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MUSIC TECHNOLOGY

TOM SCOTT

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MIDI FILES

Sequencer Standardization

REVIEWS

Kawai Q80

ART MultiVerb

Yamaha DEQ7

Roland E660

JL Cooper Mix Mate

Softwind Instruments' Synthophone

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Dynamic Studio

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PREVIEW

Akai S1000



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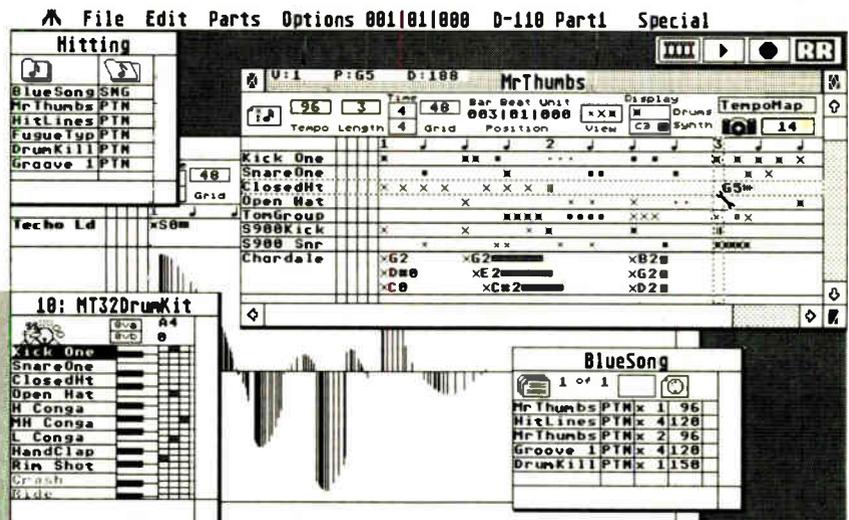
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EDITORIAL

Beyond Music

THOUGH I'LL SURPRISE no one by saying it, there's a statement which needs to be made: developments on the musical instrument side of the music industry have begun to stagnate. No one's quite sure why, but it seems that the rapid changes which began with the introduction of the DX7 in 1983 and continued until fairly recently have come to a halt. But technological growth hasn't stopped on all sides of this industry.

In fact, as this month's installment of the AudioFrame Explained, the article on Post Production and the reviews of two new digital equalizers attest to, the pro audio side of the music industry is really starting to heat up. With developments like DAT, hard disk-based recording, "writeable" optical discs (CDs), and the beginnings of a new standard for digital audio transmission - the AES/EBU standard discussed in "Digital Audio 102" in MT September '88 - pro audio is poised to launch into a growth and development phase similar to what the musical instrument side of the industry just went through. Digital audio is now almost as hot as MIDI was when it was first introduced; I even think that any big developments we see on the musical instrument side of things will be related to digital outputs.

Interestingly, you can almost draw comparisons between the two sides of the industry: both have a standard from which they could and will base their growth (MIDI and AES/EBU respectively), both have a cost-effective tangible product and idea that has attracted and is attracting great interest (inexpensive digital synthesizers and inexpensive digital recording), both fostered and will continue to foster the growth of an entire industry of related supporting products (MIDI controllers and processors and digital mixers and signal processors), and both suffered and are suffering from early confusion and problems with compatibility. I also think we'll start to see even more connections between the two worlds of digital audio and digital MIDI data. Products that permit digital audio to be manipulated in the same

way we can manipulate MIDI data seem inevitable.

Checking out the latest signal processors and digital mixers may not be quite as exciting as listening to a hot new synth, but the kind of refinements that these audio products can make to your music are the kind that I think we can start expecting from products of the future.

Of course, my predictions may be off, but I think us technology junkies are going to have to start looking beyond music to the audio side of things for our fix of rapid change. Luckily, this issue of MT will be at the upcoming Audio Engineering Society (AES) convention in Los Angeles, so it shouldn't be too long a wait.

IF YOU'RE A SUBSCRIBER to MT, you've undoubtedly noticed the four-page mini-magazine we're calling *Outside MT* enclosed within the plastic bag that held this issue. We're happy to say that thanks to the wonders of Desktop Publishing (DTP), this little extra is going to be a regular part of the package for all subscribers from this point onwards. As you can see from this month's version, which includes a basic application article on MIDI thru boxes and patchbays, and the start of an opinion column by Technical Editor Chris Meyer, it's going to contain more of the kind of articles that you normally see within the pages of MT - reviews, feature articles, etc. We've been wanting to provide you with even more editorial coverage for quite a while, and this little advertiser-less package should fit the bill quite nicely.

If you're not yet a subscriber you should do something to change that. In the meantime, however, you can send a self-addressed stamped envelope to: *Outside MT, Music Technology, 22024 Lassen St., Suite 118, Chatsworth, CA 91311* and we'll send the mini-mag to you for free.

We hope you enjoy this new addition to MT. Let us know what you think. ■

Bob O'Donnell (Editor)

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At Kawai we're committed to excellence and value. Great sound and user friendly, the K1 is the best selling synthesizer under \$1000. But don't take our word for it! See and hear the K1 family today—the K1 keyboard, the low profile K1m module, and the new K1r rack mount module!

KAWAI

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MUSIC

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Experiments in synthesis, demented horn music, Alaskan folk songs and a bit of Hunter S. Thompson entertain our fun-loving Oriental tape reviewer in this month's column.

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The British hipsters are back with another dance-oriented album full of inventive, film-influenced samples. According to keyboardist Dan Donovan, however, all is not well with technology.

Tom Scott 57

The renowned jazz saxophonist talks about film scoring, his early and lasting involvement in wind synthesis, and the joy of owning a well-equipped home studio.

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During a recent visit to Robert Redford's Sundance Institute, music editor Deborah Parisi got a chance to chat with several leading film composers. Her report on the men and women who create music for the movies is the fourth in our series looking at the technology behind different genres of music.

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Our in-brief preview gives you the low-down on the upcoming 16-bit stereo sampler from Akai.

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One of two digital equalizers being examined this month is this stereo four-band parametric or mono eight-band parametric unit, the first in a new line of pro audio products from Roland.

Kawai Q80 41

The company's new hardware sequencer offers a slew of editing features, some fancy quantization, the ability to store SysEx data and that all important element: a built-in disk drive.

Yamaha DEQ7 48

Yamaha's digital equalizer offers a variety of different configurations and a sparkling clean digital sound.

ART MultiVerb 62

Pitch shifting, reverb, flanging, delay, this new multi-effects processor can do almost anything and can even do up to four different effects at once. Travis Charbeneau tells you how well it does them . . .

Synthophone 100

It was bound to happen. A dedicated MIDI wind controller that actually uses a . . . a . . . a . . . saxophone!

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Computer Newsdesk 66

Programs for the Commodore 64 and the CZ, new IBM starter kits from Voyetra, and a mini-sequencer for the Amiga, get the MT treatment in this month's news page.

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The latest creation from the minds of Intelligent Music is an Atari ST package that will play what you draw.



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Drumware's KI Ed/Lib for the ST, Zero One Research's D50 Editor and Librarian Desk Accessories for the Macintosh, and Digigram's Big Band composing program for the ST are all tested in this month's homage to things small.

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The latest standard to hit the world of electronic music should have some very positive long-term effects for computer musicians. Antony Widoff explains what the agreed-upon standard for sequencer files is and how you can use them.

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From ADR through sound effects creation, Scott Gershin explains how samplers are revolutionizing the post-production process.

The AudioFrame Explained, Part 3 34

The latest installment in our series on this high-end marvel delves into the mysteries of digital mixing and hard disk recording.

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If you want to endow your synth and sampler sounds with movement and life, do what Charles Fischer tells you to: add panning.

Updates and Upgrades 88

If you want to find out if there are any new options or enhancements being made available for your existing hardware or software, this new section is the place to look.

In Past Issues 89

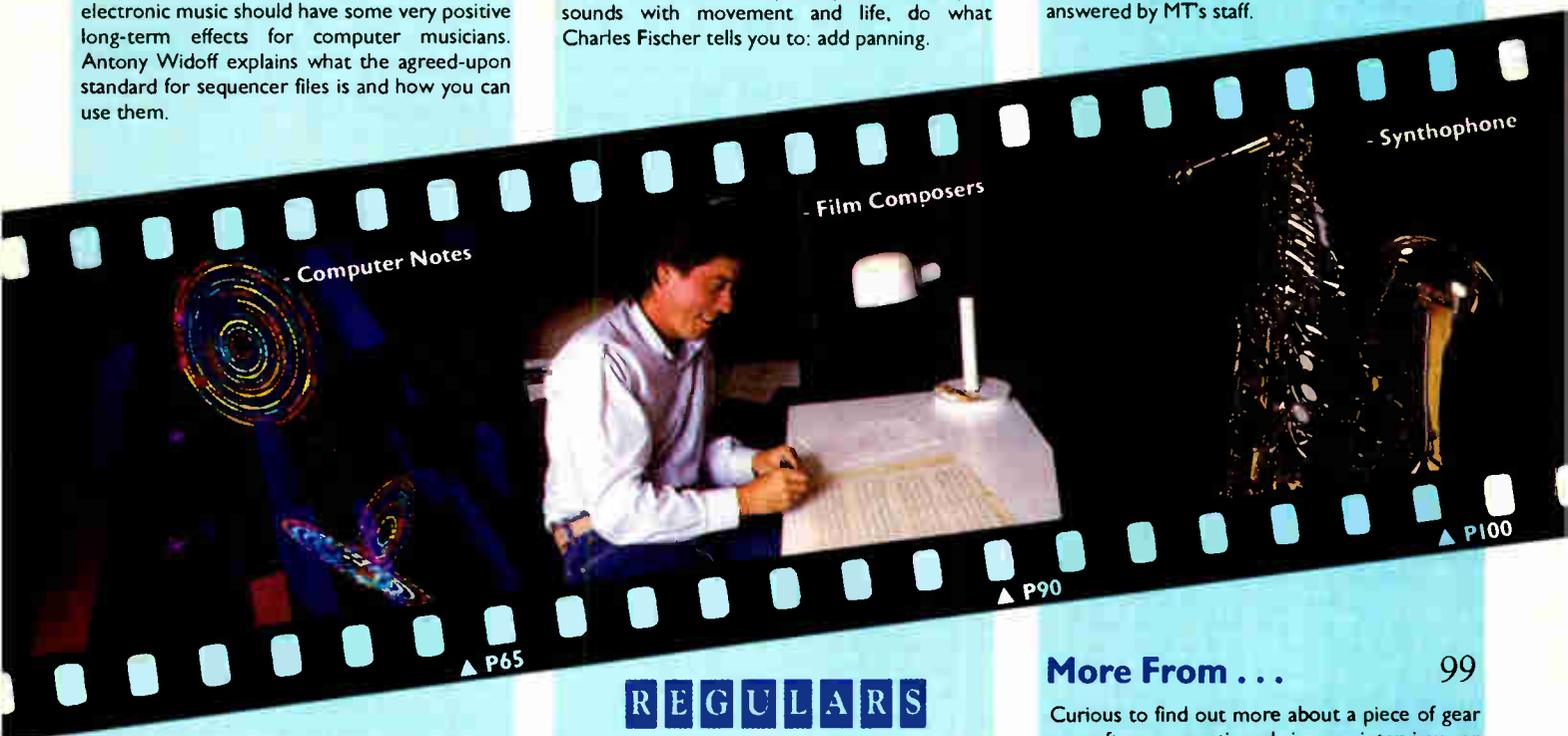
A quick rundown of the contents in previous issues of MT. Time to stock up on those back issues . . .

Patchwork 96

A moody ESQ patch and a nice Rhodes sound for the CZ are this month's reader contributions, while new sounds for the MI get reviewed in Patchware.

Input/Output 98

One of several new regular sections being introduced this month is this column: a place for you to get any and all technical questions answered by MT's staff.



Dynamic Studio 79

Our first in-depth look at a sequencer for the Amiga finds a package with some nice features that also permits you to turn your computer into a drum machine.

Forte II 83

This heavy-duty sequencer for the IBM offers a truly impressive array of controls, a friendly interface and two intriguing companion programs, as Matt Isaacson relates.

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A sonic maximizer in a pedal, a KI in a rack, a MIDI system without wires and various other unnatural contortions get appropriate coverage in this month's edition.

Readers' Letters 8

Heat for Scritti's Green and Gamson, a response to the Contemporary Christian music article and more views from you are given air in the latest compilation of reader feedback.

More From . . . 99

Curious to find out more about a piece of gear or software mentioned in an interview or feature article? This new section will tell you who to contact.

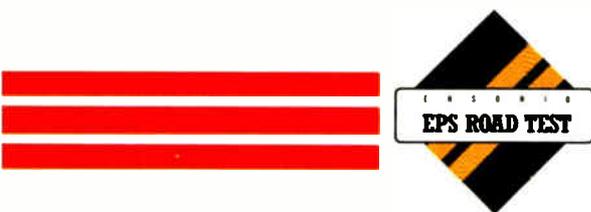
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SONIC STINGER

For those of you who have been anxious to get the aural enhancement available in BBE's rack-mounted Sonic Maximizer (see review March '87), but were unwilling to fork over for a full, stereo, rack-mounted version, BBE has just released a simplified, foot pedal version of the Maximizer called the BBE Stinger. The unit combines harmonic phase compensation with controllable high-frequency boost, to brighten up your sounds, whether they be guitar, bass, or synth. The box has a single 1/4" phone jack input and a single 1/4" output jack. The Stinger runs on a 9V DC battery, or a 1/8" jack AC adaptor. The BBE Stinger lists for \$129, and fits into most multi-pedal carrying boxes with an overall dimension of 50x65x119mm.

MORE FROM BBE Sound Inc, 5500 Bolsa Ave, Suite 245, Huntington Beach, CA 92649. Tel: (800) 233-8346.

ZETA THREE ON LOCATION

For Zeta-Three owners, autolocation is no longer a future prospect. The new Zeta-Remote autolocator/controller is now shipping to enhance the Zeta-Three with its data entry keypad, dedicated display keys, and doubled alphanumeric display capabilities. The Zeta-Remote displays and locates up to 100 points in bars/beats and SMPTE/EBU timecode. With an independent memory capable of storing 100 edit setups, in addition to six user-programmable function keys, and a tempo map beeper, this light-weight, compact unit should prove quite useful in audio/video/MIDI synchronization. The Zeta-Remote connects to the Zeta-Three through a single, small-diameter cable, and has a full-footprint rubber-matted bottom side to prevent slipping and scratching. The unit lists for \$1795.

MORE FROM Adams-Smith, 34 Tower St, Hudson, MA 01749. Tel: (617) 562-3801.

WIRELESS MIDI AT LAST

If you use a remote MIDI controller in your live performance, and have a few extra bucks, you no longer have to be a "slave" in the true MIDI sense of the word. Now you can break those chains of MIDI with Gambatte's MIDIStar digital wireless system. Using "Spread Spectrum" technology, MIDIStar overcomes problems of dropout or hung notes, while transmitting all MIDI channels, codes and commands on one of 12 factory selected frequencies over 400 feet of operating range. The belt pack transmitter weighs 8.2 oz, and runs on a 9V alkaline or lithium battery. The battery lasts anywhere from six to eight hours - plenty of time for a sound check and performance. The MIDIStar system allows you to use as many as four MIDIStars at a time, as well as other wireless equipment.

MT NOVEMBER 1988

NEWS DESK

without cross-interference. All this for only \$2995. It's something to think about . . .

MORE FROM Gambatte! Inc, 1438 Tullie Road, NE Atlanta, GA 30329. Tel: (404) 325-4843.

TWO IN ONE

Not one to be left out, Quik-Lok now has a workstation. But I thought Quik-Lok made keyboard stands? They do. Their new QL624 Workstation essentially combines an eight-space rackmount unit with a single-keyboard stand. MIDI modules now truly are convenient. The stand is height

adjustable and able to hold anything from your 88-key master controller to your 49-note keyboard. The base is extended to accommodate the extra back-weight of the rackmounts. The setup also works well as a mixing console stand, with a place to put signal processors to boot. The base of the stand can be folded up for easy transport, and the rack-mount unit is easily detachable. The QL624 is available in black or silver, and retails for \$190.

MORE FROM Music Industries Corp, 99 Tulip Ave, Floral Park, NY 11101. Tel: (516) 352-4110.

RACKING IN ON THE K1

Kawai has released their popular K1 synth in a rackmount format. The K1r is a single rack-space module, with all of the functions of the K1m, including full editing and storage of patches, with internal memory as well as card format capabilities for

additional sounds. The only thing missing on the K1r is, for obvious reasons, the joystick. So now you can have Kawai's sampled digital waveform synthesizer in a more convenient place, at a more convenient price - namely, \$595.

MORE FROM Kawai America Corp, 2055 E. University Dr, Compton, CA 90224. Tel: (213) 631-1771.



MICROTONALITY

What is it? Essentially, it's that little shade of a pitch between C and C#. And between C# and D. Et cetera, et cetera. Microtonality is that whole world of pitches outside of the standard, dare we say "run-of-the-mill," equal temperament twelve-tone scale. Fascinating, Captain. However, I believe more data is required if I am to completely comprehend this. No problem! Hal Leonard Books now publishes *Tuning In: Microtonality in Electronic Music*, by a very knowledgeable synthesist, composer, arranger, physicist, educator, and early music specialist (sure we haven't left anything out here?) - namely, Scott

Wilkinson.

The book is an in-depth study into the history of microtonality, its development and use by such notables as Pythagoras (the Greek guy) and J.S. Bach, by the Indians, Chinese, Indonesians, Arabs, and a host of others. Wilkinson goes into extensive theory discourses on pitch, psychoacoustics, temperament, and anything else you need to know, as well as applications with electronic instruments, synthesizers, and computers. Also featured: a glossary, discography, bibliography, and manufacturers' listing. 120 pages. Price: \$14.95.

MORE FROM Hal Leonard Publishing Corporation, 8112 W. Bluemound Rd, Milwaukee, WI 53213. Tel: (414) 774-3630.

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,

I was delighted, disappointed, angered, and stimulated by "The Musical Word," by W. W. III (Oooo! powerful initials) in your August issue, which is to say that it was a well-written, sensitive, open-minded look at one genre of today's musical spectrum that is often ignored.

I am prompted to respond in part with praise, in part with an additional perspective, and in part with a critique.

Since its inaugural issue, Music Technology has maintained its integrity as the first class source of information in music tech, and also an open forum to readers with often dissenting opinions. Some letters to the Editor have erupted into controversy lasting several months, and though I do not wish to embroil your readers in a theological or philosophical debate, I do wish to clear up some points regarding "Christian" music, as well as to encourage correspondence.

Some of the misconceptions of the "Christian" music genre are fostered by the general anxiety of skeptics who don't understand the driving force or the world view of the performers, and thus discount it as "religious stuff." Others are perpetuated by the ignorance of some of those who perform it.

The former have valid suspicions regarding the intentions of the writers and performers. Some of this is due to the "guilty-by-association" syndrome connected to recent media-hyped scandals of the "Christian" scene.

Nevertheless, there is reason to be suspicious. Some Christians are "being called by God" as an excuse to write poor lyrics and give mamby-pamby, gushy-sentimental performances. Some of this garbage is due to honestly blundering around trying to make sense of a new found faith, and the rest of it is due to church-perpetuated ignorance, and the Christian vs. Secular dichotomy. This group tends to view art as a wholly secular activity and wrongly assumes that Christian artists should paint Crucifixion scenes, or print John 3:16 on photographs that would otherwise stand on their own merit, or preach via shallow lyrics that have little to do with where most people really are. Unfortunately, the mind and intellect are rarely engaged.

The use of terminology such as "Christian" tech, or "Christian" rock, or "Christian" this-or-that really bugs me. Such labels pit the music against mainstream listeners who might listen to good music by Christians, but would not listen to "Christian" music.

J.S. Bach was content to be a Christian and

write good music. He believed his creativity flowed from being created in the image of a creative God. No sermons.

What is termed "Christian" rock is for the most part trite and preachy propaganda and not art. The good art by Christians needs no justifications, and should be taken at face value - like any other art. We didn't refer to the later Beatles material as "transcendental" rock, or to Steely Dan's music as "Zen" rock, or to Cat Stevens' material as "Sikh" rock, yet those religious world views were communicated on secular airwaves, and influenced the thinking of the listeners.

So, when you referred to technology used by Christians as "Christian tech," I must ask, "What is Christian about a D-50, or a DX7, or a Kurzweil?" You understood rightly when you stated, "Perhaps these labels only serve to alienate listeners who would otherwise be able to enjoy all kinds of music." Yet, on many occasions in your article you referred to this art form as "Christian," thereby alienating many of your readers.

Christians who play music should accept some responsibility for this alienation. They have dichotomized reality and spirituality to the point where they have become schizophrenic. They have never come to peace with the duality of reality. This dishonesty or ignorance is reflected in their art.

In conclusion, my hat is off to you for not allowing the Separation of Church and State-of-the-Art to provide your readers interesting insights on this genre. Since no one publishes "Christian Music Technology," I'll have to settle for its secular counterpart. If some enterprising Christian decided to print such a publication, I might buy the inaugural issue to line my birdcage with, and continue my faithful reading of your excellent publication.

J. David de Coup-Crank
1290 Fay Pl.
Pasadena, CA 91104

Dear Music Technology,

Tim Goodyer's write-up of Scritti Politti in your August issue reflects a real problem existing between commercial interests and the improvising musician. Tim bravely sticks to his guns in this interview, while these two "political scribes" of the music world, Gartside and Gamson, keep insisting that improvisation is "very alien and old" and is "fascist in its own way."

I think the reader should keep in mind that Gartside's words (about improvisation being

"metaphysical reactionary garbage") were improvised - yes, improvised, as is most spoken language. It was not a prepared speech.

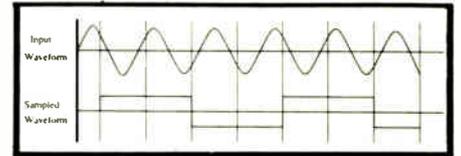
Improvising musicians express their music with greater or lesser degrees of perfection, much as individuals express themselves verbally with varying degrees of grace, comfort, daring, and originality.

These two "scribes" have found more lucrative territory inside the recording studios, and have therefore decided to wage a personal war against a universal form of human expression. What an ego-trip! They must actually believe their own promotion.

Emmett Chapman
Los Angeles, CA

Dear Music Technology,

Your article in the August issue entitled "Digital Audio 101" needs a bit of correction. In your diagram #3 you attempt to show the aliasing effects of sampling a sine wave of a frequency over half the sampling rate (the Nyquist rate). Unfortunately, the diagram is in error. A correct diagram is:



As you can see, the sampled waveform is at a much lower fundamental frequency than the input sine wave (count the number of "cycles" of the input waveform versus the sampled waveform).

The diagram published shows no aliasing whatsoever. What it shows is a properly sampled sine wave with quantizing error. (Count the number of sine waves versus the number of sample points and you can see there are actually 13 samples per 4 cycles - well below the Nyquist limit.)

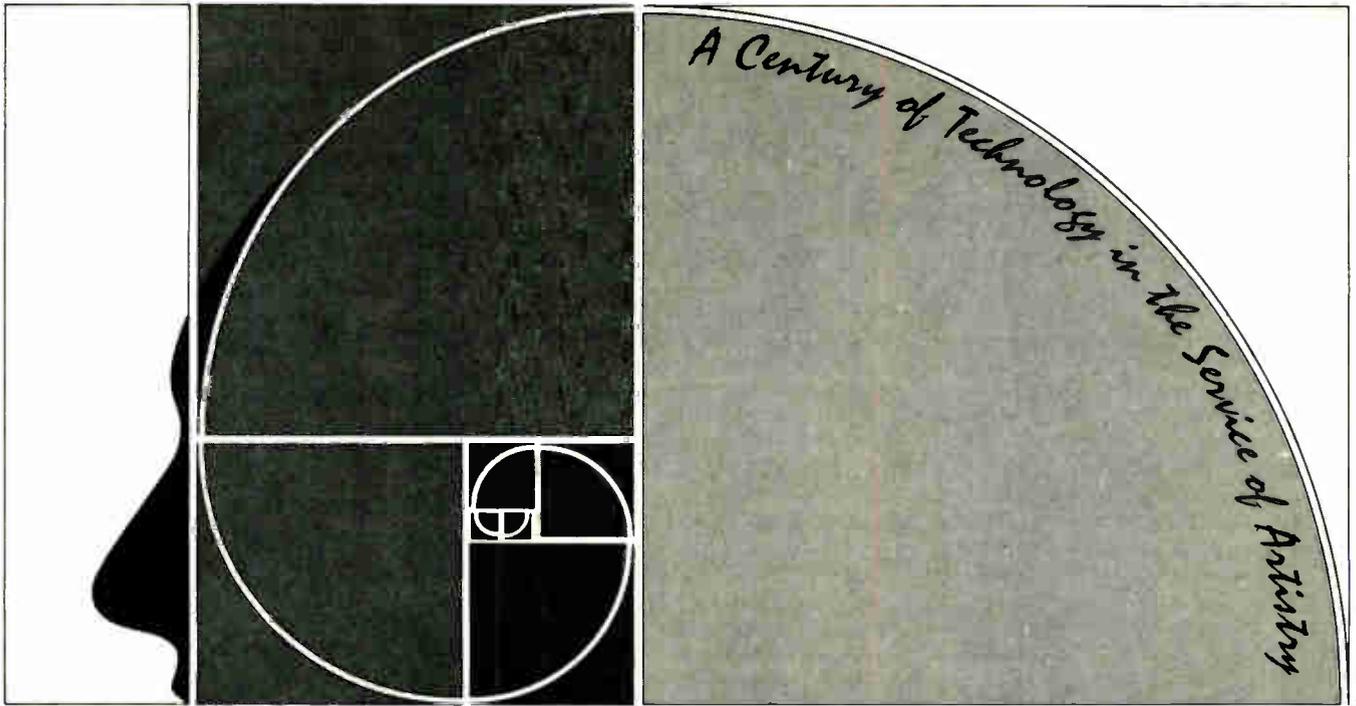
I hope this clears up any confusion the diagram may have caused.

Philip J. Bernosky
San Jose, CA

Dear Music Technology,

Many thanks to Ted Greenwald for his love it or leave it response to my letter in the July 1988 issue. Actually, his mention that machines can help or hinder the music-making process was exactly the point I was making.

Aside from this, his contention that "good music is not the result of accidents" may be a



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crowd pleaser, but will disappoint the many users of algorithmic composers or anyone who believes that interaction with chance holds potential artistic value. I would invite any reader of these pages not named Bach, Mozart or Greenwald, whose music has never benefitted by some unintended occurrence, to make themselves heard.

Also, to point out that microtonality has been available for years with voltage controlled oscillators again reinforces my observation that the hardware is evolving away from, rather than toward, supporting truly innovative music. When was the last time any of the industry's big hitters announced a new line of VCOs, or for that matter, anything without an imbedded normalization scheme that steers us directly toward mainstream sameness?

Sure, sure, we have pitch-bend wheels, mod wheels, and MIDI control of practically everything. It's theoretically possible for the new machines to make almost any noise we want them to make, when we want them to make it, but not without laborious programming and coercion. They have to be fooled into doing what the old Serges, Moogs, ARPs and other open-ended machines (and home-made gear) took for granted.

I guarantee that the music that is produced by any community of musicians will be absolutely influenced by the instruments they are provided with. My letter, after all, was a response to a question posed in this magazine: where has all the innovative music gone? And my response is still: it has gone the way of all the old music machines!

That we as composers should overcome these limitations (or "give up," as Mr. Greenwald says) is missing the point. The limitations are real, and their effect on the music is real.

Charles Williamson
Columbia, MO

Dear Music Technology,

I'm flattered but it's just not true. In September you published an article on HMSL, the Hierarchical Music Specification Language. It's true that I did write HMSL along with David Rosenbloom and Larry Polansky. I am not, however, the "creator of Forth" as the article states. The language Forth was actually the brain child of Charles Moore. He created Forth when he needed a language for controlling telescopes in an observatory. Forth turned out to be a very powerful language that is now used for writing almost everything from games, to word processors, to music programs. It is a very good language for interactive experimentation and has often been used for writing experimental music.

Carter Scholz, the author of the article, originally wrote that I was a "co-creator of JForth" which is correct. JForth is an implementation of Forth for the Amiga from Delta Research. The "J" apparently got dropped somewhere between his submission and the newsstand. The "J" stands for "JSR" or "Jump Subroutine." This refers to the fact that JForth compiles directly to 68000 machine code and is thus "JSR threaded" – an unusual feature that probably doesn't mean much to most folks, but makes some Forth fanatics drool. JForth was

written by Mike Haas, Brian Donovan and myself. It is simply one version of Forth. There must be several dozen versions of Forth, running on almost every computer from a Commodore 64 to a VAX.

Thank you, though, for publishing the article. It's nice to see products that are designed more for experimentation than for mass market discussed in your magazine.

On a different subject, I must respond to Ted Greenwald's letter in the same issue. He implied that the only support that musicians need for microtonality is the pitch-bend wheel. This may be fine for monophonic lead lines, but will not work if you want to play chords with just intoned intervals. The pitch-bend wheel can transpose a chord, but the intervals in the chord will still be equal tempered. It is also hard to get accurate intonation with the wheel without sliding into the pitch. If we carry his logic further, I suppose all we really need is a keyboard with one key and a very big pitch wheel that we can use to get all the different notes we need. I applaud the synthesizer manufacturers who have included support for alternative tunings. It is a real plus for those who want to explore beyond Bach's equal tempered kludge. The Yamaha FBO1 is particularly well suited to microtonal experiments because of its "fractional note" mode that allows you to specify notes with arbitrary pitch.

Phil Burk
Frog Peak Music
Oakland, CA

Dear Music Technology,

I would like to respond to the numerous letters and articles on copy protection with three comments:

1: Yawn!

2: As long as people are willing to pay for products that are copy protected, copy protected products will keep coming.

3: It's interesting to note that the developers of these products use tools (compilers, text editors, word processors) that are rarely copy protected.

Having disposed of all the copy protection arguments (!) I would like to address a couple of important problems that most users of electronic instruments must encounter.

A few weeks ago I noticed that my poor old (well, six months old anyway) MIDI percussion controller had lost its memory. I quickly opened the box and found a little battery soldered on the circuit board. Aha, one of those five-year lithium jobs. I immediately called my local music store to see if they had the correct battery. Of course they didn't, but they gave me the name and phone number of the service center that stocked such items. When I called the service center, they told me that they were not allowed to sell these batteries over the counter, but if I would be pleased to ship my box (at my own cost) to them, they would be delighted to install a new battery. I didn't wait to ask what the labor charge would be for this complex operation. Instead, foolishly, I called the manufacturer directly in hopes of getting a reasonable alternative. They didn't give a damn and just told me to call my local music store! In the end, I went to my local Radio Shack store and bought a battery holder for two AA

batteries and some suitable connectors. The whole thing fits inside the box.

Now, anyone who is reasonably competent with a soldering iron can easily perform this job, which takes about five minutes. For those people whose talents lie in other directions, they are stuck with what is a very unreasonable alternative. I suspect that if I had shipped it to the service center, I'd still be waiting for it. As a leading magazine in the electronic music industry, your people should be lobbying the manufacturers to solve this kind of problem in a reasonable (to us, not to them) way.

The second issue is the problem of manuals. This applies to instruments and to software. Most of the manuals that accompany these products are a disaster. The most pathetic manual I've seen is the one that accompanies the Yamaha DX7II, with Roland not far behind. Although instruments made here do not suffer from this problem (hats off to the folks at E-mu and Ensoniq), software developed here does. I appreciate that the developers of software here are running on a small budget, and in general I am extremely impressed by the quality of their products, but it wouldn't hurt them to explain how to use the software in more detail. Again, your voice is louder than us plebes, so shout a little, huh?

David Jameson
Chappaqua, NY

We agree wholeheartedly with your complaints about service and manuals. As far as service is concerned, there's not a whole lot that we can do except print letters from upset customers like yourself. With manuals, we generally make a point to comment on the documentation whenever we review a product or software package, hoping that manufacturers will take notice.

In that light, we forwarded your letter onto Roland and Yamaha. While Roland said they were going to follow up personally, Phil Moon of Yamaha's Digital Musical Instrument Division wrote a specific reply:

While Mr. Jameson may have been very disappointed in the manual he received with the DX7II, I can tell you one group of people who were much more disappointed: us, the Digital Musical Instrument Division of Yamaha.

With the DX7IIFD and the DX7IID the engineers included everything people wanted to add to the original DX7, but the manuals did not do them justice. Because of this, our product managers produced 25 supplemental booklets for the DX7II that are available through our authorized retailers. In addition to the DXII booklets, additional manuals and user guides have been produced for the QX3 sequencer and TXI6W sampler among others. So chances are, if you don't like a manual, we probably like it less and are trying to do something about it.

In the end, we are committed to giving our users the information necessary for them to get the most out of our products. ■

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*David Crigger in Home and Studio Recording

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Akai S1000 Sampler



Photography Adam Jones

The long-awaited 16-bit sampler from Akai is nearly upon us.

Preview by Simon Trask.

THE DIGITAL SAMPLER occupies a unique position. You can treat it as a musical instrument, or you can treat it as a tape recorder – nowadays you can even treat the “tape recorder” as a musical instrument. No wonder the demands placed on samplers are growing rapidly.

Akai's response is the S1000, a linear 16-bit stereo sampler with 24-bit internal processing, switchable 44.1kHz/22.05kHz sampling rate and 16-voice polyphony. Sample quality is impressively clean and sharp – we're entering real “defy you to tell the difference” territory here. Additionally, the S1000 is one of a growing number of samplers which uses fixed-rate sample playback.

Two megabytes of memory are fitted as standard, upgradable in 2Mb steps to a maximum 8Mb. The standard memory gives you just under 12 seconds of stereo sampling at 44.1kHz, or, at the other extreme, around 47 seconds of mono sampling at 22.05kHz. The S1000 can access up to 200 samples at a time in its onboard memory.

Sampling can be in stereo or mono, with a choice of XLR and 1/4" inputs on the front panel. A front-panel switch lets you set low, mid or high input gain, with further fine-tuning courtesy of the Record Level knob.

Once you've recorded one or more samples you can trim their start and end points, reverse them, loop them using cross-fade looping, and splice them together. Samples can also be spliced into other samples, and crossfades from one sample into another can be specified. Individual samples can be tuned in semitones and cents.

The S1000 provides two digital ADSR envelope generators for each of its 16 voices. One is routed to filter cutoff frequency and/or to pitch; the other to amplitude. Additionally, each voice has its own LFO for pitch

modulation, with speed, depth and delay values.

The basic organizational unit of the S1000 is the Keygroup, which can consist of up to four layered samples allocated to any area of the keyboard. You can place multiple Keygroups on the keyboard, overlap them and crossfade between them. Keygroup configurations can be stored in up to 100 Programs, and multiple Programs can automatically be called onto the keyboard by assigning them the same number. Each Program can be routed to the stereo audio outs and to any one of eight polyphonic individual outs (voice allocation is dynamic across all outputs).

The S1000 can receive on all 16 MIDI channels, with voices being allocated as required. Individual channels can be muted, and MIDI pitch-bend, mod, aftertouch and volume can be turned on or off for each channel. Not only can you reserve a number of voices for specific Programs, but each Program can be given a priority (low, medium, high or hold). Each Program can be assigned to a single MIDI channel (1-16) and given a MIDI patch number which will call the Program onto the keyboard when received. By assigning more than one Program to the same patch number you can layer Programs on each MIDI channel – an original feature, I believe.

System Exclusive data dumps can be initiated from the S1000's front panel, and are received automatically. Sample data can be sent either in MIDI Sample Dump Standard or S1000 formats – the latter including additional features specific to the S1000.

The S1000's onboard disk drive takes 3.5" double-density and high-density floppies, while you can hook up hard disks with the addition of Atari/Supra or SCSI interface cards which plug into the back of the sampler.

Akai is also producing a plug-in AES/EBU interface card. If you opt for the complete system (S1000 with 8Mb memory, AES/EBU card, and Atari/Supra or SCSI hard disk card), be warned – the extra memory won't come cheap.

S900 owners tempted to upgrade will be relieved to know that the S1000 can accept S900 samples off disk. Sample data and loop points are all that survive (and you may have to redo the loops, due to the different sample quantization of each instrument), but then the S1000 is a much more sophisticated instrument. Additionally, there are already over 100 sample disks produced specifically for the new sampler.

Perhaps the most significant planned update for the S1000, promised since the sampler was first announced, will be time-stretching – the ability to alter the length of a sample without altering its pitch. Apparently this is proving more difficult to implement than was first thought, so don't hold your breath. But when it does arrive it should be worth the wait – particularly bearing in mind the range of uses that sampling can be put to these days.

Initial impressions are that the S1000's combination of excellent sample quality, flexible and powerful organization and straightforward operation make it a strong contender for King of the Samplers. For those musicians who can afford it, the S1000 could represent an ideal upgrade path from the S900, particularly as those precious S900 sample libraries can be utilized on the new sampler. In fact, the S1000 could well become the new studio standard. ■

PRICES S1000, \$5999; EXM005 2Mb memory upgrade card, \$TBA; AES/EBU digital input card \$TBA; Atari and Supra hard disk interface card \$TBA; SCSI hard disk interface card \$TBA.

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a guide to POST PRODUCTION

If you've ever wondered what happens after a motion picture or a television program has finished filming, this article is for you. Take a behind the scenes look at how samplers and other pieces of hi-tech music gear are transforming the production process. *Text by Scott Gershin.*

IN CASE YOU hadn't noticed, a merging of the technologies of the music industry and the audio/visual industry has been occurring. Many musicians have crossed the borders into television and film as composers, sound effects (FX) designers, editors and mixers. MIDI is becoming more and more familiar to the world of television and film, while SMPTE timecode is now commonly used in music recording. Electronically-inclined persons on both sides are starting to create their own home studios and take on many audio/visual projects.

