is well within your grasp, as long as you use common sense and patience. Let's see in detail how GenWave can help. One of the command boxes along the right edge reads Mode, where you select looping (as opposed to one-shot/loop-off mode). The cross appears in the magnification window. The top pointer along the horizontal strip above the entire waveform display now marks the loop start point, while the lower pointer defines the loop end point. The current positions are shown in the magnification window. Moving the pointers represents a fairly coarse travel through the sound data. When you get close to the desired position, you have fine control with the incremental arrows in the command boxes on the right. They move by single sample, in both directions. Depending on the sample rate of your waveform, this could walk you through your sound by increments of 1/40,000 of a second.

Among the command boxes on the right is a padlock symbol. Selecting it enables the loop lock - a fun feature - where the length of the current loop is frozen. Now only the upper pointer or arrow is active, moving the start point. The end point moves automatically in the same direction, by the same number of samples. The manual suggests using this feature for single-cycle loops on pitched sounds. You can walk this constant-length loop through the sample, hoping for a lucky match. When you think you got close, you can refine the start and end points with the freehand drawing feature.

The magnification window shows the loop splice as one sample per pixel. Given the generous size of the Atari monitor screen, this shows the finest detail of your sound. But while the entire waveform display at the bottom of the screen is too coarse for detailed information, the 1:1 ratio of magnification is often too fine, since it doesn't display much of what comes just before or after the selected points.

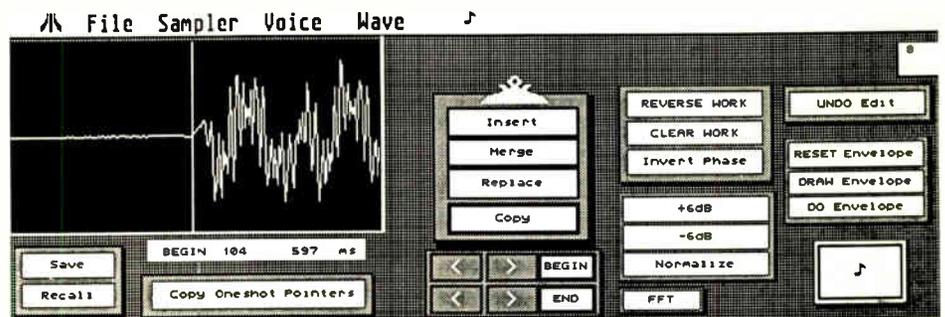
The solution is zooming out, taking a slightly

more distant view, up to a resolution of 64 samples per pixel. Zoom is selected from one of the boxes on the right, where the zoom ratio is displayed. Clicking on Draw selects the drawing mode. The mouse cursor turns into a fine cross (called "crosshair," as in many graphics programs), and drawing is possible for as long as the cursor remains inside the boundaries of the magnification window. After you zero in with the crosshair, pressing the left mouse button activates the drawing. If the zoom ratio is larger than 1:1 when you click on Draw, it is automatically reset to 1:1. When the cursor is moved outside the magnification window, the Draw mode is disengaged, and the entire waveform display is redrawn while the cursor turns into the busy bee. This is where Hi Rez makes you twiddle your thumbs until they fall off.

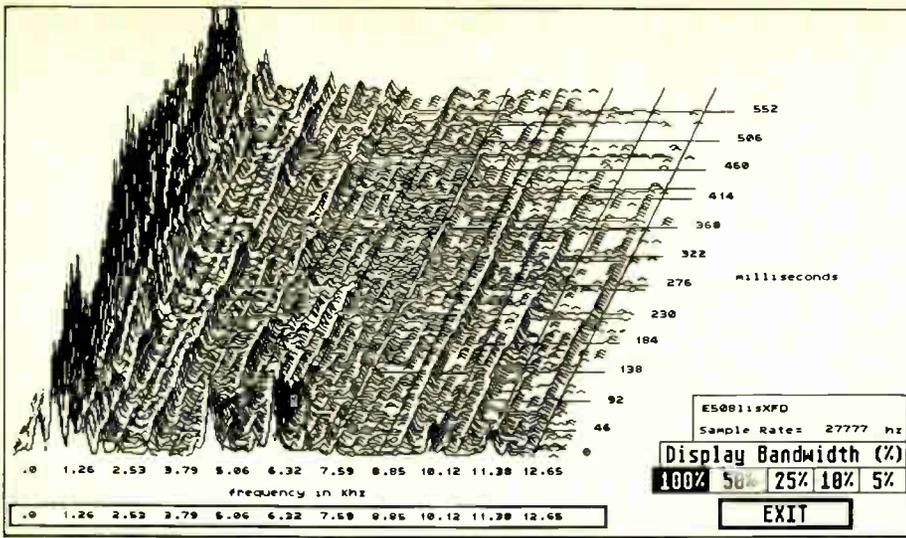
Sustain or Release Loops are possible, depending on your sampler. In release loops, the crossfade feature often helps to smooth things out. While the manual promises no miracles and encourages the user to look for the best possible looping points before attempting a crossfade, a detailed paragraph explains how the program goes about them. A dialog box lets you set the percentage of the data between the loop points that you wish to use for the crossfade; clicking on Do It starts the calculations. The result must be sent to the sampler to be heard. If you give up, click on Undo, and all is forgiven (as long as Undo was enabled before you started). Click on Recall Loop, and you're back to the original loop points. For samplers with dual loops (both sustain and release), clicking on SXR assigns the same loop and all edits to both sustain and release loops.

MORE KNIVES

One-shot mode lets you work just with Sample Start and End points and any area in between, again using the sliding pointers and the increment arrows and the draw mode. In addition, you can click on Fade, which implements a linear fade-out, starting from the current position of the Start pointer and reaching zero amplitude at the current position ▶

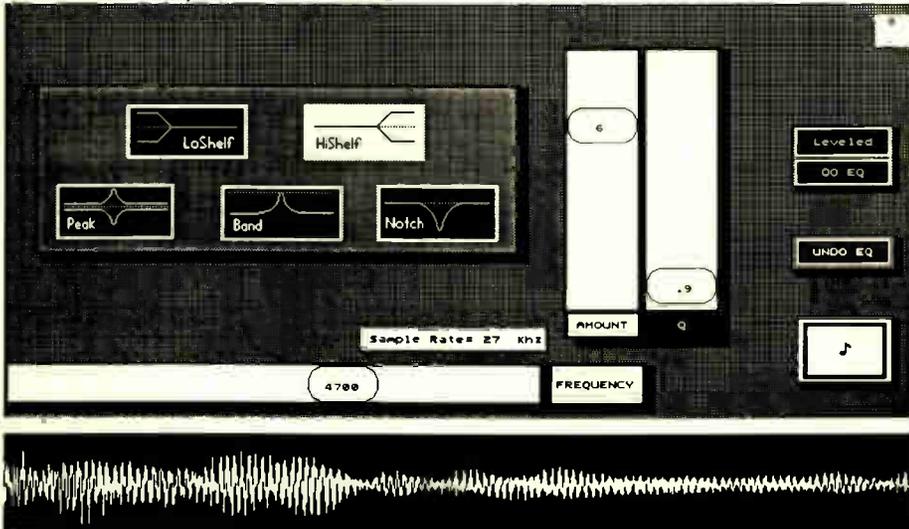


Loop/Draw page.



FFT Display.

File Sampler Voice Wave



Digital EQ page.

of the End pointer. This can eliminate unwanted "gated" or noisy endings of samples. As with loops, the result must be sent to the sampler to be heard. Fade can be undone with Undo, as long as Undo was enabled before you started.

Fade is a quick solution for simple problems; much finer control is available from the Envelope Screen. This has four main windows. The bottom is again occupied by the entire sample display, across the full width of the screen. Above it is a band of similar proportions, within which you can draw amplitude envelope shapes. In the upper left corner is a magnification viewing window, and the remainder of the screen is filled with command boxes. The sliding pointers along the entire waveform display have a different function on this screen; they mark the boundaries of the Clipboard area, for "cut and paste" operations. The fine detail of these pointer positions is shown in the magnification window.

Once you've defined the portion to be worked on, you can click on any of the following command boxes: Reverse (simply flips the data between the pointers by 180 degrees horizontally, so that this portion now plays backwards); Clear Work (erases all data between the pointers); Invert Phase (flips the

data by 180 degrees vertically); Draw Envelope (lets you draw an amplitude envelope, which must be followed by Do Envelope to initiate the calculation); Reset Envelope (brings back the original shape); Do Envelope (activates the calculation of your drawn shape); +6dB (boosts the gain of the sound between the pointers (this can be done repeatedly and is cumulative, so it can be used to produce clipping to simulate compressor effects etc); -6dB (attenuates the sound between the pointers); Normalize (boosts the sound between the pointers to maximum gain before clipping); Copy (sends a copy of the sound between the pointers to a buffer known as the "Clipboard", from where it must be saved to disk (the only function that requires the use of the ST disk drive); Replace (moves the contents of the Clipboard to the area between the pointers, where it overwrites any existing data); Merge (merges the contents of the Clipboard with the sound between the pointers, beginning at the position of the upper pointer - executing a -6dB attenuation for both signals before merging is recommended to avoid clipping); and Insert (squeezes the contents of the Clipboard into the sound at the position of the upper pointer, pushing existing data to the right). All the above functions can be

undone with Undo. Pointer positions can be saved for future recall or reset to match the positions on the current Loop/Draw page.

The Equalizer Screen's bottom is again occupied by the entire sample display, across the full width of the screen. No pointers are present because equalization works on the entire sample. Five diagrams show various filters, and three virtual sliders let you adjust the cutoff/center frequency, amount of cut or boost, and the Q (bandwidth). The filter choices are: LoShelf & HiShelf (both with 12dB per octave "Butterworth" response); Bandpass and Notch with adjustable Q, and a Peak response with cut/boost and Q. After you choose a filter and response setting, clicking on Do EQ initiates the calculations. To hear the result, you send the sound to the sampler. Undo can restore the original EQ characteristics. Enabling the Leveled function ensures that clipping is avoided during the calculation of your EQ settings. Multiple passes at the same function are, of course, possible.

LATE FOURIER

Fast Fourier Transform (FFT) was reserved for mainframe computers and high-end digital music systems until only very recently. It is the process of breaking down a sound into its sine wave components, also called the frequency spectrum, including all harmonic and non-harmonic overtones. Since the rest of the program was finished before the FFT and shipped without it, the folks at Drumware offer this feature as an update at no cost (except for a \$10 S/H fee) to registered buyers of the program. Eventually, all disks sold will contain FFT.

At the time of writing (early May) a beta version was available, which worked just fine. It displays the sample graphically in the form of peaks and valleys representing the amplitude of different frequencies at different times, from the start to the end of the sample. The display is placed on a reference grid that outlines the frequencies from left to right and the duration of the sample from front to back. The whole thing is shown from a slight angle, off-side and above, like a landscape in relief.

Various choices allow viewing percentages of the bandwidth, so that resonant peaks can be identified more easily. Together with the EQ features, this puts you in the driver's seat in the race for good sound. If you care to initiate a screen dump to a compatible printer, you can even plaster your walls with your favorite samples (baby's first gurgle, documented for posterity? Yuk . . .). But seriously, this is a super-cool feature, particularly at this price. I only wish that a choice of display modes would allow for viewing a "thinned-out" sample, or at least a side-on and back-to-front angle, since complex samples necessarily come out convoluted in the small space available. But maybe I'm just greedy . . .