The use of samplers to create soundtracks for television and film has revolutionized the laborious task of *Post Audio Production*—also known as Post-Production, or simply Post. From the art of recording "Foley" acting (post-production re-enactment of common noises such as footsteps, bodyfalls, and water movement) to the creation of appropriate ambiances for a scene, samplers have become integral to post-production work. But to understand the impact samplers have had, you need to have a basic understanding of all that is involved in post-production.

Post-production is the last stop a television show or movie goes through before the folks at home get to see it. You can pretty much assume that most of what

Illustration Sylvia Hofflund

you hear on your prime-time favorite did not happen as you see it. Even though it may not seem so, the audio undergoes many stages of processing which entail a large number of people that are heard and not seen. Since the trend in working with audio is slowly changing over from film to tape, I will only be describing the processes of post-production as it pertains to the tape world. This is better known as electronic sound editing and mixing.

Transfer

THE FIRST AND last person to work on a show is the person in Transfer. His or her responsibility is to transfer or re-record the visual information onto a format that the rest of the facility can access and edit. A taped show will come to a post-production facility in a 1" videotape format with two channels of audio and one channel of timecode. Since many people will end up working on the show, visual copies will be made onto 3/4" video cassettes with the first audio track containing a composite of tracks one and two from the 1" master, and the second audio track containing SMPTE timecode. The timecode on track two will correspond to a visual numbered representation called a "window burn," used for referencing. It is crucial that the timecode on the 1" master and that of the 3/4" copies be exactly the same.

The next step is to stripe a reel of 2" 24-track tape (or what ever multitrack format is being used) with SMPTE on track twenty-four, or the last track available. The SMPTE stripe must also directly correspond to the timecode on the 1" master and the 3/4" video copy "work prints." Once the multitrack tape is striped, the 1" master, which usually just contains a rough edited version of the dialog and some sound effects that were recorded on the set, is transferred over to the multitrack. Ordinarily, this is put on the two tracks closest to the timecode, taking great care that the degradation of the sound is kept to a minimum, and once again, that the sync between the master and the copies are phase or bit accurate.

The show then enters the realm of the editors. Leading the team is the supervising editor who acts as a buffer between the client and the editors. His or her job is to choose the right editors to accomplish the needs and wants of the client. Every supervisor works differently. Some will spot out, or specifically assign, all the dialog, effects, Foley and ADR, while others delegate the responsibility to respective editors and let them have creative input. Regardless of the supervisor's managing style, in all cases he or she adds a central focus to a project that can contain many different people with many different opinions on how it should sound. During a spotting session with the client, the supervisor will take notes

pertaining to the different forms of editorial and then individually confer with each editor on what the general consensus of the client was, and where they wanted a specific effect or editorial alteration. (The "client" can be anywhere from one to a hundred persons, but it's usually around five - all of whom have their own ideas on how a show should sound, and often have no idea how the whole process works.)

Dialog & Ambience

ANOTHER RESPONSIBILITY OF the supervisor is to spot and run the ADR (Automated Dialog Replacement) session. In an Automated Dialog Replacement session, the actors go into a studio and re-say their lines of dialog while watching the screen and hearing the original dialog, trying to repeat the lines in sync. ADR is necessary when something in the original dialog was unacceptable, such as a distorted line, an airplane flying by during a Roman period piece, a frantic director talking to his actors while the camera was rolling, or a horse farting in the middle of a western love scene (no joke!).

The show is then given to the dialog editor whose job it is to smooth out the different takes of dialog, cut out the lines that will be replaced with ADR and fill them with ambience matching the scene. This is one of the most crucial jobs in the editing field. Since a show is not shot in order, and different camera angles are shot during different parts of the day, a change in ambience can easily occur, making the scene choppy. A common example is while filming one actor in the morning an unheard compressor or air conditioning motor is running; while filming a second actor later that afternoon, the motor is shut off. The end product after the picture editor has finished is that the ambience between each of the actors' close-ups changes abruptly. If the supervising editor and the client feel that the line is sufficient to understand, then the dialog editor will

"Samplers are starting to be used by effects editors for bodyfalls, punches, and other props that require excessive energy from the Foley walkers."

take a sample of the problem ambience that has no dialog in it and mix the quieter dialog with the motor hum, thus creating clean transitions from one line to another. At that point the mixer can try to notch (EQ) out the hum combined with noise gate techniques to clean up the dialog.

As mentioned above, samplers from the music industry have started creeping into the post production market, making the technique of sampling ambience a great belated love. The editor cuts and pastes a small amount of ambience known as "fill" (usually only a couple of seconds between lines) to lengthen the original sample before looping or reverse looping it. With fill looping, the dialog editor can fade in and

out of lines or fill over for ADR lines easily and quickly. Another technique requires the use of hard disk recorders where the editor can record the dialog into the digital realm. In this instance, editing becomes an advanced form of word processing.

On occasion the dialog that was laid in by the picture editor may have been transferred improperly, out of sync, or incorrect in some other way. In those cases the dialog editor has to go back to the dailies (the original recorded dialog from the set) and lay in the dialog from these recordings, rather than using the composite tracks from the 1" video master. Last but not least, the dialog editor will split the dialog between several tracks to help the mixer easily mix the tracks. Splitting the dialog is necessary when the voices of the actors need to sound as if they are coming from different places. An example would be a case where one actor is talking to another actor over a telephone. The voice heard over the phone will be placed on a separate track from the visible actor, allowing that track to be "futzted" ("futz" refers to placing an effect on the dialog such as heavy echo or the simulation of a nasal texture) without affecting the rest of the dialog. Also, the volume of the voice over the telephone is often much lower than the actor's on the screen, and if the camera starts cutting back and forth between both actors, then the editor will need to split the dialog that needs to be futzed onto a separate track, where a more appropriate volume level and a separate ambience can be created for it.

Bodyfalls and Coconuts

AS THE DIALOG editor works on the show, the supervising editor will have supplied the Foley walkers with a spotted cue sheet of the Foley needed for that show. On a Foley stage there is a recordist who makes sure the levels are correct on the multitrack and that the machines are

aligned and working. This position is similar to that of the second engineer in the record industry. S/he is assisted by a mixer who is concerned with the quality of the sound and the mic placement. Half the tracks are assigned for footsteps while the remaining tracks are used for props. Most shows use a team of two Foley walkers who will complete a one-hour show in a day or two. On larger projects the supervising editor or Foley editor will be present on the Foley stage to ensure the quality of the sound and watch for sync problems.

The actual Foley stage consists of several different surfaces such as a wood floor, cement floor, linoleum surface, packed ▶

► dirt, gravel, wood planks, leaves, etc, which are called pits. Also a large tub is used to simulate water movement, and a metal staircase to simulate metal surfaces. The Foley walkers emulate the movements of the characters on the screen using the different surfaces. Things that you hear are not always what they seem. You may see a knife swoosh on the screen, but the sound you hear is actually created by the Foley walker whipping a branch or twig in front of the microphone. Dropping a sack of potatoes may be used to simulate a bodyfall. Foley is definitely a creative art that has no rules; just a bag full of tricks.

Because of the time constraints of television and the physical nature of the art of Foley, samplers are starting to be used by effects editors for bodyfalls, punches, and other props that require excessive energy from the walkers (like slamming yourself into a table, falling onto a cement surface, and then rolling around in dirt each week). Using sampled footsteps has not yet been accepted because of the complexity in which natural footsteps are created (shuffle, light step, hard step). To duplicate the nuances of each step and make them sound non-repetitive takes a lot of time and internal RAM. Not that it can't be done, but more often than not it proves to be cheaper and faster to use walkers at a Foley stage.

Another concern in post-production is background conversations. Every time you see people talking in the background and hear bits of their conversations, you are actually hearing a walla group. Walla groups got their name from the old days when actors would actually murmur "walla, walla, walla" to recreate undistinguishable group dialog. Each leader of a walla group has a stable of actors who can mimic different dialects, accents, and languages. As they watch the screen the actors will improvise the background conversations, whether it's the pick up scene in a bar or the evacuation of Vietnamese adults and children running and screaming to get away in today's popular war scenarios.

Bang, Whoosh, Boom!

WHILE THE FOLEY walkers are creating real-time human effects, the effects (FX) editor is creating a mirage of audio illusions. When the FX editor gets the show, the only thing on the production track is dialog and an occasional sound from the dailies that fits with the picture. The background traffic, birds, crickets, car-bys, children and persons talking in the background, are all created by the FX editor. These are called background effects or BG's. BG's set the ambience for a scene. For example, in a western you may want offstage (off camera) horse whinnies and carriage movement, while a scene in New York would require traffic movement both close up and distant, horns honking, and

the right amount of slap-back emulating the reflection off the New York skyscrapers. The FX editor creates the appropriate ambience for a scene, which can make or break it. BG's have to be selected tastefully, so as not to conflict with the other elements in the show, especially music.

Hard FX are those sounds that are not ambience, such as cars, guns, punches, and bodyfalls. All hard effects need to sync up to the picture exactly to create the illusion that the object on the screen just produced that sound. This gets tricky when cutting in sounds of animals, both natural and unnatural. Theoretically, if a sound editor has access to every imaginable sound, then FX editing would be easy. Unfortunately, the truth is that every show winds up having several effects that you don't have, or the effect you do have doesn't work well with the picture. In those cases the effects need to be designed and manipulated to work with the visual effect. For example, to give a train more zest when it passes, the editor might add a lion roar and/or an explosion to give the sound some kick.

Samplers are starting to make a big impact in this style of editing. Samplers that contain between one and sixty-four megabytes of memory can give the editor quick

What's in an Editing Room?

For the MIDI junky, an electronic editing room can consist of (more or less) a multitrack (24, 16 or 8 tracks), a way of synchronizing the multitrack with a video deck (3/4", stereo VHS, or stereo Beta), sometimes one or more two-track or four-track machines, a digital storage device (sampler or hard disk recorder), a mixer that can monitor all of the tracks on the multitrack machine, a speaker/amplifier setup that can both let you hear the nuances and emulate the broadcasted medium, and last but not least, a television monitor. Other pieces of equipment, such as outboard processing, vary widely according to the users' needs and budget. ■

access to load up several FX and preview them. This beats the old method of stacking up 1/4" reels of tape FX and shuttling through each one to see if the effect works. Also, larger samplers contain a way to catalog all the effects in the house's library. Until now the TV industry has been using samplers from the music industry. However, recently a number of companies have created digital editors dedicated to post-production such as Lexicon's Opus, AMS's Audiofile, DAR's SoundStation, and Hybrid Arts' ADAP, to name a few. Other popular systems that have crossed the line between the industries are the Synclavier, the Fairlight,

WaveFrame's AudioFrame (currently being covered in this magazine), and the Emulator III (see review - including comments from electronic Foley artist Bill Koepnick - in the August '88 issue).

If it seems to you that the FX editor and the Foley artists create much the same sounds, then you're right. Especially in television where deadlines are tight and lack of communication can easily occur, it is better to over-do things. That way you can have the mixer mute the undesired sound rather than tie up a dubbing stage that costs the client over three hundred dollars an hour while the editor cuts in an effect that he thought Foley covered and Foley thought FX covered. I think you catch my drift.

And Last . . .

AFTER ALL THE elements have been assembled, the edited audio, which usually takes up several multitracks, will go to the dubbing stage. At that stage you will find three eager mixers and a recordist who will spend two or three compacted twelve-hour days with one or more producers (usually a committee of several chiefs and several "yes" men), associate producers, directors, head picture editors, writers, actors and their better halves, pets and neighbors, preparing the mix. The first mixer (the "gaffing" or "head mixer") will mix dialog, the second will mix FX (both hard and BG's), and the third will mix music and Foley. The mixing consoles are usually large enough to handle three or four multitracks (approximately 64 faders).

Once the show has been edited and mixed, the person in transfer will then record the final audio product back to the 1" master, and send it to the networks for airing. Unfortunately, that may not be the final step. Transfer errors do occur. Sometimes the mix that went into overtime and weekend work, can end up being distorted on the master, or double-Dolby encoded. Needless to say, a transfer person's job is the keystone of post-production; it has no room for error.

As for films, the same process takes place, except a film work-print takes the place of the 1" video master, and footage is converted into timecode. This gives the people in post-production both a window burn containing timecode, and a feet-and-frames display.

So there it is in a nutshell, the various components of a post production department. Since electronic editing is still in its infancy stage, every facility will have their own setups and personal configurations. Smaller facilities will often have one person wearing different hats, covering the duties ordinarily delegated to several people in the large facilities. But whatever the situation, it's a fascinating process that is being transformed by the influence of music technology. ■

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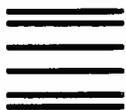
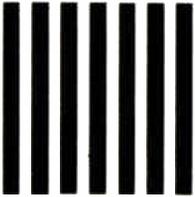


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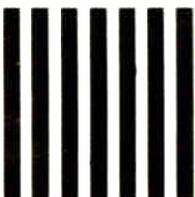


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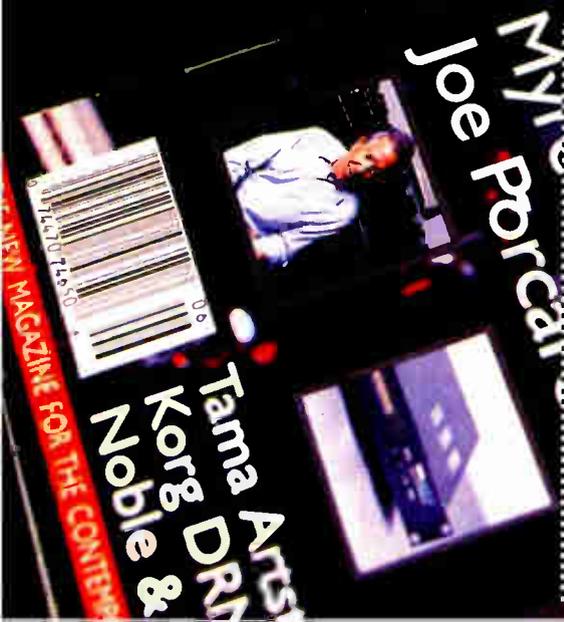
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World Radio History



Photography Rosemarie Ronnseville

MIDI controllable eight-track automation in a single box for under a thousand bucks? They said it couldn't be done . . . Review
by Lorenz Rychner.

THE MUSIC WORLD should have a Hall of Fame for gadgets that can be summed up with the catchphrase "the smaller they get, the smarter they are." My nominations for loosely historical firsts in their categories (no letters, please, unless the editor consents . . . *No, I don't - Ed.*): Walter Wood's amps, Tom Scholz's Rockman and cohorts, Tascam's Portastudio and successors, the Apple Macintosh computer, Casio CZ101 synthesizer, several Alesis products, Yamaha's TX802, and now the Mix Mate from JL Cooper.

The proverbial "recording studio in your bedroom" can boast self-contained automated and synchronized mixdown of up to eight tracks if you find a niche for this little box. It speaks MIDI, MTC, SMPTE, FSK, and it has its own memory (4000 events) for fader movements and mutes.

Being a computer in its own right, it doesn't need the help of a personal computer, but when teamed up with a Mac or an Atari ST it becomes even more useful (40,000-event memory and other advantages).

A Physical Relationship

THE MIX MATE sits flat on four rubber feet, 10" wide, 7" deep, and just over 2" high at the rear of its slightly slanted box. Made of sturdy metal, it is painted in JL Cooper's customary no-nonsense gray, and eight firm but smooth 3/8" faders take up the near half of its panel. A dust cover seems a must, since the 1/8" wide fader cutouts have no sealing (although since these faders control just abstract voltages, instead of passing actual signal, dust isn't as much of an audible problem). Calibration

markings show 0, -10, -20, -30, -40, -50, and $-\infty$. The faders are identified with easily readable numbers from 1-8, and beyond the numbers are two rows of red LEDs enclosing a row of eight square pushbuttons.

The top row of the neatly labeled rear panel shows MIDI In and Out, the power on/off pushbutton, two RCA jacks marked "To Tape" and "From Tape," and a five-pin socket for connection to the AC adaptor that comes with the unit. The bottom row has a second pair of MIDI In and Outs labeled "Plus Port" for connection to a computer when the Mix Mate is in Plus mode (more on that later), and 16 RCA sockets, arranged in eight pairs of In and Out, one pair for each fader. The VCAs are of the dbx 2155A type. Please note that the Mix Mate does not, in itself, mix or amplify signals. It either leaves the signals as they are (at fader settings of 0dB, called Unity or Parity Gain), or it reduces (attenuates) them by as much as -81dB in 64 steps across the throw of the faders (126 steps when in Plus mode). The eight In/Out

pairs keep the eight signals separate at all times, channel crosstalk is listed as -90dB.

Use and Abuse

NECESSITY BEING THE mother of invention, different users will find different applications for the Mix Mate. Let's look at the most obvious situation - the mixdown of a multitrack recording to stereo two-track. Instead of feeding the individual track line outs from the multitrack tape recorder to a mixing console, each track is first connected to one of the Mix Mate's eight RCA inputs, and each of the Mix Mate's RCA outputs is fed to a channel on the mixing console. Where available, this connection may be done from and to the console's channel insert connectors, or by way of the user's patchbay. Instead of using the faders and mute buttons on the mixing console during playback, the user leaves the console channels open and mixes/mutes the audio tracks with the controls on the Mix Mate. The built-in computer of the Mix Mate records the user's moves, referenced against a synchronization signal that it receives from one of the multitracks, and it re-enacts these moves on subsequent passes. Changes can be added as they are needed. When all the fades and mutes are just right, the user can rely on a perfect hands-off mix, time and time again, as long as the multitrack tape holds up.

Mastering to cassette becomes

attractive for budget operators who need only a limited amount of copies, as is often the case when hustling for a specific project where the guy (or gal) in the suit says the famous words, "Well - let me hear some of your ideas." Just run as many first generation mixes as you need for the suit, his or her partner, and their mistress. While you wait for their decision, save the Mix Mate's memory to a computer or other MIDI data recorder via MIDI System Exclusive messages and run more identical masters at a later date.

Synchronization is a strong point of the Mix Mate. It generates and reads both SMPTE and JL Cooper's proprietary smart FSK. Both these kinds of sync eliminate the need for rewinding to the top of your tracks, since they provide constant lock-up. Mix Mate handles all four SMPTE frame rates. It defaults to 30, but the other rates are selectable at the push of a button. When generating SMPTE in Normal mode (see below), Mix Mate starts all four frame rates at 00:59:45:00. When generating SMPTE in conjunction with an Atari ST or a Macintosh computer with the optional Plus mode and software, the Mix Mate can start at any time. While in SMPTE lockup, Mix Mate can generate MTC (MIDI Time Code). If you have one of the few late-model sequencers that recognize MTC, you'll be in heaven. But Mix Mate gets smarter: while receiving MIDI clocks, it can

generate FSK sync. While reading back the FSK, it generates MIDI clocks and Song Position Pointer, locking your sequencer and drum machine to tape. It also works when receiving good ol' MIDI Clock, with or without Song Position Pointer, maybe from a synchronizer that's already part of your setup. The manual is helpful in suggesting the right kind of sync for different setups, and the correct procedure for recording sync (called "striping the tape" in tech-talk). With a little experimentation most any sync problem should be easily overcome.

Modalities

MIX MATE OFFERS three modes of operation, four Fader modes, and a Mute mode. The operating modes also affect the way the Mix Mate deals with MIDI. They are the Normal, Plus, and Lobo modes (Lobo 1, Lobo 2, and a new FI mode soon to be called Lobo 3). Each of these modes offers further choices. This gets a little complicated, because the Mix Mate has no LCD or other readout - switching is done by pressing and holding buttons while tapping other buttons. Various combinations of LED lights indicate the status. Here's an attempt at summarizing what Mix Mate can and cannot do in the various modes.

In Normal mode, Mix Mate is a stand-alone computer. Here's how the Fader and ►

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▶ Mute modes work while Mix Mate is in this mode.

– **Normal/Manual:** This acts like a “dumb” rehearsal mode. Faders and mute switches work but are not memorized, and incoming sync has no effect on Mix Mate’s memory, mute switches, or on its VCAs. But incoming sync is translated and sent from the MIDI Out port. When the incoming sync is FSK, Mix Mate generates MIDI Start, Stop, Continue, and Song Pointer. When sync is SMPTE, Mix Mate can be set to generate MTC (MIDI Time Code). Mix Mate can also be set to Echo any MIDI data from its MIDI In to its MIDI Out ports.

– **Normal/Write:** This is the Record and Re-record (Edit) mode. Mix Mate records whatever the user does to the currently enabled faders and mute switches while the unit is synchronized to an outside sync master. The enabled faders and mute switches work directly on the built-in VCAs, affecting the signals passing through the RCA In-Out pairs, and overwriting (erasing and replacing) previously recorded actions for the enabled faders and mute switches. Disabled faders and mute switches are in Read (playback only) mode. The enabled faders and mute switches generate no MIDI data, and incoming MIDI data has no effect on the VCAs. But Mix Mate generates MIDI sync data and MIDI Echo as listed above under Manual mode.



– **Normal/Read All:** This is the Playback mode where Mix Mate re-enacts the previously recorded fader and mute moves while locked to incoming sync. New fader and mute moves are not recorded, as the memory is protected in this mode.

– **Normal/Update:** This is a special Edit

mode where you change the overall level of your fades for a track or for a section of a track, by adding or subtracting an offset to or from the previously stored moves, while maintaining the relative level changes.

– **Normal/Mute:** When the Mute button

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is pressed and its LED is lit, the enabled channels can be muted with their individual buttons. Muted channels have to be unmuted before leaving Mute mode, or they'll stay muted in the other modes.

Computer Control

THE PLUS MODE, an optional add-on feature, lets an Atari ST or a Macintosh computer take over the operation and memory of the Mix Mate. The two MIDI ports marked Plus and the interface card may be ordered for installation by dealers and tech shops. A non-protected program disk comes with this option. You still do the mixing on Mix Mate's faders and buttons, and the four Fader modes and Mute mode operate as described under Normal mode. The computer displays a screen that replicates the Mix Mate panel, and it shows moving faders as you change fader positions on the Mix Mate's panel.

The computer now provides you with other niceties. You can type a name under each fader, and you can label the screen with your song title, project name, etc. It also helps greatly with a problem that is due to the fact that Mix Mate doesn't have motorized faders (hey - whaddaya expect . . .); the real position of faders rarely corresponds to the memorized position. The computer screen shows both the real fader and moving phantom faders. This becomes even more important when you need to make adjustments where you want to avoid sudden jumps in level from the last recorded level to the current position of the fader. In Update mode the phantom faders give you just that kind of reference. You can also choose your screen colors, have the computer save to disk automatically whenever Mix Mate stops hearing incoming sync (you can also save anytime you want), and select SMPTE format and start time for recording SMPTE on tape. The computer can display bars and beats (after you input the time signature) or SMPTE hours:minutes:seconds:frames while locked to sync. It also displays the remaining memory in percentages.

The other modes are called Lobo 1-3. Ponder the impenetrable trade secrets: is this a joke on lobotomy because it's a brainless mode, or should it be Loco as in Local Off (not a strong sales point in Spanish)? (The former - referring to cutting off its own internal brain to be controlled by outside sources. - Tech Ed.) Anyone familiar with Local Off in MIDI should have no trouble but lots of fun with these modes. While Mix Mate is in Lobo, the faders are disconnected from the internal VCAs and they respond only to incoming MIDI data. You can still hear the effect of your moves instantly, but your sequencer has to receive and echo back the data.

In Lobo 1 each fader transmits and receives a specified MIDI controller number on Mix Mate's current MIDI Channel, with the travel of the fader covering the available range for each controller. In Lobo 2 each fader transmits and receives a specified MIDI Note number on Mix Mate's current MIDI channel, with the fader position representing velocity. In the new F1 mode (soon to be labeled Lobo 3), the faders send and receive MIDI controller #7 volume, on separate MIDI channels that must be adjacent (eg. 1 thru 8, or 7 thru 14, or 13-16 and wrapping around to 1-4, etc.). The signals from multitimbral instruments with separate outputs (Yamaha TX802, samplers, etc) and racks like the TX816 can be controlled in this way. Sure you could do this in the regular way, by addressing their little brains with controller #7. But anyone who has cursed the noisy output of any older or low-cost MIDI voice module will appreciate the difference it makes if the controller data arrives at the VCA instead of the sound generator - during soft passages the noise from the sound generators is also reduced because you're dealing with a channel fade.

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Final Thoughts

BY NOW YOU must be wondering about drawbacks in using Mix Mate. There can be a major one, but it's not Mix Mate's fault. Consider the signal flow during mixing: tape tracks to Mix Mate In, through Mix Mate's VCAs, Mix Mate Out to your mixing console's channel inputs, through the EQ and Sends and Returns to the Stereo L&R master outputs, and into your two-track stereo recorder. Since all signal attenuation is done in the Mix Mate, your console's channel faders need to remain up and left alone for most of the time. This shows up any deficiencies in your console. If it's noisy during quiet passages, you'll be in trouble. During my experiments the differences between my old Yamaha RM804 (hiss) and the much quieter Hill Multimix and Toa D4 were considerable.

The manual is excellent. Users of the plus mode (computer hook-up) can go straight to their own chapter where all the necessary text is repeated, in context, from the earlier Normal mode chapter. If you hate jumping around a manual as much as I do, you'll appreciate this. The small booklet is ringbound and lies flat or even folded over. The print is small but clear, and the sections are neatly structured, with sub-headings exposed in the left margin.

In conclusion, I'm happy to report that Mix Mate does its job as promised, and the combination of automation, computer interfacing, and the synchronization capabilities make it an excellent value. ■

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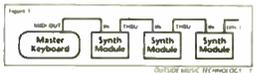
Text by Glen Darcey.

The Thru Box
I believe the user when the well equipped synthesizer had a Program 5 or an ORF and a lead synth such as a Pro Clear or some type of mixing and a the guitar effect pedals. I you want really costly. Nevertheless, it's a must for the home studio to have a computer for memory and scoring and patch labors and tasks, a turn price can have three or four step configurations, one or two analog outputs, a drum sequencer, and a 16 x 16 MIDI effects unit as well as the typical recording equipment. Assuming you've surmounted the problem of attaching all of these in knowledge or wisdom, you have to worry about connecting them together. After all, you want to be able to access all of these top units out having to disconnect and reconnect cables for your next gig the next time 1988



some together, I will be able to put some more in motion on how to clear up the MIDI Control System from here and help to make Thru boxes, mergers, and patching boxes a work for you instead of a paper toy.

joining of MIDI cables from the master controller MIDI Out to the MIDI In of the first slave from the MIDI In of the last slave to the MIDI In of the second slave and (figure 1 below) dual turn (covering for slaves that don't have their own MIDI Thru jack, a Thru box is usually used to send signal step a patch that covers both triggering and MIDI data entry. The diagram below has an entry line the signal has to pass through the drive of an opto-isolator and quite normally together. (Status 'chaining' in the



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Inside Issue #1

WIRING YOUR MIDI STUDIO

A look at how to better organize your MIDI equipment with a survey of available MIDI Thru Boxes and Patchbays.

THE OTHER SIDE

Technical Editor Chris Meyer inaugurates his new opinion column with a commentary on the high end vs the low end.

READERS' TAPES

"I have spent half my life trying to get away from journalism, but I am still mired in it – a low trade and a habit worse than heroin, a seedy world full of misfits and drunkards." Wisdom by Hunter S. Thompson; Reviews by Yung Dragen.

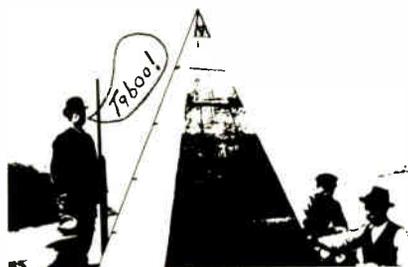
Thompson; Reviews by Yung Dragen.

LIFE IN THESE pages will be a little different this month; instead of my usual Taoistic learnings, I've been getting back into Hunter S. Thompson (inventor of Gonzo Journalism). Thompson's *Gonzo Papers Vol. 2 (Generation of Swine)* has just been released in hardback, and my outlook on life has taken on a more cynically humorous bent again.

Actually, there are a lot of parallels between *Gonzo Journalism* and the teachings inside Natalie Goldberg's *Writing Down the Bones*. The latter tome is essentially a series of Zen exercises in turning off the editor within during the actual act of creation, and letting "primary thoughts" flow uncensored onto paper. Primary thoughts tend to be much stronger (and scarier), and you can always edit later.

The same can be applied to music.

One person who seems to never turn on the editor within is **Arnold Mathes**. The tape he submitted, *Taboo*, is just one of the 32 (!) that he has either created with his own hands or in conjunction with others. Arnold seems to be one of those great, wild synthesizer experimenters I used to associate



"TABU (total abandonment of better understanding)"

with in the mid-'70s. In Arnold's case, he just seems to have kept collecting equipment (it's a scary list – including such exotica as a Moog Satellite, VCS3, Acetone organ, Texas Instruments Speak & Spell, Bosch electric drill, UFO spinning top, and a Yamaha SPX90) and kept releasing tapes. This sucker is 90 minutes of uneven, amusing Dadaist electronic ditties with names such as 'Bad Boys from Outer Space,' 'Dateline for Domin-



Sublime Wedge

ance,' 'Looks Like a Casio/Works Like a Pit Bull,' and 'Ectoplasm and You.' Unfortunately, the longest piece is the most annoying: 'Mutiny on the Putney' (the nickname for the VCS3), which contains almost 14 minutes of tortured violin tones. Overall, it's ambient music for experimental synth freaks. Like Prince, Arnold seems to lack quality control or the ability to throw anything away, so I'll probably end up editing a version with my favorites.

Equally crazed but with a more accessible sense of humor is **Frank Pahl** and his various incarnations: the jazz-fusion group **Sublime Wedge** and various works he's engineered and played on out of *Private Studio*. I haven't quite got Frank figured out – two of my chakras keep shouting "Grand Wazoo-era Mothers of Invention," but his solo tape *Only a Mother Could Love* isn't quite like that. Basically, Frank has a lot of horns – most of which he likes to jam into a baby doll's mouth for cover photos, and write songs for ('Ode to a Clarinet,' 'Ode to an Eb Horn,' 'Ode to a Damaged Trumpet'). Others are of a quirky rockish bent, including 'Bricks are Naked, Dammit!,' 'Bookworms Don't Get Laid,' and a nightmare about being on Jeopardy ('Warped 13'). Frank can really play horns – when he wants to. Overall, *Mother* is required listening for anybody who likes horns, jazz, quirky rock, and has any sort of a sense of humor.

Frank's band **Sublime** is easier to figure out – these guys were all into the Sex Pistols when they were 13 or 14, and as they got older, grew an appreciation for the speedier forms of jazz fusion (Stanley Clarke, The Fents, and Miles Davis' 'Star People' come to mind). The only aberration in this reality is the ultra-high-speed country number 'I Prayed in Toledo.' The sense of humor remains.

The *Private Studio* compilation (*Tape Number 3*) finds Frank and friends up to all sorts of bad craziness. Favorites included 'Westinghausen Laughed Yesterday' by **Only a Mother** (perfect early-70s German psychedelic rock, with a burn-out coda – 'The Romantic Side of Brutus Lee' is also good), 'Rotten Chicken' by **The Blurbs** (funny, quick story-telling rock), a meditative sitar and multiple-guitar solo by **Howard Glazer**, the open-space jazz improv by **Maelstrom**, and 'Black Dream' by **Spanking Bozo** (described as "moody ethereal funk" – try mixing fun/progressive rock with Parliament/Funkadelic). If there was any karma in this world, *Private Studio* would become as big as *Ralph Records*.

George Dobbs claims as his influences Steely Dan, older Genesis, the Beatles, Pink Floyd, and Billy Joel. My ears tell me White Album-era Beatles, and the entire Canterbury movement of British rock (in particular, Caravan). The nine songs on his demo tape are all loosely played by George (contributing mostly vocals, piano, and thin analog synth) and friends Ron Salvo, Walter Schick, Joe Giotta, Neil Kammerman, Mike Calagham, and Tim Norquist. All was recorded on a Porta One; there are regular problems with signal overload and everything being too



Frank Pahl's fun and games with baby dolls.

equal in the mix (push the piano and drums back; bring up the vocals and bass). George's voice in particular (on purpose or not) accurately emulates the "British choir boy" sound of the era, and the lyrics are interesting - he just needs to tighten up the songs, performances, and recording technique a bit.

A different trip into the past is provided by **John Angaiak** and his second tape, *Family*. This sounds like folk music from the '60s, with a twist - multiple DX modules (a DX7 and TX816 - with what sounds to be mostly stock patches) and a drum machine alongside the guitars. The second twist is the singing - a mixture of English and Yupik Eskimo. The lyrics are of a very personal nature, talking about watching his kid (Samantha) grow and relating an Eskimo's social and familial concerns. Production and engineering (the tape was recorded "in the spare bedroom of a trailer in Bethel, Alaska") is fine, and the keyboard contributions of Scott Vangen are inoffensive. John's voice is slightly husky and sounds, well, like an Eskimo singing folk songs. This is for those who like folk (with a different bent), or who are perhaps native Alaskans themselves.

Back in February's issue, I denounced a tape by **The Dan Schaaf Ensemble** as being more concerned with academic randomness than actual music. I, of course, expected a letter bomb in return. Instead, Dan Schaaf himself sent a letter stating: "Thank you for your review. Comments and observations such as yours help me and other 'indies' know what we've done as opposed to what we think we are doing. Enclosed is my latest release, *Brave Young Men and Women*. Preliminary reaction to the tape suggests that it is more readily accessible to those who may not be interested in certain technical matters." Well, my *sustained* reaction is that it is indeed more "accessible," and is in fact a rather enjoyable tape of avant-garde(ish) electronic chamber music. The random hi-speed flurries have been moderated quite a bit, and the tones (leaning towards the reedish-analog) are a bit more colorful, though still taking a back seat to the

compositions themselves. Interesting neo-classical academics.

Also several months ago in these pages, I forwarded a letter from one **Andrew Schoen** stating that he was interested in putting together a promotional vehicle for independent tape folkies. Well, I have now seen the first *Home Recording CO-OP* catalog, and it is good - a few dozen listings of cassettes talking about style, showing cover art, and ranking the recording quality. The only criticism I can level is that the

descriptions are a bit more "praising" than I might manage, but overall, it looks like A Good Thing. Andrew also noted in his letter that came along with the catalog that I seem to be in a "I've heard it before" phase; yes, I was for awhile - but this month's batch provided different religious tacts for a change (and no New Age).

Well, it's August, and I've finally made it all the way through the tapes I've received by February of this year. The backlog's down to 50. I continue to insist upon reviewing every tape someone decides to send me; I'm still trying to figure out a way to catch up. Suggestions? ■

Contact Addresses:

Arnold Mathes, 2720 Homecrest Ave., Brooklyn, NY 11235. All 32 of Arnold's tapes cost \$5 each.

Frank Pahl, c/o Private Studios, PO Box 531, Wyandotte, MI 48192. Cassettes cost \$3-5; Only a Mother's album costs \$6.50.

George Dobbs, 64 Madison Ave., Demarest, NJ 07672.

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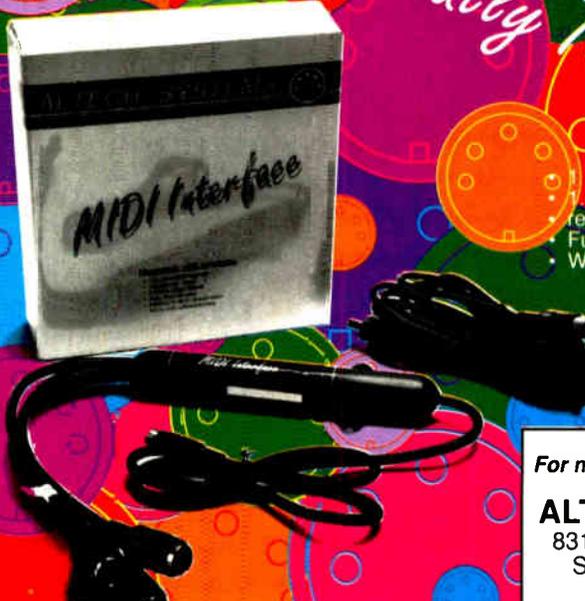
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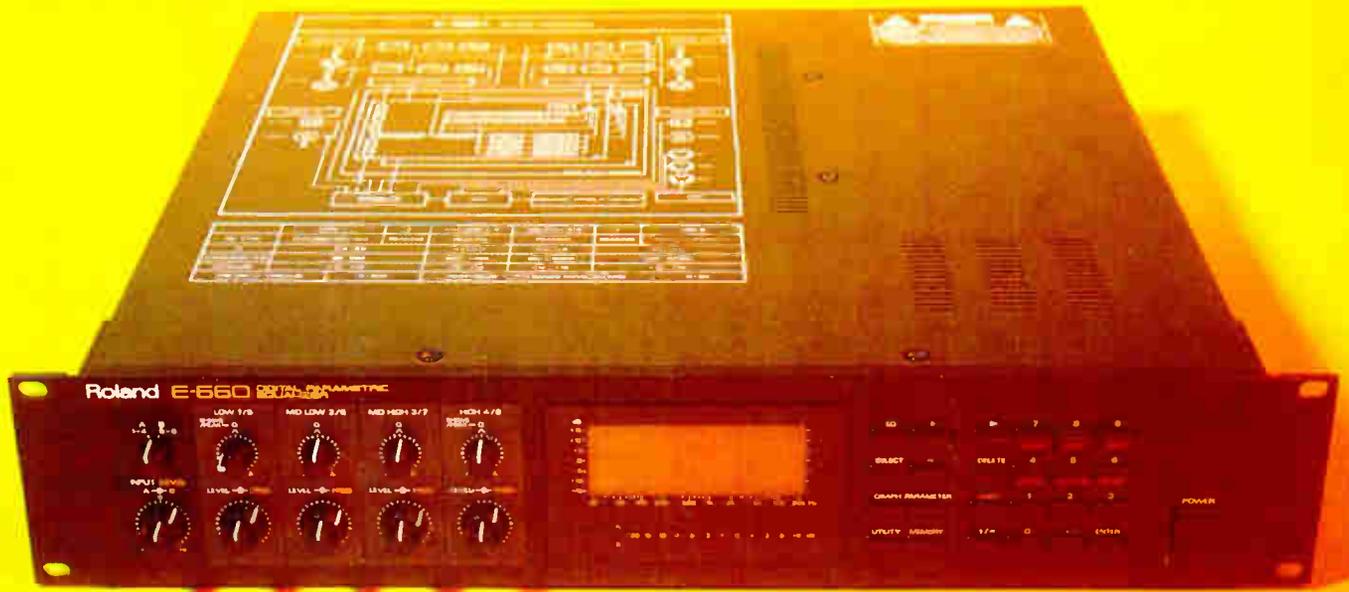
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Roland E660

Digital Parametric Equalizer

Photography Martin Gibson

As both professional and domestic audio standards rise, the quality of outboard equipment must keep pace. Enter Roland's state of the art parametric equalizer. Review by Vic Lemard.