MANUAL LABOR

The owner's manual deserves a special mention. Manuals are a common cause for

gripes, by users and reviewers alike. Well, not this one. It was written with care. This shows in the way that each "page" (screen) is described, first outlining its main purpose, then detailing everything on the screen in careful language. No global remarks here that you miss out on when you look up a single item. For example, each feature that can be undone with Undo has a mention about it right in the paragraph that describes the feature.

The section on Sound Sample Editing Techniques & Applications describes in detail the most common looping problems, and illustrations make the text even easier to absorb. A step-by-step instruction for mixing two sounds, and suggestions for creating digital flanging and echo, digital fuzztone, and cut & splice editing round out this bonus chapter. The manual ends with details on the operating systems and interface characteristics of the samplers that the program accesses individually, plus some useful MIDI Sample Dump Standard (SDS) information. While there is no index, the table of contents at the beginning of the manual should point to the right page at a glance.

CONCLUSIONS

What about performance? I used the program with an Akai S900 and it worked just fine. The Fade feature cleaned up the ends of dirty samples, and looping a snare drum successfully filled the studio with glee. When using a Yamaha TX16W sampler, via MIDI SDS, things went less smoothly. When called about this, Scott Morgan (one of the wizards at Drumware) explained that the real-time update of samples is not happening between the Atari and the TX16W, and that a new Yamaha operating system disk is supposed to take care of some quirks by mid-summer.

Other MIDI SDS devices pose similar problems, requiring the edited sample to be transferred to the sampler every time the results need to be heard. This takes forever. While this isn't Drumware's fault, they plan on configuring an audio output via a tried-and-tested device called ST-Replay (already in use in Europe) that will let the user hear the edits on the fly, in companded 8-bit resolution. Another point to be happy about is that other samplers will be included in the future - I can't wait for the Korg DSM1 version. Roland S50 users may feel the same way, because the program works in more critical detail than the S50's on-board video interface allows for.

Having made all these positive statements, I want to make one thing clear: working with samples at any serious level is time consuming. The Atari ST is no slouch, but many of the operations of this program take a long time to calculate. The owner's manual makes no bones about this, it even points out the ones that take extra long. Reserve that midnight oil for serious work. But then again, you can sleep when you're old...

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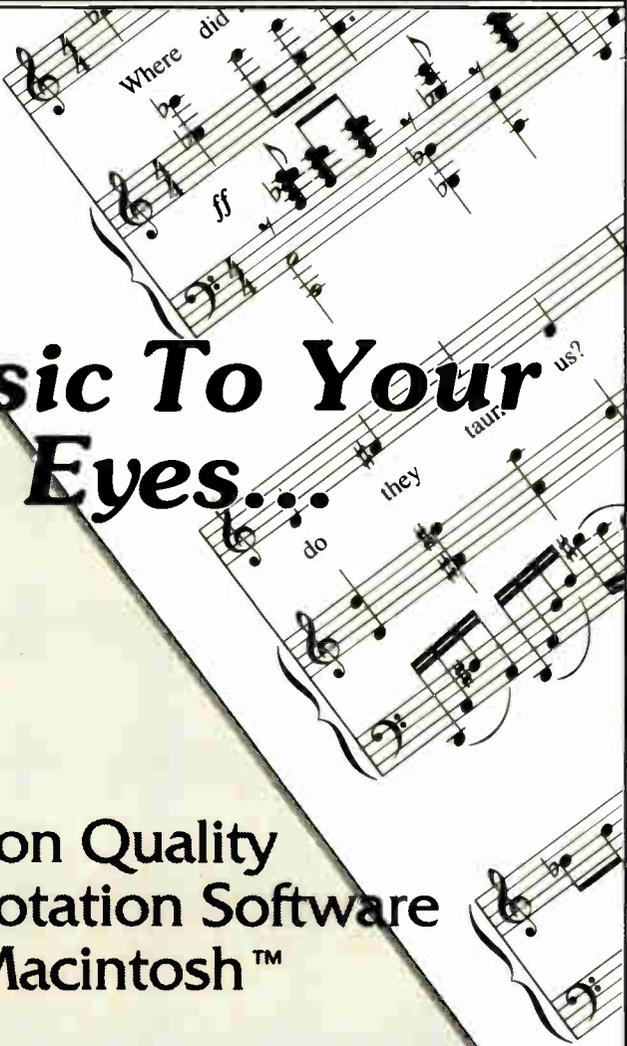
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Jim Miller's Personal Composer 2.0

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The latest release of this combination sequencer/music notation program for the IBM has several interesting new enhancements including features that support a variety of working methods. *Review by Ernie Tello.*

"PERSONAL COMPOSER? THE program by Jim Miller? Oh, I know that one. Pretty good on scoring, but it has some funny bugs in it . . ." That's a fragment of a conversation that you might have overheard a year or so ago. However, now that version 2.0 has finally made its appearance, it's not too likely that you'll hear things like that any more. Personal Composer has now reached a level of power and refinement that is, in my opinion, equal to any other sequencer/notation combination currently available. But enough praising, it's time to explain . . .

THE PACKAGE

First of all, to run Personal Composer you'll need an IBM or compatible with at least 640K RAM, an EGA or Hercules graphics card, and either an MPU401 or an IBM Music Feature card. A mouse is optional, but can come in handy for score editing. Of course if you want to print the score output you'll also need access to either a dot matrix printer or PostScript-compatible laser printer.

Speaking of printing, one of Personal Composer's best features has always been its scoring capabilities, but with this new release the sequencing part of the program has gotten considerably more serious. It has 32 tracks, a

brand new Event Editor, and a "Bounce/Erase" editor, all of which I'll say more about later. Before going any further, though, let me take a deep breath and make a running dash through some of the other numerous features that are now present in this program.

The package includes a patch editor/librarian for the Yamaha DX7 and TX7 synthesizers (only the original ones unfortunately - the Mark II series isn't supported yet), a MIDIGraphics editor for creating new icons that can be assigned to MIDI commands, and support for the IBM Music Feature card (an add-on board for PCs and compatibles that's basically equivalent to a Yamaha FB01). For those who know how to program, there's also a built-in programming language called Syntellect that provides programming access to just about every feature in the product. This means that the program has an open architecture which, in principle, allows the more industrious among you with programming skills to add features the program lacks - a unique capability among music programs. Finally, you can now also print scores on a PostScript laser printer with the Sonata font.

As you might guess, because of all the features, the program has gotten absolutely huge. The executable file alone is more than one megabyte! Given that, 2.0 is the last version of

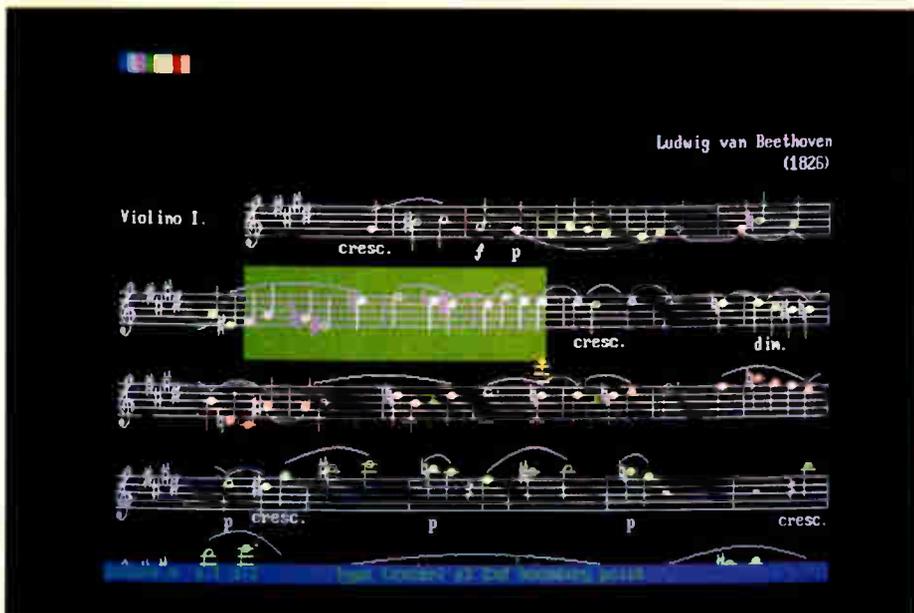
the program that will even fit on a high density floppy. After this, it's a hard disk or nothing.

BIRD'S EYE VIEW

When you load Personal Composer, you are always put into the score editor first. From there you can go to several other different screens, some of which are reproduced here. One of the most important of them is probably the Recorder. Ah! The world of color! This is the control screen for the 32-track sequencer. C'mon, you see it. The one that's laid out to look like a mixer. However, if you notice, it's a two-tiered mixer with 16 tracks on each tier.

Notice too that at the top there is an extra row of numbers from 1 to 16. Those numbers refer to MIDI channels - not sequencer tracks. At first they all appear in dull white. If there has just been some activity on one or more MIDI channels, however, then the numbers of those channels light up in red. It's a primitive MIDI traffic indicator. Down in the right lower corner is another message area that informs you of the size of the recorder file in both measures and bytes, and inside the box you can see which buffer is active.

The three rows of menu commands provide various controls, option settings, and entry into other parts of the program. When Record is set to On, each time you record a track, the ▶



▶ program automatically sets you up to record on the next open track. Both the Bounce and Erase commands allow entry into the Bounce/Erase Editor. As I'll describe more fully below, this allows MIDI channels to be separated, merged, and deleted on the desired Recorder tracks.

Those with their good old DX7 or TX7 will find the built-in editor/librarian very handy too. It has a rather well-designed visual interface. The envelopes are shown in different color graphs, and can be seen either all at once or one at a time.

One of the biggest new additions is the Event Editor. It shows your MIDI recording in the customary note bar format and provides all the operations you ever thought you needed, and a few others besides. One of the interesting extras is the Spline function. This lets you throw all discretion to the winds and generate note sequences according to a geometric curve and specified note density. After selecting values for note spacing and duration, you draw a graph on the bar note display by specifying four points with the cursor. That's it. Presto, simplified

algorithmic composition!

The last editing screen I'll talk about here is the MIDIGraphics editor. This is where you create new graphics icons, such as some music symbol not as yet supported by the program, or something of your own design you feel deprived of. The real fun part of this is that you can then define a MIDI message string to go along with your little graphics symbol. It could even be a system exclusive message which will tickle the parameter of a synthesizer or other device when the symbol is encountered in a score. But be forewarned: if you've no interest in the niceties of hexadecimal, or find that it brings on migraine headaches, then just leave this stuff alone and stick with the part that's fun for you.

SCORING

A whole cartload of new features have been added to the score editing section which contribute to making it even better than it was. One of the most useful of these is a score verification facility that allows you to check the rhythm of your score at any step in its

development. Let's say you play back the score and you hear something odd that you can't quite diagnose. You just type "vs" and the program will scan through the score looking for any measures with errors or discrepancies in rhythm. If there are, the measure will be highlighted on the screen with a vertical dotted line through the delinquent beat. You'll utter some minor obscenity in surprise to discover that you actually did leave out an eighth rest, easily corrected. Not bad, eh? It's the sort of feature that makes you wonder how you did without it before.

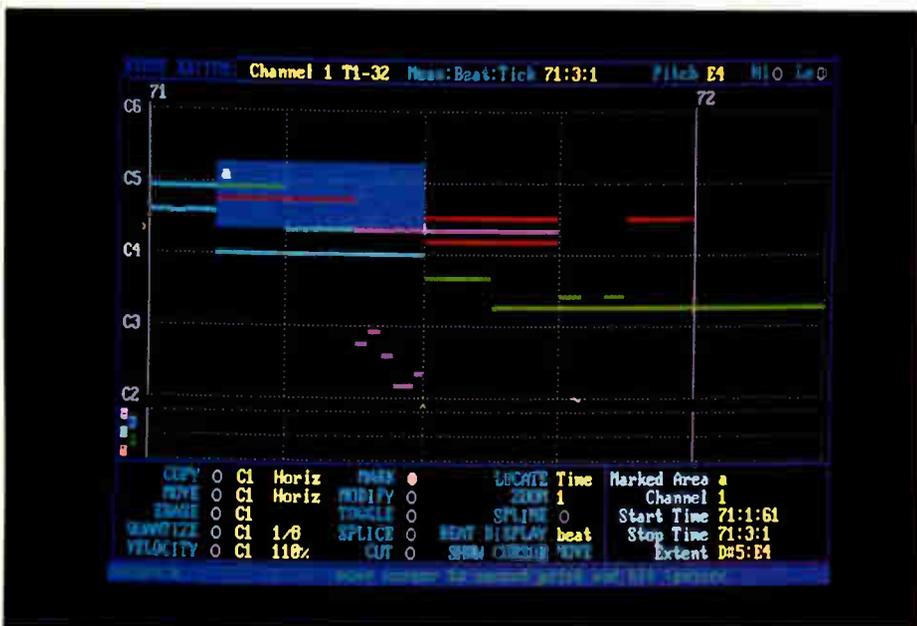
For adding expression to a score, you can either use the traditional music signs (*ff*, *mp*, and so on), or you can specify the exact velocity number for each and every note. A very nice touch which I find useful is an option that lets you turn on a display of the velocities which appear on the score as tiny numbers right next to each note.

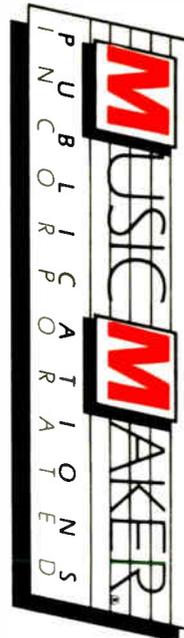
As of this version, all possible time signatures, tenor and alto clefs, and a host of different scoring symbols have been added. Many of them still do not have associated MIDI functions when the score is played back, however. The most important of these is probably the repeat signs. If you want to repeat a series of measures and have it play that way, you have to use the copy commands to actually re-enter the bars in the score, which is a drag.

One of the many things I like about the score editor is the ability to use color to make your scores easier to read on the screen. Not only can you use any background and foreground colors for the score itself, but any text you add can appear in any color of your choosing. One ingenious option allows you to use eight different note colors to identify key velocity levels. However, one thing you cannot do for score displays that would be very useful is to make each staff a different color. This would be convenient, for instance, in large orchestral scores to allow you to easily spot the different parts.

As with all current scoring programs that play back using MIDI, it just isn't possible to do all the things with ties that you can on paper scores and expect the playback to sound as you'd want. The way ties work is by filtering out the note off messages. In order to have one note tied while other notes continue to play, you have to use different MIDI channels. This is one case where the note bars found on many sequencers are more effective than music notation. In most sequencers like the Personal Composer recorder, you can have overlapping note bars of varying lengths on the same channel, instead of having to filter out all note off messages.

In spite of the large number of musical symbols available for writing scores, the list is, unfortunately, still incomplete. Missing are grace notes, trills, glissandos, and triplets other than threes and fives. However, because of the MIDIGraphics editor, there is still the possibility that you can create the symbol or symbols you need that aren't provided. Personally, though, I don't see how the ones I just listed could be added this way. The MIDIGraphics editor is





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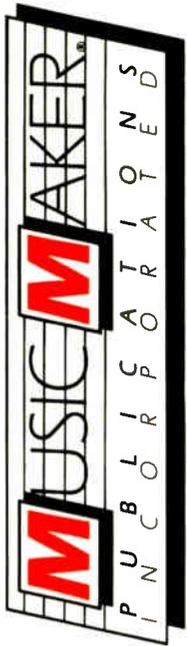
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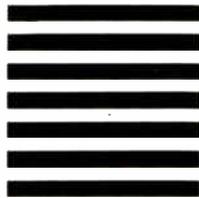
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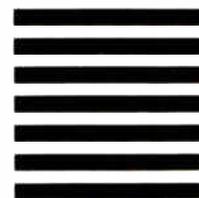
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essentially a grid that represents a greatly magnified pixel pattern. By filling in squares on the grid, you can define your own graphics images and save them.

At first glance it might seem that this program is only for entering perfectly completed scores, but this isn't true at all. You can use it as a musical notepad to record different themes as they come to you, and rework arrangements in a multitude of different ways. It is relatively easy to move parts of a score around at will, to copy from one version to another, and so on. This is a tool that lends itself to just about all facets of composing music.

You can also use it to transcribe things you play into it, though notes are much easier to accurately notate than rhythms. If you just turn on the MIDI recorder and start improvising freely as the spirit moves you, you're going to be up against quite a challenge. There are typical clean-up things you always have to do before generating the score, such as getting the bars aligned properly. This can generally be done in the Event Editor without too much difficulty by cutting off the necessary amount from the beginning along with any lead-in measures. But the main problem in unstructured situations is tempo. If you improvise a piece with various free form or "rubato" passages without knowing at what tempo the sequencer was set, you're going to be out of luck if you want an exact rhythm transcription.

The key velocity command for scores is very powerful. You can assign key velocities by the

note, for a whole staff at a time, or by row or column. A row is any note on the current staff on the same line or space as the cursor. A column is all the notes lined up vertically. Often in orchestral pieces the instruments come together on a loud chord or "tutti" and with this column command you can adjust the volume of all these voices at once.

EDITING EVENTS

Moving back to sequencing, the Event Editor is probably the largest new addition to the program. This is where you make changes in MIDI sequence recordings. If you've just recorded a track and you need to align it with

Transcription "You can also use *Personal Composer* to transcribe things you play into it, though notes are much easier to accurately notate than rhythms."

the measure numbers, then this is where you do it. The resolution available is an impressive 120 clocks per quarter note. Some powerful facilities are available here, and for this reason, it's a little harder to use than other parts of the program. On the screen is a large window with a number of measures of music displayed as bar segments, as with most sequencers. A Zoom command permits you to set how many measures you are looking at on one screen in a range between one and six. The way this part of the program works is a little contrary to your first intuition, because when you mark areas of music you are not actually marking notes, but positions on the staff.

Good use is made of color here. You can color-code note displays so that those of the same track and MIDI channel are visibly distinct. However, for cases where even this looks crowded and confusing, there is an option to make only the events of a single track and channel visible.

OTHER TRICKS

As mentioned earlier, support for the IBM Feature card (or external FB01's) is also provided with the program, though not very much information was supplied about this option. On entering this editor you see a rather slender horizontal window with a number of

command names that let you do things like selecting a voice bank, tuning the instrument, and assigning a voice to a MIDI channel. One command, called Voice Function, allows you to edit any voice parameters. And, of course, you can use this program to rearrange voices in banks.

Personal Composer 2.0 also lets you create macros of up to 2000 keystrokes. A macro is a very useful type of single key command which will automatically run through a common series of operations so that you don't have to do it manually. "Virtual Memory" is another one of those computer phrases that sounds much more formidable than the idea behind it. All it really

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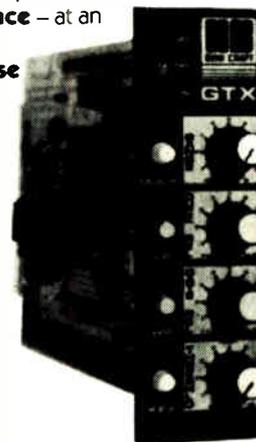
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► means is that a program can use a hard disk to make up for shortages in internal memory or RAM. Personal Composer now has this capability for recorded files, which means that for most practical purposes, there is not an upper size limit on sequences other than the space on your disk. This does not apply to scores, however, where an upper limit to the size of a score file you can load still exists. But by breaking up large scores into a number of separate files, you can get around this limitation.

What the Syntellect feature amounts to is a built-in computer language. It works like a compact version of the LISP programming language but with all kinds of MIDI commands built in. Though it sounds like a speech impediment, LISP actually stands for LIST Processing (not "Lots of Irritating Silly Parentheses" as some programmers might tell you.) It's the main language used in Artificial Intelligence. However, before you get the idea that this means something that it doesn't, let me say that the LISP programs that have any AI in them are very large and usually require special hardware to run efficiently. The language present here is really for more mundane chores like making modifications to entire scores, coding up custom librarians, and so on. However, just about anything that can be done in Personal Composer can be called automatically from within a Syntellect program. What this means is that good programmers with a lot of time on their hands and a somewhat distorted sense of humor could do some very

weird things with it. Of course, I wouldn't want to encourage that, but then again . . .

MANUAL

Quite frankly, this program has the best user guides I've come across in the music business. We've all gotten used to expecting untold horrors in this area, but here's one that's a welcome surprise. It comes in the form of a bound paperback book more than 600 pages long. Included are tutorials and a lot of helpful hints as well as complete documentation on commands and even error messages. If anything, the guide errs on the side of verbosity. It seems to me that you're sometimes forced to wade through many pages in order to get an overview of a particular part of the program.

IN MY OPINION...

As you have undoubtedly noticed, the basic impression of this review is a very definite thumbs up; primarily because there's a lot to like here. It's a very large program and it's unique. I'm sure you're well aware of the need to be able to work in various different ways depending on what's required. For one project, you might want to work by scoring musical notation for a large number of parts at one time. For another, you may want to slowly build something up with performed tracks and segments. Most of all, at some point you may have a need to switch horses right in the middle. Most programs today still allow only one way of doing things, and require users to adjust the way

they work to the program rather than the reverse. Obviously, it's an achievement to do just one important thing reliably and well. Personal Composer does several.

On another level, the most creative musicians need tools that they can twist a little to their own ends. Although a lot more could be done in that direction with this program, it already has this quality to some extent, and that is very rare. The macros that let you redefine your key equivalents, a programming language, and the MIDIgraphics facility that lets you create symbols which will output any kind of MIDI message you want when scores are played back are all examples of these. And rather than discouraging you from getting under the hood by making things seem more difficult than they are, you are invited to learn all you can to have as much control over your MIDI setup as you can handle.

Perhaps most interesting of all, though, is the fact that programs like Personal Composer are now allowing musicians who can read the ability to make music that other musicians couldn't possibly play. Isn't technology grand? ■

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Ernie Tello is a composer, engineer and freelance writer who focuses his professional time on research in Artificial Intelligence and composing music for film and video. He is the author of "Mastering AI Tools and Techniques" from Howard Sams & Co.