TO MY MIND, the equalization on mixing boards has always been of a dubious nature. Standards have certainly improved since the days of simple "shelf" controls for treble and bass, but when it gets to the point where even SSL has to redesign their EQ circuits, then we can be sure that not everything is quite right – yet.

Most boards now have semi-parametric and full parametric (variable bandwidth) equalization for mid or perhaps high and low mid frequency bands. However, many add more noise in the bargain. Alternatively, as part of a MIDI-controlled mixdown, MIDI patch changes can be used to switch between different equalization settings to control particular frequency ranges. But this system suffers from glitching as memory changes take place. And what's the point of being able to master recordings in the digital domain if sound quality is limited by analog equalization?

Given all these problems – and the fact that if there's a gap in the market someone will fill it – it was only a matter of time

before the necessary black box appeared: in this case, the Roland E660 Digital Parametric Equalizer.

Description and Specification

THE E660 IS a four-band serial/parallel (parallel meaning stereo) or eight-band serial parametric equalizer housed in a standard 2U-high rack-mountable black case. The front panel is split into three parts – parameter rotary controls along with input level and channel-band selector on the left, a 96×32 pixel backlit LCD and level/channel indicators in the center, and two keypads on the right. One, which I'll call keypad 1, has eight buttons, and the second (keypad 2) has 16. Many of these have dual operations assigned to them. The rear panel has stereo audio input and output sockets (balanced XLRs and unbalanced standard jacks) set to the professional level of +4dBm, three MIDI sockets, and digital in/out by means of either two phono sockets or by Roland's AES/EBU optical interface. An LCD contrast control (which should be on the front for ease of use) and a removable

power cord complete the guided tour of the rear panel.

The spec is impressive: a signal-to-noise ratio of better than –80dB, a frequency response of 20Hz-20kHz within 3dB and a dynamic range of greater than 94dB (which converts to at least 15½ equivalent bits of resolution). The A/D converter is of the 16-bit linear variety, while Roland claims D/A conversion of 18 bits by use of companding and a 28-bit parallel arithmetic digital processor. The result is a machine that's extremely quiet, accurate and certainly up to CD quality.

Operation

AS THERE IS no overall output control – a feature that I would personally have liked to see – the input has to be set up quite carefully to allow for any overall level increase. Pressing the Utility button on keypad 1 brings up the Input Pad page, allowing individual setting of digital and analog signals (with the aim being that the red +8dB indicator doesn't light up). Holding the signal level down to +1 or +3 allows more headroom for equalizing. Parameters are changed by positioning the cursor over them from keypad 1 and then entering new values from keypad 2. A nice touch is that the Enter button has to be pressed to instate the new value, allowing

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the setting of a parameter to be executed accurately at a specific time.

The analog input can also be altered by rotating the dual ganged pot on the front panel, but this works independently from the previous page which should permit the user to mix a digital input with an analog one, as the connection of one doesn't disconnect the other – an interesting idea.

There are three modes of use, which can be switched between by using the shift and mode buttons on keypad 2 followed by +/– to scroll through the menu. Using the channel selector rotary control along with the EQ button on pad 1 allows access to all parametric settings, no matter in which mode the E660 is being operated. In eight-band mode the frequency bands occur in pairs corresponding to the Low, Mid Low, Mid High and High bands of four-band operation. Center frequencies are variable as follows: 30-960Hz, 200Hz-6.4kHz, 500Hz-16kHz and 800Hz-20kHz. Each may be cut or boosted by 12dB and the resonance varied between 0.3 and 9.9.

In any mode, the highest and lowest frequency bands may be set for shelving or peaking by pushing the resonance (Q) rotary control, which acts as a spring-loaded switch. The resonance used on this machine is a constant gain version, meaning that any change in resonance will have its level determined by the setting of the Level control. Altering values is easy – simply

turn any of the parametric rotary controls and the present values for that band are shown on the screen. I noticed that the result was not quite instantaneous – probably due to the fact that the control has to be read by a microprocessor and then acted upon. However, the knobs do have a high degree of resolution, level being given to one decimal place, Q to two decimal places and frequency to about 1.3% rounded to the nearest whole number. Unfortunately, values can not be incremented/decremented by the +/- buttons.

In four-band mode, channels can be set independently, or the settings on one channel can automatically be copied to the other. In the latter case, especially useful when setting up in stereo, two settings can

existing contents of that location are automatically transferred to memory 0 as backup.

Other Features

ONE FEATURE WHICH stands out is the Graph mode, usable in four- or eight-band serial (mono) modes and accessed by pressing the relevant key on pad 1. With all level controls set to zero, a straight line appears across the screen – the graphic display is independent of input. Tweak the knobs, press the graph button and presto! Nine to ten seconds later (or about 20 seconds in eight-band mode) the display appears, showing how the settings have affected it. It's a pain that it takes so long, but it really is useful – and you can move a

"If you're investing in a DAT recorder for mastering you have to realize that digital equipment of this standard is important if you're to benefit from the extra dynamic range."

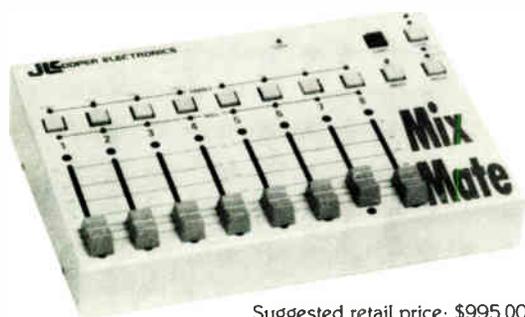
be arranged and listened to by switching over the channel selector.

All changes are imposed on memory location 0 – called the Temporary Area – and then have to be saved to one of the 99 user memory locations. Each of these locations, which can be named with up to eight characters, consist of all EQ data along with delay values and Thru on/off. After writing information to a memory, the

control while the graph is on the screen and see the redraw in 2-3 seconds, which is great for fine tone shaping.

Next there are two pages accessed by Utility (keypad 1) which control pre-delay (of up to 500 milliseconds) for an input in any mode, and post-delay for each frequency band in four-band parallel mode only. My initial reaction was that these features are here because they are easy to

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which can operate at a central frequency of between 30Hz and 90Hz, with a fine adjustment of one decimal place, and a ratio intended to eliminate hum to various degrees by acting on the central frequency and its even-numbered harmonics. Don't get too excited by the prospect of taking all your old recordings and removing the earth loop buzz – it isn't that simple. From what I can ascertain, Roland has used a special type of comb filter called a Recursive Filter, which, depending on the parameters used, will act in a number of different ways. The one in this case uses a degree of feedback, which is fine if there are no transients, but behaves badly when there are. Much of my testing was carried out in the digital domain using a Sony DTC 1000 ES DAT recorder, and it was apparent that the hum canceller acts more like a digital delay on the bass drum, with variable feedback dependent on the ratio setting used. In other words, if any of the musical program exists near the central frequency or the adjacent even harmonics, they will be adversely affected by the canceller. What the hum canceller does seems to be more appropriate for use in large PA systems where occasional buzzes need to be gotten rid of.

► implement on this piece of equipment and look nice on the spec sheet. However, it's true to say that time delays are useful in terms of large PAs, where columns of speakers are separated by large distances. I also discovered an interesting application while experimenting: use three bands for

equalization and pick out the frequency at which the hi-hat is dominant on the fourth one, using a high Q value. Now post-delay the three EQ bands by about 20 milliseconds, which leaves the hi-hat effectively ahead of the rest of the track.

The E660 also features a hum canceller

Finally, one hefty gripe – the audio Thru is done in software and has a 16-20 millisecond delay on it, which makes it of limited use. Of course, it can be used for

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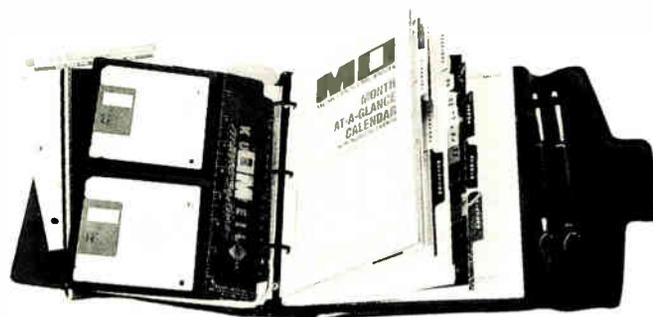
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simply checking the EQ setting against the input, but that's all.

Digital Ins and Outs

A SONY/PHILLIPS digital interface has been used on the E660. This is of the unbalanced variety operating at about 0.5 volts peak-to-peak, and utilizes an integral clock synchronizing signal in the code (as opposed to the professional standard of three BNC connectors for left, right and clock). The only problem this can give rise to is that it's awkward to clock a domestic R-DAT machine to the E660. To be fair to Roland, anyone intending to use this feature would probably be using a professional machine and a converter, but standards are nice and one wishes the digital forces that be out there would agree on one and all use it.

MIDI Implementation

PRESSING THE UTILITY button gains you access to the E660's three MIDI pages. The first of these allows a channel to be set for reception or transmission, as well as having the option of Omni On. The second allows a MIDI Program Change table to be set up by assigning the relevant memory location to a program change number, 128 patches being available.

The third MIDI page permits two MIDI dumps - total memory and the Program Change table. The former takes about 10 seconds to transfer and is a one-way dump - it's actually intended for transferring data to another E660. Bearing in mind the point about patch changing memories on a mixdown and the attributable noise, especially if the new memory has a different mode setting, such a program change is risky at best. So, what can be done with SysEx?

Well, the MIDI implementation chart and System Exclusive chart in the back of the manual are excellent (I think this is the first positive thing I've ever said about a manual) and with a bit of work you can set up a string of bytes to alter practically anything in the temporary area (memory location 0). Consequently, a frequency band could be altered and its level reset to zero when the next frequency band is changed, allowing one band at a time to be set. Transmission takes less than 10 milliseconds when working in this manner - the change is instantaneous and noiseless. C-Lab's Creator/Notator and new versions of Hybrid Arts' MIDITrack (for example) will make good use of this as they both permit the writing and sending of SysEx messages within a sequence.

Verdict

OBJECTIVELY, THE E660 IS straightforward to assess as it has a professional spec and excellent features - a quality item. The only direct competition is the MT NOVEMBER 1988

Yamaha DEQ7 (see review elsewhere in this issue), which interfaces digitally with their DMP mixer series but requires the FMCI format converter to write to an R-DAT machine. The recommended retail price of these two items is the same as that of the E660 - \$1995 - but as the DEQ7 is not a conventional parametric equalizer - it's a graphic/parametric hybrid, a direct comparison is difficult.

Subjectively, I love the E660. Having mastered a track from B16 onto R-DAT via the digital interface on the E660, I used it to cut and boost sections under sequencer control while monitoring the E660's graphic screen. I can assure anyone it has its uses in a studio - and not just a

professional one. This machine is highly usable in a semi-pro setting and at a justifiable price - bear in mind the improvement in a final mix and the attitude of A&R men towards good demos. If you're thinking of (or already have) invested in a DAT recorder for mastering purposes, you have to realize that digital equipment of this standard is important if you're going to benefit from the extra dynamic range.

OK, the E660 has a couple of blind spots - the hum canceller to name one - but overall, well done Roland. ■

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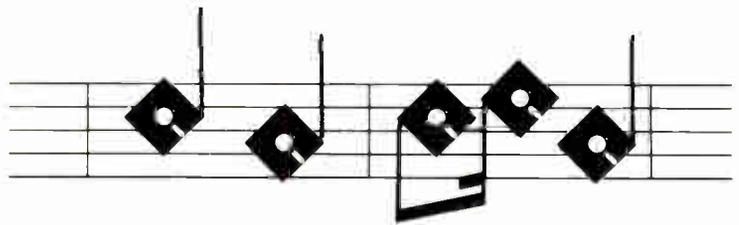
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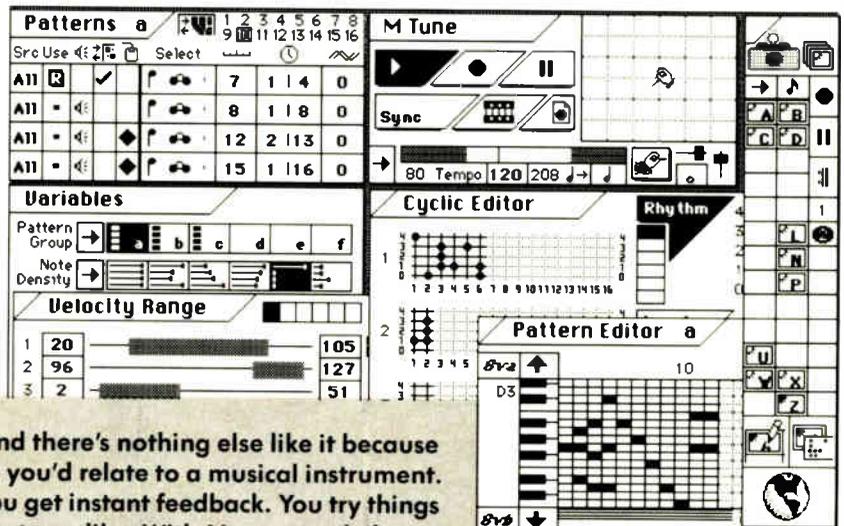


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BAD ATTITUDE



Photography E

Where can you find the imagery of filmmaking and the sophistication of sampling combined with the energy of punk? Big Audio Dynamite's Dan Donovan calls the shots. *Interview by David Bradwell.*

“DON'T THINK I should be reading magazines like *Music Technology*. I try not to read up too much about the gear because it really starts to drive you a bit mad after a while. If there's one thing that I'm really not aiming to be, it's a techno-whiz.”

The speaker is Big Audio Dynamite's Dan Donovan and his sentiment may come as a surprise if you've heard the new BAD album, *Tighten Up Vol 88* (Columbia Records). Furthering the themes of their first two long-players (*Big Audio Dynamite* and *No. 10 Upping Street*), it combines sound samples and snatches of film dialog with the more traditional elements of rock 'n' roll – screaming guitars, full-frontal drums and heartfelt vocals. Donovan is the man responsible for the hi-tech elements of BAD, yet is of the school of thought that has little

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regard for technology. Songwriting is the most important thing, sampling a necessary evil and synthesizers a means to an end. It's a strange paradox, and one, in this case, with its background in the discipline of photography . . .

According to Donovan, Mick Jones conceived BAD “five minutes” after he left

“People think you have to have thousands of dollars and big studios to get the best from technology, but you don't.”

The Clash. The new band's direction was the same one that he would have wanted The Clash to pursue – but now he was starting again, with a clean slate and fresh personnel. Donovan was the last member to join, as he explains.

“I joined about three years ago, as the rest were starting to record the first album. I

turned up to take the pictures for the sleeve and just happened to mention that I played keyboards. There were a few bits and pieces lying around that they weren't sure what to do with, so I said ‘I know what to do with that.’ I'd always played classical stuff on the piano from when I was a kid, but I'd never been involved in the music business before. I

was a photographer, so it was quite a strange step.”

However, Donovan was not the only recruit from the field of visual communication. Don Letts, who plays keyboards and supplies sound effects – and who admits to being completely non-musical – gave up a career as a video director to offer

▶ his knowledge of films as a source of sampled dialog. The line-up is completed by bass player Leo Williams and drummer Greg Roberts, who secured the post through replying to a classified ad in Britain's well-known music magazine, *Melody Maker*.

Big Audio Dynamite earned much praise from the music critics. The second LP was not so warmly received. A lot therefore hangs on *Tighten Up Vol 88* as it seeks to re-establish the band's position. They have reached that difficult make-or-break third album stage and all is not well. The promotional campaign has been thrown into turmoil by the illness of band-leader Jones. Although now out of intensive care after a nasty bout of pneumonia, he won't be back to full health until nearly Christmas. The tour scheduled for the Summer and Fall had to be cancelled – it seems BAD doesn't have a lot to be thankful for at the moment.

Aside from the problems with the band, Donovan is having troubles of his own. He has grown up in the shadow of his

"Photography is a craft and you really have to know what you're doing, but music anyone can do – it's a much more basic and, I think, a more artistic thing."

photographer-father Terence Donovan, and recently had his own pop success eclipsed by wife Patsy Kensit and her group Eighth Wonder. But in particular, he is having difficulties with technology.

"I don't like the way technology is being used at the moment," he begins, "I think it's very dull. It's too easy to make records with it. It doesn't really tax people and make them come up with new ideas because it's so easy to write stuff with sequencers. In the old days with a guitar, drums and bass you had to be more selective and push yourself a bit more to get good stuff. In some ways technology offers potential, and it should be used by everybody – not just Stock, Aitken & Waterman. I can't see what will happen in the future with it but I think there'll be a terrific backlash, and there'll be a return to songwriting in the old style. I find it irritating because it's so easy to forget about the music and just work on programming and turn yourself into a computer operator. I've got no desire for a Fairlight; I'd rather have a new car."

Donovan is similarly unimpressed with sequencers.

"Sequencers are too all-pervasive – it's so easy to create huge orchestral sounds that record buyers now take for granted. Records today sound like a mess, there are no clear little ideas anymore – there's no space for the music. What we try to do is create a space. It's very important to play together and we always record together. When we're laying down stuff we try to play as much as possible live."

In spite of this distaste for sequencers, Donovan does occasionally resort to using

them, either as a compositional aid or to help when playing live.

"When writing, I like to randomly do stuff and see how it sounds. I've got a QX1, and sometimes I just type in a load of notes, play it backwards or whatever and transpose it to see how it sounds. If I think of an idea I'd rather play it myself than try to figure it out on a sequencer and make it really complicated. I always try to make things really simple."

He has little time for people who program complete songs, and it seems that programming human feel into sequences has hardly crossed his mind:

"I don't really see the point in that. If it sounds like a sequencer that's fine. I don't want to make it sound like a human because I could make it sound human simply by playing it. I think the people who used the sequencers most inventively were always Kraftwerk. They were one of the most innovative bands of their time, definitely. The only way I really like to use sequencers

is to play simple rhythmic stuff, and there's no point in programming human feels into that sort of stuff, because I want it to sound like a sequencer."

But perhaps Donovan's most intense dislike of equipment is reserved for computers.

"I've really avoided using any kind of computer. I know they're great and I know they're the best for sequencing and visual editing, but I really can't face the thought of sitting down in front of a computer keyboard and a screen, tapping stuff out. I just don't want to be involved with them. I know I can't really say that because all keyboards are computers, but I'd rather play the things. I know I'd start to go mad if I got involved with a computer."

DONOVAN STARTED HIS musical life on the piano, and still prefers piano keyboards to those on any synthesizer he has played.

Throughout the time he was learning piano, he looked forward to the day he would acquire his first synthesizer. That was a Roland JX3P and it was quickly followed by a Yamaha DX7. In retrospect he sees these two purchases as the best investments of his life – six months later and he was recruited into the band. However, neither synth is retained in his current line-up.

"I've got the old standard Akai S900, a Prophet VS which I think is a very underrated keyboard, a Mirage and an Oberheim Matrix 6," he reveals. "The VS has got some great sounds, although the keyboard tends to be a bit mushy. There's a great function on it where you can make random waveforms and

random sounds ad infinitum. It just comes up with some fantastic Dr. Who 'dalek sounds' and all kinds of weird stuff. Having said that, I like sampling myself. I like sounds that are real. I never got into programming, I was never very good at that. I couldn't be bothered to sit through it all, working out which button does what. If you've got enough time and patience it's fine. Personally I don't really have much of either. I've discovered certain things with programming sounds that will alter them radically and that's the only thing I use. I don't know how to combine different waveforms and stuff like that. I'm just not interested in it.

"The Akai's brilliant, it's a piece of cake to use, and I use it all the time. Looping is really easy to do. I did get into the finer details of looping on the Mirage, but as soon as I got the Akai I gave up with that. The Mirage is basically a real pain to use. Your only visual display is those two hexadecimal digits and you're constantly re-referring to what they actually mean, and that got to me. I still do Don's stuff on it because I think it's got a great raw sound for sound effects, not too polished, but now I use the Akai most of the time."

Donovan's keyboard setup has a permanent place in the recording studio – because he doesn't believe in taking his work home with him . . .

"I'd rather leave it and come back to it fresh. Once you're not near keyboards and recording stuff all the time you get more of an urge to write. I sometimes have to forget about it for a while to get inspiration."

Once in the studio, sampling becomes all important as a key element in the distinctive Big Audio Dynamite sound. Finding suitable sources is the specialty of Don Letts, as his background in filmmaking is invaluable in the search for pertinent dialog. Donovan explains how he and Letts begin the search for material.

"We look all over the place, take things off TV, off videos, off records . . . The most important thing with the soundtrack stuff and effects is that they all mean something. It's very easy to whack in a load of interesting sounds that bear no relation to the track. We always try to use them in an intelligent way, so that it means something to the song, not just because it sounds good. People made a big deal about our use of dialog, so on the last album we tried to keep it to a minimum. People should realize it is not the all-important thing. What is important is the fact that the tracks are all songs and they are danceable, they have a meaning and they're interesting. As for specific samples, I've got things I've recorded on tape, for example the sound of 15 buffalo crashing, but there's nothing that springs to mind that I use all the time, I always try to use different things. I'm quite happy with Akai factory samples, violins, pianos and stuff like that – I've got a lot of different drum sounds and quite a big library. I don't walk around all the time trying to find great samples. You have to

limit yourself as to how you spend your time, and that's why I really can't get too involved with the technical side.

"We sample other people, and I wouldn't mind if somebody sampled our records, it really depends on how you use them. I read an interview with Ennio Morricone in one of the music papers and he was flattered by being sampled, he didn't see anything wrong with it, which I thought was great. If you use samples in an intelligent way and not as the basis for a whole song, I think that's fine."

There seems to be a growing belief within certain areas of the music business that the cutting up and sampling of records in the

cheap stuff and do it as well. What's great about reggae is that they use little Casios and tinny drum machines – really simple, cheap stuff – but they use it in a great way. You don't need Fairlights."

AWAY FROM SAMPLING and the pressures of being a musician, Donovan is still able to pursue photography. Most of what he does is in relation to the band because he doesn't have time to work for anyone else.

"I suppose photography is in my blood. There is a strong link between photography and music. From the point of view of

hip hop that was coming out from New York. I've gone off it now, because I reached total hip hop saturation. I still listen to a lot of reggae on the pirate radio stations. I think it's the most interesting music around at the moment. There's so many different variations in it, which people don't actually realize, because you don't really hear it unless you search it out."

With Donovan's love of the song and high regard for the craft of songwriting, talk inevitably moves in that direction. When writing he aims to set himself as few guidelines as possible.

"I'm thankful that I haven't been involved



Photography Josh Cheuse

M/A/R/R/S tradition is the new punk. Anybody can pick up a sampler and make music – with or without any musical knowledge. Once again records are costing less and less to produce, independent labels are thriving, and even the charts seem to be opening up. Donovan doesn't agree.

"Punk was more to do with energy. It was a movement. The idea behind it was great and it would be great if something like that happened again, but you can't really compare it to sampling, because you're not really saying much by stealing somebody else's record, are you? I like the aspect of sampling that means anyone can do it and it would be great if more people did. People have the impression that you have to have thousands of dollars and big studios to get the best from technology, but you don't. You can get really

business, the music business is far more shambolic and disorganized than the photographic world. Music is more of an immediate thing, photography is more technical. A lot of photographers go under the guise of 'art photography' and they'll just wander around with a 35mm camera. snap stuff out of focus, blow it up, frame it and call it art. But it's rubbish because photography is a craft and you really have to know what you're doing. Music, anyone can do, it's a much more basic and, I think, a more artistic thing."

Donovan's artistic influences are complimented by those of the band, whose roots can be traced to rock 'n' roll, funk, new wave and reggae. Donovan, meanwhile, is recovering from an obsession with hip hop.

"Up until recently I was totally into the

in the music business too many years, because I haven't got a set formula or way of working. I just do what interests me. It's a very odd thing, you can lay down a bit of music and think it sounds great and then the next day it will sound like shit. Or you can do something which is rubbish and then add a tiny little thing onto it which will make it fantastic. It's such a difficult thing, music writing. The only guidelines I set myself are not to get too complicated and come up with original ideas."

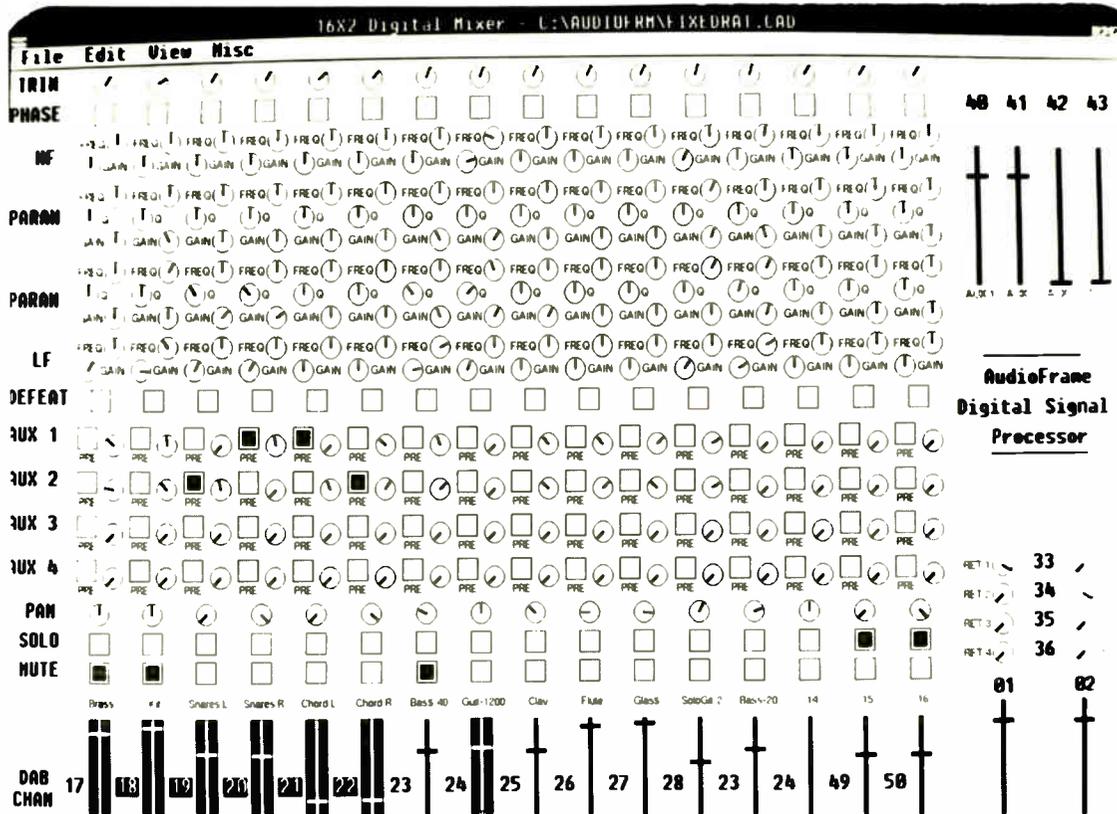
I venture that age-old question, "what is the classic song?" Donovan has no hesitation.

"American Trilogy' by Elvis," he begins. And then, remembering the musical ancestry of Big Audio Dynamite, he adds, "To be honest, I thought The Clash wrote classic songs." ■

FUTURE POSSIBLE

THE AUDIOFRAME EXPLAINED

part three: mixing and recording



Photography Courtesy of WaveFrame Corporation

The camera (or microphone) pans to WaveFrame's imminent forays into digital recording and playback. Text by Chris Meyer.

THE FIRST TWO installments of this series have looked at the AudioFrame as a complex, elegant sampler. However, WaveFrame's research into digital audio and signal processing has implications beyond replaying James Brown five octaves lower in stunning fidelity. This month, it's time to muse about using the AudioFrame's ability to augment (or replace) the standard mixing console and tape recorder.

Why "0" Isn't Enough

BEFORE I CAN properly talk about any digital mixer, some basic digital math (as it applies to audio) is in order.

For starters, digital systems do not have "headroom" – the ability to handle signals above a nominal operating level of 0dB – in the same way that analog systems do. In digital, "0dB" means "full level," and

anything higher would mean a digital number larger than can be handled. Therefore, you have to mentally create a "headroom" figure that you want to work with, and subtract that from the overall capabilities of the digital system.

For example, the AudioFrame's internal Digital Audio Buss (DAB) has a 24-bit linear numeric range, which translates to 144dB of dynamic range. If you want to operate with 24dB of headroom (a fairly safe figure), you now have 120dB of dynamic range left out of the original 24 bits. The question that follows is, why do you need headroom in the first place? Considering that the AudioFrame's inputs are "only" 16 bits in range, 24 seems like overkill.

The reason is that every time you double the number of signals summed together (in either the analog or digital domains), your

overall level goes up 6dB. Add 65,535 (the highest values a 16-bit number can represent) and 65,535 together, and you get 131,070 – which requires a 17-bit number to represent. Using the handy mathematical rule of one bit equaling 6dB and running out a little math, you can quickly see that 24dB of headroom is needed to not clip when you mix together sixteen 16-bit digital signals all running at full volume ($16 = 2^4$). After they're mixed, you can always attenuate the signals to make them "fit" through a 16-bit digital-to-analog converting output. This is why a system that may be only 16-bit all the way through (and therefore starts with a theoretical dynamic range of 96dB) does not compare favorably with even a semi-pro analog mixer (taking out 24dB of headroom only leaves 72dB of dynamic range at the input to work with, which

leaves you with all the low-level quantization fuzz of a 12-bit linear sampler).

The Mixer

AS BRIEFLY TOUCHED upon last month, one of the first pieces of software to ship for the AudioFrame's DSP card is a 16x2 four-auxiliary mixer with stereo reverb. The other is MIDICAD (created by WaveFrame employee Roger Meike) - a graphics application that runs on the control computer and links MIDI controllers, functions inside the DSP card, and knobs, switches, and sliders on the screen together. Each input (16 in all), aux send and return (four each), reverb in and out (two each), and mix output (two) can be assigned to any of the 64 Digital Audio Buss (DAB) channels that run inside each Digital Audio Rack (DAR). This can in turn be connected to analog-to-digital converters, digital-to-analog converters, channels in the upcoming digital I/O card, and/or outputs from the Sampling Synthesizer sample playback card inside the DAR. All mixer and reverb connections run at 24 bits, with internal processing going up to 56 bits for precision and headroom.

Each channel looks considerably like a well-stocked analog mixer. The input section includes an input trim control (adjustable from -144dB to +12dB), a phase switch, and a peak indicator that "blinks" (darkens a dot on screen) at 0dB. This is followed by a four-band EQ section. The upper and lower bands are of the shelving variety with 6dB/octave slopes and +18/-30dB boost/cut ranges; the low band is sweepable from 20Hz to 2kHz, while the upper band is sweepable from 1kHz to 20kHz. The middle two bands are parametrics, with a "Q" (width) variable from 0.4 to 100 and frequency sweepable over a 20Hz-20kHz range. An EQ defeat switch rounds out the section.

Below the EQ section are four send level knobs for the four (mono) aux busses. Their range is from -144dB to 0dB, with a switch by each that selects between pre- or post-fader. Rounding out the channel is a pan knob, solo and mute buttons, and channel level faders.

All of these controls can either be moved by the mouse, as part of a subgroup, under MIDI control, or by being assigned to a roving numeric value box (just move the mouse pointer over a control, and its absolute value in the correct units is displayed - a nice way to quickly check settings), typed in. WaveFrame demonstrates JL Cooper's MAGI fader box controlling the main faders, and said they are looking into having a custom fader box with 100mm faders built.

In the master section, there are four

auxiliary return level controls per master (left and right) channel, master faders, VU-style meters for the master busses (with a peak-hold switch) that flicker into inverse video when they peak, and a roving meter that can be assigned to any DAB channel. Switches overhead allow external MIDI

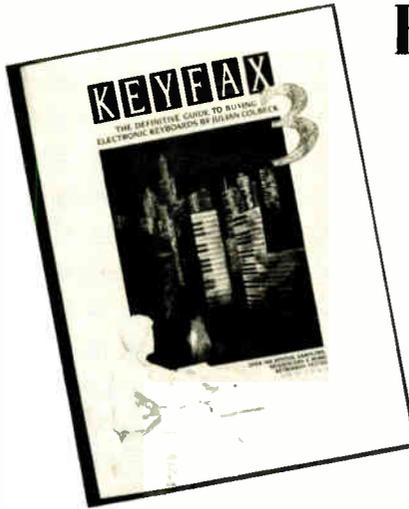
precedence).

The reverb was primarily designed by Charles Anderson, who used to work on digital reverbs for AKG. It runs at 24 bits, has two discrete channels (although both run together in stereo with the same settings, as opposed to having two mono

"I can't help but to think it's a short matter of time until WaveFrame or some other 'musical instrument'-based company gives professional recording companies a rude shock."

control to be enabled/disabled, and for the mixer to be disabled and return the DAB to whoever was previously using it. (If a mixer output is assigned to a DAB channel that something else - say, a sampling voice or input - was using, the mixer takes

effects) and is very smooth. User-adjustable parameters include the levels, pan position, and delay (0-1000msec) of eight early reflections, reflection/reverb balance, a pre-delay of 0-200msec, density (described in the manual as "a tradeoff ▶



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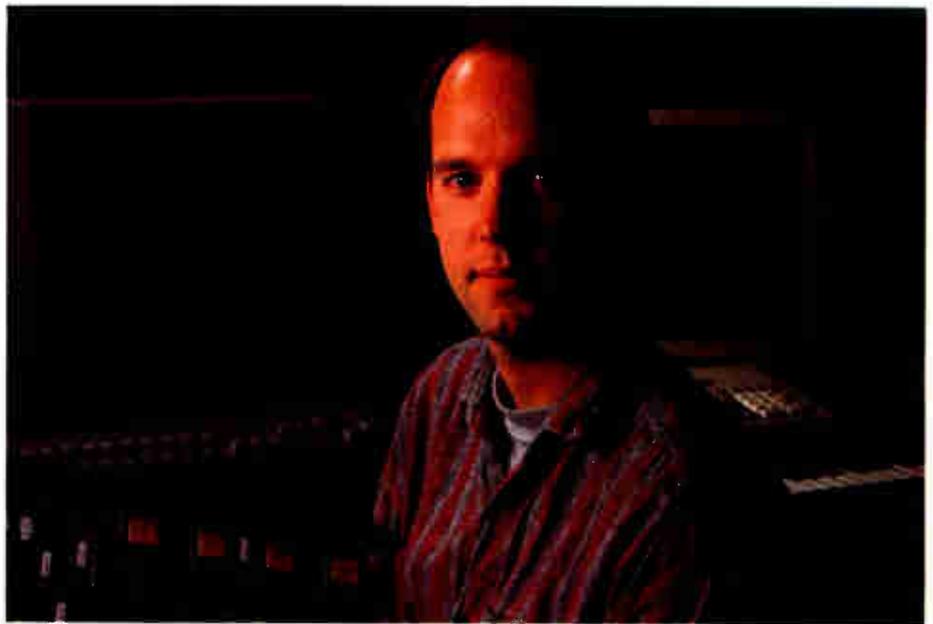
► between coloration and flutter”), overall decay (from about 500msec to infinity hold), high frequency decay (sweepable from 1-20kHz), room size (with a labeled range of 50-150 “meters,” it subjectively changes the room size from about a shower stall to a cathedral), stereo spread and center, wet/dry mix, and individual output levels. These figures aren’t quite as exciting as the range of the EQ, but they’re competent and reflect a good tradeoff of features versus DSP processing power consumed (more features would have meant a less complicated EQ or fewer channels). WaveFrame is also offering a number of reverb room algorithms and presets (the user can also save his or her own settings and mixer snapshots).

Automation is provided by the WaveFrame’s EventProcessor (see last month’s installment). Because all of the mixer controls on the screen are assigned to a MIDI controller, channel, and internal virtual MIDI cable, they can be recorded and played back just like any MIDI data. Also, because the EventProcessor is MIDI and SMPTE synchronizable, so is the mix (and, of course, any music the AudioFrame is actually playing via the Sampling Synthesizer cards). However, the EventProcessor does not yet allow graphic editing of MIDI controllers (and therefore mix moves); nor does it chase mix moves

from the beginning of the song (therefore leaving your mix hanging at the last settings until each controller gets “moved” again). I didn’t have a chance to try the mixer out with Texture (an IBM sequencing program

external sequencer may also be used, but that hurts the all-in-one philosophy.

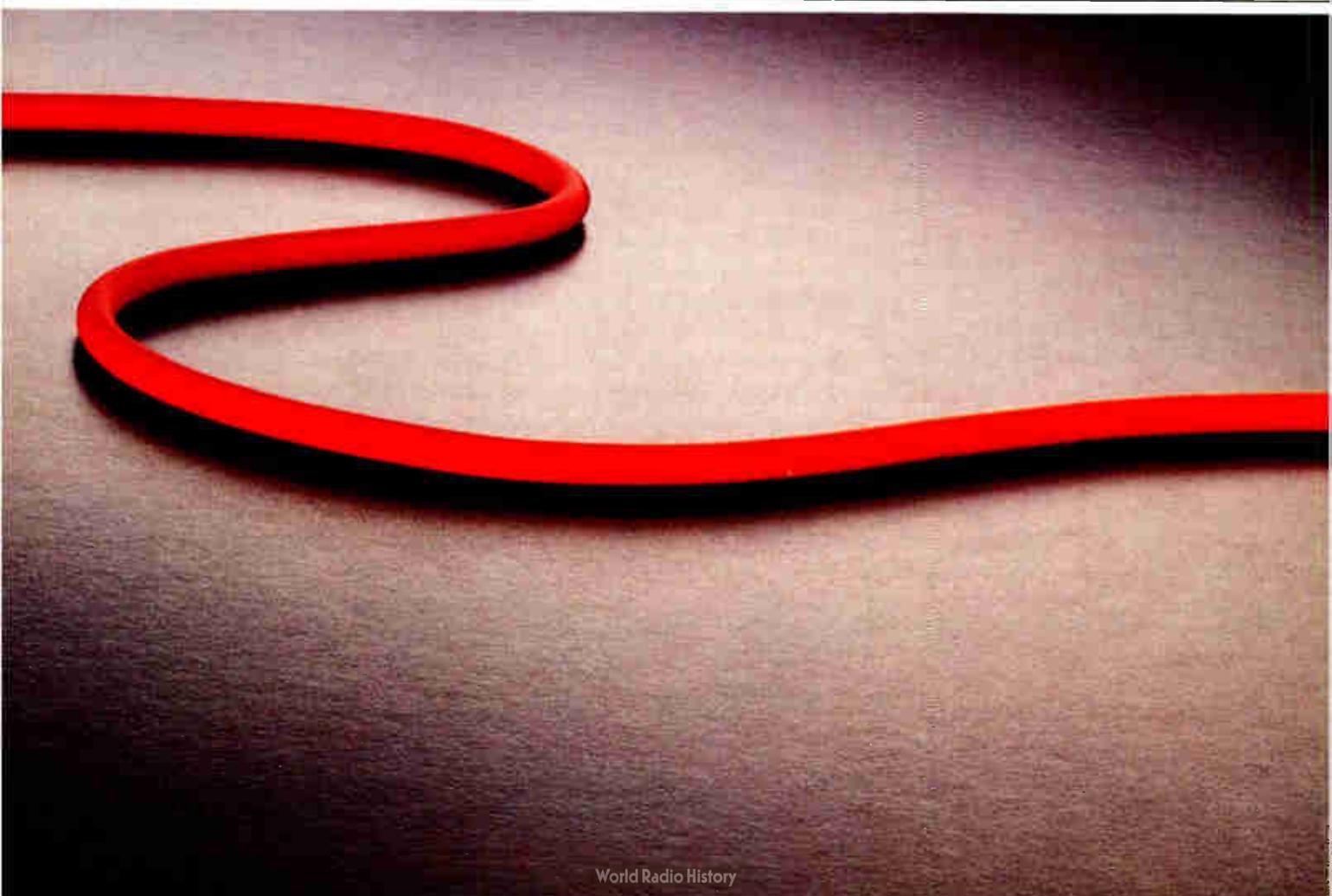
As far as subjective comments go, the EQ responds smoothly, and more importantly, sounds great. I’m inordinately



DSP engineer Charles Anderson.

that WaveFrame employee Roger Powell created before joining the company that has since been ported over to the AudioFrame); perhaps it works better. An

picky about EQ sections, and this is the first digital EQ I’ve used and heard that I feel as comfortable with as a high-quality analog EQ. Also (as Vic Lennard alludes to



in his E660 review elsewhere in this issue), many digital equalizers either glitch or tend to react very slowly when dynamically altered. When asked about the design, vice president of engineering John Melanson

"typical" EQ, and even at that they went through six iterations until they came up with a design that everybody was happy with.

I have mixed feelings about how the



Photography: Rose Rounsaville

An alternative mixer that presents an 8X2 board and the reverb on the same screen.

went into detail on how they had to use a filter algorithm that required many more multiplications and summations (and therefore processing power) than the

level faders react. On the positive side, when controls are subgrouped (several controls moving in concert with the actions of one master - faders, muce

switches, EQ frequencies, or whatever desired), movement was ratiometric (when the master is brought down 50%, all slaves are brought down by the same percentage as opposed to the same absolute value), and motion seems to be pretty smooth without audible "zippering" (steps heard thanks to digital quantization). This latter point fits in with WaveFrame's claim that values are held to 14-bit precision and levels can be changed in 0.1dB increments. However, under MAGI control, the value window indicated that levels changed by roughly 0.5dB steps, with a sudden drop-off from -57.9dB to "off" on the channel faders. This seemed to be a limit imposed by sending a 7-bit (128 value) controller over MIDI (for the record, MIDI has provisions to send a 14-bit value, but it's rarely if ever used). The faders also seemed to move sluggishly in the middle of the range, with sudden movements at the ends. Part of this is a visual aberration caused by the Windows operating system being slow to update the CRT screen; however, that sudden drop-off is a problem exhibited by other digital mixing systems.

Switching over to mouse control seemed to give finer steps, but a drop-off still occurred from roughly -74dB to off. The software would not accept an attenuation value below the drop-off when

COMING SOON ON THE OTHER END OF THIS CABLE.

If you're about to buy a MIDI/SMPTE synchronizer, we've got a word of advice for you.

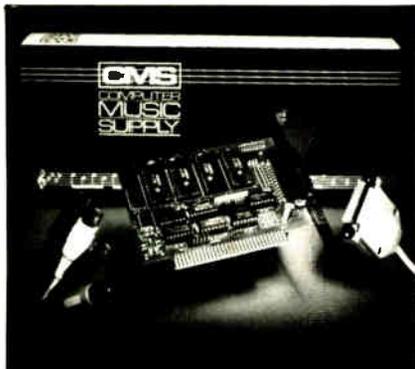
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typed into the roving window. This needs to be solved, and a fader box that also has pan knobs and mute buttons needs to be built before many audio mixers would be willing to make a fully digital transition.

As a digital submixer for the AudioFrame's own sounds (its original intention), the mixer and reverb are pretty nice. Taking into account that the DSP card (which the mixer runs on) costs \$10,000 slows one down a bit, but considering that the DSP card has other functions and that really high-end digital reverbs alone cost

"The objectives are fairly simple: give the user an interface that looks and feels as much like a traditional tape machine transport as possible."

more than half this, it's not too bad of a bite for AudioFrame owners to take. However, looking at the current mixer as a precursor to a digital virtual mixer based on the AudioFrame leaves me . . . well, anguished.

On the one hand, the sound quality of the AudioFrame is simply impressive. Not surprisingly, so is the price of such a system: a computer, DAR, 32 inputs, eight outputs, two DSP cards to allow a 32x2 mixer with two stereo reverbs, a MAGI fader box plus a few extra MIDI controllers thrown in for good measure comes in at around \$55,000, whereas a large all-digital console (or for that matter, some all-analog boards) can easily tap six digits. On the downside, a current AudioFrame-based mixer would not have submix

"WaveFrame actually feels that there is more future in hard disk recording than digital mixing, in that hard disk recording can give the user things that tape simply can't do . . ."

busses, direct outputs or insert points (these can be faked by intercepting the signal pre-input, but then they would be pre-trim and pre-EQ), mic preamps (the current analog-to-digital converters and input trim controls do not provide enough gain), normal tape machine assignments and monitoring, or a proper physical interface. Some of these require software; some require more input and output cards. There also comes a point where the DAB's 64 channels suddenly becomes full just handling I/O. However, the AudioFrame itself is already so close that I can't help but to think it's a short matter of time until WaveFrame or some other "musical instrument"-based company gives professional audio manufacturers a rude shock.

Hard Disk Recording

WHEN THE AUDIOFRAME was first shown in 1987, a simple hard-disk recording and playback system was also shown. The most interesting feature was that it could be started from the middle -

in other words, if external time started at what would be the middle of a long piece of music coming off the hard disk, the disk would "chase" like a MIDI sequencer and pick up playback from the correct place. However, hard disk recording was quickly dropped from demonstrations, with the explanation that "we decided not to show it until we had something that was finished, and was better than anything else out there."

It's still not ready, but I picked up a lot of hints of where WaveFrame's philosophy on

the issue is coming from. For starters, when I asked John Melanson last June if the AudioFrame's hard disk recording was going to be like other existing systems, he replied, "I hope not, because nobody else has done it right yet."

I'm certain that New England Digital, Compusonics, AMS, Digital Audio Research, and IMS (for starters - see the feature on hard disk recording in the June '88 issue) will take exception to that statement, but there's a grain of truth in there. For one, whereas many systems are SMPTE-synchronizable, they cannot track varispeed. Others can't remember when you started recording something (or keep SMPTE integrated with the sound), which is essential for speeding up the re-laying of production sounds to video. There's also

the matter of changing pitch or time without changing the other.

As WaveFrame's self-described "minister of propaganda" (actually, vice president of marketing) Steve Cunningham put it, the objectives are fairly simple: give the user an interface that looks and feels as much like a traditional tape machine transport as possible. That should reduce the learning (and fear) curve to near zero. Then, start taking advantage of some of the "bells and whistles" that hard disk recording gives you - such as random access editing, looping, and playback - while trying to make it as simple to get at as possible. WaveFrame actually feels that there is more future in hard disk recording than digital mixing, in that hard disk recording can give the user things that tape simply can't do (while the current goal of digital mixing seems to be to match the already-existing functionality of an SSL analog board with digital audio).

The first pass at the user interface will be "glass" (CRT screen), with hardware to follow closely. Cunningham states that there's some actual advantages to glass, in that more information can be presented

An Education for Life

easily than on a piece of transport remote control hardware.

The next step is the integration of what I personally refer to as "the three worlds" – tape-style recording, MIDI sequencing, and sound-effects style "edit decision lists" (where specified certain events are triggered at specified times without a bar and beat reference). The idea is to be able to present all three from the same user interface, so those who are used to working in more than one of the "worlds" can deal with each part in terminology they are already familiar with. Again, hoping that already-learned skills can therefore translate directly, reducing the learning curve to zero. Along with this, editing tools available in one "world" should also apply to material created in the other worlds. Examples of this include being able to sequence hard disk tracks from an EDL, having edits (such as cuts and looping) made in a MIDI sequence also happen to the hard disk tracks, and aligning sequence downbeats to hard disk recorded downbeats. Add in some software for the DSP card, and time stretches and compressions enforced upon MIDI sequences and EDL data to make them fit picture can also stretch around the hard disk tracks without changing pitch.

Laudable. And, I have to admit, after the extended close contact I've had with the company, I feel they have as good a chance of getting it "right" as anybody. However, I have to have my enthusiasm tempered by the fact that I haven't seen anything yet (it's only fair), and that I spent a good deal of my spare time in my previous career as a software engineer trying to muse out a solution to the "three worlds" integration without a definitive answer. As a user, I sincerely hope that somebody proves to me that I simply wasn't up to the task.

Fade to Silence

NEXT MONTH, I'LL conclude this series by looking at WaveFrame's research into sound modeling synthesis as an alternative to additive or other synthesis methods. This isn't something we'll necessarily see as a product (at least from WaveFrame) in the very near future (with hard disk recording and several other paths screaming for attention), but there's some interesting general ideas in the topic, and it'll give yet another perspective on what the people from Boulder are thinking of. Until then . . .

Special thanks to Craig Hunter at WaveFrame's West Coast office for getting up at an insanely early hour (at least, for musicians and journalists) to run me through the latest mixer software and help me make deadline.

The entertainment industry is a multi-billion dollar enterprise, and music plays a leading role in it. In fact, the frequency and variety of musical entertainment available every day through radio, television, recordings, and concerts can overwhelm even the most accustomed listener. That's one reason why a comprehensive program of music study is such an important part of a good education: It teaches us to listen attentively, to think about what we hear, to recognize complex musical content, and to participate fully in the musical experience. After all, great music is always entertaining – but if we don't even hear it, we'll never know everything else that it has to offer as well.

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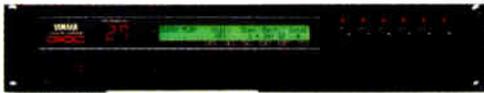
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Kawai Q80

MIDI Sequencer



Photography Rosemarie Rounseville

Kawai's first sequencer offers a multitude of elaborate features and options including extensive editing capabilities, patch storage and a floppy disk drive. *Review by Dave Bertovic.*

WHEN PERSONAL COMPUTERS met MIDI and software sequencers became available from numerous developers, I was amazed at the flexibility and

MT NOVEMBER 1988

processing capability that was now available to those who needed that kind of power. I was not alone in my observations as is attested by the number of personal computers and sequencing packages currently

in use. Why, then, would any manufacturer want to design another hardware sequencer?

Well, there are a number of reasons, and good ones at that. First of all, if a musician ▶

▶ doesn't need a computer for other reasons, purchasing one for the sole purpose of sequencing may represent a sizeable investment. Two, if the user plans to work in more than one place (from home to the studio to a live performance), a computer may prove to be cumbersome and difficult to set up and tear down. Three, some people find that certain key strokes or mouse movements used in executing various functions may be difficult or clumsy, especially when speed is important.

It appears, then, that hardware sequencers are still viable products as they are easy to transport, easy to use, and lately, relatively affordable. Also, recent advances in operational functions and memory capacity (including the addition of an on-board disk drive on some units) have made dedicated sequencing products more attractive than ever.

Kawai's Q80, which had just shipped at the time of this writing, is all of the above. It is a powerful and flexible sequencer with a good-sized memory plus a disk drive.

Overview

MEMORY FOR STARTERS: the Q80 has internal storage for up to 26,000 notes and their corresponding velocities. These notes can be used to create up to 10 songs. Each song can hold up to 32 tracks; each track

consisting of one musical part's notes, time signature and MIDI channel. Each song can contain up to 15,000 of the available 26,000 notes. The songs can be chained to play in any order. More control over each element (note or chord) of a track is available with the Active Quantizing and Step Recording functions, described later.

The Q80 also utilizes a function called "Motif" that can be used within each song. Similar to a pattern in a drum machine, a motif is a separate memory area that can be used to create song parts one at a time. There can be up to 100 motifs per song.

A "song," then, is comprised of tracks (01 to 32), motifs (00 to 99) if desired, and a Tempo Track. The Q80 also provides an additional 64K of internal memory for storing MIDI System Exclusive data (in 10 separate files) for patch data storage as well. Each of these 10 files consists of 16 tracks and a whopping 999 SysEx messages. If that isn't enough, you can store approximately 150,000 notes in up to 112 songs on one floppy diskette. That's a lot of memory.

The Q80 uses the standard MIDI In, Out and Thru ports for its MIDI connections. Also provided are tape sync in and out connectors, a metronome jack, and a footswitch input (all four are 1/4" ports). A receptacle for the AC power pack is provided along with the on/off switch.

The Q80's front panel provides a well-arranged grouping of functions into the now-familiar matrix-type switch-and-LED array. Centered on the panel, the top group allows access to the unit's operational functions and the lower group accesses track numbers or note values (when editing). To the right of the center function groups is the cursor left or right keys, and below them are the familiar Record, Stop, Play and Reset Rewind, Fast Forward buttons. At the top of the panel is a large increment/decrement dial for data entry and the 16-character, two-row backlit display. Last but not least, to the left of the front panel is the Q80's disk drive. The unit uses standard 3 1/2" double-sided, double density floppy diskettes. A blank floppy is even included.

The single most impressive feature of the Q80 is its ability to allow the user to create songs in their entirety, recording directly on the 32 tracks, or to "piece together" a song by recording parts as motif segments and then string a number of these segments together in a track to form a song. What is extremely useful is the ability to use song tracks and motifs together to achieve some very elaborate and intricate sequencing.

Editing

SIMILAR TO OTHER sequencers and computer software packages, the Q80 offers many editing options to fine tune the sequence after it's been recorded. In the Bar Edit function of a song or motif, you are able to alter the following parameters: volume, transposition, quantization, note split, note shift, velocity, and gate time. You are also able to perform the following functions: insert, delete, erase, mix, copy, move, Make Motif, and Event Extract in song and motif modes. An Event Edit function (the proverbial "MIDI microscope") is also provided. These edit parameters deal with the performance characteristics of the song or motif such as pitch-bend, vibrato, sustain pedal, volume pedal, and so forth. You are also given editing control over MIDI events such as patch number, Omni Mode on or off, Local Control on or off, etc.

What's the difference between Bar Edit and Event Edit? Well, the former deals directly with the musical data: the notes or chords as they exist in a song or motif. Bar editing permits you to delete a bar, group of bars, or entire track, insert a bar or motif into any point within a track or motif, erase a bar or group of bars (this results in a rest because the bar lengths remain intact), mix bars between tracks or motifs, and copy a bar or group of bars to another location within the same track or motif. You are also able to transpose a bar, group of bars or entire track or motif, "Move" or shift the timing of the notes for an entire

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track forward or backward by any number of clocks (resolution on the Q80 is 96 pulses per quarter note, giving you 384 clocks per bar to work with), and quantize editing (see "Quantizing" described below).

There are numerous Bar Editing functions. Note Split and Note Shift are two interesting edits that allow you to divide a track or motif into two pitch ranges (Note Split) such as splitting a track into a bass track and a lead track, and transpose notes selectively within a track or motif (Note Shift). This is a transpose function that allows you to change the pitch of notes that are a certain note value, such as "shift all F#'s up 3 semitones," rather than the Transpose function, which transposes everything in the bar into a new key signature. A feature like this is very helpful if you change drum machines or the drum note assignments you normally work with. The Velocity Modify function allows you to adjust the MIDI velocity amounts per bar, group of bars or entire track or motif, and Gate Time modify permits you to edit the notes' durations (more on this later).

"Make Motif" is a handy little function that allows you to take a section of bars within a track and group them into a motif, while Event Extract takes all MIDI control events for the track or motif and transfers them to another track or motif. By the way, in a motif, the same Bar Edit parameters are available with the exception of Volume, Move and Make Motif.

On the other side of the river, Event Editing is concerned with MIDI "control events." These MIDI control events are MIDI performance commands that affect the playing style of the music - adding or removing patch change commands as well as adding, removing or editing the amounts for velocity, vibrato, sustain pedal, volume pedal, breath controller and so forth. In Event Edit for tracks and motifs, you can delete, replace or insert MIDI controllers. You can also adjust velocity and gate time for individual notes (as opposed to the Bar Edit functions, which can only adjust everything in a bar or group of bars).

The Control Change function allows you to reassign existing MIDI controller numbers in a track or motif. This interesting feature lets you take a pitch-bend on a chord for example, and transform it into a sustain command for the chord instead. Other MIDI command edits include MIDI Mode Changes (On or Off status for Local Control, Omni Mode or Mono Mode), program change, channel pressure, pitch-bend and System Exclusive data.

But that's not all the editing you're able to perform, because in Step Recording you are given the ability to perform many of the above functions in addition to others not found in Song Edit or Motif Edit. For example, Step Record permits you to enter

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► notes and chords one at a time (chords can also be constructed by pressing the Chord button and entering the intervals one note at a time from the keyboard). Extremely difficult musical phrases can be entered into a track one note or one chord at a time. In the Step Record mode, you are also permitted to add or remove rests, ties and slurs, notes, bars, bar marks and bar rests. The Step Back function allows you to return to the start point of the last note edited so that additional notes can be added or removed, if necessary.

Quantization

ONE OPERATIONAL FUNCTION that stands out as being particularly uncommon but useful is the Q80's Active Quantization. Here's how it works: similar to the quantizing or "auto-correct" function of other sequencers, AQ adjusts the timing of notes by arranging them in memory to the nearest beat value as they occur. This is the well-known method that corrects for sloppy playing when notes are being recorded. As in other products, the Q80 allows for quantizing during recording, or a track can be quantized after it has been recorded. A typical beat value would be, for example, 16th notes and the Q80 will adjust notes (if that's what you want) to play exactly on the nearest 16th note. AQ, however, takes common quantizing to another level of utility by allowing you to quantize only those notes that are way off in timing, and leave those notes alone that are just a little out of time. This approach allows for a more natural feel when the track is then played.

AQ can be used to correct an entire track or a certain range of bars within a song or motif. AQ also permits the selective quantization of individual notes and the deliberate shifting of notes out of

commands of a given note.

If you want to replace a section of a track with new music, the Punch-In/Punch-Out function allows you to erase and replace a section of notes specified as a range of bars. This function can be performed automatically as well, because the Q80 allows you to specify the punch-in and punch-out points in advance, and will enter and exit Record at the precise times. The punch points can be entered by the use of a footswitch plugged into the rear panel. Punch-in/punch-out recording can also be used in Step Record mode. In addition, the Punch-In/Punch-Out function will permit you to rehearse the new part before actually committing it to memory. In Rehearse mode, the track is played up to the punch-in point (just like the pre-roll used on a tape recorder). After the punch point, the specified track range to be replaced is muted so that you can rehearse the new part over several times if necessary.

System Functions & Memory Management

THE Q80 PROVIDES numerous system functions (both MIDI and internal) and data storage operations. "System" operations include MIDI basic channel select, clock source select (internal, MIDI or tape sync), metronome on/off, and mode (Record only or Record/Play). A "Rec Data" function allows you to selectively filter out specific incoming MIDI data, and the Q80 also offers MIDI echo select, pedal assign (to determine the status of the pedal jack: Start/Stop, Continue/Stop or Punch In/Out), Step Function (for determining if the tie, rest, velocity and gate parameters in Step Record are linked to MIDI controllers), and of course, memory protect on or off.

Quantizing " 'Active Quantizing' takes common quantizing to another level of utility by allowing you to quantize only those notes that are way off in timing, and leave those notes alone that are just a little out of time. "

time for some interesting musical effects.

Another interesting edit function is that of Gate Time, a function within the Step Record mode. This, in effect, allows you to quantize the end time of the notes when played back from the Q80. As an example, the Q80 will correct for note timing at the moment the key is pressed. If a quarter note is played, but held on the keyboard for too short or too long of time, quantizing will not lengthen or shorten it - it will just correct its start point. Gate Time allows you to edit the note's duration, so that a quarter note (or any other note value that is appropriate) will be exactly a quarter note in duration, or any other duration desired, expressed as a percentage of the Step Time. In MIDI terminology, Gate Time allows you to specify the time between the Note On and the Note Off

Memory operations primarily have to do with saving and loading to and from the disk, and transmitting and receiving MIDI patch or pattern data to and from synthesizers or a drum machine. One of the more useful functions of the MIDI data mode is the ability to delete certain blocks of information that may no longer be needed. MIDI data is stored in 10 files, each file having 16 tracks and each track having 999 blocks. 64K of internal memory (RAM) space is dedicated for this purpose. The Q80 allows you to delete all tracks, just one track, all blocks within a track, or just one block.

Disk operations are straightforward as well. Songs are saved and loaded one at a time and you may re-assign the song numbers if necessary. MIDI patch or pattern data can also be saved and loaded

in the same manner. If you want to save several versions of the same song, you are also permitted to rename the song in this mode so that another file with the same name will not be erased.

Drawbacks

THE KAWAI Q80 is one of the more powerful hardware sequencers on the market, yet it is fairly easy to get around on as well. In fact, I found it to be as friendly or friendlier than any other MIDI sequencer I've used. It has some excellent editing capabilities, making it a contender when shopping for a sequencer, either hardware or computer-based.

As impressive as it may be, however, there were a few points that need to be brought out as areas that need improvement. A product can never be everything to everybody, but there are certain things that need to be addressed here.

For one, the Owner's Manual is sketchy in many areas. If you are not familiar with current sequencer technology, some of the functions may not appear to be as clearly stated as you might need. A series of complete examples would have been extremely helpful in most sections of the manual. The Motif function is especially mysterious until you actually start using it, and learn by trial-and-error. You must also be very careful when editing a track within a song, because if a Motif is present within a bar range, an Error message appears. This has the potential of occurring often if you need to do a lot of editing.

You cannot copy a song to another song location within the Q80. You can, however, save a song to disk and then load it back into the Q80 under a different song number. This is also true when naming a song. You can only name it when saving to disk.

Finally, a drawback to the Punch Record function is that you must punch-in and punch-out at even bar marks. You cannot punch in or out in the middle of a measure. This can be a significant limitation depending on your situation.

Conclusions

ASIDE FROM THE few minor points mentioned above, what the Q80 does, it does well. In particular, I found the disk storage system to be one of the more useful additions to sequencers in general over the last few years. The drive unit appears to be very well-built, and its operation is smooth and almost silent.

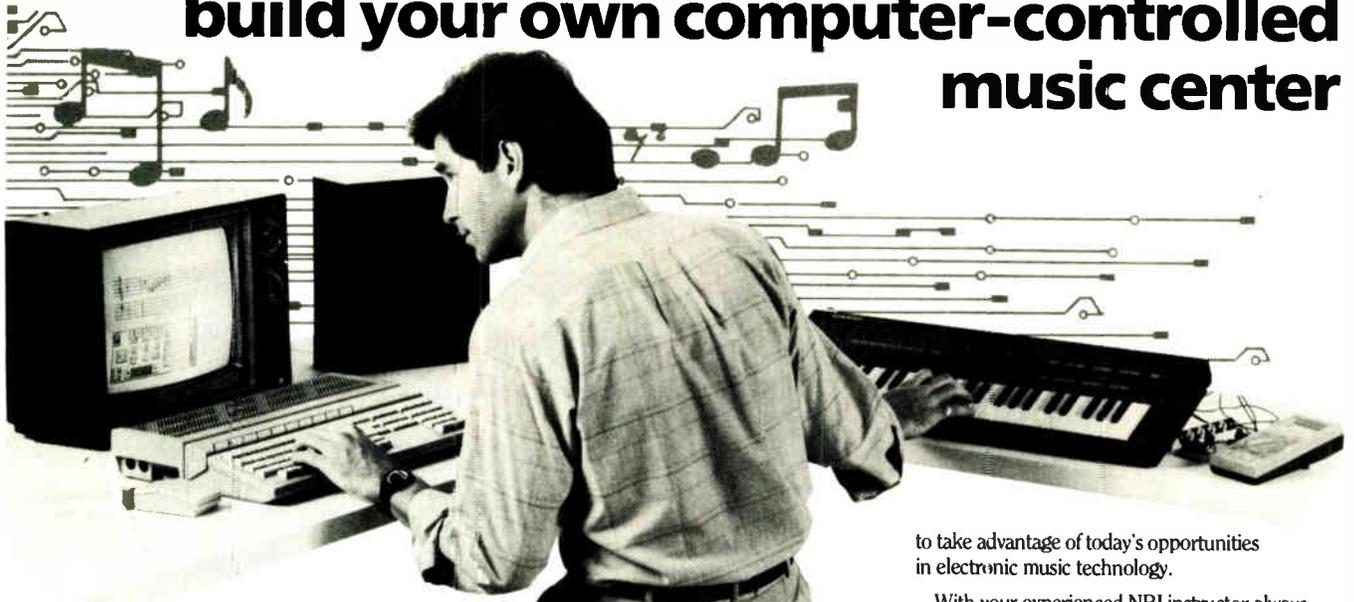
If you are presently shopping for a sequencer of any kind, the Kawai Q80 is worth a serious look. If you're not looking right now, keep it in mind. ■

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Yamaha DEQ7

Digital Equalizer

Not content to produce digital reverbs and delay-based effects, the latest black box from Yamaha's Pro Audio Division is a multi-function equalizer and filter. *Review by Peter Bergren.*

DIGITAL AUDIO IS an ubiquitous phenomena. Even the "low end" audio market is being transformed by a variety of digital devices, including DAT and CD recorder/players, a plethora of digital delays and reverbs, and lately even a line of digital mixers from Yamaha. What has not been common until very recently is a cost effective digital equalizer/filter system. But now that Yamaha's DEQ7 is here, the wait is over.

At first glance, the DEQ7 appears akin to the SPX90, Yamaha's very popular reverb and delay-based effects device. Like the SPX90, the DEQ first samples and digitally encodes incoming analog signals, and then performs various mathematical

operations on the resulting stream of numbers. In the case of the 90, these are devoted primarily to altering *time* relationships in the signal. But in the DEQ7, the *frequency versus amplitude* relationships in the signal are manipulated. And the instructions for performing this legerdemain can, of course, be stored and recalled, just as in the 90.

The great advantage of such "blank page" programmable devices is that one unit can take the place of however many separate units it has programs for. Most commercial studios have at least one rack filled with various types of equalizers and specialized filters, to be used outboard of the console's equalizers. Each of these will have a distinctive "sound" or coloration

that they lend the material passing through them, and they're each prized for such characteristics. But while this is obviously an advantage for the well-heeled studio, most of us simply can't afford such luxury (yours truly included). Yamaha is, therefore, certainly on the right track in offering so much function in the DEQ7; for while it may not duplicate the distinctive sound of outboard analog equalizers, it offers real savings in cost, space requirements, and flexibility.

Overview

THE DEQ7 CONTAINS 30 factory programs which comprise the "templates" for several important types of frequency versus amplitude modification "circuits." Included

MT NOVEMBER 1988

are multiband stereo and mono graphic equalizers, a hi-fi type tone control, parametric equalizers, band pass and reject filters, several combination filter/equalizers, and some really nifty triggered filter sweep effects. Each filter or equalizer circuit has a left and right channel (save for the mono graphic equalizers), and all analog controls normally associated with each type of device are part of the software, and are fully adjustable. Of course the factory programs, once modified, can be stored in any of sixty user registers under any title desired. These custom programs are then available for recall either manually, or by MIDI command. All in all, a very well-conceived piece of gear.

Furthermore, the DEQ7 comes equipped with not only analog but digital input

Concept *"While it may not duplicate the distinctive sound of outboard analog equalizers, the DEQ7 offers real savings in cost, space requirements, and flexibility."*

and outputs – running at a 44.1kHz sampling rate with 16-bit quantization – as well. This means that if you already own other Yamaha products which transmit and receive digital audio per the Yamaha proprietary code (such as the DMP7 Digital Mixing Processor), it's easy to make a digital connection with the DEQ7. Should you want to connect gear to the DEQ7 that is equipped with digital signal ports, but doesn't communicate via Yamaha's proprietary code, there are "standards converters" in existence (from Yamaha) which will make the translation.

The Controls, Back Panel Connectors

THE DEQ'S FRONT panel looks like other Yamaha digital effects. Reading from left to right there's the AC power button, and then a dual concentric pot with knobs to adjust stereo level and balance of the incoming signal. Next are three displays: an eight-segment dual LED level indicator (with clipping indication), a two-character LED display to indicate which program number is currently on line, and finally a 2x16 backlit LCD data display.

Next comes a series of black push-buttons, some of them with indicator LEDs built in, which Yamaha call "keys." Arranged in three groups, the first is called the Parameter key and just to the right of this is a key called Delay/Level. Pushing this causes the LCD display to show either a left or right delay time, or the output level of the system's left and right channels. Using the Up or Down Parameter keys will change either delay from 0-738msec, or alter system output levels from wide open to barely a whisper. Obviously, these delays and adjustable output levels lend themselves not only to sound reinforcement

work, but to the studio environment as well, especially when combined with certain filter sweep effects.

Next up are Store, Recall and up and down arrow keys for saving and selecting programs. Finally, we come to the last group, the first of which is Utility. This scrolls through several functions, including title editing, an adjustable digital attenuator to control incoming digital signals, MIDI bank, channel, program change to memory number mapping, MIDI bulk dump, a display change to allow you to read delay times in seconds, meters, or feet equivalents, and also a "Convert L=R to L/R function." The latter is operable on certain programs that default with parameter adjustments common to both left and right channels. The convert function allows separate adjustments to be made to each

channel when enabled. Those cunning people at Yamaha seem to have thought of everything.

The final two buttons on the front panel are the Protect On/Off and the Bypass keys, both of which do exactly what you would expect them to. At the far right-hand side of the front panel are two jacks: Foot Control, where you plug in an accessory footpedal to let you control filter sweeps and the like, and Bypass.

Getting to the back panel, and reading left to right, you encounter a pair of MIDI DIN connectors, In and Out, but not Thru. Next comes another pair of DIN's, but these are digital signal In and Out ports. It's important to bear in mind that these are intended for communications with devices that speak Yamaha's proprietary code format, and other codes must be

output of the DEQ7 into a completely digital effects loop, say between the mixer's digital mixing buss and final A-to-D conversion.

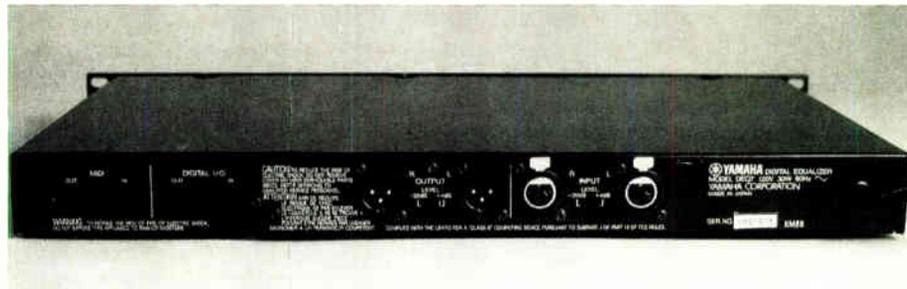
Next over on the back panel are two pairs of XLR's. These are the analog signal terminals for left and right channels, and each is electronically balanced. Both input and output pairs have a level adjustment switch that flips between a -20 and +4 level, making it easy to tailor system levels.

Diving inside I found the DEQ7's innards up to Yamaha's usual high standards. The main circuit card is a large one, of high quality, and clearly labeled. As you would expect, it's positively loaded with digital IC's. All but one of these are soldered directly to pads on the board. The power supply section is separate from the main card, and there's a substantial shield between them. The supply also seems well made, and adequately heat sunked.

The Programs

HERE'S A LIST of the factory programs:

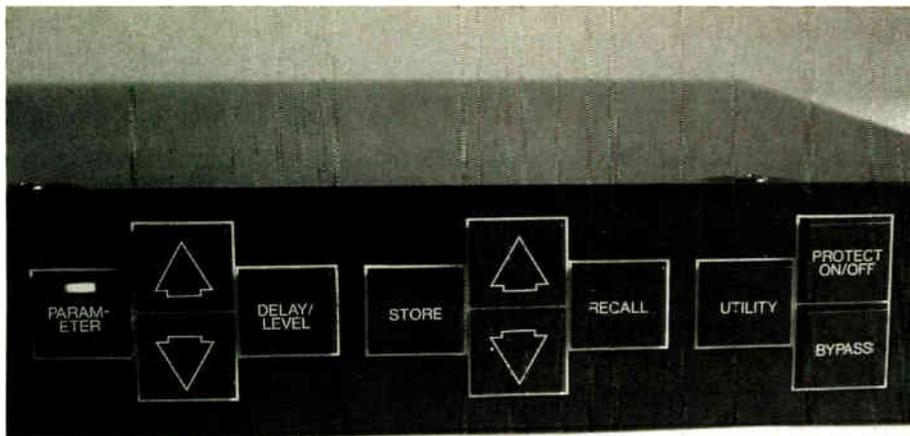
- Twelve graphic equalizers, including 10-, 14-, and 17-band stereo formats, and 27-band mono formats. Some have separate parameter control of left and right channels, some have common controls (which can be "converted," as mentioned). Also, some programs provide low and high pass filter functions as well.
- Three parametric equalizers, two of them four-band, and one two-band. The latter is a "combined" program, with the parametric on one channel, and various filters on the other.
- Programs 16 and 17 are "tone controls," very similar to what you'd find on a home stereo as a "Presence" control. Very handy!
- Next are three band-pass filters, and two band-reject filters. Both the frequency and slope of the low and high pass



converted if chaos is to be avoided. It's also vital that you interconnect the DEQ7 properly. For example, because the DMP7 digital mixer was my only other source of digital signals, and means of D-to-A conversion, and because it lacked a "digital signal loop," I had to be content with feeding an analog signal into the DEQ7, and then inserting the resulting digital signal into the DMP7's "Digital Cascade In." This yielded a converted (to analog) signal at the DMP7's output. But I would have preferred to insert both the input and

functions can be altered, giving you anything from a very wide band-pass characteristic to a very deep and narrow rejected band (for cleaning up AC hum, for example).

- Then in program 23 there's a four-band parametric EQ on one channel, and a six-frequency notch filter on the other. Program 24 is a variation on this, being a six-frequency stereo notch filter adjustable over the range of 20Hz to 16kHz. In addition, a stereo high and low pass filter can be used in tandem with the notches. ▶



► – Finally, there are six effect programs. These take the form of filter sweeps which can be controlled by MIDI, footpedal, level of incoming signal, or by an internal LFO. In some of these the type of filter being swept is selectable. All of them sounded interesting, a couple were *awesome*.

So How Does It Sound?