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SURREAL SAMPLING

The sonic landscapes of Richard Burmer conjure exotic images and evoke emotional responses in an unusual and provocative manner. The secret's in the samples. Interview by John Diliberto.

IF KITARO'S MUSIC evokes his home at the foot of Mt. Fuji, and if Andreas Vollenweider's music casts visions of his residence in the Swiss Alps, then you have to figure that Richard Burmer must live on the shores of Tahiti: synthesizers interwoven with palm fronds, stars mirrored in a deep blue ocean, wind rustling through the leaves. You might think that from listening to his music, but he actually records in a nondescript ranch house in a suburb of Los Angeles, with multitrack tape decks rucked cozily away in the closets of a bedroom.

That being the case, Richard Burmer
MT JULY 1988

must be an extraordinary man with a well-traveled past for him to conjure the opulent landscapes of his tone poems. But Burmer is as down to earth as Andy Griffith's next-door neighbor. It's inside his mind that Burmer travels to exotic shores and lush tropical forests. He brings back his visions with music that's as carefully polished as chrome, but with the textures of a rainforest.

Burmer has released only two albums in the last four years, *Mosaic* and *Bhakti Point*, but they are flawless, sonically detailed, miniature excursions. "When I'm writing, I just have a mental picture, that's almost like

a story that I can describe into a piece," he explains. "That's the way I hear it. I want to describe a picture and then let the person take off on their own."

Many of Burmer's pictures are located in Owosso, Michigan, where he grew up. He tunes in to those childhood memories, when everything seemed wondrous, on 'Riverbend' from *Mosaic*. "I lived about two blocks away from a river and when I was little, we would go there and play," he recalls. "In the summertime it would be like a Mark Twain kind of thing, because we had a big rope that would swing across the river, and you'd let go of the rope and fall ▶

► in the river. I'd always be dreaming about this river, because when I was little I never went to the other side, so I'd always wonder what was there. I know now that there's a big field and a small airport, but not being able to go over there made it seem like another world. I'd have these dreams about where the river would curve around by our house and the way 'Riverbend' came out was more like wintertime, because you'd go down there and it would be all ice. I just tried to get that feeling I'd get through the dreams of not being able to get to the other side."

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Burmer's tone poems sound like they're played by some mystic orchestra populated by ritual percussionists, choirs of flutes and recorders, and strangely manipulated strings. But for the most part, it's just Richard Burmer playing an Emulator II, a Roland JX3P and a synthesizer artifact called the Electro-Comp EML101.

He's always been interested in unusual sounds, and music that evoked an atmosphere and an era. As a twelve-year old growing up in Michigan, he decided to take apart the family piano one day to see if he could make it sound differently. "There was an old piano that they moved into my parents basement so I could learn keyboard on it," he laughs. "But somewhere along the line I got the crazy idea that I would take out all the mechanisms and try to turn it into a new instrument. It was never the same again. I'd use it to bang the strings and last year I took my PCM unit home so I could record it and transfer the sounds into the Emulator."

Burmer's father is a very tolerant and enlightened man. Not only did he allow Richard to live and tell this story, but he exposed him to a range of music from classical composer Ralph Vaughn Williams to minimalist pioneer Terry Riley's *A Rainbow in Curved Air*.

At the same time, he was intrigued by Irish and British folk music while his mother was exposing him to Russian folk songs. "My mother's Russian, so I was always hearing Russian folk music which is much different from Irish folk music," he explains. "But there's a sense that folk music brings, why it was made, that I've been intrigued with."

Despite his immersion in technology, Burmer has an affinity with the folk tradition. "To the point that I write about my environment and places I've been," he agrees. "Like 'Winter on the Wind' was about wintertime back there in Michigan. I remember being in the house and watching sparrows, and it was so cold out there and I felt sad, but it was beautiful at the same time."

Burmer was already playing guitar when his music matrix was engaged with his introduction to Indian music. At one point he almost became a disciple of Indian Ragas. "I really got seriously interested in

music when I started sitar," he says. "I just studied on my own. Ravi Shankar had put out a book called *My Music My Life*, and it taught the basics of tuning and simple scales. So I just started playing Indian music. That's what really inspired me. There was something about the sound of it."

THE DRONE OF sitars wasn't too far from the drone of electronics. It was another family member, his brother, who plugged him in. "He would bring home these albums of Paul Beaver and Bernard Krause, the Walter Carlos things. Since he was into electronics, he built a small synthesizer. It would do



little tiny effects when you think about what's going on nowadays, but it was still enough to take a two-track recorder and make some sounds."

He made even more sounds with the EML 101 synthesizer. It was a suitcase size synth, comparable to the ARP Odyssey and Minimoog, and made by a company called Electro-Comp in Connecticut. "At that time, what was out that you could afford was a Minimoog, an Odyssey and then I saw the EML101 which was patchable, which I wanted, so I decided on that," he recalls. "I still have two of them that I use on recordings all the time. This one's been modified. Back then, pulse width modulation on an oscillator was a cool thing and I had an extra VCA put in, plus a keyboard controller to run the sequencer. I still use it for a lot of percussion."

It was the Mellotron, the orchestral hallmark of groups like the Moody Blues and King Crimson, that really sparked Burmer's symphonic imagination. "I was

listening to some of those European bands that were using Mellotrons, and I thought, 'What is that sound?' I always dreamed of having a Mellotron, so in 1975 I got one."

Although he doesn't use it any more, he still waxes nostalgic as we sit in his living room with rain pouring down outside. "It has that nice icy sound," he says wistfully. "It's great on days like this. Gloomy days are good."

The Mellotron was an early manner of sampling, using tapes that engaged playback heads when the keys were depressed. Later it was joined by the Chamberlin, an even more obscure ancestor of sampling. Until I met Burmer, I'd always thought it was some

obscure medieval instrument.

"They were made by Harry Chamberlin in his house," says Burmer. "He told me the one I've got is the last one he's building. I don't know if that's true or not. It uses the same principle as the Mellotron except it uses half-inch tape and there are eight instruments on it," he says. "The tape lasts 8-10 seconds. But it has a characteristic sound. Now I'm using the Emulator and that makes it easier to work with those sounds. But the real violins on the Chamberlin, even when they're played back, they don't sound real; they take on their own characteristic."

Burmer didn't find what he was looking for as a music major in college. "I had a year and a half of music theory," he says. "I took piano as my major, but I started doing so much with electronic music and taping at home, that I wanted to continue with that. The school was into classical things, so I just drifted away from that."

Much of the '70s were spent

experimenting in Michigan, recording onto a four-track tape deck. His sound was already refined, as evidenced by a piece called 'Intro,' released on the *Music from the 21st Century* collection on GNP Crescendo records. Recorded in 1977 on four-track, but released in 1982, it stacks up against more technologically sophisticated works by Tangerine Dream, Don Preston and Steve Roach. "Back then I had a studio and was doing these tapes, but there was really no goal in getting them out," says Burmer. "It was more or less an experiment in doing my own music. But when I came out here to California, I had this tape and played it for some people and they decided to use it for an album."

It was in California that he met synthesist Steve Roach and Don Swanson, played with the late pop singer, Jimmie Spheeris, got his first Emulator and began programming for E-mu. It wasn't long before he became an expert at digital sampling, creating a vocabulary of voices from solo instruments to complicated stacked sounds mixing acoustics and electronics.

His first album, *Mosaic*, was released in 1984. It's a series of meticulously crafted works, from the haunting 'Winter on the Wind' to the harrowing nightmare of 'The Serum.' "That's madness," Burmer laughs in mock menace when I mention it. "When I came up with that idea, it was like if you were in a jungle, or out in the wilderness with this fever and hallucinations that wouldn't stop. That's why it takes these dips, it calms down, but then it comes right back up, like 'I'm sorry, but it's not over yet.'"

'The Serum' is full of uncharted sounds, subtle tape and other-worldly environments, as if the present were talking to the ancient past. While so much electronic music seems to stretch out time and slow down perceptions, Burmer's music is compact and dense. A five-minute piece is like a time-lapsed symphony.

The rhythms seem to emerge from a lost African jungle, but many of them are provided by the old EML101s. "On 'The Serum,' that was all EML101 and the sequencer," reveals Burmer. "The big drum hits at the end were the Emulator. But the majority was the 101: the noise shakers, the bum-bum-bum-bum. I call them my kalimba drums. I have to come up with my own words 'cause they don't sound like anything. They get sounds that are so different. It's a shame that they're out of business."

Because he records on the new age Fortuna label and consorts with Steve Roach and Kevin Braheny, Burmer has also been grouped under the new age label. But it's tracks like 'The Serum' that belie the new age appellation to Burmer's music. And in fact, there wasn't a quartz crystal, meditation manual or yogi portrait to be
MT JULY 1988

found in his home, whose population was recently increased with the birth of his first daughter.

"I don't call myself new age," says Burmer with mild distaste. "Some people call it meditation music, which I am not. I

"I still have two old EML101s that I use on recordings all the time, primarily for a lot of percussion parts."

like to get a little livelier with some of my stuff. If that's what they put it under in the record stores, that's fine, new age. As long as it's called music."

Burmer's romantic melodies and lush arrangements do have a new age attraction, but he veers away from saccharine sweetness by adding slightly discordant elements: voices murmuring in the background, sometimes like a radio transmission, sometimes like a disturbed subconscious; the pounding crescendos; and the odd tape manipulation with backwards sounds that don't leap at you like some psychedelic drivel, but insinuate themselves at a slight incline from normal.

"I look at things a little differently from most," he claims, describing two of his pieces for *Western Spaces*, a collection of synthesized solos, duets and trios with Kevin Braheny and Steve Roach. "We went to this place, Glacier Point in Yosemite, and you can see the mountains and

waterfalls. When you look over the other side, there's this magnificent view and we're standing there like ants. 'Story from the Rain' was about when we got there and it was raining. In the morning when the sun comes up there's this condensation with the

steam rising up. So I took that idea and turned it a little sideways to make it surreal."

RATHER THAN PULLING out the stock shakuhachi, sitar, or percussion disks that make so much new music sound like it was cast in an assembly line, Burmer's sounds are his own. On 'Ave Pladaelio' from *Mosaic*, he opens with massive drum hits, followed by screeching, striated drones that sound like they were recorded in the nether worlds of Arabia.

"All the yells in the background are horses and seagulls, which were truncated really short with echoes," says Burmer. "The big drum hits are actually tablas tuned really low and hit really hard."

Burmer has several unusual percussion disks. The title track to *Bhakti Point* is driven by what sounds like tuned bongos, but are actually from an acoustic guitar. ▶

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▶ "One percussion disk I did was just knocking on an acoustic guitar," he discloses. "But when it's worked into a song it has a conga-like effect. The instrument allows you to do so much, you can get a sound just by smacking on something and it sounds good."

He isn't always interested in the perfect percussion sound, the quintessential violin pluck or the definitive saxophone cry. He plays most of the sampled instruments himself, whether he can actually play them or not. Instead of looking for pure tones, he plays at the corners of the instruments, extracting unusual sounds from their natural acoustic resonances.

"It's getting more acoustic sounding," says Burmer. "There are still synths, but it's a lot of acoustic guitars, woodwinds. It's a delicate balance. Just hearing renaissance

"The Emulator allows you to do so much; you can get a sound just by smacking on something and it sounds good."

and medieval ensembles, I really like the sound of that, just blended in with a little of the electronics. The synth with an acoustic guitar or flute turns it into a different instrument. It's not a flute anymore and you don't even have to play it like a flute. It allows you to come up with a whole new instrument, but keep that characteristic."

He spends so much time sampling that he has extra sounds that he can give away. Many of them appear on K-Muse disks called the Burmer Collection. "There are sounds that I don't give out that are created especially for my albums," he explains. "The sounds I create that go out I don't often use for my own music. Not to say they're inferior, they're just different from what I would use."

"One sound can be used for a lot of things," he continues. "For instance, there's this ominous sound that comes in the middle of 'Across The View' (Western Spaces). That's also on 'Nightland,' but it's filtered a little differently and that sound is not out in the public."

One sample he uses frequently is his wife, Debbie, as a breathy choir. "She's sort of like my boys choir," laughs Burmer. "If I need some nice soft voices to come in I just multitrack her on the 8-track and wild-sync 'em together and put a cue track on there and match 'em up. That's what I did on 'Ave Pladaelio.' I did it on the 4-track, used one track as a cue track and overdubbed seven voices, mixed 'em on the 4-track, dumped them down and mixed them back on with more voices. It's all these generations, but I'm really careful so it sounds good 'cause it can get too noisy."

Burmer also does a lot of multi-sampling, which accounts for the fluid melodies and seemingly spontaneous solos. Because he samples in close to the range of each note, he avoids the Micky Mouse effect. "I

sample in every fourth note so you don't stretch it as much," he says. His flute lines are particularly deceptive, so full of the right mixtures of mouth noise, modulation and breathiness that it's difficult to tell if they're real.

Burmer's pristine recordings aren't the result of state of the art technology, but his attention to detail and extracting the most out of his equipment. While *Bhakti Point* was recorded on a 16-track Otari MX70, *Mosaic* was done on 4- and 8-track machines. He records most of his sounds dry, and adds the reverb and delays with the Lexicon Prime Time Digital Delay, Lexicon 200 Digital Reverb, and the Master Room Spring Reverb. "I like to combine the spring with the digital reverb most of the time," he divulges.

This search for perfection in sound

doesn't get in the way of his composing. His writing is simple and direct, but elegantly articulated with a slight edge of surrealism. *Bhakti Point*, his second record, doesn't have anything as tumultuous as 'The Serum,' or with the overdrive sequencers of 'Physics.' "I guess I'm not as agitated any more," says Burmer.

Each song has a story, a recollection or a fantasy behind it. The title is a Hindu word. "The word Bhakti is a Hindu word that means pure act of love and devotion," explains Burmer. "And I just thought of a place named Bhakti Point, that's somewhat of a paradise with a lot of adventure. It has a surreal basis for the whole feeling of the album."

As he prepares his newest album, Burmer finds himself surrounded by more technology than ever, but playing it a little less. Since *Bhakti Point* the Emulator II has been joined by the Emax, the Roland JX10 and the Prophet VS. But he finds he plays a lot of things in manually. "A lot of the percussion I just play by hand," he confesses, "because everytime you hear the same sound, it's like a photograph. A natural instrument doesn't do that. It would always be different, so I like to use the real instrument. Like on 'The Turn Again,' there's the autoharp. I could've done it on the sampler, but every one had to be different, so I played it myself."

Richard Burmer isn't about to give up on sampling, however. He's so good, in fact, that most keyboardists should follow the example of Dean Benedetti. Benedetti used to play saxophone, but after hearing Charlie Parker, he knew that a pinnacle had been reached and any attempt on his part would be a futile, if not sacrilegious exercise. I'm not ready to anoint him the Bird of Sampling, but I'm already packing for another journey into Burmer's landscapes of the imagination. ■

SYNTHESIZER SOUND SYSTEMS

part two

In our final installment on making a beautiful noise, modular systems are surveyed piece by piece. Text by Lorenz Rychner.

LAST MONTH I dealt with the many ways you can configure a sound system where at least some of the components are doing double-duty. This time we look at modular systems where each component is dedicated to one job in the chain of the audio signal. This approach allows for the greatest flexibility, but it can also cost more than the others: in price, in ease of transport, and in setup time.

A typical modular system consists of a line mixer, a power amplifier, and speaker cabinets (the latter two can be combined if you use powered speaker cabinets). As you saw in the last article, they are rare, but don't overlook them, they can work out to be cheaper and more practical in the long run. Let's look at our available options for each link in the chain.

• Mixers

The new dedicated recording or general-purpose PA mixers are necessary to control a lot of instruments, especially with separate outputs from samplers, drum machines, or from rack-mount synth modules. If you need to feed microphones through your mixer as well as instruments, you'll need to look for extra features on units sold as keyboard or line mixers. As the word "line" implies (as opposed to microphone), typical line mixers don't accommodate microphones. Mic cables come with XLR/Cannon (usually for low impedance) and 1/4" (could be for low or high impedance) connectors. If the keyboard or line mixer is said to be suitable for microphones, check the impedance of your mics and the mixer's input characteristics. Conversely, if you select a PA mixer, make sure it can accommodate line level instruments along with microphones.

Applying external signal processing (reverb, delay, EQ, etc) is easier if your mixer has multiple master sends and returns. If you expect several instruments to share effects, make sure the depth can be controlled from the individual input channel send controls. These may be labeled Effect or Auxiliary, and they may return to the master section in mono or in stereo. If marked "pre," this means that the signal is split before ("pre" means "before") it gets to the EQ or to the fader.

One split goes to the effect or auxiliary bus, and the other goes to the master section via the channel fader and pan pot (as you would expect). For live performance you probably want it "post-everything" so that your channel fader movements affect not only the volume of the signal that goes to the master outputs, but also the volume of the signal that goes to the outboard processing unit. Some mixers let you switch the pre/post assignment, others are built for internal rewiring by the buyer without infringement on the warranty. Your dealer can help you with suggestions if you inform him or her of your planned signal routing.

Some new line mixers don't provide EQ, based on the assumption that your sounds are tailored on the instruments themselves, via filter control, etc. While this saves on space and money, think twice before you forego the opportunity to tweak the sound on stage. When the acoustics of a room kill your carefully prepared sounds, even a global EQ unit that you use via a master send/return may not give you enough control to bring them back to life. The new synths and samplers with their lack of programming knobs and sliders aren't easily re-programmed during performance, and sounds from drum machines always seem to need help during a soundcheck.

If you intend to use the mixer both on stage and in your home studio, you'll need to give the EQ and microphone question extra consideration. For recording as well as for live work, something like the Hill Multimix is hard to beat (if you can afford it), because it is configured for either 16:2:1 (for stereo or mono performance), or for 16:4:2:1 (four subgroups for 4-track recording or monitoring).

How portable should the mixer be? Does it fit into the industry standard 19" racks? Does it come with a carry case? Most A-frame keyboard stands adapt to hold a rackframe, so that the controls will be within reach, while the power amp and speakers are placed elsewhere. PA mixers of the console type with twelve or more input channels can get bulky. Rack-mount mixers with that many channels are a fairly new breed, so not all dealers may have a selection.

Here's what's out there:

- **Akai MPX820:** MIDI programmable 8-channel mixer. Each channel with XLR and 1/4" inputs and channel patch in and out jacks (1/4"). Channel controls: Selector switch; instrument/line/microphone, mic pad -40/-20/0dB; trim, monitor send (pre-fade), 3-band EQ (± 15 dB at 10kHz/1.5kHz/100Hz), effects send, pan, fader. Master section: fade time, effect receive left, effect receive right, aux 1 return with pan, aux 2 return with pan, L&R master level LEDs, master fader (main out level). Control section for programming of 99 available memories (snapshot, but fade time allows some programmable real-time mixing automation): numeric keypad, program up and down, manual, memory protect on/off. Price: \$2,499.95

- **Biamp 83RX series:** 6- and 8-channel versions rack-mountable, 12- and 16-channel versions console type. Each channel with low impedance XLR and high impedance 1/4" jacks, plus out/in channel patch. Channel controls: trim, effects send, monitor send, 3-band EQ (± 15 dB at 7kHz/2.5kHz/90Hz), pan, +8dBV LED, level. Master level controls: effects send, effects return, subs return, reverb, mains return, all with pan, monitor reverb, sub 1, sub 2, main, monitor. LEDs switchable sub 1/main and sub 2/monitor. Prices: 6-ch, \$899; 8-ch, \$999; 12-ch, \$1,399; 16-ch, \$1,699. Option on all models: built-in digital reverb (Alesis) with 16 programs and remote bypass adds \$300.

- **Biamp Rackmax:** 16 channels, each with balanced 1/4" and XLR inputs and signal (-15dBu) and peak (+15dBu) indicators. Channel controls: pad switch (-20dB/0dB), trim (-40 to 0), line/mic switch, 48V phantom power, effects send, auxiliary send, monitor send (sends are internally selectable for pre-EQ, post-EQ/pre-fade, or post-fade), 3-band EQ (± 15 dB at 10kHz/2kHz/80Hz), pan, solo, fader. Master level controls: effects send, auxiliary send, monitor send, monitor return, main return, return pan, mono out, headphones (with solo switch), master faders L&R, LEDs for master level L&R, Master L&R stack inputs. Rack-mountable (ten spaces). Price: \$1,999. Option: built-in digital reverb (Alesis) with 16 programs and remote bypass adds \$300.

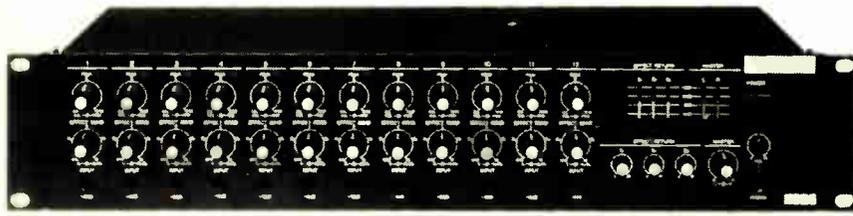


Boss BX8 mixer

- **Boss/Roland BX8 stereo mixer:** 8 channels, each input from -50dBm to -10dBm, with overload indicator; input impedance from 1.8kΩ to 100kΩ; for mic or line. Channel controls: gain, treble (±10dB at 10kHz), bass (±10dB at 100Hz), effect 1 send, effect 2 send, pan, fader. Master controls: effect 1 return, effect 2 return, headphones, output level switch (-10dBm or +4dBm), master faders L+R, level LED L+R. Inputs (1/4") for eight channels, 2X2 effect returns 1+2; outputs effects send 1, effects send 2, master L+R (1/4"), master L+R (RCA phono), headphones. Powered via AC adaptor. Under 13" wide. Price: \$495.

- **Boss/Roland BX16 stereo mixer:** 16 channels. Inputs, channels, and outputs are configured as on the BX8. Under 19" wide. Price: \$795.

- **ElectroVoice** has a range of sophisticated mixers in 8- (rack-mountable), 12-, 16-, and 24-channel



Korg KMX 122 mixer

configurations, with line and microphone inputs. Prices: BK832, \$1,040; BK1232, \$1,250; BK1632, \$1,495; BK2432, \$1,931.