IN A WORD: very good. Not wonderful. But certainly very, very good. I was impressed with the clarity of reproduction, the quietness of the unit, and its freedom from any hint of digital “glitches” during a several hour test period. Each program lived up to its description in the manual, the graphic equalizers, the tone controls,

and some of the effects being especially good. My test source material was a master analog two-track tape with which I'm very familiar, and I found most of the programs useful in “touching up” the tape's stereo program. Pulling up the bass, or conversely toning it down, accenting the “air” in cymbals and the “bite” in a snare drum were no problem. All in all, I'd say the DEQ7 was what a good piece of audio gear should be, namely “musical.”

The only reservations I have concern the similarities in sound, program to program. You say an equalizer should not have a “sound” of its own? Well, as I mentioned before, all of the industry-accepted equalizers and filters do add something of themselves to the material just passing

through. And if you're looking for the sound of a Pultec tube EQ, or an older NEVE console equalizer, you won't find it in the DEQ, which nevertheless does have a sound of its own. I'd call it almost, but not quite, neutral – digital neutral, that is. There is a very slight hint of the sound being “manufactured,” which to a degree it is, by being taken apart and reconstituted digitally. I also heard a very slight loss of room ambience and reverb tail detail, a common complaint with digital systems.

Conclusion

THE SOUND OF the DEQ7 is certainly not the equal of the finest stereo analog equalizers or filters, but then can you break the bank account purchasing one of each of these? Personally, I'd have no qualms about purchasing a DEQ for myself for use in “re-equalizing” my collection of tapes. In fact, I might just do that.

But really, it's incumbent on you to listen to it yourself. Sound quality is so subjective, after all. The DEQ7 certainly lives up to its maker's claims in all other regards, but as they say, “Hearing is Believing.” ■

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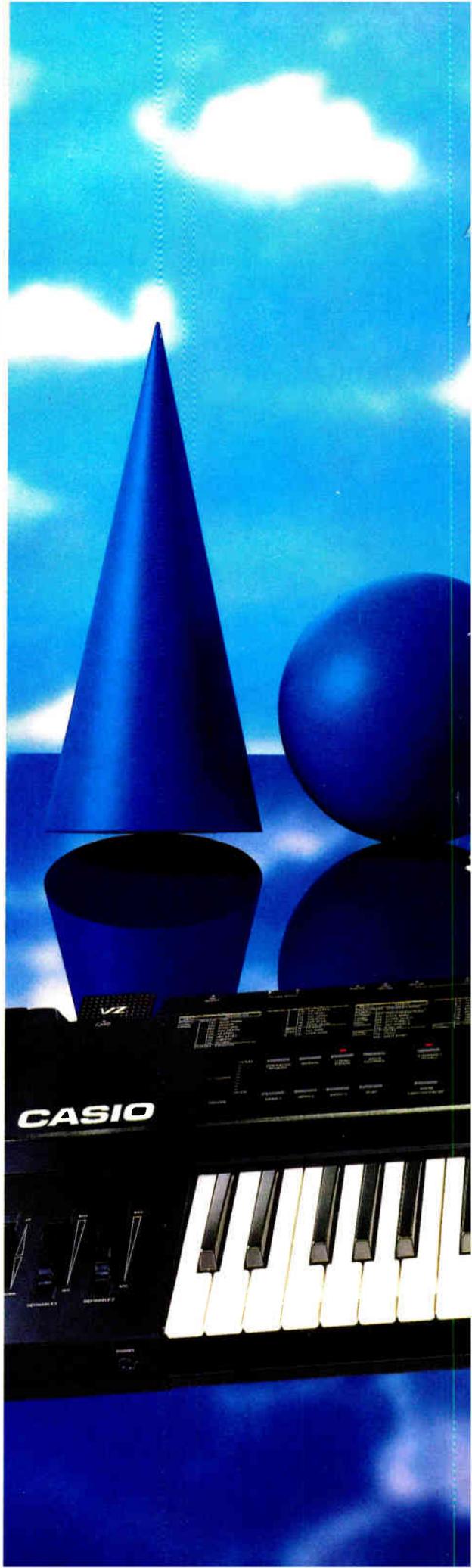
velocity split and positional cross-fade capability. You'll swear you're playing a MIDI stack instead of a single keyboard.

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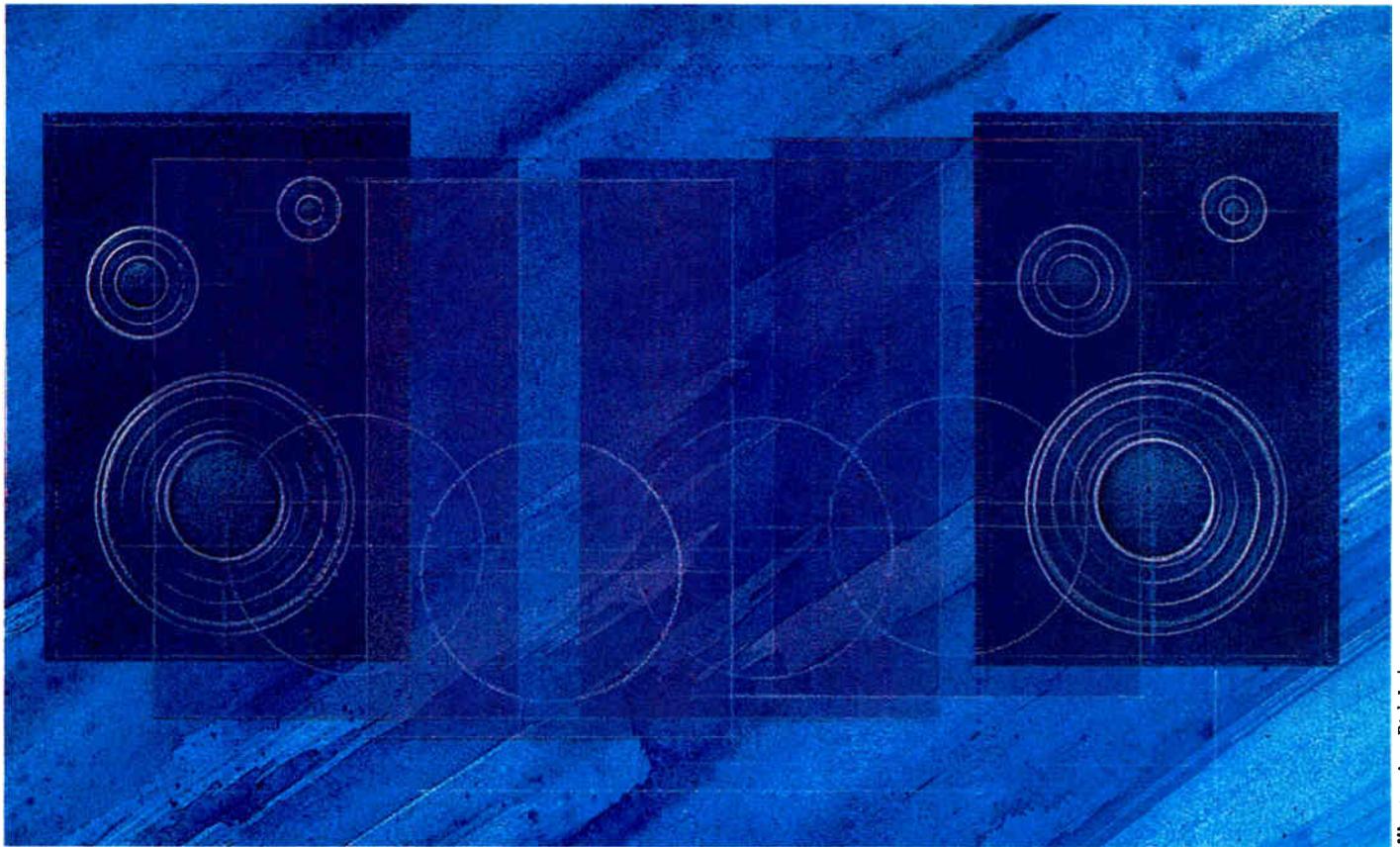


Illustration Rick Lohmes

DYNAMIC *panning*

If you want to add more life to sounds from your synth or sampler, there's nothing quite like the motion created by panning. *Text by Charles R. Fischer.*

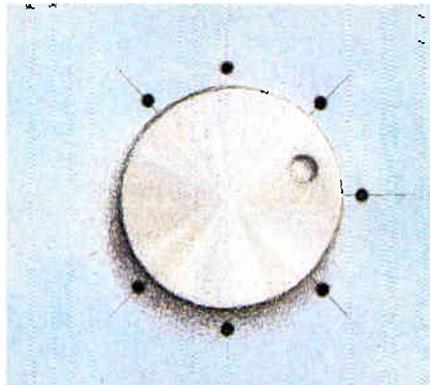
MOST SAMPLERS AND synthesizers made today feature stereo audio outputs. Some of these instruments are set up so that voices can only be sent to one or both outputs (the Yamaha FB01 and TX802 Tone Modules are two examples). Other instruments feature a very powerful tool known as dynamic panning. This allows the user to move the instruments voices anywhere between the left and right speakers in real time, giving the creative user an entire group of dramatic special effects. Instruments with this feature include the Ensoniq ESQ1, SQ80, the E-mu Emax and E111, the Roland D50, the Sequential Prophet VS, and the Yamaha DX7II and TX81Z.

In this article I'll discuss how you can produce these effects, and how you can use them with your instruments. You've probably heard these effects on the radio or your favorite tapes or CDs, and by understanding them, you will have the opportunity of duplicating these sounds, or coming up with your own original effects.

Stereo and Dynamic Panning

BEFORE WE JUMP into the effects, let's take a minute to examine stereo systems

and how panning works. In a stereo environment, a sound may be placed in the left speaker, the right speaker, or anywhere in between. Some instruments sound best in the center, where they subjectively seem to ground things: kick and snare drums, bass, and lead vocals tend to be placed here. Other instruments or vocals are spread away from the center to avoid muddying the mix. On most songs, you'll notice that toms, cymbals, and background vocals are moved off to the corners to avoid clashing with other sounds. This left-to-right field is known as the stereo panorama (hence the term "panning").



While most sounds are usually panned to a certain location and then forgotten, there is nothing God-given about this rule. Way back on the Beatles' 'Her Majesty,' Paul McCartney's vocal and guitar are slowly moved from left to right at the beginning of the song. Similarly, the Rhodes electric piano featured "Stereo Vibrato," which moved the sound around by gently alternating it between the left and right speakers.

With programmable samplers and synths, this basic concept can be taken much further by choosing the proper controller to "steer" the sound between the speakers. To get the proper effect, the user must choose the proper controller, and set it up for the desired results.

Low-Frequency Oscillators (LFOs)

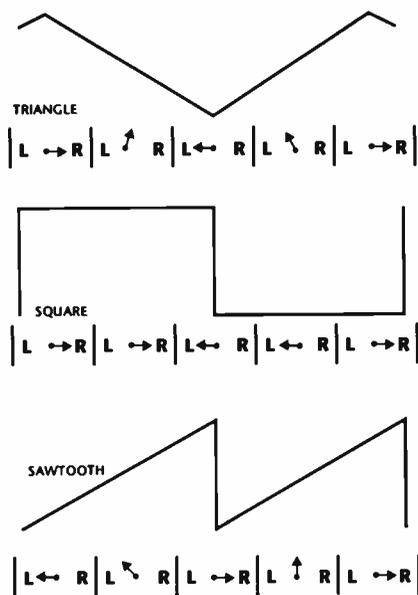
THAT SAME BELOVED LFO that is used for vibrato and chorusing is also a natural for autopanning effects, like in our ancient Fender Rhodes. To duplicate this effect, a sine or triangle wave is used for a smooth sweep between speakers. By adjusting the rate and modulation depth, you can get everything from a subtle shimmering to a blatant jump between channels. And if

your instrument has two oscillators or layering, try sending the same LFO to one oscillator or layer at a very slight depth, with the two oscillators or layers panned to different positions. The result – instant stereo chorusing without the need for an effects box!

By using other waveforms, a variety of similar effects can be produced (see Figure 1). A square wave gives an instant bounce between channels, while sawtooth waves create a slow sweep that instantly snaps back to its starting point. Again, if your instrument allows layering, try making two copies of a sound using sawtooth-type panning. On only one of the voices, invert the sawtooth (not possible on all instruments). If done properly this results in a sound that begins at the “center,” only to spread out at the sides at a rate set by the LFO.

Because the LFO motion provides a rhythmic effect, you can “tune” the LFO to match the tempo of the song. This produces an amazing coherency where the panning seems to “march in step” with the music. Other instruments allow their LFOs to be synchronized to note ons.

Figure 1. By using various LFO waveforms, you can greatly change the panning effects produced.



Envelope Generators

WHILE LFOS ARE used to produce repetitive effects, envelope generators are designed to produce a single sweep. The envelope has an advantage in that the user is able to adjust the rate and depth of the various segments.

By using an envelope to control movement, the sound may be made to slowly fade or ricochet between speakers. If the envelope is set for a rapid attack with a slow release, the panning will fade away in a fashion similar to reverberation. While it's not the same as a nice digital reverb,

the illusion can be made very close in the right circumstances. This can come in handy if you are recording in a budget studio, and you only have access to a few effects units. This will free up the reverb for use with the drums or vocals.

Again, if your instrument allows layering, make two versions of a single patch, and invert the envelope on one patch. This results in a sound that starts in the center, and swells out to the corners, giving you a very impressive effect. This technique sounds especially good with organ, strings, and orchestral sounds. If you prefer, the effect does not need to be that blatant – panning a layer of two almost identical sounds to the left and right, and altering the filter, timbre, or amplifier envelope on ones gives some interesting, more subtle motion.

Keyboard Control

WHILE LFO'S AND envelopes can provide a number of nice effects, using the keyboard to control panning can add an element of realism to acoustic-sounding patches and samples.

Figure 2. Using velocity to control panning, the player can cause the instrument to shift slowly or suddenly, by varying the force used to strike the keys.

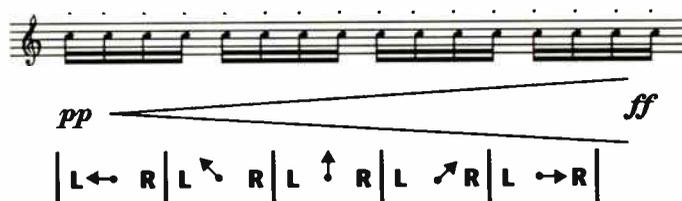
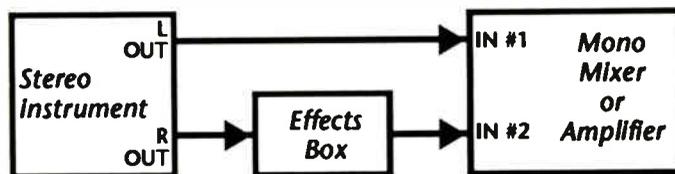


Figure 3. Even if you're stuck with a mono mixer or amplifier, you can still use dynamic panning as a programmable effects send to control the level of whatever effects boxes you are using.



When acoustic instruments like piano, marimba, or vibes are recorded, a pair of stereo microphones are often used to add ambience. For example, with a grand piano, the bass mic might be panned left, and the treble mic panned right. This spreads the instrument out and makes the instrument sound larger in a mix.

By using your keyboard to control the panning, this effect can be imitated perfectly. Bass notes come out of the left speaker, the midrange is centered, and the treble is heard on the right! Arpeggios and thick chords take on a whole new life when heard in this way.

If you have a sampler or synth capable of this trick, give it a try. You'll be surprised at the realism it adds.

Other Tricks

ANY CONTROLLER THAT can be used to affect panning may be tried – the only potential problem is that you have to make sure you use the effect in a musical manner. If you're feeling experimental, you can try modulation wheels, aftertouch or footpedals.

I recently created a pan flute voice for the ESQ1 that used velocity to control the panning location. Soft sounds appear on the left, louder sounds on the right. By rapidly repeating a single note while varying the striking force, the player may move the sound's position at will (see Figure 2).

Finally, stereo outputs can be useful even if you're stuck with a mono setup. If you call one output your “straight” output, and the other your effects send, you can use dynamic panning to control the amount of reverb, delay, or flanging on your axe (see Figure 3).

As the instrument is moved from left to

right in the mix, the volume of the effects will increase. While digital effects processors that respond to MIDI controllers to produce the same effect tend to be on the expensive side, this trick will work with any effect, MIDI'd or not.

The next time that you've run out of ideas with your synth or sampler, give panning a try. The ideas presented here are just a starting point: now it's time to jump in and see what it can do for you. ■

Charles Fischer is a freelance writer and programmer who runs Mescal Music in Hercules, CA.

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WIND ON FILM



Photography Peter Figini

Tom Scott's expertise in studio basics and wind synthesis have led to some great music and fine scores. Daddy Wind Synthesis tells the story. *Interview by Deborah Parisi.*

TOM SCOTT IS rushing around his studio like the proverbial chicken – apologizing, setting up microphones, fiddling with the Macintosh. “Sorry,” he smiles, “it’s gonna take me about twenty minutes to finish this up. I’ve got to have it done before Lynne leaves for lunch.”

“It” turns out to be a theme song demo for a cable television station. After a few minutes, he calls Lynne and the two of them start to croon: “Power . . . power . . . power . . . Tampa Bay, Channel Twenty-Aaaaate.” Reminds me a bit of the way demos used to be done; the vocals are doubled, then

MT NOVEMBER 1988

tripled; a bit of reverb’s being used to thicken it all up. “We really ought to be doing this more as a power vocal,” Lynne complains, “but you have to start out pretty middle-of-the-road until you know what the client wants.”

A few minutes later, the cassette is done. The session’s over; the job’s probably won.

It’s a bit odd that Tom Scott – solo artist, film and television composer, sideman extraordinaire, and the man I think of as Daddy Wind Synthesis – is hustling his rump for a TV spot, but it seems to have more to do with his energy level than anything else.

He slides a few chairs together in the corner of his impressive little studio, hauls over an ashtray and relaxes a bit. “Like Groucho says – mind if I don’t smoke?”

The studio is in immaculate condition, particularly considering he was working there half the night and has barely finished the vocal overdubs (see diagram for equipment details). Interestingly enough, it’s one of the few rooms in the house that isn’t completely trashed, although that’s not a comment on his housecleaning. Carpenters are crawling around everywhere; the front of the house looks like it’s been creamed by Gilbert the

► Terrible. But the remodeling hasn't affected his work environment – not a peep seeps through from the calamity just outside the door.

"On the album (*Flashpoint*, GRP Records), I used this studio for composing," he begins, "but we needed a bigger place to cut the record (the bulk of the album was cut at Sound City Studios in Van Nuys, California.) We recorded on an analog Studer 24-track, with Dolby SR. Both for the sound quality and the number of tracks, this room is just not practical. Especially for a band; I can't bring a band here."

The tracks on the album rotate band members for the most part, although Vinnie Colaiuta provides a driving syncopation throughout and bassist Neil Stubenhaus provides the deep, well-edged ba-bomping on most tracks. Other players contributing their expertise include Randy Kerber, Dean Parks, Michael Fisher, Alan Pasqua, Eric Gale and Lynne Scott.

Scott launches into an appreciative overview of the gear. "It's hard to assign a value to all the things in here, but I would have to rate them in terms of money and career value that they've had – and music value, too. The Mac's first. The Fostex multitrack is very good. The Mac, the multitrack – I don't think I could get along without them.

"As far as the synths are concerned, I'd have to say that the DX series – DX7II, DX7,

TX802 – is way up there, because I have so many voices for them. That's what I depend on. And certainly my Akai sampler. I'd be in trouble without any one of them. The D550 has quickly become an indispensable auxiliary. I hear too much of it lately, so I'm getting some custom sounds, because when mixed properly it's great."

It's more difficult for him to think of gear he could live without. "That's harder. I guess the Fostex DDL," he says after a moment. "But when I did the TV shows I used it a lot – TV stuff is mixed in three stripes, a totally nonsensical way they have of doing stuff, so in order to get separate echoes, I would

"Now there are music editors doing their work on Cue, and I get a messenger at the door who's got a disk. I boot it up, and there's the cue."

assign it to one of those tracks, even though it's an echo ordinaire, especially when you think about the Lexicon 200 and the Yamaha REV5, it was better than only having one echo chamber that's universal to everything you're recording."

Synths are, and have been, an integral part of Scott's music, for colorings, backwashes, and on occasion lead lines. It's curious, considering his own background as a session player and acoustic performer, that he's using synth strings on a couple of the tunes. Is there a conflict between Scott the synthesist and Scott the horn player?

"That's a damn good question," he says, "a

damn good question. I don't want to throw fellow players out of work – that's the last thing I want to do. On the other hand, I'm a realist. And in the case of this album, it was a question of using synth strings or using nothing. You don't have the money to bring in a string section the size that you really need to give it the weight you need. You can't do with four strings, or five; you need 12, 16, or 20 to really get the kind of sound you want.

"But regardless of the fact that I didn't have the money to hire string players, realize that the term here is 'synth strings.' Synthesizers are incapable of duplicating the

sound of a string section. I could have used another synth sound, a pad sound of some kind, that would have colored it in the same way.

"As far as the question of musicians, I think that technology is rearing its ugly head in the music fields to those people who are convinced that an acoustic instrument is the way to go, and don't have the ability or the wherewithal to make any kind of change, or enhance their acoustic playing with some kind of electronic addition. That's just the way things are."

With the S900 and TX16W looming in the background, I ask how much sampling is

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The Sentient Six: Total control of all MIDI gear, from multi-track sequencing, transposing delay effects, continuous to 95 different controllers. Without delay.

done in his work. Is he sampling records?

"No," comes the reply. "I know guys who do, and I have a couple of drum samples – there's a snare drum sound in there, for example, that I got from a friend of mine, called Wind Snare, and I think it's off of one of Stevie Winwood's albums. But I don't know for sure. The point is, I don't consciously sample off records. There's a kind of community of us, film-oriented guys, who freely trade stuff among ourselves. And frankly we don't know where it comes from."

"I've heard stories about guys who actually cut false tracks to get a whole string section to play a unison note, and then up a fourth higher, and then sample them. And, you know, if it's possible it's going to be done."

"Unfortunately, using synthesizers to replace string players, or any musician for that matter, is often simply a question of work – of adapting to a changing industry. Just like every other industry has had to do."

Scott's no novice to synthesis, of course; he came at it from an early desire to drive synths with a sax-like controller. He first discovered the Lyricon in 1974 while on tour with Joni Mitchell. "That was the Lyricon 1, the original one, which had its own oscillator. It was really not a very good sounding unit. But the Lyricon that I got a lot of mileage out of was the Lyricon Synthesizer Driver, which I fed into an old Moog Model 12, the original old Moog with the fantastic low pass filter and oscillator."

There's a warmth to those old synths that has never been duplicated. Never. I wish they had MIDI."

Scott's keyboard chops are mostly used for composing; these days he uses Yamaha's WX7 to push the racks around him, "... because you can impart far more expression into a melody with breath control than you can on a keyboard. You'd need four hands – two on controllers and the other two on the keyboards – to do what I can do with the proper kind of breath expression."

"I don't think samplers can respond to breath control yet," he says, "although Judd Miller is using the Akai thing to drive a sampler, an expander – he's got all kinds of stuff happening. He's a killer. But he will tell you that some of the sounds respond to breath, some of them don't. So you have to program appropriately."

Deciding when to use wind synthesis as opposed to keyboards or acoustic sax is just a matter of course for Scott. "When I'm composing for films, the film dictates the music; when I'm doing an album, the song dictates the instruments and the orchestration. Perhaps it was subconscious on my part, because Larry Rosen, the head of GRP Records, put a bug in my ear to play tenor sax on this project, and nobody had ever said that to me, ever. When he said it, I didn't know whether to resent it or what. My attitude was kind of, 'I think that's my

decision.' But I can see his point, because it makes a more identifiable sound. I've kind of turned into this chameleon, where you hear a melody instrument and you're not sure what the hell it is."

"Really, though, I think the tunes on this album just call for saxophone. Also, on the last album I was using the Lyricon, which had two or three sounds in particular that always sounded great, that spoke to me in terms of their appropriateness for particular songs. The WX7 is so new, that actually if I was doing the album again today, I could probably come up with more stuff. I'm definitely going to use it more as time goes on. It's just a little too new. There are a couple little bugs in it that annoy me, and I really hope that Yamaha takes an interest in it."

"One problem is with the breath control," he continues. "On some of the sounds on the TX81Z, when you initiate the tone and get it up to its full volume, you can hear the volume going up in increments – click, click, click. Now my understanding is that it's not the WX7, it's something to do with the microprocessor in the TX81Z itself. There are some sounds where it doesn't happen at all, and there are ways of masking it. If you add enough echo and phasing and chorusing and effects, you don't know it. But that's not my idea of the way it should be. It should sound good dry. So, for those reasons, I didn't dive immediately into the WX7, ▶

Sense

Multi-Flavored Pick Direction: Assign a MIDI channel for drums on downstrokes and horns on your upstrokes, or pan simultaneously.

SENTIENT SIX
By PASSAC.

▶ although I do enjoy playing it. (For more on this problem, see this month's *Input/Output* column.)

"So the WX7 is in progress," he says. "I just wish that the people who wanted one could buy the package and go home and be just pleased as hell with the sounds they are getting. It's not quite that easy at this moment. If I have to spend days and days



and hours and hours tweaking the thing – and I've been at this thing just about as long as anybody has – what happens to the poor sucker who goes home with this thing as a beginner?

"I wish they would come up with a companion module for the WX7 that had all the effects – like maybe an SPX90 that was made so it did all the masking of the imperfections of the sound. That would be OK with me."

TOM SCOTT THE film and television composer is perhaps not as well known as Tom Scott the artist, but he's worked at both for almost the same amount of time. "The perception that I became a film composer is, in a sense, not true, because I was really doing both all along. It's just that I became more prominent as a player.

"I started playing when I was 7, and I started playing professionally when I was about 17. But I also did my first film score at 16, a little educational film called *Eggs to Market*, that's still in distribution in California. My first really professional scoring was done in 1967, I believe – an episode of *The Bold Ones*."

Even though his scoring credits don't yet outnumber the 500+ albums he's performed on, the work is extensive: films include *Uptown Saturday Night*, *Stir Crazy*, *The Sure Thing*, and *Soul Man*; television credits include themes for *Family Ties*, *Starsky & Hutch*, and *Square Pegs* and background scores for *Baretta*, *Streets of San Francisco*, and a host of specials and movies of the week. He attributes his early success to people – Dave Grusin, Quincy Jones, Sidney Poitier, to name a few, put faith and recommendations in his hip pocket.

"I always wanted to be a film composer; being a star in the world of music was never really a goal of mine. I don't mind being in

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the limelight, but to this day it's not something that I crave. I really kind of enjoy being in the background, doing stuff behind the scenes. And film composing really represented the opportunity to provide music that helps highlight the emotion that a director's going for. That is the real challenge. Especially if it's a good film.

"In a way, scoring's a lot easier," he admits. "I'm one of these people, and I suppose most people are, who thrives on being pointed in a direction. If you tell me, 'I want something that goes with this,' that narrows it down immediately. If it's a love scene you can't write some funk beat; there are certain limitations within the creative area that you're dealing with. But when someone says, 'OK, do an album,' and it can be anything you want, that's tough," he laughs, a bit maniacally. "I find that a lot harder.

"Of course, scoring was a lot harder when my father started out," Scott says (Nathan Scott wrote music for *Dragnet*, *Lassie*, *Twilight Zone*, *Wagon Train*, and scads of other TV shows. "When he composed music for *Lassie*, which I remember the best, his sessions were at a studio called Glen Glenn, with no projection. And he didn't use click tracks – he did it all with a stopwatch. And he'd find the place that he'd want to hit, and he'd make the music feel right with rubato. He'd make whatever adjustments for a 3/4 bar to make it come out, Boom, on whatever the beat was that he wanted to hit.

"So, getting to my first big date, I just wrote it the way I'd seen my dad do it. They didn't have projection, either, so I was doing it to a clock. And I picked up that technique pretty well; it could have been a disaster. When you're working that way, it's critical that you allow the film to move you. It's wrong to say, 'This is the style of music I like, so I'll make it fit in this scene.' No, no, no. Let the scene dictate. To me, a lot of the guys who are so-called soundtrack composers are really pop songwriters. It's really kind of ass-backwards the way those film studios do it, because in order to make a company hit soundtrack album to go with a film, once they're done shooting a film they'll solicit a tune that an artist may have coming out soon

"To me, a lot of the guys who are so-called soundtrack composers are really pop songwriters."

on an album, or something in progress, and they'll see if they can slam it in somewhere and make it fit.

"That concept is almost repugnant to me. What are we making here – are we making a film or are we making a record? If we're making a film, let's have the music accompany the film; let's have it be made specifically to do what the film needs. I do get irked a little bit when I hear those guys referred to as film composers, when in fact they're not at all in the traditional sense. They don't understand about taking a scene, looking at a scene, and letting it be their

guide in terms of the music."

Scoring has become easier, more fluid, for Scott, largely due to the Macintosh's proficiency. "Nowadays I work pretty exclusively to a click, but that doesn't necessarily mean that there's a rhythm feel to the music. Even if the music has a real rubato feeling, I will still have the constant click for a couple of reasons. One is because I'm so thoroughly committed to the Macintosh computer and the Opcode program by Rick Johnson that's called Cue, that I rely on it very heavily. It's really a time-saver, compared to what I used to do.

"Let's say I had a film date coming up in a week, and so every day I've been writing things, and it's the day we do the chase. And let's say there's a lot of motion, and then we cut to somewhere else that's very staid and sedate, and then we cut back to the chase – in other words, there's a lot of technical cuts, areas where the music has to change radically. Well, blocking out the three-minute scene at that time was and is to me an unpleasant, strictly mechanical task. I used to just dread getting up and having to slog away at that, and then set up the score paper with all the proper clicks and stuff at the top, and indicate all the things – just the physical part of mapping out a piece of music like that for an orchestra. That's three or four hours of the day right there.

"What the Cue program lets me do is cut the amount of time I have to do that. Before, God forbid you should make an error somewhere and number incorrectly on something in the first minute, because then you've thrown everything off. I've had that, where I had a bar number wrong, and I've had to go back and redo the whole thing . . . it's just a giant pain in the ass. Cue doesn't ever make a mistake. That's the beauty of it.

"Now there are music editors – the guy who breaks down each scene that needs music – doing their work on Cue, and I get a messenger at the door who's got a disk. He hands me the disk, I boot it up, and there's the cue. And I can assign a tempo to it, and the way it lies on the bar count, so I can just examine how the beats fall and how the cue lays out, and if I want to alter the tempo

slightly or make a 3/4 bar somewhere, I can do all that easily.

"Then I can set up the score paper, and I end up printing a bunch of score paper on computer paper, blank score paper where all the clicks are mapped out and all the indications are made, tempo changes, and then I proceed to write the music around that."

The computer fervor thickens; Scott begins extolling the virtues of music notation software. "I do use a music notation program, a lot. If you're thinking about using one, the question is: how valuable is it to

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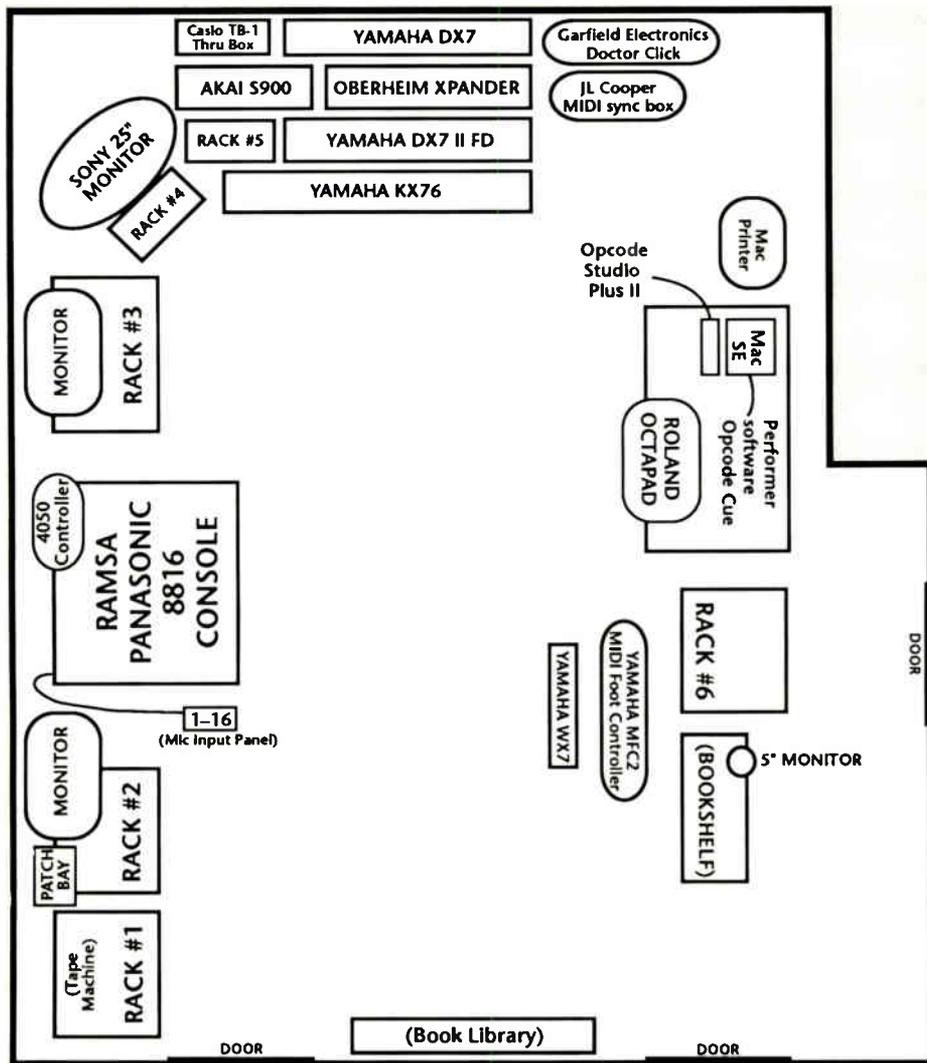


Diagram of Tom Scott's studio.

Rack #1:
 Fostex E2, with center-track timecode
 Fostex B-16
 Dual-well cassette deck
 Technics Closed Loop reel-to-reel

Rack #2:
 2x Kepex II Noise Gates
 Fostex B-16 Meter Bridge
 8x32 Fostex RCA patchbay (256pt)
 Lexicon 200 reverb
 Fostex 4030 synchronizer
 Fostex reverb
 Fostex DDL
 Fostex comp/limiter
 Simons integrated direct box
 Applied Creative Technologies 8-channel direct box

Rack #3:
 Technics turntable
 JVC R-DAT
 VHS VCR
 BR-8600U Super VHS (editing deck with shuttle control)
 Tapco 2210 graphic EQ
 Ibanez Multi-Effects (comp/limiter, stereo chorus, EQ, analog delay)

Rack #4:
 Ramsa power supply
 2x Hafler 500W amps

Rack #5:
 Studio Technologies AN2 stereo simulator
 Songbird stereo chorus
 Yamaha R100 reverb

Rack #6:
 360 Systems Midi Bass
 Yamaha TX81Z synth module
 Yamaha TX802 synth module
 Yamaha TX16W sampler
 Yamaha SPX90 multi-effects
 Yamaha MJC8 MIDI patchbay
 Yamaha MV802 mixer 8x2 rack mixer
 Yamaha REV5 reverb
 Roland D550 synth module
 Roland MKS20 digital piano

have a copy of your composition instantly available at any time, day or night? I can't tell you the number of times that it's helped me. Let's say I've done an album, and I'm planning to do a tour or concert. When it wasn't computerized, I'd go and get out my band books, and a third of the parts would be missing. Prior to the computer era, I've had to copy the same piece of music five times over a three- or four-year period, because I keep losing them - or people rip them off.

"So to me, the question isn't whether it takes time - it takes time, especially to do something real accurate. And, plus, it still screws up - 'That's not an 11th ending, it should be a 1st ending' - little things. Finding out the little bugs in a program and how to get around them is part of the challenge. But I cannot put a value on the fact that once I've done it, it's always there. It's a permanent record, and it's instantly retrievable."

He stops short of inputting via MIDI, however. "No, I don't do that. I have a buddy who's into that, and he says he's just

got to quantize the hell out of it - both the attacks and the releases. But that's not what I use it for . . . yet. Maybe someday. I tried it a couple of times, and I got the most amazing parts, like 128th note rests. But I forgive it for not being accurate on MIDI; what it does already is just fine. And things just keep improving."

Using both synthesizers and orchestral scores, Scott's able to get the most mileage out of his compositional tools. To hear him talk, when to go electronic, when to go acoustic is not a dilemma at all. "It's very simple," he says. "The sounds that are, to me, really outstanding synthesizer sounds are sounds that either can't be duplicated by a great player, or can't be duplicated any better by a player. Those, by definition, are the sounds that I use. For me, one of the best uses of the synth is when you've got a scene where there's very little happening." In a flash, he's at the DX7, rummaging through patches, eventually producing a great plucked percussion sound.

"What you're looking for is something to act as a glue through a scene. Say there's a

guy walking down the street, he's going to do something, he's got a plan, but on the screen it's just a guy walking down the street. We know what's going on, so we've got to place something to kind of get through this moment to let you know that something's gonna happen. We're on our way to a mission of some kind." Scott starts playing a simple, quick-paced rhythmic line, building in pace and intensity. "A sound like that, which has a lot of velocity, gives you the overall feel. That's one area where it's great to write just that part on the Mac - whenever you just need some kind of rhythmic thread. That's one great use of a synthesizer."

It may well be that we'll soon be seeing a lot more of Tom Scott. At press time, he was in final negotiations for the job of Music Director of Pat Sajak's new talk show, scheduled to run opposite Carson (Watch out, Doc . . . heeere's Tommy). With a baby and a house both under construction, no doubt the steady gig will be a comfort.