- **Hill Multimix:** 16 channels, each with transformerless balanced mic input (XLR, 1.2kΩ) and unbalanced line input (1/4", 10kΩ), channels 1-4 also with RIAA inputs (1/4"). Channel controls: gain, line/mic switch, pad (20dB on mic only), 3-band EQ at fixed 10kHz/1kHz/100Hz (all ±12dB, low Q), 48V phantom power (on some models EQ defeat), auxiliary 1 send (post-EQ/post-fade), auxiliary 2 send (pre-EQ/pre-fade), pan, mute, PFL (Pre-Fade Listen - mono to headphones), subgroup assignment 1/2 3/4 (not on channels 13-16), master stereo assignment, peak indicator, fader. Master controls: channels 13-16 can function as subgroups 1-4 (with individual outputs) while active for channel input with all channel controls except subgroup assignment; auxiliary return level with pan control, mono output level, mute, PFL, master faders L&R, level LED L&R, headphones level. Unbalanced

master outputs L&R, mono out, aux 1 and aux 2 out, headphones out, aux return (all 1/4"). Rack-mount chassis (eight spaces) with front panel handles, separate rack-mountable power supply (one space). User-ready internal adjustments can select pre- or post-fade assignment for both auxiliaries, pre or post master fades for mono output, and -10dB/+4dBm for outputs. Price: \$2,399. Optional extras: additional aux sends, sends-returns for each channel, transformer balanced master outputs.

- **Kawai** makes both an 8-channel console mixer (MX854CX) with versatile outputs, and a compact (two spaces) rack-mount 8-channel keyboard mixer (MX8R) with two effects loops and XLR outputs as well as 1/4". A nice touch is the built-in MIDI Thru box (1 In, 3 Thru) on the MX8R, price \$329.

- **Korg KMX62 keyboard mixer:** 6 channels, each with VCA switch for remote volume control via footpedal, input level -35dB, input impedance 10kΩ, 1/4". Channel controls: volume, effects send, pan. Master controls: effects return volume, peak level LED (switchable master/effect), master volume L&R. One effects send, effects return L&R, master output L&R. Rack-mountable (one space). No list price.

- **Korg KMX122 line mixer:** 12 channels, 1/4" inputs, -10dB/12kΩ, rear inputs duplicated on front panel (front priority).

Channel controls: channel volume, effects sends 1 and 2/3, pan. Three effects sends (two selectable per channel, send to effect 1 is selectable pre or post). Master: level L&R, effects returns 1, 2, 3, all with separate level LEDs, headphones level. Master outputs duplicated as sub out. Rack-mountable (two spaces). No list price.

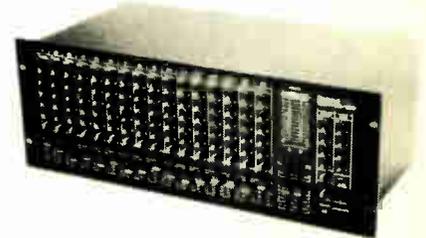
- **Peavey 701R:** 7 channels, each with high impedance unbalanced and low impedance unbalanced input, pre out/in jack. Channel controls: gain/attenuation, pre-monitor send, 4-band EQ, post-effects send, pan, +10dB LED, level control. Master connections: low impedance transformer balanced and low impedance unbalanced outputs for sub A, sub B, sum, monitor; aux inputs for sub A, sub B, sum, monitor, effects; effects send high/low; effects return; stereo out; (built-in) reverb footswitch; level LEDs switchable for sub A/B and sum/monitor; reverb and effects return/pan to monitor; masters for sub A, sub B, sum, monitor, effects; stereo output

level. Rack-mountable. Price: \$649.50.

- **Peavey MDII stereo mixers** 8-, 12-, and 16-channel versions. Each channel with balanced low impedance XLR and balanced or unbalanced high impedance 1/4" input, pre-EQ out/in 1/4" ring/tip/sleeve jack. Channel controls: gain, monitor send (pre-EQ), 3-band EQ (midrange sweep 200Hz-5kHz), all ±15dB, effects send (post-fade), pan, fader, clip indicator. Monitor send slider, effects send level, effects return to monitor, effects level, effects return pan, built-in reverb to monitor, reverb level, reverb pan. Master level L&R faders, stereo sum level, 2 LEDs switchable Left/Master and Right/Monitor, high output (for headphones), 12V lamp socket. Console type with connectors on rear top. Prices: 8-ch, \$749; 12-ch, \$949.50; 16-ch, \$1,149.50. For transformer balanced XLR outputs left, right, master, monitor, add \$50 (n/a on 8-channel version).

- **Ramsa/Panasonic** makes a number of mixers of interest to keyboardists: WRI33 has 8 channels (rack-mountable or freestanding, with carry-handle and case), \$1,200; WRS208, 6 mono and 2 stereo input channels (rack-mountable or freestanding, wedgeshape), \$1,600; WRS212 10 mono and 2 stereo input channels, console type, \$2,200; WRS216, 14 mono and 2 stereo input channels, console type, \$2,700; WR8210A, 10 channels, configured for 4- and 8-track recording as well as live performance, \$2,500.

- **Roland M160 line mixer:** 16 channels, channels 1 & 2 -56dBm (mic level), channels 3-16 -26dBm (line level). Channel controls: Peak light, sensitivity, effects send 1, effects send 2, effects send 3,



Roland M160 mixer

auxiliary send, pan, fader. Master section: LED level L+R, pre-fader peak, send levels effect 1, effect 2, effect 3, auxiliary; return levels effect 1, effect 2, effect 3 (each in stereo), auxiliary (mono) with pre/post switch; master level L+R faders, headphone level. Inputs (all 1/4"): 16 channels, returns 1, 2, 3 (all stereo), aux (mono), hi/lo switch for returns 1 & 2; direct in to headphones (for external metronome click etc.); bus in to effect 1, 2, 3, and aux (all at +4dBm); outputs: sends for 3 effects and aux; master L&R +4dBm unbalanced (1/4"), master L&R +4dBm balanced (XLR). Fixed power cord. Rack-mountable (four spaces). Price: \$1,095.

- **Roland M240 line mixer:** 24 channels.

Structured like the M160, but lies flat (console style), can be operated while in its (optional) road case, including the AC adaptor. 26" wide. Price: \$1,495.

– **TOA D4 and D4E** are a 4-channel rack-mount mixer with a 6-channel expander unit. Together they form a 10-channel



TOA D4

system (in four rackspaces) that has flexible signal routing and a built-in MIDI Thru box (1 In, 8 Thru).

– **Yamaha** has a variety of mixers suitable for keyboards, some rack-mountable, others in console shapes. The KM602 and KM802 are two stand-alone units that mix 6 and 8 channels into stereo L&R. The 602, \$225, has a built-in chorus effect which can be turned on and off for the first four channels and one Aux Send, while the 802, \$325, has no built-in effects but three Aux Sends. The MV802, \$445, is an 8-channel rack unit with two sends per channel and a VCA input for footpedal control.

• Power Amplifiers

The rack-mount power amplifier is the workhorse in your setup. Heat, badly matched speakers, incorrect input levels, loose connectors, and the dreaded voltage fluctuations can play havoc with amps. Make friends with roadies and other professionals before committing your bucks: their stories about reliability or otherwise could save you money. Space doesn't permit me to attempt a complete listing of available makes and models. The different design philosophies are a favorite topic of sound engineers everywhere. The following is a cross-section that doesn't claim to be exhaustive. Keep in mind that power rating in watts doesn't tell the whole story; I hinted in the last article at the many variables to consider.

– **Ashly FET1000:** Mos-Fet amp with extensive protection against overload and brownouts – said to operate at half-normal line voltage. 120W per channel into 8Ω, 190W per channel into 4Ω. Rack-mountable. New – price not available at press time.

mountable. New – price not available at press time.

– **Ashly FET2000:** Mos-Fet amp with extensive protection against overload and brownouts – said to operate at half-normal line voltage. 300W per channel into 8Ω, 500W per channel into 4Ω. Rack-

mountable. New – price not available at press time.

– **Biamp XA series:** Four models, from 50W per channel into 4Ω (XA 100, \$499) to 500W per channel into 4Ω (XA1000, \$1,199). Rack-mountable.

– **Biamp T series:** Capable of 2Ω operation. T500, 240W into 4Ω, \$1,199; T1000, 480W into 4Ω, \$1,599.

– **Crown amps** are among the favorites of many sound engineers. Their model DC300A (now series II) has been around for years (180W per channel into 8Ω, \$1,049); also DC150A series II (90W per channel into 8Ω, \$749). Other models are available.

– **Hill DX300:** 200W per channel into 8Ω. Rack-mountable (two spaces). Price: \$899.

– **Hill DX800:** 250W into 8Ω/400W into 4Ω/800W into 8Ω bridged mono. Rack-mountable (two spaces). Price: \$1,199.

– **KMD Kaman RP500S:** 250W per channel into 4Ω, 150W per channel into 8Ω. Rack-mountable. Price: \$699.50.

– **Peavey:** Ten rack-mountable power amps, from 130W per channel into 4Ω (M2600 MK V, \$399.50) to 600W per channel into 4Ω (DECA 1200, \$1,399.50).

– **Rane MA 6 Multichannel Amplifier:** This is configured into 6 channels, each at 100W into 8Ω, with built-in limiters for +15dB headroom. Could be of interest to keyboardists who bi-amp or tri-amp large systems, or for separate powering of a split system. Price: \$1,349.

– **Yamaha** offers many rack-mountable power amplifiers through their Professional Audio Division. Check with (714) 522-9011.

• Speakers

Speaker cabinets are the last link in the chain. They should project the sound well into the room, preferably with 15" woofers and mid/high-frequency horns. Placement on stage has a lot to do with the way your audience hears the high-end of your sounds, since high frequencies are notoriously critical in their dispersion pattern. If possible, stand-mount your speakers (many cabinets come with adaptors already fitted).

– **Carvin** sells their products only direct – call (619) 747-1710 to get their catalog, in particular about the 820, 850, 960, 980 systems, ranging from 150W continuous power handling at \$219 to 200W with horn loaded 15" woofer, ElectroVoice horn driver, and high end tweeter, at \$399.

– **ElectroVoice** models are among the best-known speakers. Their products are used by many cabinet builders. They also market their own finished cabinets. Call (616) 695-6831 and ask for their catalog on stage systems where you'll also find helpful information on sound characteristics beyond the immediate sales pitch. Their keyboard system is the S1803; it weighs in at 134lb with a 18" woofer, a midrange unit and a tweeter. Continuous power handling is 200W. Price: \$1,242.

– **JBL**, a Harman International brand, is well known in the industry. Your dealer is likely to have some of their products. If not, call (818) 893-8411 to ask for catalog and dealer referral.

– **KMD Kaman** builds rugged cabinets of varying sizes, from 75W with one 12" speaker and a piezo horn (SE1275, \$199.50) to 400W with a 15" heavy-duty cast frame speaker and an ElectroVoice 4"×10" horn/driver combination (SE15400, \$649.50).

– **Peavey** makes a vast selection of speaker cabinets in all configurations, with active or passive crossovers, many with adaptors for stand mounting. From \$129.50 for small 10" speaker plus high-frequency horn to full concert reinforcement and monitors. Call (601) 483-5365 or check with your dealer.