"It'll be like doing 10,000 concerts a week!" ■

ART MultiVerb

ART's volley into the multi-effects market delivers reverb, pitch shifting and more in a programmable package. *Review by Travis Charbeneau.*

"FOUR DIGITAL EFFECTS simultaneously! Reverb! Digital delay! Flange! EQ! - all for under \$600!" Holy SysEx Dump, Batman! If you've been reading the ad copy for ART's latest wonder you may be led to believe that the MultiVerb will help you to take over the world. Well, after working with it a bit I have to tell you the worldly conquest stuff may be out of the question, but sonic conquests of a massive variety are most assuredly in order . . .

Out of the Box

ON ITS BACK, the MultiVerb sports left/right, 1/4" phone jacks in, left/right out, a 1/4" footswitch input, and MIDI In/Out. In front there's a 32-character backlit LCD, seven-segment numeric display, input level slider and display (four LEDs), output level and mix sliders, plus a ten-key multi-function keypad, inc/dec buttons (for 99 factory presets, 100 blank slots and 1 bypass), manual bypass and an edit mode button. (There's no on-off switch; this unit was built for a rack power strip.) The MultiVerb can be used in-line, but I don't recommend it.

Why, you ask? Because the MultiVerb's synthesized stereo image from a mono input is utterly convincing, that's why. As with the original ProVerb, your mix simply opens up like the proverbial pod bay door into: sssspace . . . ace . . . ace . . . ace! Stereo return is, therefore, a minimum must. You can hear this imaging right away by stepping through the MultiVerb's 99 factory presets with the clearly-marked inc/dec buttons, or random-access keypad entry. These two simple functions are marked in royal purple; the more intricate stuff in light gray, so your technolust can be quickly satiated by sound.

Programming

ALL 200 MEMORY slots on the MultiVerb can be user-programmed. A "lock-unlock" utility protects 1-99, the factory-programmed presets, with preset 100 set for bypass. Even if reprogrammed, these original "factory 99" can be easily recalled from the front panel. Using the purple inc/dec buttons, you step up to 101-200, stopping at a blank slot (or unlock and completely delete one of the "factory 99.") Then you enter the gray edit mode, and, using an "add" button, simply step through the algorithms which the MultiVerb

prompts you for, adding on the basic effects you want. The effects algorithms are prepatched together just like you would a desktop cluttered with good old guitar pedals: flange in front of delay in front of reverb, EQ in front of gate, pitch transpose in front of delay, etc. By "chaining" these effects together in different combinations, you can torture any sound until it screams for mercy. When finished with the basic chain, you then step through your selected effects for fine-tuning.

The MultiVerb includes 19 different categories of effects algorithms to choose from: EQ (high-end rolloff, with 13 selectable frequencies), flange, chorus, pitch transpose, panner, mono DDL short and long, reverb 1, 2 & 3, gated reverb 1, 2 & 3, tap DDL short and long, regenerated DDL short and long, and stereo DDL short and long. Nice vibratos and tremolos are also possible. One other point worth mentioning is that the different reverbs have different densities: reverb 3 is the most dense and recommended for pure reverb programs, while reverb 1 is the least dense and should be used in multi-effects programs.

Greater and lesser degrees of fine tuning are available for each effect in the chain, and, as with their original selection, you can hear the changes as they are being added to your signal. For example, Reverb 2 of the three types onboard offers hall, room, plate and vocal types (plus Reverb 1's versions of all four), as well as parameters for decay (0 to 25 seconds), high-frequency damping (0 to 50 percent in 7% increments), position (front to rear, 100 percent in 17% increments), diffusion (40 to 100 percent in four 20% increments) and level (0 to 100 percent in 7% increments). Pitch transpose offers six parameters: type (smooth or quick), pitch (-12 to +12 half steps in semitone increments), fine (-1 to +1 half steps in 6 cent increments - remember, a cent is 1/100 of a semitone), regeneration (0 to 100 percent in 8% increments) and level, 0 to 100 percent in 6% increments. Panning offers just two parameters: depth (0 to 100 percent in 7% increments) and speed (0 to 15). Simple.

Tap delay is far more complex. It offers just four parameters: type, taps, delay and level; but type alone breaks down into 18 algorithms of its own for even, shortened, lengthened, mono, stereo; and varied types of flat, reverse and forward slopes. In summary, you have programming over a lot

more sections of the sound than many previous budget reverbs, but the adjustments are a bit on the coarse side. Do we want everything for our \$600? You bet.

Utilities

THE MULTIVERB HAS a very thorough implementation of utility features. It has a four-year lithium battery to remember its MIDI channel assignment and MIDI program table (or "MPT"). In addition to being a convenience, this table allows you to select which 128 (of the available 200) programs will be addressable via MIDI program change commands. Fortunately, mapping is much simpler on the MultiVerb than it is on other ART products.

The MultiVerb will also dump on command via the MIDI Out: one preset, all presets, or the MPT, so you could save 200 presets at a whack with a librarian. A handy MIDI merge function will echo the MultiVerb's MIDI In data and combine it with outgoing MIDI data through the unit's MIDI Out on to the next device (perhaps another mapped effects unit). ART even allows you to adjust the viewing angle of the LCD - a very thoughtful feature.

Sound

IN MY OPINION, it's fabulous. The MultiVerb boasts 20-bit processing and a 15kHz bandwidth and it shows (or should I say, sounds). The factory presets are very impressive. Even the notorious CZ101 factory organ goes straight to Bach heaven with stuff like 'Concert Leslie' (DDL+FLA+REV) (MultiVerb LCD-speak) or 'Panning Flange' (DDL+FLA). Presets like '12 String Guitar' (DDL+Ptr) give your patch a second, octave-higher voice and just a touch of shimmering delay. 'Warehouse Snare' (DDL+REV) will bring back memories of those good old garage band rehearsal days, and 'Studio Plate Rev' (EQ+DDL+REV) makes even that squelched drum machine crash ring like the real thing.

You also have available a host of truly deranged presets. Pitch transposition in particular does some utterly perverse things, especially when combined with delay. 'Space Shift' (DDL+Ptr), and 'Barbershop Pole Fling' (EQ+DDL+Ptr) in particular give meaning to the word "special" in "special effects."

All of this stuff really sparkles; the kind of thing that makes you want to put on



headphones, leave a paperweight on the keyboard and just sit back and cruise. Again, I can't over-emphasize the stereo imaging. Bring some Dramamine. Ping-pong stereo echo flip-flops a full 180 degrees. Combine it with panning and you may suffer from motion sickness.

Complaints

REMEMBER HOW THE ProVerb occasionally snaps when changing between presets? The MultiVerb seems to snap audibly during a change on quite a number (switching to 50 and 51, in particular, gave quite a squawk). According to ART, this problem is software addressable and they are looking into it. Most of this noise will fall well below the threshold of perception in a normal mix.

There is also nearly a half-second delay while MultiVerb gets its act together during almost any change, particularly one involving pitch transposition. This is due to the time it takes to set up a new chain of effects, and again according to ART, should definitely be fixed in final software. Fortunately, when processing a single voice, this delay can easily be written around. To paraphrase the old political bromide, one rarely charges horses in the middle of a note. Another problem with the pitch transposition was that the shifted signal often seemed out of tune – when set to a fifth higher than the original it created noticeable beating with a sampled grand piano sound from the EPS. On the plus



side, PTR did not glitch on either simple sine wave or more harmonically complex patches and samples.

I was not surprised to hear some of the stronger flanging effects wreaking havoc with level settings as they cycled to peaks. This seems to be characteristic of all flanging devices. ART suggests setting the overall input level at the -6db LED with peaks at the 0db light. I found -12 much safer. I often got distortion without ever seeing the red 0db LED, and even at -12 the unit seems to have gobs of clean output left over.

As mentioned earlier, one other point that could be a bit troublesome is the coarseness of some of the parameter values found in the MultiVerb. In pitch transposition, for example, the six cent

increments can be rather large, particularly if you want to fatten up a sound by slightly detuning it (other more expensive multi-effects units currently available give one cent resolution). Also, most of the digital delay algorithms on the MultiVerb offer delay times in five millisecond increments, which again, could prove to be a problem in situations where you're trying to synchronize an echo to a rhythm (or just delay an instrument to alter its "feel").

Not so much a bummer as a bump up against reality is the matter of algorithm limits. Depending on which effect algorithms are selected (and how much signal processing power they chew up), others become unavailable. ART's manual does not list these permutations, which may indeed approach infinity. The

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► MultiVerb lets you know as you program which algorithms are left. For example, if you select Pitch Transposition, only EQ, Mono DDL Short and Mono DDL Long are left – just three remaining from an original selection of 19 algorithms. If you select Stereo DDL and Pan, only EQ remains. Pitch Transpose, Chorus, and Reverb 3 seemed to be the most hungry, whereas EQ left you almost the entire effects palette to work from. Obviously, at this point the analogy to a desktop loaded with pedals breaks down. Still, all digital, all in one box, all programmable – whaddya want for under \$600 bucks!?

Lastly, it's a shame not to see real-time MIDI control of parameters – particularly because ART has obviously seen the great potential that lies there with their own DRI reverb. MIDI control of *everything* is looking more and more like the wave of the future; it's too bad that one of the pioneers (ART) is not carrying on themselves.

Conclusions

I REALLY ENJOYED working with the MultiVerb. The "factory 99" presets admirably showcased its potential. Ease of programmability, even with the standard paging interface and the thin preliminary manual I received, also shows great promise. A computer-driven editor/librarian, combined with MultiVerb's variety of command dumps, should make programming a dream. The very word "programming" sounds ostentatious applied here (like "programming" a fuzz tone) so novices should not be put off. Indeed, it's great fun to be able to chain an array of effects and have them all pre-"programmed" and patched together at the pulse of a MIDI program change command.

In the MIDI studio, slated for one or two signal applications, the "all-in-one" claim is reasonably valid, and, as my Casio organ example indicates, the MultiVerb can make even a budget patch sound like a million bucks. But I would definitely put this module in the category of special effects. Its most outstanding presets, applied globally, would amount to wretched excess (and give the program-change noise problem center-stage). Conversely, use as a simple reverb would amount to wretched neglect.

For guitarists and other instrumentalists – consider selling the farm (or, considering the price of the MultiVerb, one of your guitars). I come from 25 years of guitar, and those of us who grew up on the Fuzz Face and Cry Baby would have killed for sounds like these. ■

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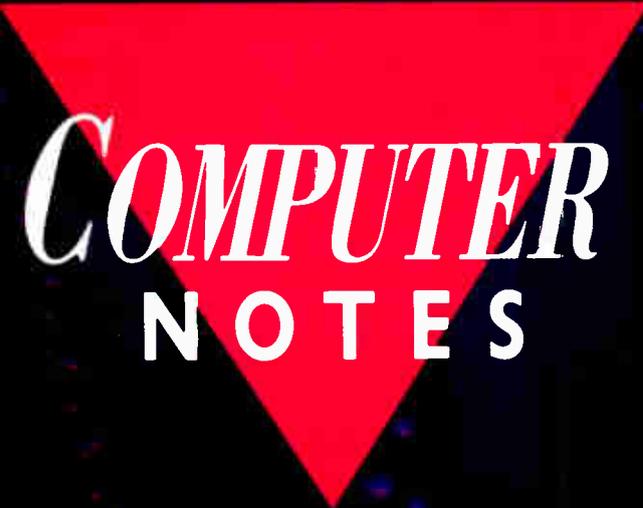
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COMPUTER NEWS DESK

CI AND PC/PAKS

Voyetra has announced the release of a whole slew of software packages for the new Yamaha CI. At the head of the list is an enhanced version of their Sequencer Plus Mark III (Sp3) which features control of the CI's SMPTE reader/generator in all four major frame rates; a "Port Assignment window" which acts as a 2X8 MIDI switcher/merger/rechannelizer allowing any combination of the two In's to the eight Out's on the CI, as well as Thru capabilities for all of the eight Out's; recording from both of the MIDI In's at once; tracks assignable to any combination of Out's, and the ability to simultaneously playback up to 64 MIDI channels. The Sp3 for the CI lists for \$495, and must be ordered separately from the PC version, but owners of the PC version can make arrangements with Voyetra for upgrading to the CI version.

The Patch Master Plus (PM+), retailing for \$195, is Voyetra's network organizer/universal librarian/MIDI Data Analyzer. The new program has been enhanced for the CI to include a full-screen SMPTE monitor, and the Port Assignment window featured on the Sp3. Voyetra's Sideman Series, including the DTX, 8IZ, DW, CZ, and D50 editor/librarians, has also been adapted for the CI, and sells for \$129 per program. Both the upgraded PM+ and the Sideman Series will work with either the CI or PC.

M/pc, Voyetra's version of Intelligent Music's M program for the Macintosh, will also now be available as a single package for both the CI and PC. M/pc retails for \$249.

In addition to CI software, Voyetra has also released several PC/compatible "entry-level" software packages, which they call "PC/Paks." The PC/Musicpak, in two versions, provides an MPU-compatible PC MIDI interface and Sequencer Plus Mark I sequencing software. The 2.0 version includes a V-4001 interface with tape sync and Sequencer Plus Mark I 2.0, for \$249. The 1.0 version includes an OP-4000 interface, without tape sync, and the Sequencer Plus Mk I 1.0, for \$199.

For the brand new computer musician, the PC/Starter Studio, retailing for \$499, comes with PC/Musicpak 2.0, two MIDI cables, and a Casio HT700 MIDI synth. Also, the PC/Demopak, which includes demo versions of the Sp3 and PM+, Slide Show Disk (tutorial of Sideman programs, Sp3, and PM+), and a Supplementary disk with song files and bank files for the Sp3 and PM+ respectively, sells for \$19.95. The demo versions allow you to "try out" the software without the ability to save



Voyetra is now supporting Yamaha's CI computer in a big way.



Voyetra has announced a series of entry-level PC/Paks which include their Sequencer Plus Mk I program.

songs or files.

And finally, the PC/Programpak, for \$59.95, supplies programming support for the MPU interface standard, and comes with a 150-page programming guide for the OP-4000 and

Roland MPU interfaces, and a 220-page guide to programming in the C language. A lot of neat stuff here.

MORE FROM Voyetra Technologies, 333 5th Ave, Pelham, NY 10803. Tel: (914) 738-4500.

CAN WE TALK?

Yes, as a matter of fact, we can, thanks to the MIDI Conference, a telecommunications service on the WELL (Whole Earth 'Lectronic Link) network, run by the Point Foundation. MIDI Conference is hosted by none other than Carter Scholz (writer for MT and other electronic music publications) and Warren Sirota (a columnist for Guitar Player). The MIDI Conference provides support and information on MIDI, public domain programs, shareware, and conference topics ranging from "specific computer types to the Grateful Dead." Basically, it's intended to be a place where professional musicians and programmers can pool their ideas. WELL rates: \$3 an hour, plus \$8 a month minimum charge. The network also includes access to Usenet, an international electronic mail and news network. You can log on to WELL through the Compuserve Packet Network, or call (415) 332-6106 at 300 or 1200 baud. At the login prompt, simply type "new-user" (lower case).

MORE FROM Whole Earth 'Lectronic Link, 27 Gate Five Rd, Sausalito, CA 94965. Tel: (415) 332-4335.

JOT THIS DOWN

Billed as a "musical notepad for the Amiga," the MidiVU, by Diemer Development, is a one-track desktop-accessory MIDI sequencer. Why just one track, you might ask? Well, this small package, which takes up just 2% of a standard Amiga disk (so you can copy it onto any of your larger programs, no problem), and which can be loaded in just three seconds, is designed for those flashes of creativity you may have while working on your word processor, paint program, or whatever. With a simple layout of Record, Stop, Play, and Loop (so your riff will repeat over and over while you improvise to it),

you can jot down your idea within seconds, and then continue with whatever you were doing. MidiVU also has a MIDI Monitor and help screens to display MIDI 1.0 message definitions. Price: \$29.

MORE FROM Diemer Development, 12814 Landale St, Studio City, CA 91604-1351. Tel: (818) 762-0804.

MUSIC FROM THE CABIN

Music from the Cabin is a new software label, started by a guy named Don Malone. Don has come up with three music software packages for the Commodore 64 as well as cassettes of electronic music.

The first software package is an algorithmic MIDI sequencer titled Algy that features seven modes of algorithmic control, including MIDI channel, octave, pitch, transposition, velocity, gate time, and release time. The program allows for deterministic and algorithmic editing while the music plays, and lets you send System Common and System Exclusive messages, save and load patch banks, vary the tempo from 40 to 360 beats per minute, and create banks of sixteen patches in memory for easy access. It's also compatible with Dr. T's software. Help screens and more than fifty patches for the CZ synths are included. License fee for Algy is \$20.

The second package is a "soft-instrument" called Zitherish, which is designed to work with a Casio CZ synthesizer (although it will work with any MIDI synth). Basically, it uses the synthesizer keyboard to control pitch patterns, rhythm patterns, tempo, and range. A bank of sixteen CZ patches are provided, and the license fee is only \$5.

Third is simply five banks of CZ "electric type" voices, titled ElectricCZ, for use with the C64, for \$5 as well.

Don's electronic music cassettes are called

Concert and cost \$10 each. Apparently no two cassettes are the same, so you can order however many your heart desires, and continue to experience new sounds.

All of the software is fully supported by Music from the Cabin and has no protection and no guarantees. All orders require an additional \$3 for COD. Make checks or money orders out to Don Malone.

MORE FROM Music from the Cabin, 21806 River Rd, Marengo, IL 60152. Tel: (815) 568-7185.

DR. T ES MI AMIGA

Dr. T's KCS (Keyboard Controlled Sequencer) is now available for the Commodore Amiga in its version 1.6A. The sequencer includes track mode, open mode, and song mode for recording, as well as a Vary feature that lets you create variations on your sequence or track. Through MPE (Multi Program Environment) you can load other Dr. T's programs while in the KCS. Additional features include a "scratch pad" for storing comments about a sequence in a data file, SysEx capabilities, "Environment" files for storing clock and other miscellaneous settings independently, and SMPTE interface with MIDI Song Pointer. The KCS v1.6A lists for \$249.

Dr. T's has also created an editor/librarian for the Roland D110 and Amiga. The D110 ed/lib features an on-screen keyboard for remote operation with the mouse, compare/copy for preliminary review of newly-created patches before saving them, and a randomizing feature, with the ability to control the percentage of randomization involved. The program is fully multitasking, so you can use it with other standard Amiga applications, and this package lists for \$149.

MORE FROM Dr. T's Music Software, Inc, 220 3oylston St #306, Chestnut Hill, MA 02161. Tel: (617) 244-6954.

OPCODE + YAMAHA

+ MACINTOSH = ...

You guessed it, more editor/librarians. The Opcode ed/lib for the Yamaha TX81Z version 5, now available, is also compatible with Yamaha's DX11, DX21, DX27, and DX100 synthesizers. The program features front panel graphic layout and a microtuning graphic display, and automatically converts six-operator patches (DX7) to TX81Z/DX11 sounds. Also included is support of Standard MIDI Files, so you can import sequences and play them while in the program. The librarian features Opcode's "Bundle" capabilities, which allow you to store Performances, ie. patches, microtunings, and complete MIDI setup, in one big lump. Other features: a random patch generator, and an on-screen keyboard so you can play your keyboard with the mouse. The TX81Z Editor/Librarian lists for \$175, and the Librarian is available separately for \$100.

Also for use with the Macintosh, Opcode has released a version 5 editor/librarian for the Yamaha SPX90, for \$150. All parameters can be manipulated on-screen, and you can edit more

than one patch at a time. The Editor features a Delay Time Calculator to compute the exact delay time for a given note value at a set tempo. The SPX90 ed/lib also features the Bundle

capabilities, random patch generator, and on-screen keyboard operation.

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

Opcode's new TX81Z E/L works with all Yamaha four-operator synths, including the DX11.

It will help you play your favorite tunes.



If you're determined to get ahead in music, we offer the following suggestion: Mind your own business.

With the Yamaha® C1 Music Computer, you can put yourself in complete control. Whether you're building a sequence, organizing your voices, hyping the band or just making a valiant attempt to figure out your taxes.

The C1 is IBM-compatible. So right



The C1 gives you access to thousands of advanced MS-DOS programs, for music and business.

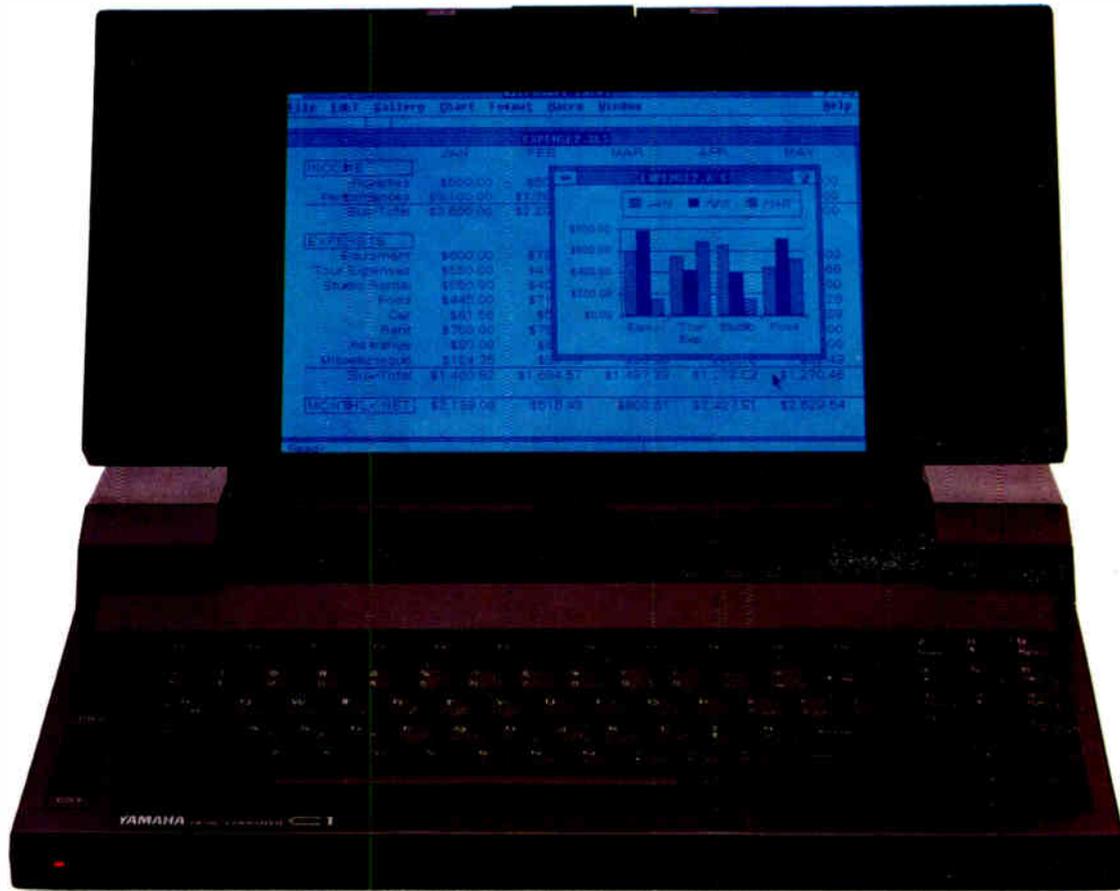
from the start, you've got access to thousands of the most advanced programs.

It has an 80286 processor, for speed. A megabyte of memory, for power (with room for 1.5MB more). And a Toshiba-style expansion port that allows you to add more options down the road.

But unlike other computers, the C1 is the product of a very musical family.

It's thoroughly wired for a professional MIDI setup, with two MIDI INs, one THRU and eight OUTs. It even under-

And a few other numbers.



stands SMPTE—no converter required.

Plus, it has two programmable sliders for better MIDI control. And keys marked with music symbols, to make data entry less of a mystery.

You can start with a pair of built-in 3.5" disk drives. Or choose a model with one 3.5" drive and a 20MB hard disk. Which can not only carry a tune, it can carry hundreds of voices—and all of your programs as well.



C1 for the road. Our computer even comes with its own carrying case.

Of course, the C1 has connections for all your standard computer goodies, including monitor, modem, printer and mouse. And it's been designed for easy carrying from living room to studio and stage.

Call 800-333-4442 for the name of the authorized Yamaha C1 dealer nearest you, then stop in for a screen test.

See how well it performs when you play music. And when **YAMAHA**[®] you play accountant.

Yamaha Music Corporation, USA, Digital Musical Instrument Division, P.O. Box 6600, Buena Park, CA 90622. In Canada: Yamaha Canada Music Ltd., 135 Midner Avenue, Scarborough, Ontario M1S3R1.

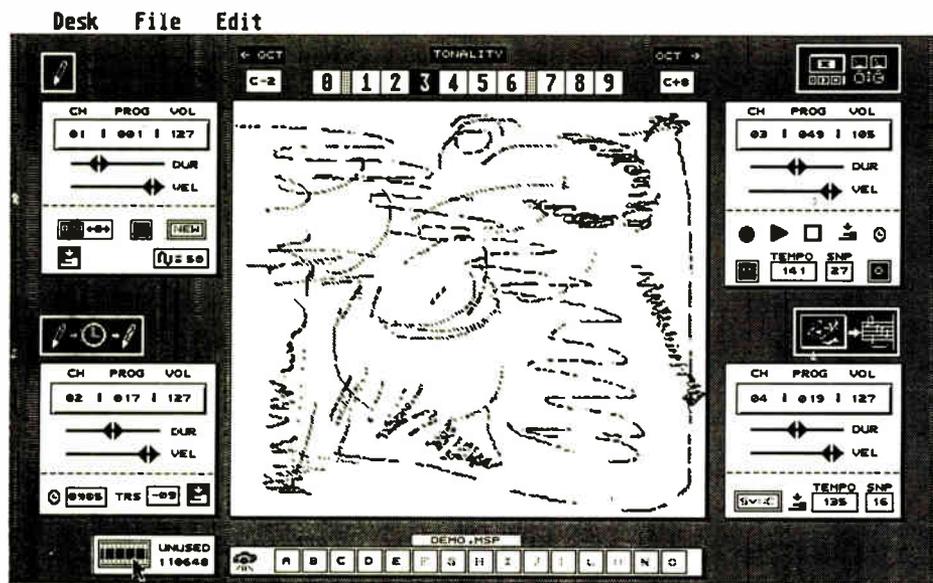
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Computer Notes Desk File Edit MIDI Song Setup

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Intelligent Music MidiDraw

The latest development from this innovative company will turn drawings you create on the Atari ST's screen into music. Review by Aaron Hallas.



Something completely different - creating music with MIDI Draw.

ARTIFICIAL INTELLIGENCE IS a big buzzword in the music business these days, so it's no surprise that we are seeing a number of software programs and even musical instruments that claim to be "intelligent" programs or devices. For example, "M" from Intelligent Music and Dr. T's PVG (Programmable Variations Generator) can create variations based on a musical idea input by the user. Jam Factory, also from IM, learns from material that you play and then improvises variations on that material. Some do use a form of artificial intelligence known as "Expert System Techniques," where they behave as a human expert would in a given situation. But are these programs really intelligent, or do they simply rely on controlled randomness to do their magic?

Whatever the case, they not only make the process of creating music easier, they actually make it fun. Although MidiDraw - the program under review here - coes have some of the same features as "M," it more closely resembles Music Mouse, an interactive performance program for the Macintosh and Amiga (and the Atari ST in the near future) that allows you to compose music with the mouse and computer keyboard. Similarly, MidiDraw will let you compose/perform music by drawing on the Atari screen.

If you have used a drawing program such as DEGAS on the ST or MacPaint on the

Macintosh, you will be right at home with MidiDraw. If you haven't, it doesn't take long at all to learn how to use the mouse. MidiDraw doesn't offer a bevy of drawing tools or any of the sophisticated editing functions that its non-musical counterparts sport, and you can't save your pictures or even import pictures from DEGAS or other drawing programs. But it sure is a kick to hear music being created while you are doodling on the screen.

THE PROGRAM

Whereas Music Mouse's main screen has a grid and is bordered on all sides by musical keyboards, MidiDraw's screen is a blank slate and therefore offers no precise visual reference to the pitches that will be produced when you

(which I'll explain shortly) and activating at least one of the control panels, you are ready to go. If you have each control panel set to a different MIDI channel then you can control four instruments at once (or one multitimbral instrument). You aren't limited to just four notes at a time (one from each control panel) because each panel has a sustain function. It's possible to send many overlapping notes at the same time. The actual process of sending MIDI note on messages is instigated by moving the mouse. Moving it to the right produces higher pitches, moving it to the left produces lower pitches. Moving the mouse forward or backward will raise or lower the velocity. Moving the mouse diagonally allows you to control the pitch and dynamics simultaneously.

THE MUSIC

The maker claims that MidiDraw is "extremely easy to use, and offers powerful features at the same time." On the surface MidiDraw does appear to be extremely easy to use. As mentioned above, you simply draw on the screen and control the dynamics of the notes on one axis, and the pitch on the other. If you've connected your MIDI keyboards or sound modules to the MIDI output of the computer correctly, you will indeed hear music. However, if you haven't used MidiDraw before, the results would probably be roughly equivalent to dropping a handful of marbles on the keys. John Cage may find the resultant music to be quite exciting, but your average musician may have a little trouble figuring out what to do with it. The fact is, you do have to know what you are doing before you can expect to get good results from MidiDraw.

I believe that the secret to getting the best possible performance from MidiDraw is in the

Interpreter "The Interpreter will erase the picture pixel by pixel, sending out the corresponding MIDI notes until the drawing is completely erased."

draw on the screen. This may at first seem to be a disadvantage; however, I found it to be quite the contrary. MidiDraw doesn't assume that you have any keyboard experience at all. It is a completely different approach to drawing (er, creating) music.

Drawing takes place in the Drawing Field while the program's four control panels determine how the output is directed to your MIDI instrument(s). After selecting a tonality

wrist. Seriously though, selecting the right Tonality can mean the difference between getting the "hand full of marbles" effect and getting an acceptable performance. Selecting a tonality for the Drawing Field can be done with the mouse or from the Atari numeric keypad. Tonality zero is set to be the chromatic scale, the other nine can be changed to any type of scale you want, including normal diatonic scales, modal scales or any other set of pitches you

choose to combine. Tonalities 1-6 can be set by the octave - that is, once you have defined one octave those notes will repeat throughout all octaves. Tonalities 7-9 can have different notes in different octaves (64 notes maximum). You can also define the Drawing Field's range in octaves (from one to ten).

THE CONTROLS

A look at the main screen will give you some idea of just how easy it is to use MidiDraw. All performance features are located there, including the Drawing Field in the center of the screen, a control panel in each corner, a row of ten Tonality Buttons above and a row of fifteen Snapshot Buttons below the Drawing Field. An Enable Toggle above each of the four control panels is used to activate or de-activate them

Tonality "Selecting the right Tonality can mean the difference between getting the 'hand full of marbles' effect and getting an acceptable performance."

during a performance. The upper half of each control panel contains three numerical parameters (called "Numericals" in Intelligent Music-ese) and two sliders. The MIDI channel, Program and Volume numericals (and all other numericals) can be changed with the left or right mouse buttons one number at a time or scrolled rapidly by holding one of the mouse buttons and moving the mouse forward or back. The slider, labeled DUR (Duration), controls the gate time, and the one labeled VEL (Velocity) controls the range of velocity values sent out from the Control Panel.

The Picture Control Panel (upper left corner) is the one used to control the output of the Drawing Field. The lower half of the panel contains five controls. The New button clears the Drawing Field, the Color Button lets you choose between two possible drawing colors (black or white if you have a monochrome monitor), the Sustain button lets you enable/disable that function and the Drawing Mode Toggle allows you to select the Repeat Mode or Move Mode. In the Repeat Mode the notes are repeated as long as you hold down a mouse button. In the Move Mode the notes are played only while the mouse is in motion. The Rate Numerical controls the repetition rate of the notes in both drawing modes. The repetition rate can also be changed directly from the mouse while drawing.

The output of the Picture Control Panel is sent to the Delay Control Panel (lower left corner) which, if active, will not only delay the notes but can also alter their duration, velocity and transposition level (up or down one octave in half-steps). The delay range is adjustable from 200 to 2000msec (two seconds). If you have two instruments that are set to different MIDI channels and have the Picture Control Panel and Delay Control Panels set to those same channels then you will hear the original notes played by one instrument and the delayed notes played by the other as you draw.

Are you starting to get the picture? (*Bad pun, Aaron - Tech Ed.*) You may have noticed that
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I've only mentioned MIDI outputs so far. This is because MidiDraw will not accept input from another MIDI instrument. However, there is a way to record your performances and play them back as well. Yup, you guessed it, the Recorder Control Panel (upper right corner).

A total of nine controls are available on the lower half of the Recorder Control Panel. Aside from the requisite Record, Play and Stop buttons you will find a Sustain Toggle, Tempo Numerical (20-220 beats per minute) and a Velocity Offset Toggle that will allow you to control the velocity with the mouse while the sequence plays back. The SNP (Skip Note Percentage) Numerical indicates the percentage of notes that will be skipped and the Note Order Toggle will cause the recorder to select notes randomly from the sequence. You can

choose between two playback modes, Note Mode and Realtime Mode. In Note Mode the notes are played back in a constant rhythm, without velocity variation (unless you introduce velocity with the mouse). The Realtime Mode will reproduce your performance (notes and velocity) accurately. If you have the Recorder Control Panel set to a different MIDI channel you can now have up to three instruments

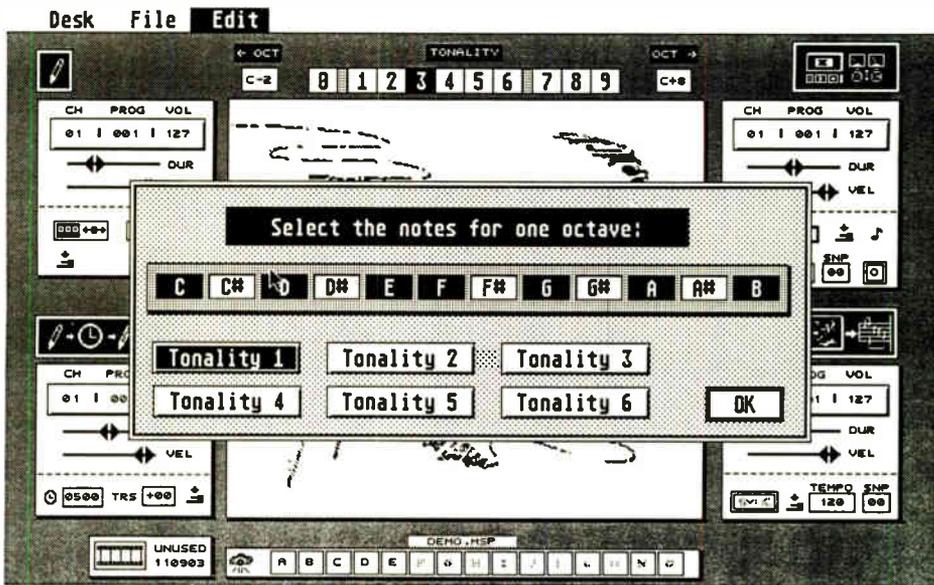
MIDI notes until the drawing is completely erased. You can update the picture by drawing in the Drawing Field while the Interpreter is running. If the Interpreter Control Panel is set to a different MIDI channel than the other panels you can control yet another instrument (that's four all together). The lower half of the control panel has the same Tempo, SNP and Sustain controls as the Recorder Control Panel as well as a Sync toggle that allows you to synchronize it to the Recorder.

One other point worth mentioning is that all of the controls are functional during a performance and many of them have keyboard equivalents so you can access the screen controls while drawing.

Once you have tried your hand at drawing you can take some pictures with the camera. These are called Snapshots. Snapshots allow you to save your favorite screen settings and recall them during a performance. The performance itself can also be captured in a Movie. These can be saved to disk as MIDI Files for use with other MIDI applications.

THE CONCLUSION

So there you have it, a software program that turns your Atari into a MIDI performance instrument, and a fun one at that. I would like to have seen a few more MIDI controllers such as pitch-bend and mod wheel included, and the inability to synchronize to the outside world



The Tonality screen allows you to choose which notes will be played.

playing, one from each control panel. You can also save your music as MIDI Files for use as input to Intelligent Music's "M," and other MIDI programs such as Dr. T's KCS, Passport's Master Tracks Pro, and Steinberg's Pro24 (version 3.0).

The Interpreter Control Panel is my favorite. This is the one that lets you sit back and listen while the computer plays your picture. Assuming that you have drawn something in the Drawing Field and have activated the Interpreter Control Panel, it will scan the Drawing Field looking for pixels that have been drawn in. The Interpreter will erase the picture pixel by pixel, sending out the corresponding

does exclude MidiDraw from certain applications (IM is planning to include sync capabilities on version 2.0). But on the other hand, you don't have to know how to play a musical instrument to use MidiDraw, so now creative non-musician types have yet another tool with which they can make music. And those of us who can play have an intriguing new avenue on which to explore our musical creativity.

PRICE \$95
MORE FROM Intelligent Music, 116 North Lake Avenue, Albany, NY 12206. Tel: (518) 434-4110.