– **TOA** has too many models to list in this space. The 380SE & 480SE three-way systems were developed specifically for the reproduction of electronic sounds. They may be connected for full range, bi-amped, or even tri-amped, handling 360W of continuous power. They are large, with a 15" woofer, a midrange CD horn with compression driver, and a high-frequency horn tweeter. Call (415) 588-2538 for prices and dealers near you.

YOUR SOUND SYSTEM is like any other part of your chain. Buy too much, and you will waste it and your money. But don't buy what you really need to get the job done, and you'll only end up with less hair (and successful gigs) in the end.

PATCH WORK

YAMAHA TX8IZ

Oh My! Bells

Vic Loher, Morehead City, NC

Here's an excellent bell sound, offering a really deep, bonging bottom end and a clear, thin chime on the high end. Vic suggests changing the Release Rate to "2" on all operators for a longer sustain at either end. Good stuff! ■

ALGORITHM	5			
FEEDBACK	0			
FREQUENCY	6.00	5.00	6.00	5.00
OSC. WAVE	1	1	1	1
DETUNE	+3	+3	-3	-3
OUT LEVEL	99	73	99	73

EG				
AR	17	31	17	31
D1R	31	31	31	31
D1L	15	15	15	15
D2R	5	0	5	0
RR	3	3	3	3
EG SHIFT	OFF	OFF	OFF	OFF

SCALING				
RATE	2	1	2	1
LEVEL	99	0	99	0

SENSITIVITY				
PITCH	0			
AMPLITUDE (0-3) (ON/OFF)	0			
	OFF	ON	OFF	ON
EG BIAS	0	0	0	0
KEY VELOCITY	0	0	0	0

LFO	
WAVE	TR1
SPEED	12
DELAY	0
P MOD DEPTH	0
A MOD DEPTH	15
SYNC	OFF

FUNCTION	
MODE	POLY
P BEND RANGE	2
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

ALESIS HR16

Drumkits

Charles R Fischer, Hercules, CA

Here's something a bit different. Charles sent us his favorite drum kits from the little monster of the drum machine world, we checked 'em out and said, "Hey, these are pretty good, let's use 'em." So, no, they're not exactly patches, but the machine is programmable, so here they are. They work well as they stand but of course Charles points out that they can be tweaked to your own personal preferences. The names pretty much describe their intended purpose. Enjoy. ■

Kit: ROCK/POP

Pad Name	Instrument	Tune	Level	Pan
Tom 1	#21 10" double-head tom	+5	85	<3
Tom 2	#21 10" double-head tom	-1	85	<1
Tom 3	#22 14" double-head tom	-2	82	1>
Tom 4	#22 14" double-head tom	-8	78	3>
Ride	#30 Ride cymbal bell	-1	96	<1
Crash	#31 Crash cymbal	+2	96	1>
Perc 1	#34 Low conga slap	-4	75	<1
Perc 2	#33 High conga slap	-3	75	1>
Kick	#01 Power kick	-3	99	<>
Snare	#12 Ambient wood snare	+2	96	<>
Closed hat	#25 Closed Hi-hat B	0	99	2>
Mid hat	#26 Half open Hi-hat	0	99	2>
Open hat	#27 Open Hi-hat	0	99	2>
Claps	#46 Tambourine	0	95	<2
Perc 3	#43 Medium cow bell	-3	88	<2
Perc 4	#41 Shaker	-1	96	2>

Tom 2	#23 Electronic tom	0	85	>2
Tom 3	#23 Electronic tom	-5	85	2>
Tom 4	#23 Electronic tom	-11	85	3>
Ride	#31 Crash cymbal	-14	90	<3
Crash	#31 Crash cymbal	-16	90	3>
Perc 1	#38 Cabasa	-16	75	<2
Perc 2	#38 Cabasa	-16	75	2>
Kick	#09 Electronic kit 1	-5	93	<>
Snare	#14 Gated snare	+1	82	<>
Closed hat	#24 Closed Hi-hat A	0	99	2>
Mid hat	#26 Half open Hi-hat	0	99	2>
Open hat	#27 Open Hi-hat	0	99	2>
Claps	#47 Hand claps	0	96	>
Perc 3	#15 Electronic snare	-4	96	<1
Perc 4	#48 Finger snap	8	96	1>

Kit: ETHNIC

Pad name	Instrument	Tune	Level	Pan
Tom 1	#36 Large wood block	-8	88	<2
Tom 2	#36 Large wood block	-5	88	<1
Tom 3	#35 Small wood block	-3	4	1>
Tom 4	#35 Small wood block	+1	96	2>
Ride	#34 Low conga slap	-2	90	<2
Crash	#34 Low conga slap	+3	85	2>
Perc 1	#33 High conga slap	+1	75	<2
Perc 2	#33 High conga slap	+5	84	2>
Kick	#34 High conga slap	-12	85	<>
Snare	#49 Drumsticks	-9	76	1>
Closed hat	#37 Rosewood claves	-13	84	2>
Mid hat	#38 Cabasa	-3	94	2>
Open hat	#41 Shaker	-3	94	<2
Claps	#44 Large cowbell	-5	85	<>
Perc 3	#43 Medium cowbell	-7	88	<1
Perc 4	#42 Agogo bell	0	96	1>

Kit: TECHNO/RAP

Pad name	Instrument	Tune	Level	Pan
Tom 1	#21 Electronic tom	+6	96	<3

(All sounds were sent to Output 01)

PATCH WARE

NEWS: Miller/Blake Digital Samples has announced the release of a new collection of **sample disks for the Yamaha TX16W**. The library contains a variety of solo and ensemble acoustic and electronic instruments, including acoustic and electric six- and 12-string guitars, grand harpsichord, saxes, accordion, and ensemble strings. The disks are priced at \$19.95 for 720K single disks and \$29.95 for the full 1.5Meg double disks, such as the 88-note Steinway 9ft grand piano set. The catalog is free, and a Dolby encoded demo cassette is available for \$6.50. Also available from the same company are **disks for the Kurzweil 250**, which are sold in sets of ten disks for \$139.95. The \$6.50 demo cassette is available for these disks as well. For more, contact *Miller/Blake Digital Samples, 2801 18th Avenue, Sacramento, CA 95820. Tel: (916) 452-7685.*

For D50/D550 owners, Day Star Enterprises is offering its third set of patches, *Soundscapes Volume III*. Included are strings, woodwinds and brass, as well as digital and analog synth patches. Patches are available on Apple Macintosh disk, compatible with Dr T's, Opcode and Zero One; the Yamaha MDF1 disk and Roland MC500 disk formats. Data sheets are available, or the company will load them to your RAM card. All disk formats are \$20, and other formats are \$15. For more, send a SASE to: *Day Star Enterprises, PO Box 2387, Amarillo, TX 79105.*

REVIEW: SoftWorx, vendors of patches for several synthesizers and drum machines, also offers a tape of 1000 sounds for sampling along with disks for the Mirage and Emax. I recently had a chance to slap on some headphones and peruse a few dozen of their Emax disks.

One expects purchased sounds, be they on CD, cassette tapes, sampler disks, or subway walls to be of good to excellent quality. For me, the attraction of buying sampler disks is not only that they are already sampled, but hopefully the creator has spent time getting all the niggling details of *performing* a sound – loops, trimming, mapping, velocity, modulations, etc – tweaked to a degree that makes the sound pop-in-and-go. I mean, no one has free time, right?

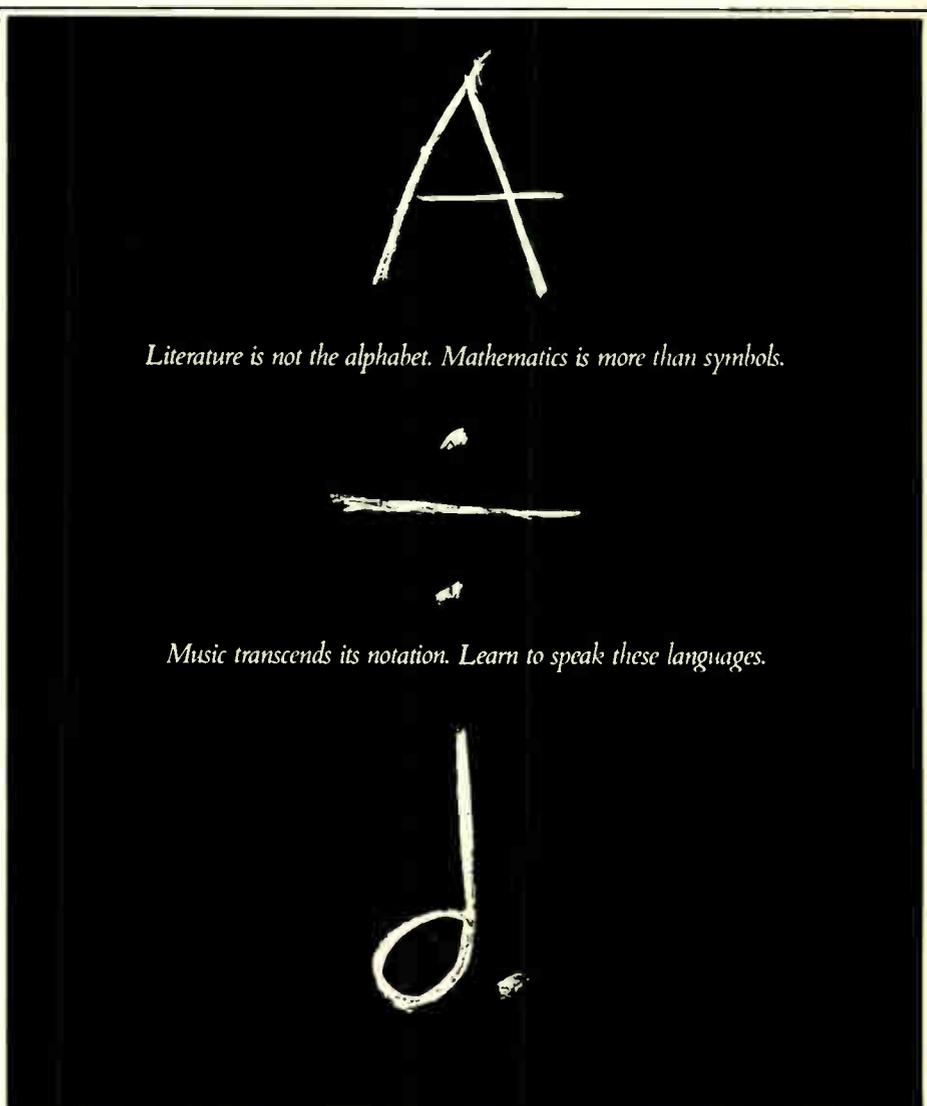
In this last regard, the SoftWorx disks are a disappointment. Disks average about three presets per, and not all are fully mapped across the keyboard (I acknowledge that a bass or flute doesn't cover five octaves, but there's *no* reason for missing notes on a B3 organ disk). Of all the disks I listened to, I only found two presets that used velocity to alter timbre (one opened the filter, while the other did some nice tricks with attack rate and balance of a layer), a few that altered panning, and *none* that altered loudness
MT JULY 1988

(unforgivable on drum sounds). The mod and pitch wheels were thankfully programmed throughout, but the mod wheel almost always brought in the same quick vibrato – no imagination. True, the user can go in and edit all of these, but I was still a little shocked (okay, I was a *lot* shocked).