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M I C R O REVIEWS

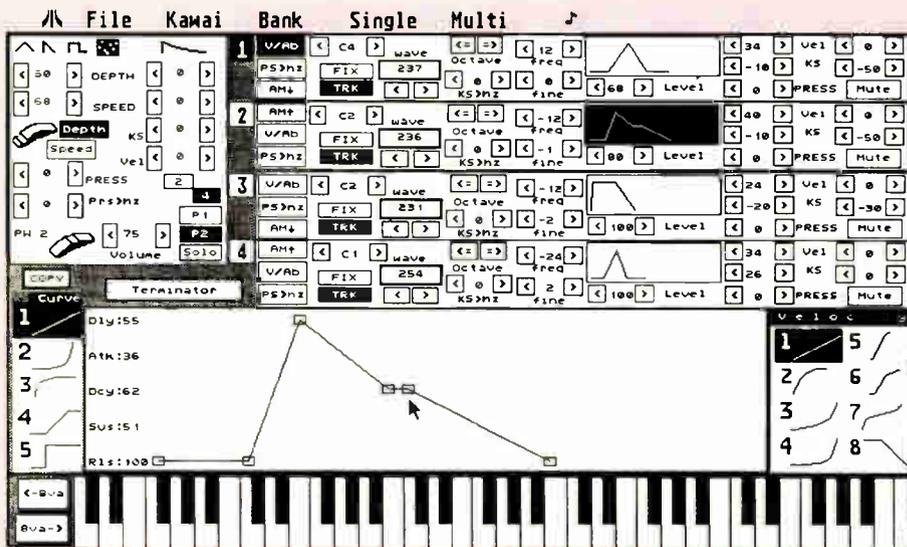
Drumware KI Ed-Lib

An editor/librarian for the Kawai KI/m/r and Atari ST. Review by Dan Rue.

OFFERING USERS THE ability to let go of control seems to be the newest hype in editor/librarians these days. "But aren't computer-based editors supposed to heighten user-programmability and control?" Well yes, but why stop there?

The KI Ed-Lib does in fact offer a great deal of control over the KI's voice editing. The Single Edit Page displays a full layout of all four parameter groups available in a single patch. Envelope editing, waveform selection, velocity curve selection, and everything else that can be tinkered with are adjustable one parameter group at a time, although all four groups are displayed simultaneously on the screen. Very intuitively laid out, very logical.

All of the KI Ed-Lib's editing functions are real time. So essentially, the computer becomes an extension of the synth, even to the point of having an on-screen, velocity/pressure/mod wheel-sensitive keyboard of its own (great if you're working with one of the modular versions). And, if dragging the mouse back and forth between the on-screen keyboard and the function edit boxes is just a pain-in-the-youknowwhat, there's an Auto Play option that has the computer automatically strike a note on the KI after every editing maneuver you make.



In addition to the Single Edit Page, there's a separate screen for Multi Editing, with click-and-drag control over rearranging Multi banks however you want, a Copy Page for copying parameters from one patch to another, full librarian controls over all banks internal and external, and a Randomizer/Interpolator/Randopulator page.

This is my favorite page. The Randomizer basically assigns random settings to all of the parameters. Total loss of control, very bizarre results. Control may be regained by either masking various parameters from the unpredictable hands of the random generator, or

by employing the Randopulator, which has the computer find parameter levels that lie somewhere in between any two patches you choose, to create a new patch. The Interpolate function, by far the most useful, simply grafts two patches into a new patch with no random numbers involved.

All in all, the KI Ed-Lib proves to be a very conducive tool for creating new sounds, which, after all, is the purpose of these programs. ■

PRICE \$119

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

Digigram Big Band Orchestral Composer

A music creation program for the Atari ST. Review by Mihai Manoliu.

WHAT A GREAT idea! Design a program that can take either a chord progression or a melody and come up with an arrangement in a variety of musical styles. A French company called Digigram has done just that; their Big Band program, which is being distributed in the US by Imagine Music Group, is a companion program to their sequencing program Studio 24. Big

Band works by calculating arrangements from a chord or melody track loaded in by the listener, or it can generate progressions/melodies on its own. Styles supported are: Rock, Funk, Disco, Slow-Rock, Ballad (4/4 and 12/8), Paso, Waltz, Tango, Swing, Reggae, Bossa-Nova, Samba, and Blues. Depending on the style you choose, Big Band will allow you to calculate chords, melodies, rhythmic (accompaniment, drums, bass), solos, counterpoints, and riffs.

Let's say you have a melody you want arranged; you play it into your sequencer that supports MIDI Files (if you don't have MIDI File

support you can still use Big Band, but you will not be able to play in your chords and melodies, nor do individual track editing) and export it to Big Band. You can now choose to have a calculation of Chords or All (an arrangement that includes drums, bass, riffs, and accompaniment). You must then choose what you want to keep and copy these tracks onto the tracks reserved for the chosen parts. Big Band has 24 tracks, of which 13 are used for new calculations, and the others are assigned names and used for the particular parts. After copying the useful parts to their respective tracks, you can

generate more calculations, such as solos, alternate melodies, chords in a different style, or more rhythmic using another style.

With each type of calculation you have several options: Chords will calculate up to three versions and an accompaniment pattern for each, and you can choose between Major/Minor modality or let the software decide. Melodies will generate up to ten versions, and you can choose the range or leave that up to the software (only Rock and Ballad melodies are available). Solos will also generate up to ten versions and you can choose the range as well as the starting bar and number of measures; similar choices apply to counterpoints, riffs, and rhythmic.

Big Band offers some limited editing options: you can add, delete and insert chords; you can chain tracks as well as copy, transpose, and chain blocks of bars. Individual tracks can be edited only by exporting to another sequencer. If your sequencer does not separate the incoming

multi-channel track you will have to save and edit each track separately then combine them. Each style has its own configuration of channels, controller, and volume assigned to each instru-



ment. You can also define the drum kit (D1) and the percussion set (D2) to work with your drum machine or sampler. The Reproduction parameters allow you to set velocity, program number, pitch-bend, and controller values for

each track. Although there are some annoying aspects to the interface, the program is quite easy to use once you have paid your dues trying to decipher the manual.

So what can you do with Big Band? You can have a lot of fun jamming with the "Band" and using creative mixing of styles. Since many of the stylistic interpretations are rather simple and the rhythmic invariant (save for drum fills), this is probably not the approach to arranging your next big hit. However, you can get some good ideas and with creative editing and development of individual tracks you might come up with solid material. Big Band would be a great gift for the budding musician. The biggest obstacles to the "Band" are the manual and the price. What is fun worth anyway? ■

PRICE \$299

MORE FROM Imagine Music Group, 751 A South Kellogg Ave, Santa Barbara, CA 93117. Tel: (805) 683-3340.

Zero One Research D50 Librarian & Patch Editor



A set of Desk Accessories for the Macintosh. Review by Chris Many.

ONE OF THE problems of using computers with music production is you usually want to use more than one program at the same time, and not necessarily those made by the same company either. There are several solutions to this, most of which involve a memory or storage upgrade, additional computers or other expensive propositions. Zero One takes a different approach, they make a full-featured Librarian and an Editor/Librarian for the D50 as Desk Accessories for the Macintosh. Because they are D/As, they're available when you need them - while you're sequencing - and the good news is they're compatible with the major brands.

You must first install the program of choice on your hard drive if you have one, or your boot disk if not. Installation procedures are straightforward, and once complete the Lib or Lib/Ed appears under the D/A section of the Mac's menu bar upon boot up.

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Both the Librarian and Editor's functions are accessed through a controller, a small window that functions as a menu to operate the software. The Librarian allows you to copy patches, and upper or lower tones anywhere within your patch library, transfer full banks or single patches to and from the D50, name your patches, etc. Just what you'd expect from a librarian. It's quite functional and although not as comprehensive as some of the full featured products on the market, it certainly does the job while you're running your sequencer or any other software. The librarian comes with four banks of new sounds for the D50 as well, most of which are pretty good.

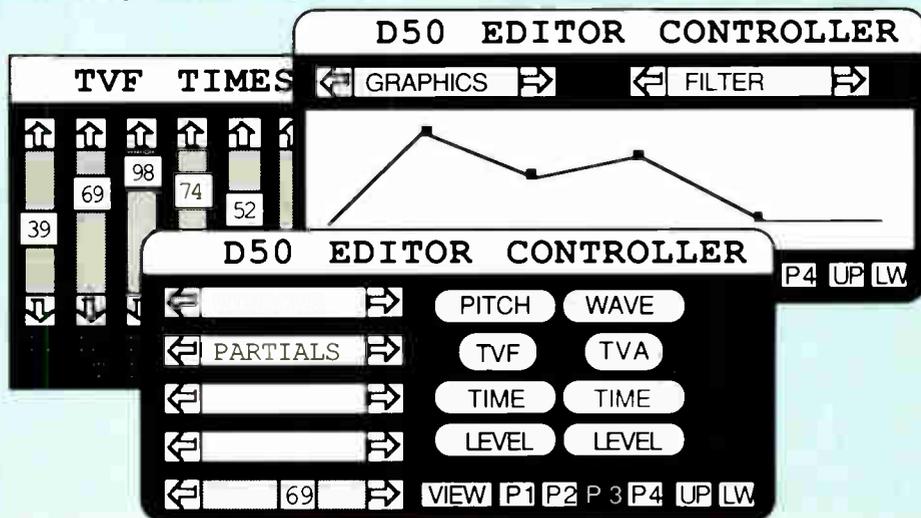
The editor is of the same nature but takes a little more liberty in cutting corners to get fit into a D/A mode. All the editing features you need are right there, including basic TVA, TVF

and envelope adjustment graphics that we're familiar with in D50 editors. However, it is one step at a time in terms of what you can view on screen. You're not really able to get everything seen at once, but Zero One has done quite a nice job of compromise. The editor does allow you to access parameters, partial structures and output mode selection, reverbs, etc. There is even a rudimentary patch generator included, allowing you to create a new sound using start and end patches.

Both of these D/As can function while your sequencer is running, a nice touch. Overall, two complete products for your Mac and D50. ■

PRICES Librarian, \$79; Editor/Librarian combination, \$159

MORE FROM Zero One Research, PO Box 301, Brisbane, CA 94005. Tel: (415) 467-5007.



MIDI FILES

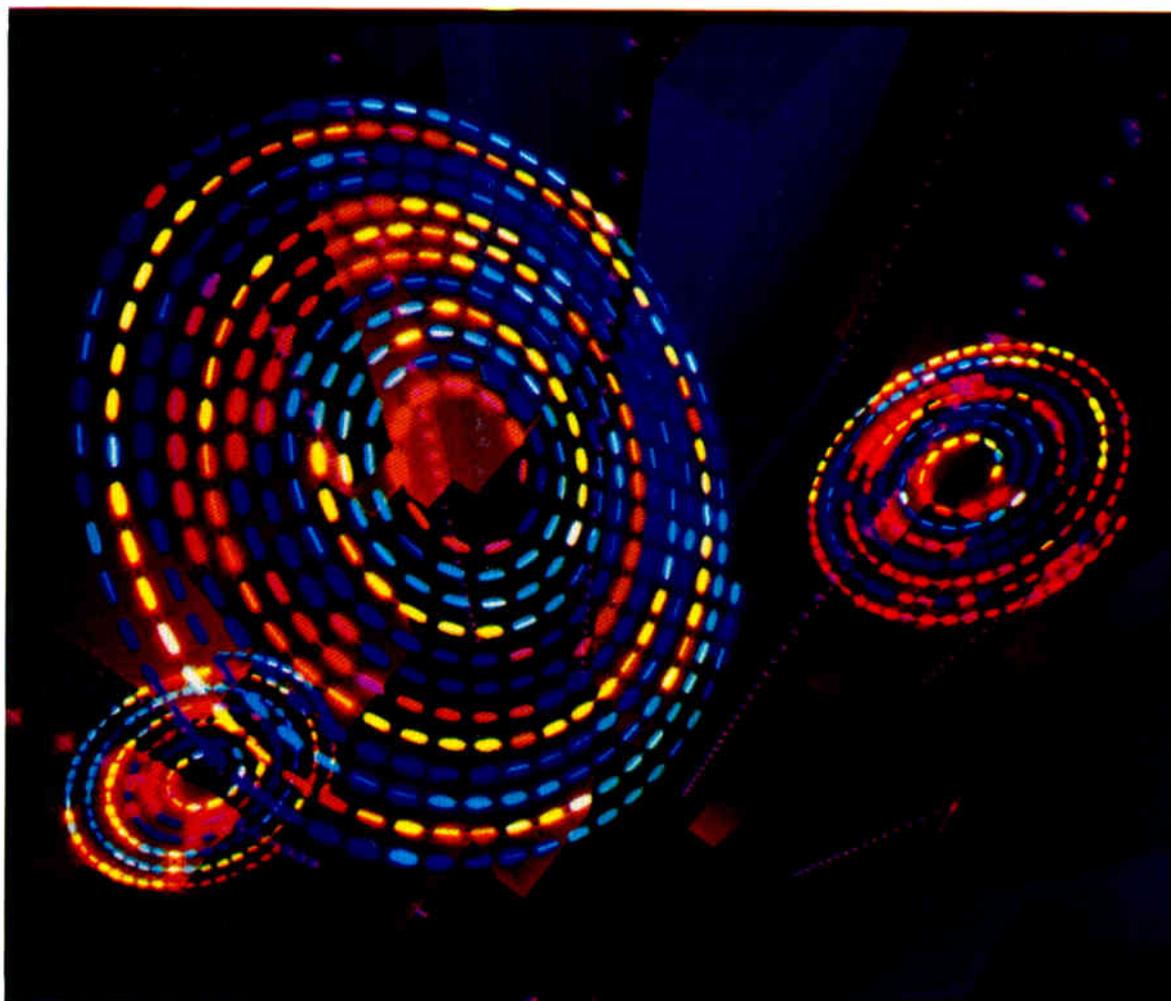


Illustration Colin Cantwell © 1988 Crystal Chip, Inc.

You've heard about them, read about them and no doubt want to know about them. Welcome to the wonderful world of standardization. Text by Antony Widoff.

WHEN MIDI FILES were first introduced way way back in 1986 it was a good idea from one company - namely, Opcode Systems. What has followed qualifies as one of those minor miracles: not only did a large number of software manufacturers across several computer boundaries contribute to their growth and promise to support them when finalized, they (at first, just Intelligent Music; later, others) went out on a limb and supported the pre-"official" versions knowing full well that they would have to keep updating their software as changes were made. Thanks to the selfless work and dedication of "midiphile" Dave Oppenheim (of Opcode) and those companies, we now have an MMA approved MIDI File.

Today, almost all Macintosh music software supports (or plans to support) MIDI Files, and other machines, such as the Atari, the Amiga, and even the IBM, are joining the MIDI File mambo line.

Whenever standardized communication is established, people can begin to concentrate and

specialize on the various tools that make up a musical system. This kind of concentrated effort can open up entirely new musical possibilities. The point of this feature, therefore, is to show a bit of where MIDI Files came from, what's in them, and how they can be used.

WHY JOIN WORLDS?

Although the concept had been explored in the past, not until the advent of MIDI did we see so many featureless black boxes. MIDI has made it easy to separate the musical controller from its sound generator(s). Today, not only can keyboardists draw on a vast library of new (and old) sounds, but guitarists, wind players, drummers, and percussionists can also play with a virtually identical sound palette. One team of individuals worries day and night about how to make its controller more responsive; another equally tense team is concerned with improving its sound generation algorithms; and never (well, rarely) the twain shall meet. They don't have to. They know how to talk to each other

through MIDI. In addition, entirely new devices, such as MIDI processors (mappers), have entered the arena, implying entirely new instrument performance possibilities.

As for computer compatibility, the Macintosh has long had a standard format for text and PICT formats. One can easily take text from a word processing program and imbed it into graphics (created in a paint program) using your desktop publishing program. One software package may have an excellent spelling checker, another excellent formatting capabilities. What you eventually get is a variety of programs working together and showing their best sides when needed.

Music software is working towards a similar flexibility. For a while, everyone was very dreamy about the idea that *one program* could be a complete sequencer, with sophisticated editing facilities, and comprehensive notation capabilities, a universal patch librarian inclusive, plus all sorts of nifty bells and whistles, all easy to access and with fully intuitive controls. Yeah,

right. A few brave souls have attempted projects along those lines and have learned the hard way that no one program can do everything. The MIDI File solves the All-One-Program Faith-Myth.

THE MIDI FILE SPEC

Just as you don't have to know all the bits and bytes of MIDI to use it, you don't really need to know all the innards of an actual MIDI File to use it. If you really want to know what the MIDI File is all about, it's easy enough to get a copy of the full-blown spec. If you have access to PAN, it's posted up there in one of the Synth and MIDI Databases. If not, you can get it direct from the IMA for \$3. (International MIDI Assoc, 5316 W. 57th St. Los Angeles, CA 90056. Tel: (213) 649-6434.) However, there are those who want to know all the gory stuff, so here's a simple explanation.

The main thing to know is that it's a simple reduction of a sequence into a linear, multitrack data file that can be shared by different MIDI programs. The MIDI File spec currently supports all MIDI events (notes, controllers, etc). There is also a provision for SysEx events and various types of meta-events. Meta-events include tempo, time signature, key signature, markers, cue points, SMPTE offset, sequence/track/instrument names, copyright notice, lyrics, and so on. Most programs do not support half of this stuff. Usually, they just stick with the basic MIDI events because that's all you really need. If your MIDI File contains time signature information but your sequencer ignores that information, it will still read in all the musical data with no problem. The same holds true the other way. If a program can read a time signature meta-event, but doesn't see one in the MIDI File, it will still get the data it understands.

Data is broken up into "chunks." Typically, one track of information is a "chunk." The

tempo information for a piece is saved as its own chunk (in fact, the first one in a MIDI file). Devices that have to exchange clocking information (such as SMPTE-to-MIDI converters and "hit point" programs) share timing information by sending a MIDI File around containing just this chunk. In general, any program can use or ignore any chunk or meta event it so chooses (kinda like receiving MIDI itself).

There is a Macintosh program called Tab Converter (by David Zicarelli) which is very useful for understanding and manipulating basic MIDI Files. Tab Converter converts any Format 0 MIDI File (the simplest and most common kind) into a text file allowing you to view it as ▶

Performer Conformer

THE ONE FAMILY of sequencer users that this article may not seem to apply to is Mark of the Unicom Performer users. MOTU was at first against supporting MIDI Files, and even now that they have softened their philosophical line a bit (thanks to the loud complaints of their users), Performer still does not support them. In the meantime, there's a utility called *Mark of the Uniform's Conformer*. Conformer will take any Format 0 MIDI File and convert it into a Performer 2.3 document. Versions of Performer higher than 2.3 should have no trouble reading the documents Conformer generates. Conformer is free and available on PAN. It is application #142 in the Mac Applications area of the Synth and MIDI Database. If you positively can't get it any other way, you can send me a disk, c/o Intelligent Music, a SASDM (self-addressed stamped disc mailer), and I'll eventually send you a copy. ■ Antony Widoff

Case Study: How MIDI Files Saved Intelligent Music

INTELLIGENT MUSIC IS certainly well known for its innovative software concepts, but that does not mean everyone knows our concepts well. Master programmer/designer David Zicarelli recently described the MIDI File as "the reason why anybody in the jaded sequencer world would be interested in a program like (Intelligent Music's) M." While I hope he is wrong, he has a point. Point being, now that there is a way of getting data from program to program, music can be worked with in ways that would never be considered otherwise.

For those of you unfamiliar with M, it is a program which encourages real-time interaction with a number of musical "variables" for both composing and performing. This allows you to, for example, change only the harmonic material as the rest of the musical process continues unchanged. You can also allow M to make musical decisions by itself. For instance, you can give M a pattern of accents where the first accent is always loud but the second picks between three different accent levels on its own.

This way of working with music is not exactly what most people are accustomed to. To create music entirely within M's structure is too much of a culture shock for most, and many, if forced to work with M exclusively, would soon return to the relative safety of their sequencer. However, many of our users have found that they can use the power of M to do certain things they could not do, or would never have thought of doing with other programs. MIDI Files let newcomers to a program like M explore without the fear that they will be wasting their time. They can play around as much as they want and whenever they come across something they like they can capture it, save it as a MIDI File, and recall it later in a program they are already familiar with. This also gives people time to learn a new program. Each time they run M, they will become more familiar with its structure, and will be able to decide if the program has a real future for them. ■ Antony Widoff

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▶ standard text in any word processing program. Tab Converter also allows you to change a text file into a MIDI File providing it follows the correct format. Tab Converter is free and available on PAN. It is application #82 in the Mac Applications area of the Synth and MIDI Database.

If you open the Tab Converter About Box, you will get all the info you need to use the program (See Figure 1).

For example, here in Tab Converter format, are the first six notes to a famous piece I didn't write. Please take note that this is Tab Converter format and not the MIDI File format.

Figure 1. Tab Converter About Box.

TabConverter: Midi to Text and Text to Midi
by David Zicarelli
Version 0.81 of 5 May 1988

This program may be distributed freely
but not sold for profit.
© 1988 David Zicarelli

Meta Events:

- .Tempo <Beats per minute>
- .Base <Units per Beat>
- .Signature <Numerator> <Log2 Denominator>
- .Name <NameWithNoSpaces>
- Meta Events must begin on a separate line

Program Change:

- <Channel> <Beat> <Unit> Pgm <Number (1-128)>
- AfterTouch:
<Channel> <Beat> <Unit> After <Value>
- <Channel> <Beat> <Unit> PolyP <NoteName> <Value>
- Controllers:
<Channel> <Beat> <Unit> Ctr1 <Ctr1 #> <Ctr1 Value>
- Pitch Bend:
<Channel> <Beat> <Unit> Bend <MSB Value>

Note Events:

- <Channel (1-16)> <Beat (starts at 1)> <Unit> <Duration (in Units)> <NoteName*> <Velocity>
- *NoteName is of the form NoteOctave where Note = A to G (*) and Octave = -2 to 8
- OR
a number from 0 to 127.

MIDI Files are expressed differently, especially when it comes to timing. For example, in a MIDI File you have to write a note-off command for every note-on. In Tab Converter you need only write a duration for each note-on event.

The first line is a meta-event for time signature. This piece is in 4/2 time. Notice that the denominator can only be a power of 2. Charles Ives may not have used MIDI Files, but most of

	1	0	382	B3	78
	4	94	10	F#4	86
	5	46	10	F#4	66
	6	1	14	C#4	41
	6	69	12	B3	59
	6	90	80	A4	67

us will never notice it. The second line (.Base 96) specifies the "units" or number of divisions per beat. In this case there will be 96 divisions for each beat in the 4/2 measure.

The next six lines are the six notes. The first number is the MIDI channel. All these notes are on MIDI channel 1. The second number is the beat and the third the unit of that beat. In this case, the second note occurs 94 units after the 4th beat, which is mighty close to the fifth beat (the fifth beat being the first beat of the second measure in 4/2 time). The next number is the duration, or length of the event, which is also expressed in units.

If you wanted to add something like pitch-bend, it is very easy. For example, a pitch-bend on MIDI channel 3, first beat, 48th unit, at a value of 56 would look like 3 | 48 Bend 56.

MIDI FILE FORMATS

Because some software packages started to use MIDI Files before the spec was frozen last

June, users have to do a little sorting out between old and new MIDI Files. For example, anyone who uses MIDI Files with Intelligent Music's Macintosh software has been presented with the option of using either Simple or Standard MIDI Files. Simple MIDI Files are the old files you might have created using old versions of Jam Factory, M, UpBeat, or Opcode Sequencer. You can usually not bother with them because they are not coming back.

Standard MIDI Files currently come in three formats: Format 0, 1, and 2. Nobody uses Format 2 yet. The only application I'm aware of that uses Format 1 is Opcode's Sequencer 2.6.

Format 0 treats everything as one large track. Since different sequencers have different ways of dealing with repeats and looping (let alone MIDI channel and track assignments), laying everything out end-to-end as if they had been played in real time is the simplest common denominator. All events are listed sequentially in time regardless of original track or MIDI channel. Format 1 allows for multiple track sequences to be maintained. This means that if you originally recorded two different tracks on the same MIDI channel, you could preserve the independence of those tracks. Format 2 lets a multitrack file occur sequentially rather than simultaneously.

Higher level programs can read all three formats of MIDI Files; lower level machines cannot (by default) read higher level formats. Numerous utilities that convert between them can no doubt be counted on to appear. Also, MIDI Files deal with timing in both fractions of a quarter note or in SMPTE time. With a tempo map (the first chunk in the file) as a pivot, it now becomes possible for programs that work in one world to read a file that came from the other one.

CAPTURING & EXPORTING

Next comes converting a sequence into a MIDI File. It is pretty straightforward to convert a sequencer file into a MIDI File because sequencer files essentially contain the same information as MIDI Files. All the programmer needs to do is to convert the sequencer file format into the MIDI File format. This is usually referred to as "exporting." Programs that document a performance as a series of actions instead of the actual MIDI messages must "film" every musical

gesture you make, and every random decision the program makes, much like a tape recorder would capture a performance on a traditional instrument. Once a "movie" has been "filmed," it can then be exported as a MIDI File. The resultant file is then saved on the computer's disk.

If one gets in an extreme jam, a part of Digidesign's Q-Sheet can actually capture anything played into it over MIDI and save it as a MIDI File.

One problem with capturing is that you are limited by the amount of free space in memory. There is not much you can do about this except get more memory. If you have these sorts of problems and you are running MultiFinder or something else which takes up a lot of memory (a big system for example), you might consider disabling it while you're capturing. I have not run into too many situations where I ran out of memory with my Mac Plus (only 1Mb).

TRANSFERRING BETWEEN COMPUTERS

MIDI Files are currently supported on a number of computers. Transfer of MIDI Files from one computer to another over MIDI should be very easy in the (near?) future thanks to a transmission protocol, still under discussion, which will allow the transfer of MIDI Files through MIDI interfaces. Although that is not standard yet, it is still pretty easy to transfer MIDI Files using standard communications programs. It's basically analogous to sending text files saved in ASCII format from word processing program to word processing program.

Eric Ameres (also of Intelligent Music) and I spent some time getting our Macintosh, Atari, and Amiga to talk to each other. We had 100% success in all combinations. Here's how we did it.

Assuming you're in the same room (as opposed to using a telecommunications network, like PAN or GEnie), the only thing you need in order to connect the computers is a Standard Null Modem cable (transmit and receive are reversed on both ends). These are readily available at your local Radio Shack. Of course, if you are using the Macintosh, you will also need an RS-232 (DB-25)-to-Macintosh adaptor so you can connect to those neat little modem jacks. Transferring between the Atari and Amiga is simple. All you really need to do is Xmodem the file from one to the other and that's it.

The Macintosh is a little more complicated because the Macintosh puts a 128-byte header on all its files. This means that when you transmit a file from the Macintosh, you have to get rid of the first 128 bytes, and when you receive, you have to create this 128 byte header. We found ways to accomplish both these operations from the Macintosh alone.

To get a MIDI File into the Mac, simply download the file as normal, and then change the file type to "Midi." ResEdit is one program that will let you change the file type. Select the file in the ResEdit window and then select Get Info from the File menu. Change the file type

from "Text" (or whatever its type field says to "Midi." Save it and you're in business.

To get a file from your Mac into an Atari or Amiga, disable MacBinary transmission in your communications program. This will leave out the Mac header. As far as I can tell, all modem packages on the Mac can do this in one way or another. Refer to your owner's manual. Make sure when uploading your MIDI Files from your Macintosh to a network, that you used Xmodem transmission with MacBinary disabled so that other machines can download them easily.

FUTURE APPLICATIONS

A little brainstorming makes it easy to come up with a "wish list" for MIDI Files and future applications. First, it should be able to transmit and receive MIDI Files over MIDI (that's already in the works). Also, it would be great if it could link MIDI Files. If you have a bunch of SysEx MIDI Files that you want to forever associate with a sequence, you would want to have them all in one file (that is, when someone gets around to supporting SysEx events in their MIDI File playback). If people start to support Format 2 files, I think this could be very easy to do (just modify one header chunk and then string together all the track chunks). It might also be useful to be able to capture bulk dumps from other devices and convert them into MIDI Files.

There are plenty of other programs one could write using MIDI Files. How about a program which dealt exclusively with timing and MIDI delays? That's one thing no one has fully explored in any program. I'd personally like to see a program that tried to determine the shoe size of the composer(s) of a given MIDI File, but the future isn't that close yet.

I find the most intriguing implication of the MIDI File to be its impact on the working environment of the computer musician. MIDI Files allow us not only to team up programs which do different tasks, but also programs which provide different ways of creating and interacting with music. Physical surroundings are vital to the creative process in any field. As an instrumentalist, I can appreciate a well-made instrument to the point where it will make me play better. I also find certain conditions such as lighting, clothing, temperature of my forehead, what someone said to me four years ago, availability of thermo-nuclear devices . . . all these things can make or break my creative mood.

I'm not kidding. I don't know about you, but if I'm forced to work the same way all the time, the working process can become very stale. With the cornucopia of styles in design and programming, and thus a wide range of creative atmospheres, there is no reason why the computer musician should be restricted to one approach. ■

Antony Widoff is a product specialist for Intelligent Music and plays music sometimes in a band called Memorial Garage.

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START/STOP ZONE LOC DRUMS 293
1:000 2:000 Start: 000 End: 999
Tempo:
TITLE: Piano Song

TR	NAME	MODE	LEN	DIV	TIME	CH	SEQUENCE
1	Piano	PLAY		BCDEF	14/24		
2	Bass	PLAY		BCDEF	14/24		16a
3		EMPT		BCDEF	14/24		
4		EMPT		BCDEF	14/24		
5		EMPT		BCDEF	14/24		
6		EMPT		BCDEF	14/24		
7		EMPT		BCDEF	14/24		
8		EMPT		BCDEF	14/24		
9		EMPT		BCDEF	14/24		
10		EMPT		BCDEF	14/24		
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The main Sequencer Screen.

The latest package in the growing arsenal of software for the Commodore Amiga is an easy-to-use sequencer package that also turns your computer into a drum machine. *Review by Stefan B. Lipson.*

I DON'T KNOW about you, but this MIDI stuff has me drowning in a sea of cables. Between sound modules, computers, drum machines, and assorted black boxes, I am constantly plugging and unplugging devices, tracing (no patchbay yet, folks) MIDI in to MIDI out, MIDI up to MIDI down and MIDI this to MIDI that. I long for the day when technology can provide me with a full-featured 32-track MIDI music workstation that weighs about six ounces, is about the size of a Walkman, and costs under \$300. Needless to say, I was disappointed when it didn't show up at the last NAMM show. Hopes for the future aside, if you're an Amiga owner who wants to pull your system together and cut down on the number of necessary black boxes, you might want to check out New Wave software's Dynamic Music Studio for the Commodore Amiga (500, 1000, or 2000).

The Dynamic Music Studio is unique in that it provides you with not just sequencer software, but also an integrated drum machine that takes advantage of the Amiga's four-channel sound capabilities. With the built-in drum sounds, you can create rhythm tracks to accompany your tunes without an external drum machine.

THE STUFF

The rather large program (it requires one Meg, but does offer a memory remaining display) consists of three basic modules which are accessed through three different option screens. The three screens allow you to toggle between the drum machine module, the sequencer module, and the sequence editing module very quickly without losing your work or your train of thought.

Working with Dynamic Studio, which is not copy-protected, is rather easy. First off, the program takes care of the directory paths and the creation of drawers for you so you won't get bogged down with having to learn Amiga-specific commands to get up and running. The folks at New Wave set up separate directories for sequences, drum kits, studios, and sounds. This is a simple but welcome feature because many of the other systems for the Amiga demand that you learn something of AmigaDos and file management. Also, the manual is really just a short tutorial and very easy to follow. Although it doesn't have an index, the program is still easy to learn. New Wave also includes a cassette tutorial that walks you step by step

through a drum editing session, thereby allowing you to avoid the manual completely.

Dynamic Studio provides pull-down menus with easy-to-understand commands. The file management options offered from the menus are easy to understand here as well. For example, you can save a sequence, a pattern, a song, or chain together a drum part for your tune (separate from the sequence) and store them all with all the associated settings as a "studio." When you retrieve the studio, the whole system is reset the way you previously specified - accompanying drum parts and all. If you are interested in porting files between other software programs, Dynamic Studio also allows you to save files in Electronic Arts' SMUS format for use with other programs (like EA's Deluxe Music Construction Set), but it does not yet support MIDI Files (see feature elsewhere in this issue).

SEQUENCER OPTIONS

The sequencer itself provides sixteen tracks with four modes assignable to any given track: play, record, empty (untouched) and mute. Select the record mode and you record the

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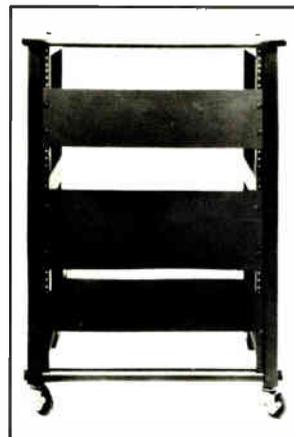
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▶ track. If you're not happy with the timing, you can quantize the track after the fact. You can also mute the program's metronome, and sliders are available as well as single step increments for the tempo. The display also tells you the length (in bars) of the sequence, the time signature, and the channel. The time signature option seems a bit peculiar to me as it allows for both numerators and denominators up to 32. In other words, I can define a signature of 29/31 time(!). This seems to be more of a coding oversight than anything, however, because changing the denominator to such a value has no correlative effect on the meter; in other words, the time doesn't get screwed up.

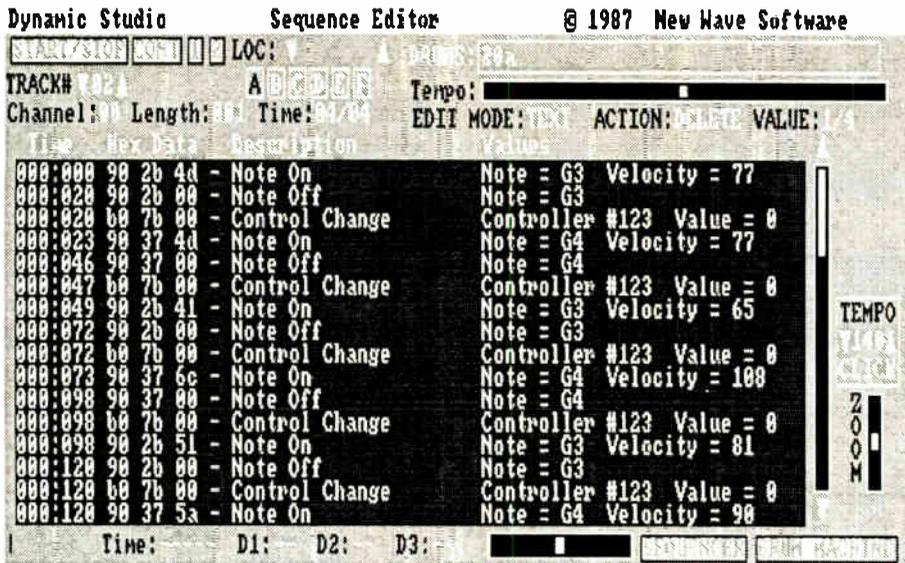
Each track on each sequence may also be further broken down into four sub parts: A, B, C and D. For example, on track one, you can record the A section as a two-bar pattern, section B as a three-bar pattern, and section C as a one-bar break. You may then specify the order in which the sequence is to be chained together. IA2BIA2C means that track one consists of section A followed by section B repeated twice, then section A, and then section C repeated twice. This can be easily done with all sixteen tracks. You can also change the keys (over a range of notes), MIDI channels and other parameters of the subsections.

Additional on screen options let you filter the various types of data from the MIDI data stream. Filter options can be used to remove program change information, System Exclusive messages, aftertouch data, and pitch wheel data, among other things. You can also modify the controller data so that you can translate pitch-bend into breath controller data.

THE SEQUENCE EDITOR

Once you have input a sequence, the sequence editor lets you edit your work. The edit sequence window appears with a keyboard running across the top of the window. Time is represented as the "Y" (vertical) axis. The zoom slider located next to the edit sequence window lets you zoom in on the graphic display, altering the number of bars which appear at any given time. The location slider runs vertically along the edit sequence window and lets you position yourself within the sequence for editing. Note and note parameter changes are made with a click of the mouse button. Note resolution in Versions 1.0 and 1.1 is 1/192 notes and the just released Version 2.0 promises twice that resolution with 1/384 notes. Version 2.0 also adds support for MIDI Song Position Pointer.

If you are more comfortable working with just the raw MIDI data, Dynamic Studio allows you to change the editor to text mode. Text mode displays the sequence as numerical MIDI data which you can also edit. Although not included with Dynamic Studio, the sequencer and sequence editor provide access to Oasis - an optional module which allows you to read diskettes for the Mirage Digital Sampling Keyboard. These sounds can also be played internally with the Amiga's four voices. Be forewarned, however, if you are considering just



The event editor screen.

using the Amiga's internal sound capabilities: the four voices only allow for one sound at a time per channel. The drum machine portion of the program also uses the Amiga sound chip, so you can run into some conflict (more later).

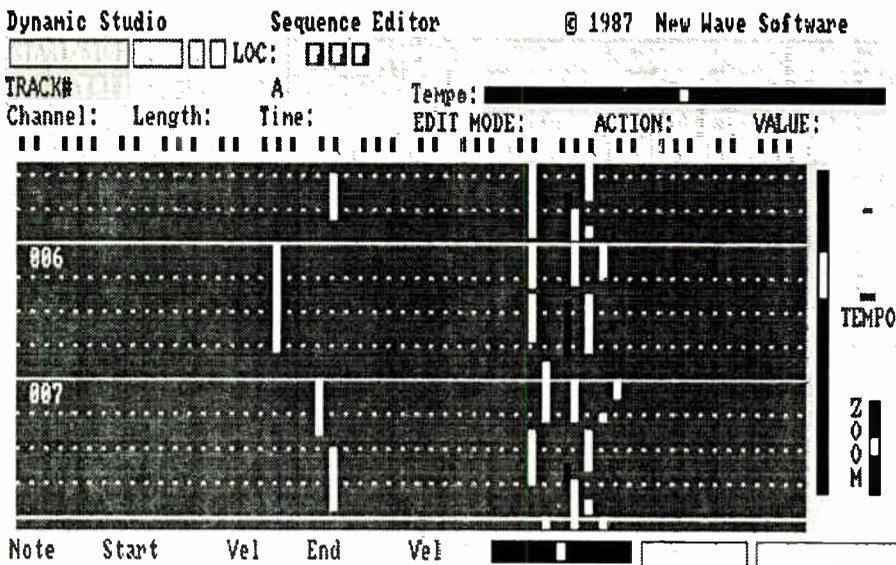
Dynamic Studio also includes a MIDI librarian for storing System Exclusive information from your synthesizer or sound module. This is a much desired feature because you always tend to come up with more voices on a synth than the onboard synth memory allows you to store. Floppy diskettes are also a lot cheaper than RAM cartridges.