On the other side of the coin, almost all the disks make *excellent* use of the Emax' stereo facilities, either with psuedo-stereo samples and layers or panning effects. Loops were fair to non-existent. Given the onboard crossfade looping facilities and Sound Designer, there aren't a lot of excuses for bad loops (for example, a nice TX816 stack simply died out). Trimming varied, with most fading out nicely, but too many cutting off abruptly at their ends. The sounds themselves are of average to good quality, with special effects,

synths, and percussion being highlights.

All of my moaning and bitching is practically wiped out by Softworx' customer support policies: for one, the disks are all \$9.95 (the Mirage disks are \$7.95, and there are quantity discounts). Second, they come with a lifetime guarantee on the media. But here's the home run: if you don't like a disk, you can trade it for another. That makes it pretty hard to go wrong. For the record, favorites were #8 (orchestra FX), #31 (gong and metal noises), #62 (human voice drum – very Art of Noise), #70 (ADD-one drums), #93 (D50 Set 3 – first preset is made for jamming), and especially #77 (rack bell and kalimba). For more info, contact: *Softworx MIDI Systems, 8402 Clover Hill Loop, Bayonet Point, FL 34667. Tel: (813) 862-6032.*
■ Chris Meyer



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▶ sound, or accurate simulations of real-world environs is directly under the control of the user.

Sampling and MIDI

S
T
U
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O
WE'RE NOT DONE with the capabilities of this unit – it samples as well, and these samples can be used in conjunction with reverb and effects programs. Sampling is pretty straightforward, with six different playback modes (stereo or mono with up to 6 or 12 samples, stereo or mono with one 16 or 32 second sample, and stereo or mono plus aux output) and is done at the 16-bit, 32K level. (Why, when everything else is so top of the line about this unit, AKG failed to make their sampling at CD quality – approximately 44K – I don't know). Editing samples is done using the faders to select the cutoff points, similar to an E-mu sampler. Looping is not an included feature, so you'll understand right away that this is not meant to be viewed as a replacement for your favorite sampler, but an additional feature to a remarkable sound processing unit.

You can trigger samples directly for the remote unit, or as established through CV gates, signal level input, footswitch or pedals, or MIDI. It is a monophonic unit – in other words, if you retrigger a sample before one is complete, it will automatically interrupt the sound and begin playing the other one, producing a stuttering effect. This may be fine in some applications, but tom fills or rolls don't sound very natural. Uses will have to be restricted to spinning in the odd vocal chorus or drum roll.

Another drawback is no real method of storing samples. You can download them

on the remote are assigned a specific MIDI command, so moving each fader or button sends out that particular command which can be recorded into a sequencer. Before you get too excited, please know that the 68K is, in reality, a dumb unit and will not necessarily distinguish between a fader move on page one and a fader move on page two (remember, faders mean different things depending on the menu

Sound *"I don't know if it's worth the cost of a new car, but this is certainly the best sounding reverb unit I've ever heard."*

page currently selected). It does turn the 68K's remote into an alternate MIDI controller, however.

As implied above, the reverse method of control is capable as well, using MIDI instruments to control the ADR 68K. Continuous controllers, pitch and mod wheels, pedals, note on/off, velocities and all manner of MIDI commands can be set up to control specific functions of the 68K and stored within a parameter map. This means you can create and save your own control setup using your familiar MIDI controllers and use them to edit or alter any number of sound processing parameters, in real time. For example, you can use keyboard aftertouch to control chorusing, have the predelay and early reflection times controlled with tempo (MIDI clock is a MIDI command as well), or adjusting stereo position (panning) by note number and/or velocity. There are any number of combinations you can accomplish using this MIDI setup, and the implementation is one of the most versatile yet in a product of this type. It

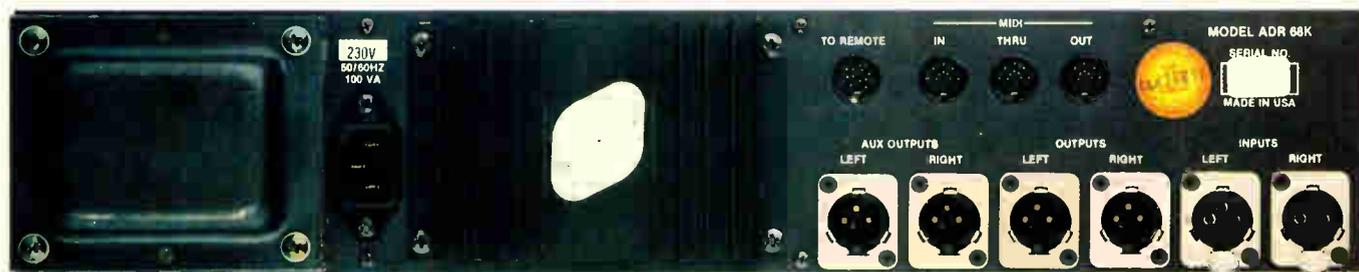
found myself turning around to examine the back wall of the studio – the reflections were that good. In using the 68K on several projects, the improvement in the overall sound was very noticeable – remarkable in fact.

The manual is one of the best available for any product. Easy to read for both the novice and the pro, it includes schematics, diagrams, comprehensive appendices, and

clear descriptions. Having grown used to having to wade through manuals, flipping back and forth to discover how to do the simplest thing, using this manual was a breeze. The only thing missing is a good index, but one can make do with the table of contents, as the information is well codified.

Overall, the ADR 68K is a most impressive unit. AKG's attention to detail also shows up in little touches like a built-in calculator that will tell you the offset value to use with a delay depending on the tempo, or a step-by-step chapter for installing new software versions.

But now we arrive at the bottom line: is it worth the \$7,000 price tag? It really depends on how far you're willing to go and what your needs are. Value is a relative thing: is a Corvette really worth the \$40-50,000 its owner spends on it? I don't know if it's worth the cost of a new car, but this is certainly the best sounding reverb unit I've ever heard. After working with this product it's extremely hard to return to the old units I used to love. The ADR



to a digital storage device or computer by way of System Exclusive or MIDI Sample Dump standard, but there is no disk facility. If you already own a good sampler, you'll probably find it easier to keep on using it for the majority of your sound or effects work, but having another high-quality sample device nearby, even if it is rudimentary in features, can come in handy.

MIDI is well supported, allowing you fairly complete control over not only program changes, but all parameters as well. Each of the six faders and 38 buttons

does take a little while to program one of these setups, but once you have learned your way around, it's not that complicated.

Road Test and Evaluation

BUT HOW DOES it sound? In a word, *great*. I don't want to overstate the impression this unit made, but seriously, this is one fabulous piece of hardware when it comes to sound processing. It is one of the most realistic reverb generators available today, if not the best. When listening to several of the factory presets through a good pair of front speakers, I

68K is a fabulous sounding reverb/effects unit that has been engineered to be constantly updated with an ever-changing technological market place, and if money is no object, it belongs in your studio, period. And even if you can't afford one, you owe it to yourself to go hear one, if just to compare the difference between the low end and the high. ■

PRICE \$6,995; \$4,995 for 3.0 software and without expanded memory

MORE FROM AKG Acoustics, 77 Selleck St, Stamford, CT 06902. Tel: (203) 348-2121.

MT JULY 1988

SELL IT FOR NOTHING

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MUSIC TECHNOLOGY's free classified section is designed to help private sellers find buyers and bands find other musicians. If you buy and sell musical equipment or sounds as part of a small business, please contact the Advertising Department to place a regular classified ad.

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ENSONIQ SQ80: 4mths old, 1200 extra sounds, road case, CV pedal, mint cond, \$1495. Tel: (502) 842-1990.

KURZWEIL 250 latest version with soundblocks A, C & D, QLS, 50K sampling, Sequencer, stand & music rack, mint, \$10,200. Tel: (209) 431-5275.

MOOG MEMORYMOOG, excellent cond, non MIDI analog synth, 6 voice, 18 oscillator, must sell, \$995 obo. Tel: (305) 226-8231.

YAMAHA CP70B w/anvil road cases, exc cond, \$1300; DX100, new \$310. Tel: (206) 641-9135.

YAMAHA DX7IID in exc cond, \$1375; new DX7IIIFD with E1, \$1875, extra voices and breath controllers. Tel: (415) 522-5426.

SAMPLING

AKAI S900 with library, mint cond, hardly used, must sell, best offer. Tel: (412) 661-7194.

EMAX OWNERS: Samples for trade or sale. Chris Magnuson, 1319 Holly Park Way, Santa Rosa, CA 95401.

SEQUENCERS

YAMAHA QXI sequencer, only \$895; new TX816 tone generator, only \$2650. Jim, Tel: (716) 328-1220/442-2419.

YAMAHA QXI sequencer, 80,000-note capability, newest version, v8 update; ATA case disk, immac cond, make offer. Tel: (412) 835-4703.

YAMAHA QX7 sequencer, \$175; Roland TR505 drum machine with separate outputs, \$200; both for \$350. Tel: (718) 499-3005.

YAMAHA QX2I sequencer, mint cond, \$175; YME8 MIDI Expander, \$40. Tel: (401) 272-7378.

DRUMS

ROLAND 909 great cond, box and manual, \$300; also, TR505. Tel: (617) 784-8826.

SIMMONS SDS7 drumset, 10 modules with all pads, cables and stands, must sell, \$2500 obo. Ken, Tel: (713) 933-3530.

SIMMONS SDS8 5 pads, brain, Pearl hardware, mint, \$600; Yamaha RX11, perfect condition, \$250 firm. Tel: (212) 982-7892.

YAMAHA RX21L Latin drum machine, \$175; E-mu Drumulator, non-MT JULY 1988

MIDI, 8 audio outputs, \$50. Tel: (401) 272-7378.

COMPUTING

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Advertisers Index

Akai	31
Alesis	36, 37, 56, 57
Alexander Publishing	62
Apple Computers	88,89
Sam Ash	93
Ashly	41
Barcus Berry	20, 21
Canare	47
Casio	3
Coda Music	75, 76, 77
J.L. Cooper	51
Disk Makers	59
Drastik Plastics	97
Drum & Keyboard Shop	98
Electrovoice	OBC
Ensoniq	48, 49
4 Designs	45
Grey Matter Response	83
Guitar Shack	69
H.B. Imaging	94
Intelligent Computer Music Systems	1, 53
K.A.T.	19
Kawai	24, 25
Robert Keller	69
Korg	64, 65
Leighs Computers	97
Lyre	35
Manny's	98
Music Foundation	107
Music Loft	102
New England Digital	61
Prelude Software	9
Rhythm City	93
Roland	17
Saved by Technology	59
Tascam	6
Technos	72
Trebas	14
Triton	19
World Music	43
Yamaha	IFC, 11, 12, 13, 101

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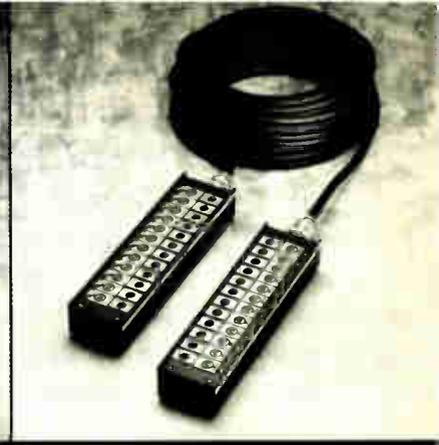
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