THE DRUM MACHINE

The drum machine module looks like it got a lot of attention in the creation of the program, so let's give it its due too. First, the program comes with an additional data diskette that includes approximately sixty drum sounds. The sounds are eight-bit samples sampled at a rate of 24kHz and while you wouldn't mistake them for sounds from the HRI6, some of them are pretty

good. The Amiga's sound capabilities are impressive for a microcomputer: but if you use the internal voices, you are of course limited to four drums at any given time. Also, the action on an Amiga keyboard isn't great, so you have to get used to a bit of delay when you play the sounds with some of the keypad keys. As with the sequencer, Dynamic Studio does allow you to set the quantization or resolution, however, so as to ensure accuracy.

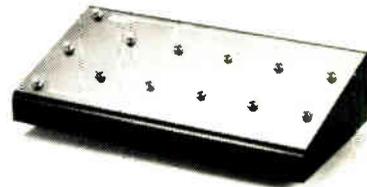
The sounds are all individually tunable in real time and there are individual volume controls for each drum sound, which are also adjustable in real time. Consequently, you can record these kinds of changes to a drum pattern, which is nice. Specific drum sounds can be assigned to specific Amiga sound channels. The program also includes several drum kits, defined as a set of ten of the available drum sounds. You also create kits of your own if you don't like those that came with the program. After you have created or loaded a drum kit, the drum names appear at the bottom of the screen with an



The main sequence editor screen.

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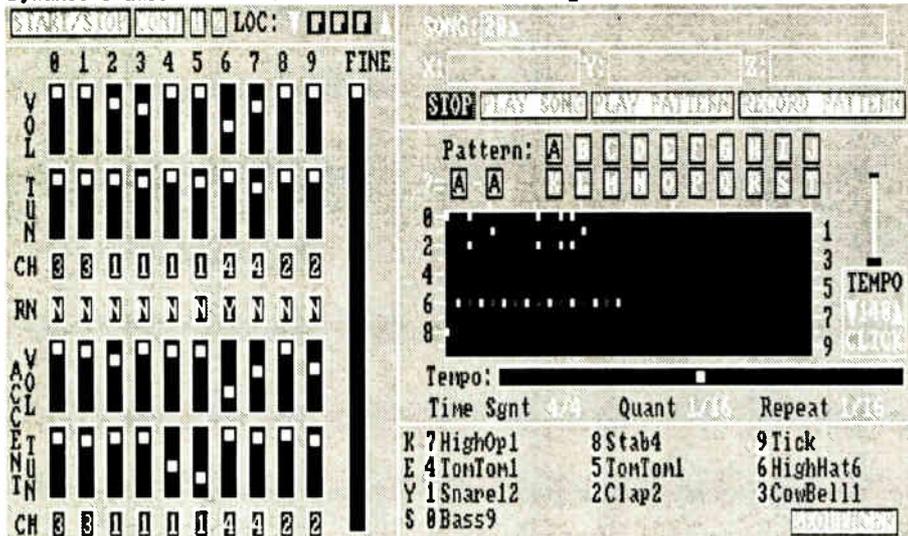


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The drum machine screen.

► associated keypad number so that you enter data with the keypad.

When laying down a drum pattern, the time signatures are limited to 1-8 over 4 or 8 (ie. 2/4, 5/4, 6/8, etc) and the length of a pattern is one bar. You write the drum sequences in a window that lets you place small tick marks at different locations to define a pattern. The window is about four inches wide and less than two inches high with the ten available drums marked off on a "Y" axis. The tick marks along the "X" axis define the pattern.

Dynamic Studio also allows you to record a string of drum patterns and chain them together to make a song. A song can only have up to twenty unique bars, which is rather short. You can name the song and the patterns so as to create a library of patterns and tunes for later use. Once you have created a drum track (song) and laid down several tracks with the sequencer and sequence editor, you can return to the sequencer, load it up with the drum tracks and listen to the whole thing simultaneously.

The drum machine is also sold as a separate

product called "Dynamic Drums." When purchased separately, the screen display of Dynamic Drums includes a map of the keypad so that the drums can be played in real time. Although the map of the keypad is not displayed with Dynamic Studio (there's not enough room on the screen), you can still use the keypad to play a part in real time.

CONCLUSION

Though it doesn't have a great deal of extensive editing capabilities, Dynamic Studio is easy to use and I think would be a good choice as a first sequencer for Amiga owners. There are a few quirks, but most of those can be gotten around. Plus, the number of nice features, like the SysEx recording capabilities, definitely offsets the few problem areas I ran into.

The built-in drum machine is a nice touch, though it confirms my belief that this is a beginner's package. As you would expect, it doesn't sound as good as a dedicated drum machine, but it does allow you to sketch out ideas and to hear how your tunes sound with a drum track. That also means less cables and one less component to deal with if you're on a limited budget.

So if you're looking for a no-frills sequencing package that gives you room to grow into, I'd check out the Dynamic Studio. ■

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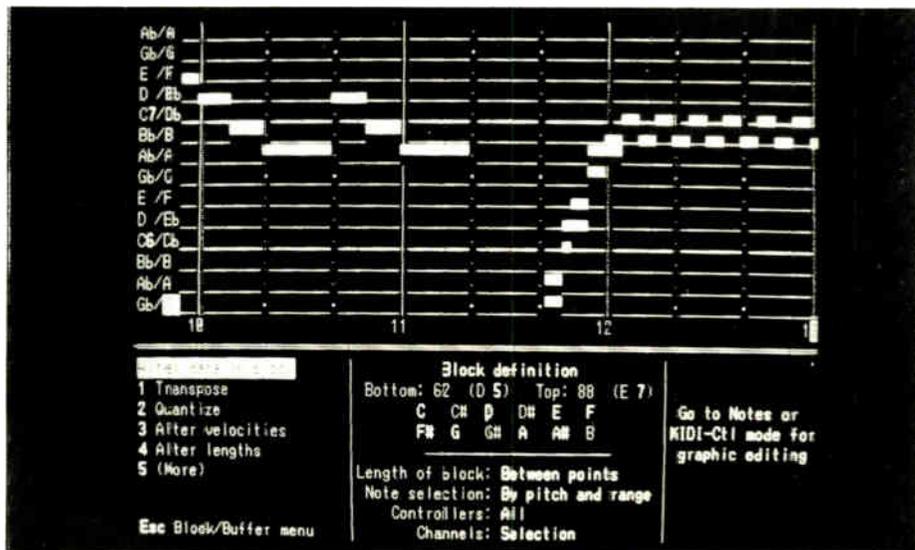
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Event Edit screen from Forte II.

The company's top-of-the-line IBM sequencer offers a slew of intuitive editing features, straightahead operation and two intriguing companion programs. *Review by Matt Isaacson.*

ANOTHER COMPUTER-BASED MIDI sequencer – another potential reviewer's nightmare. I'm happy to report that I can find little to complain about with Forte II, the sequencer for IBM PCs and compatibles from LTA Productions. It works solidly and smoothly, covers just about all of the essentials, and boasts a few unexpected extras. I experienced no crashes, data loss or refusal to function as claimed, and the few imperfections I found are so minor that I may not even bother to mention them. (Well...)

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MT NOVEMBER 1988

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eg. "T" for track, "G" for global edit, "E" for event edit, etc. In general, key designations are well-chosen to make them relatively easy to remember, and in most contexts the available key functions are listed in an abbreviated form onscreen. And if that still isn't enough, each of the nine main screens has its own Help text, often several screens long, called up by typing the letter "H" (not bad, right?), which discusses all of the functions available within that screen. It's a bit annoying that the Help info is not accessible from within commands, and not fully context-sensitive. However, the onscreen prompting is pretty good, and the rules are pretty consistent from one screen or function to the next.

As a stopgap against drudgery caused by oft-repeated commands involving long strings of keystrokes, the user can define macros compressing up to forty keystrokes onto a single key for 25 of the 26 alphabet keys – these are invoked by holding down the Alt key while hitting the letter key. The definition of these macros is easy enough – you hit "Alt-M" to tell Forte II to record your keystrokes, then you execute your command normally and hit Alt-M again.

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Other controls can also be adjusted at any ▶

► Conductor track (which of course must be duplicated in the converter). Ten times can be stored in a list, and a few quick keystrokes let you cue the sequencer directly to any of these points in other screens such as the Track, Pattern, and Event Screens, where the SMPTE window is popped up by the F10 key. Changes

made to the conductor track cause the points in the cue list to be recomputed so that they still correspond to the desired SMPTE times.

Nice as the cue list feature is, I'm more excited by the direct interaction of the F10 pop-up with the Event Editor. Want to trigger a sound on track 3 at exactly 00:02:34:24:19? Pull

track 3 up in the Event Editor, hit F10 to pop up the SMPTE window, enter this time on the dotted line, and hit the Space bar - voilà! The SMPTE window vanishes and the Event Editor is cued exactly to the point in your sequence which corresponds to that time, waiting for you to insert your note event. The real surprise is

The Companion Programs FWAP! and TrackGenie

ALSO AVAILABLE FROM LTA are two new programs which can be used on their own or, via disk file transfer of sequences, as utilities to augment the capabilities of Forte II.

FWAP! is designed for the creation of rhythm tracks. Although oriented towards drum machines, it'll drive any MIDI box that makes percussive sounds. With FWAP!, you work on individual short patterns which are displayed and edited graphically, and create a sequence by chaining these patterns together.

Patterns have up to 32 tracks (rows) and from 4 to 48 time steps (columns) which are typically 16th notes but can be as fine as 96th notes. Each track records events of one pitch and velocity from a single MIDI channel, which is all that is needed for playing a single sound in a drum machine. Accents can be placed on any time step - these affect all tracks. The essence of the information on a track is the presence or absence of a hit at each time step. Since most drum boxes provide no more than sixteen sounds at once, excess tracks can be used for finer dynamics or to drive multiple MIDI slaves.

Hits are inserted via MIDI note messages or from the keyboard, using the cursor keys to get around and various one-key commands to add or remove hits, clear or fill a track, invert or rotate the hits on a track, copy one track to another, etc. The channel/pitch settings for a track can be typed in if composing from the computer keyboard, while if playing over MIDI, one can simply rely upon FWAP! to

"learn" them as they come in.

Composition is generally done while FWAP! loops on a single pattern, adding and removing hits as it goes around. At any point, a single keystroke stores the current pattern aside and adds it to the sequence being created. A "jam" mode allows you to focus upon sequence development - as changes to the pattern are made, the updated patterns are automatically entered into the sequence in succession so that sequence playback will exactly reproduce what was heard during the "jam session." The resulting sequence and its patterns can be further edited as desired.

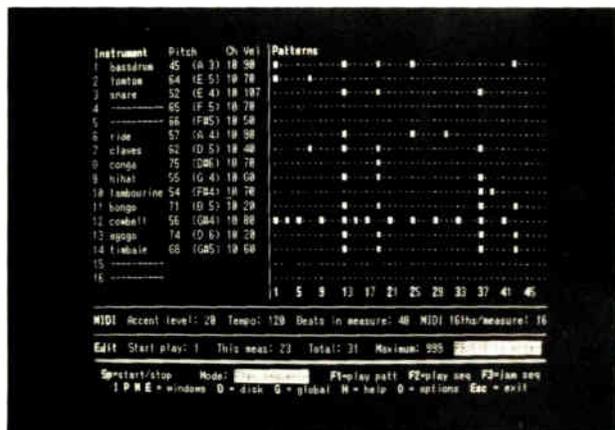
TrackGenie is an algorithmic composition program. It offers a suite of track generation and editing functions plus an eight-track "workspace" with playback features similar to those of Forte II. Tracks can easily be moved between TrackGenie and Forte II, so TrackGenie can be used to extend Forte II's editing power as well as providing an alternate source of material. TrackGenie also seems to represent a new look for LTA products, with multi-level pull-down menus and a true context-sensitive help facility.

Tracks are generated according to options which you select and fine-tune. The broad categories of control are pitch, rhythm and velocity, with sub-categories in each (eg. attack intervals and note lengths in the rhythm category). At the bottom level you choose among options such as random selection from a specified set of pitches, with an option to allow

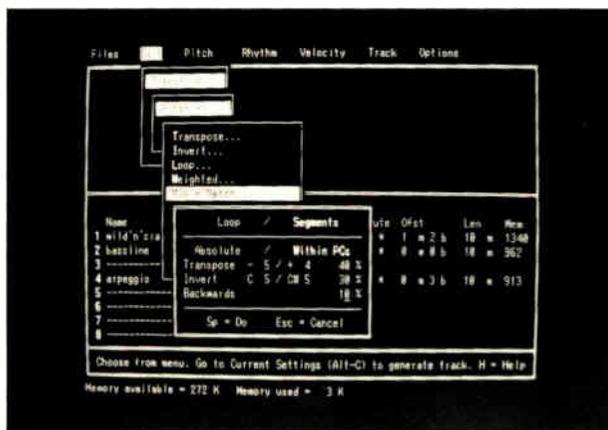
each note to be weighted to control its relative frequency of selection. The possible variations include maximum step from note to note and sloped tendency for center pitch, or less random modes such as looping through a specified series of notes (which can be entered from a MIDI keyboard), with optional random loop length and restart point. There are corresponding controls over rhythm and velocity generation, allowing the feel to be anywhere from robotic to scattershot.

The editing functions are mostly of a similar nature, allowing tracks to be further manipulated after generation, as well as adding other capabilities such as complex quantization, track reverse, pitch inversion and a very interesting one in which the notes of one track can be pasted onto the rhythm of another. Capping all of this is the live track generation feature, in which existing tracks can be manipulated as they are played back via controls such as mute/unmute, velocity and MIDI channel offset, and transpose (either absolute or within the track's specified set of pitch classes). Up to eight tracks can be used as source material for this feature, and the result can be saved as a new track.

Chaos rules when you first get started. The art in using TrackGenie lies in developing a feel for the behavior of its algorithms, learning to balance the random and non-random elements, and keeping the limits adjusted so that musically interesting results are obtained.



Create rhythm tracks with FWAP!

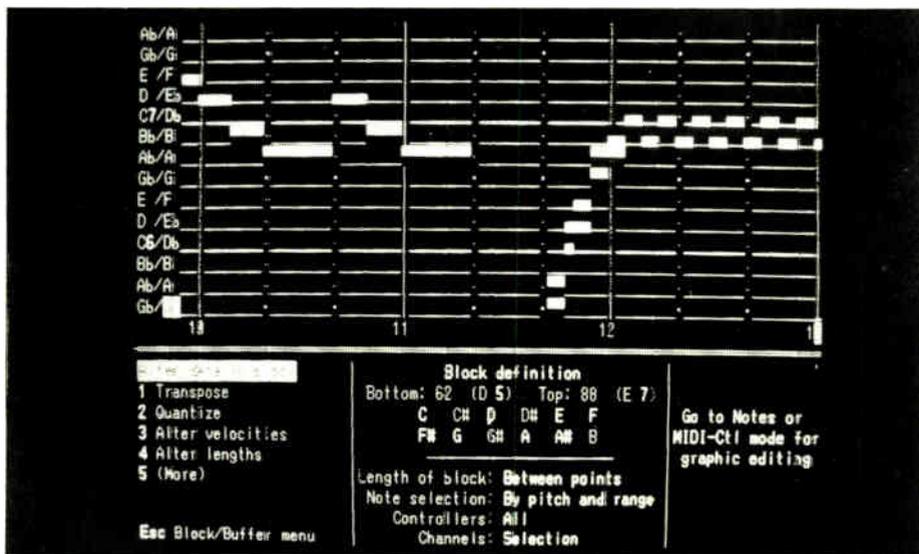


TrackGenie, LTA's algorithmic composition program.



LTA Productions Forte II

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► time, although less elegantly. The recorded MIDI channel(s) on a track can be overridden by a number entered in the MIDI channel field, rerouting all messages from that track to the new MIDI channel, but this can result in stuck notes if the channel change is entered in the middle of a sustaining note – one of the rare cases in which the flexibility of Forte II is somewhat compromised by a lack of safeguarding. The same problem occurs with on-the-fly transposing and track muting, and resurfaces in the area of cut-and-paste editing and pattern arranging, if the end of a note is cut off. Usually no permanent damage results – somehow, regardless of their origin, the stuck notes are all squelched when the stop key is hit. Other windows on the Track screen allow you to set initial tempo, time signature and sync mode as well as starting and ending bars for playback.

GLOBAL EDIT SCREEN

Here, Forte II affords you a bird's-eye view of where the recorded data is in your sequence, in the form of a grid in which each row corresponds to a track and each column to a bar. Points in the grid are changed to squares to show the presence of MIDI info on a track in the indicated bar. You can move the onscreen cursor around in the grid to cue playback from a specific bar or to select tracks and bars for an edit operation. Whole tracks can be very quickly created, erased or copied. In addition, part or all of one or more tracks can be copied to other

points in the sequence, deleted, erased or loaded into one of eight nameable buffers for further manipulation and retrieval, and silent space can be loaded into one or more tracks. Entire tracks can be time-shifted in either direction in multiples of one clock (one 120th of a quarter-note) to correct for sluggish response of an individual instrument or for artistic effect.

EVENT EDIT SCREEN

This screen swings you in for a magnified view of a single track. Note events are displayed as solid horizontal bars whose length indicates the duration of the note, while the vertical position indicates the pitch. Single-stroke movement options include jumping to either end of the track, stepping by bars or by a specific smaller time increment (eg. 16th note), or stepping directly from note to note. In the latter case, each note sounds briefly as it is reached, and its graphic symbol flashes for visual confirmation.

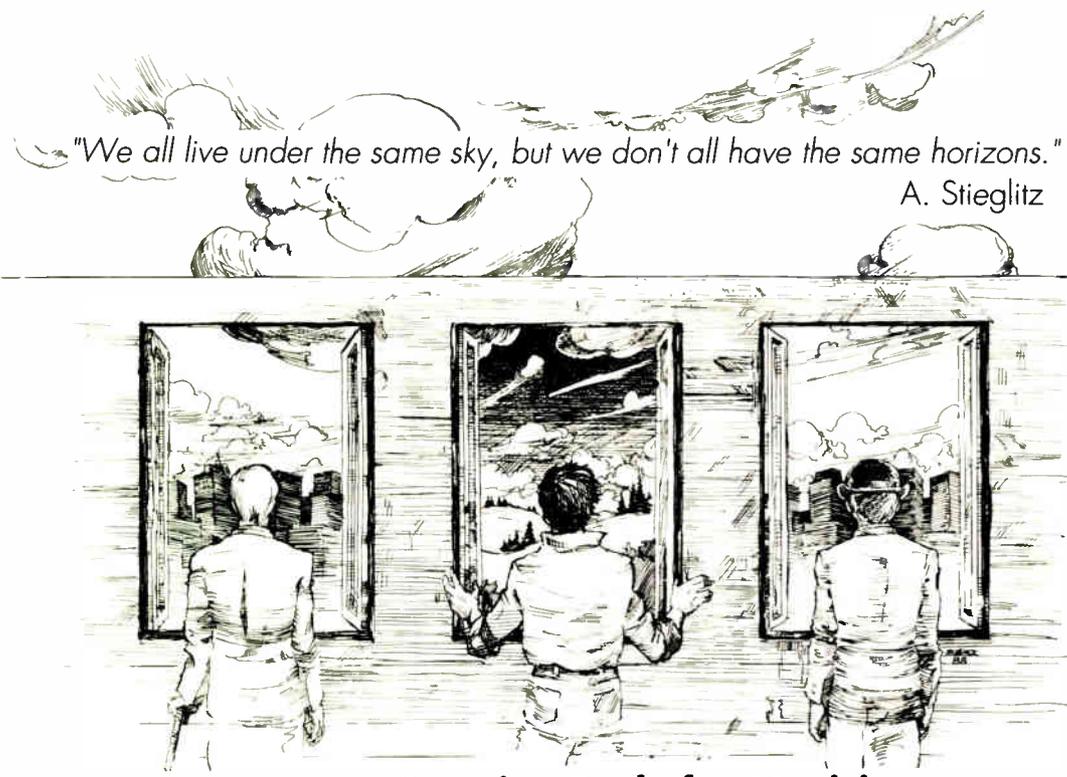
Simultaneously, information about the note is updated in the Note Info window – start and end in bar/beat/clock format, length in clocks, plus pitch, velocity and MIDI channel. Notes can be edited by jumping into this window and entering new values for any parameter, or a set of onscreen adjustment keys allows increment/decrement editing of any parameter without need to leave the graphic display window. This can be faster, especially if several notes are to be edited, but in any case the choice is yours. Notes sound again upon receiving their updated parameters, and you can play back the edited

track in real time from any point in order to hear the edits in the context of the track.

New notes can be inserted with similar ease – all applicable parameters of the new note default to those of the last note the cursor was on, which you can then modify as desired. At all times, your most recent edit action can be undone with a single keystroke. When you leave the Event Edit screen, you are given the option of discarding these edits or making them permanent – if you choose to keep them, you can put them on a new track, leaving the original track intact.

But don't leave yet – there's more to this screen. A single keystroke takes you from note mode to controller mode, where a similar set of editing capabilities is applied to MIDI controller info, or flips you into block mode, in which you select *groups* of notes and/or controllers upon which to perform an edit operation. Movement options in the graphic display window are the same as before, making it easy to home in on a specific musical phrase or section of time when defining the block to be operated upon. In addition you can select any combination of MIDI channels, any pitch range and any set of pitch classes (nice for key signature changes or retrofitting drum tracks to a different drum machine or set of sounds), and any combination of switch and/or continuous controllers (the defaults for all of these are reasonable, so normally you can leave most of them alone).

Once the block is defined, its contents can be deleted, loaded into a buffer, or altered in place



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in a number of ways: transposition, quantization, velocity or length alteration, and channel conversion can be performed on the note data. There's also an assortment of controller manipulations including full or fractional filtering to cut down the event density or memory usage, scaling of values, and conversion to a different controller type.

Quantization can be to the usual note values (16th note, etc) or to any whole number of clocks you care to choose, if your taste in timing runs to the esoteric. Note velocities can be scaled with respect to their existing values or a gradient can be set up in which the velocities will gradually fade from one value to another over the duration of the block - excellent for fading velocity-sensitive parts up or down over a stretch of time. If the block is loaded into a buffer, a few more options are available: the buffer can be shrunk or expanded in time, or the note pitches can be inverted around a specific pitch of your choice, or the sequence of notes can be turned around backwards. You can separately play back the contents of the buffer to hear the results before venturing to drop it back into a track, or the buffer can be kept on hand for later use in any edit screen.

PATTERN SCREEN

The Pattern screen is icing on the cake. Here you can non-destructively rearrange your existing tracks, cut parts out, loop them, etc. in a graphic format similar to that of the Track screen display. Sections of a track can be

specified down to the sixteenth-note, repositioned with similar resolution, and looped any number of times. For each such pattern specification - up to 255 on any one track, up to 1872 for the whole sequence - a full set of parameters can be specified which override those of the original track, including MIDI channel, MIDI program number, quantization, transpose, and velocity offset. This screen helps you make the most efficient use of memory via segment repetition. It also diminishes arranger's anxiety by minimizing the need to perform permanent track edits, and opens up interesting experimental possibilities by virtue of the fact that looping on any track is independent of that on any other track and is not confined to whole-bar or even whole-beat boundaries. New tracks can be recorded while listening to the arrangement defined by these patterns. While it may not be immediately obvious, this is a huge convenience, because your working arrangement can quickly grow to be radically different from your actual recorded tracks.

AND MORE SCREENS...

The Conductor screen allows detailed control over what amounts to track 33 in the sequencer. Here is where you specify time signatures throughout the sequence (because bar lines are simply overlaid upon the sequence, they can be moved at any time) as well as the tempo in each bar (you can go as far as to specify the tempo for each beat in a bar if you need to). There are block editing commands for the

time signature and tempo info, and some convenience features such as automatic creation of accelerandi or ritardandi by means of interpolating tempi at intermediate points. There is the limitation that all tempo values are whole BPM numbers, even when interpolated in this way. For some post-production uses, however, the ability to set tempo on a beat-by-beat basis might come in very handy by permitting a fractional tempo to be approximated.

The Options screen lets you specify settings or execute actions for a grab-bag of functions including MIDI mode, message filtering, input channel conversion and soft-thru, sync resolution, screen colors, system configuration, low-level interface setup, temporary escape into DOS, system exclusive dump management, storage of the current sequence as a standard MIDI sequence file, and SMPTE cue list management. This screen is also where you can see a full listing of all channels which have been recorded on each track.

HELP WITH SMPTE

What was that about a SMPTE cue list? Well, Forte II can't deal with SMPTE directly, since its interface to the outside world - the MPU-401 - doesn't accept SMPTE as an input. However, a suitable SMPTE-to-MIDI converter lets you take advantage of the ability of Forte II to convert specific SMPTE times into equivalent bar/beat/clock position values, taking into account the timecode format, the indicated SMPTE offset time, and the tempo map laid out in the

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► Conductor track (which of course must be duplicated in the converter). Ten times can be stored in a list, and a few quick keystrokes let you cue the sequencer directly to any of these points in other screens such as the Track, Pattern, and Event Screens, where the SMPTE window is popped up by the F10 key. Changes

made to the conductor track cause the points in the cue list to be recomputed so that they still correspond to the desired SMPTE times.

Nice as the cue list feature is, I'm more excited by the direct interaction of the F10 pop-up with the Event Editor. Want to trigger a sound on track 3 at exactly 00:02:34:24.19? Pull

track 3 up in the Event Editor, hit F10 to pop up the SMPTE window, enter this time on the dotted line, and hit the Space bar – voilà! The SMPTE window vanishes and the Event Editor is cued *exactly* to the point in your sequence which corresponds to that time, waiting for you to insert your note event. The real surprise is

The Companion Programs FWAP! and TrackGenie

ALSO AVAILABLE FROM LTA are two new programs which can be used on their own or, via disk file transfer of sequences, as utilities to augment the capabilities of Forte II.

FWAP! is designed for the creation of rhythm tracks. Although oriented towards drum machines, it'll drive any MIDI box that makes percussive sounds. With **FWAP!**, you work on individual short patterns which are displayed and edited graphically, and create a sequence by chaining these patterns together.

Patterns have up to 32 tracks (rows) and from 4 to 48 time steps (columns) which are typically 16th notes but can be as fine as 96th notes. Each track records events of one pitch and velocity from a single MIDI channel, which is all that is needed for playing a single sound in a drum machine. Accents can be placed on any time step – these affect all tracks. The essence of the information on a track is the presence or absence of a hit at each time step. Since most drum boxes provide no more than sixteen sounds at once, excess tracks can be used for finer dynamics or to drive multiple MIDI slaves.

Hits are inserted via MIDI note messages or from the keyboard, using the cursor keys to get around and various one-key commands to add or remove hits, clear or fill a track, invert or rotate the hits on a track, copy one track to another, etc. The channel/pitch settings for a track can be typed in if composing from the computer keyboard, while if playing over MIDI, one can simply rely upon **FWAP!** to

“learn” them as they come in.

Composition is generally done while **FWAP!** loops on a single pattern, adding and removing hits as it goes around. At any point, a single keystroke stores the current pattern aside and adds it to the sequence being created. A “jam” mode allows you to focus upon sequence development – as changes to the pattern are made, the updated patterns are automatically entered into the sequence in succession so that sequence playback will exactly reproduce what was heard during the “jam session.” The resulting sequence and its patterns can be further edited as desired.

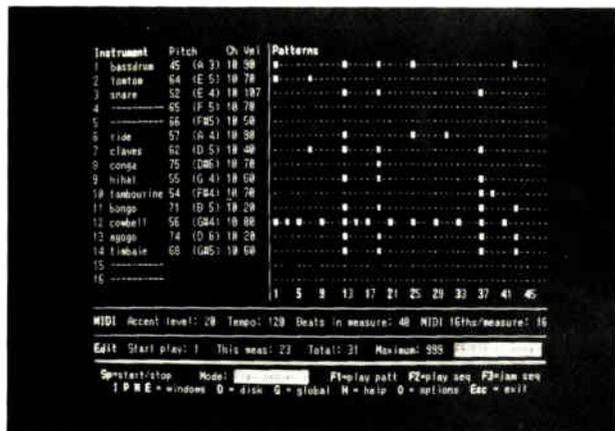
TrackGenie is an algorithmic composition program. It offers a suite of track generation and editing functions plus an eight-track “workspace” with playback features similar to those of Forte II. Tracks can easily be moved between **TrackGenie** and Forte II, so **TrackGenie** can be used to extend Forte II's editing power as well as providing an alternate source of material. **TrackGenie** also seems to represent a new look for LTA products, with multi-level pull-down menus and a true context-sensitive help facility.

Tracks are generated according to options which you select and fine-tune. The broad categories of control are pitch, rhythm and velocity, with sub-categories in each (eg. attack intervals and note lengths in the rhythm category). At the bottom level you choose among options such as random selection from a specified set of pitches, with an option to allow

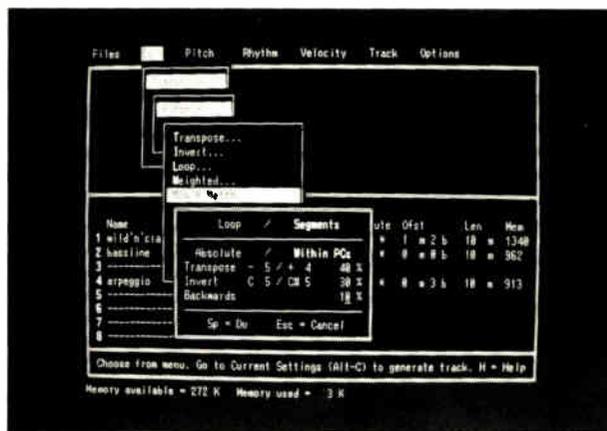
each note to be weighted to control its relative frequency of selection. The possible variations include maximum step from note to note and sloped tendency for center pitch, or less random modes such as looping through a specified series of notes (which can be entered from a MIDI keyboard), with optional random loop length and restart point. There are corresponding controls over rhythm and velocity generation, allowing the feel to be anywhere from robotic to scattershot.

The editing functions are mostly of a similar nature, allowing tracks to be further manipulated after generation, as well as adding other capabilities such as complex quantization, track reverse, pitch inversion and a very interesting one in which the notes of one track can be pasted onto the rhythm of another. Capping all of this is the live track generation feature, in which existing tracks can be manipulated as they are played back via controls such as mute/unmute, velocity and MIDI channel offset, and transpose (either absolute or within the track's specified set of pitch classes). Up to eight tracks can be used as source material for this feature, and the result can be saved as a new track.

Chaos rules when you first get started. The art in using **TrackGenie** lies in developing a feel for the behavior of its algorithms, learning to balance the random and non-random elements, and keeping the limits adjusted so that musically interesting results are obtained.



Create rhythm tracks with FWAP!



TrackGenie, LTA's algorithmic composition program.

that more sequencers don't have this relatively simple, highly useful feature.

I seem to have nearly forgotten the Step Entry screen. This looks much like the Event Editor, but watches the MIDI input for incoming events and records them at the current step. Step advance occurs in response to hits on the Space bar or strokes on the Sustain pedal of your MIDI keyboard. As each step is taken, any notes just recorded are put up on the screen in Event Editor format. If you make a mistake, you can backspace to wipe out these notes and return to the previous step to try again. You can play back what you have recorded so far, then pick up where you left off and continue recording, without leaving this screen, and you can set up a list of ten pre-defined step sizes which can be recalled at any time by means of - you guessed it - a couple of quick keystrokes.

Last but not least is the Information screen, which is simply a no-frills text editor. You can use it to generate up to 64K of setup info, track documentation, lyrics, shopping lists or whatever, which will be stored with your sequence when it is saved to disk.

OBLIGATORY GRIPES

Forte II is not perfect. As I said earlier, though, the problems I ran into are pretty minor - even if not fixed in a future update, they can be lived with. Here are some examples:

A Forte II songlist file is just a text file containing a list of sequence file names. If the name of such a file is included on the command line when Forte II is started up, the first sequence in the list is loaded automatically, and subsequent ones can be quickly loaded by hitting the F9 key. This could come in very handy for live performance. What's the problem? There seems to be no other way to load a song list into Forte II. If you forget, or get to the end of the list, you must exit from Forte II and restart it in order to bring it up with a new songlist. Also, for live use, each sequence should be automatically loaded (and perhaps started, at the user's option) when the previous one finishes playing back, instead of waiting for the user to start hitting buttons.

Forte II provides a DOS shell escape, an option which is found in almost any PC program worth its salt. With it, you can leave Forte II and your sequences sitting in memory while you step back out to DOS to run another program (such as formatting a floppy disk to back up your sequences on), and then quickly return to exactly where you left off in Forte II without having to reload anything from disk. What's the problem? During the escape, Forte II forgets the current PATH spec, which tells DOS where to look for programs scattered around the disk. Most likely, none of them is in the same directory as Forte II, and the job of remembering where they are is dumped back upon you, the user.

These are minor points which do not create much trouble in the typical user session. One of the few real problems I ran into was in the area of song position pointer function, both sending and receiving. The problem on the sending end

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is simply that you must initiate transmission by hand each time you want it to occur. Ideally, this should take care of itself when you hit the Play key, although this is one example of an operation which can be made faster and easier by making use of key macros. As for receiving song pointers, Forte II is a bit sluggish when asked to cue to points late in a moderately long sequence. If the MIDI clock source begins clocking before Forte II has finished cueing up, Forte II seems to miss some of the initial clocks and comes in behind the beat. It's as though the assumption is that the song pointer coming from the master device is also hand-triggered, and that the user will wait until Forte II is ready before starting up the master device. This, of course, is not the case with SMPTE sync, where all MIDI real-time messages are generated automatically by a SMPTE-to-MIDI converter in

response to incoming timecode. This somewhat diminishes the utility of the excellent SMPTE functions of Forte II.

CONCLUSIONS

Minor gripes aside, I would not hesitate to recommend Forte II. The elegance of the design and the smoothness of its operation - really, the comfortable *feel* of the product - far overshadow any problems I was able to turn up. The manual is thorough and well-written, and the price, while not rock-bottom, is not at all out of keeping with the value which Forte II provides. ■

PRICES \$250; \$80 for FWAP!; \$100 for TrackGenie; or \$400 for all three.

MORE FROM LTA Productions, PO Box, 6623, Hamden, CT 06517. Tel: (203) 787-9857.

The advertisement is set against a red background. At the top right, the name "JAN HAMMER" is written in large, white, serif capital letters. On the left side, the words "SOUND GENESIS" are written vertically in a large, white, sans-serif font. Above the text "SOUND GENESIS" is a small circular logo with a stylized globe. To the right of the vertical text, there is a quote in white text: "Because the Fairlight is such a superb sampler, it has allowed me to create many of my sounds. However, when it comes to the sampling of orchestral instruments I rely on the brilliant quality of Sound Genesis' Master Sampler Collection." Below this quote is another quote: "It's simply the only way to go!". At the bottom of the advertisement, the following text is printed in white: "SOUND GENESIS CORPORATION", "7807 CREEKRIDGE CENTER", "MINNEAPOLIS, MINNESOTA", "U.S.A. 55435", and "(612) 944-8528".



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■ **C-ZAR Editor/Librarian:** Diemer Development has released C-ZARI, a new extended version of the C-ZAR editor/librarian for Casio's CZ series and the Amiga. The new version is able to handle all aspects of the CZI's Operation Memories, including split points, separate upper and lower keyboard sounds, and "Tone Mix," which allows you to play two sounds at once. On-screen control of all Operation Memories, and Keyboard Velocity control via on-screen sliders is now available, and the C-ZARI maintains a directory of Operation Memory files, with cut, copy, paste, and undo functions.

- Diemer Development, 12814 Landale St, Studio City, CA 91604-1351. Tel: (818) 762-0804. Registered C-ZAR owners can buy the C-ZARI CZI software and extended manual for \$20. C-ZARI is included on C-ZAR Version 2.0, which retails for \$195.

■ **IEQ Intelligent Equalizer systems:** The Applied Research & Technology RS232 serial interface is offered as a retrofit package designed to access ART's IEQ Intelligent Equalizer systems, requiring only a standard serial interface cable (modem-type) for connecting to a wide range of computers and audio analyzers. The RS232 offers complete control over any IEQ via SysEx codes.

- ART (Applied Research & Technology, Inc.), 215 Tremont St, Rochester, NY 14608. Tel: (716) 436-2720. The retrofit retails for \$100.

■ **MSB Plus:** New features on software revision 2.0 of J.L. Cooper's MIDI Switching box include a programmable program change manager, with up to eight program changes sent out for each of the MSB Plus' 64 patches, program advance mode using the Panic Button footswitch jack, and the ability to dump SysEx messages from the front panel.

- J.L. Cooper Electronics, 1931 Pontius Ave, Los Angeles, CA 90025. Tel: (213) 473-8771. Retail for revision 2.0 is \$75. New MSB Plus' have the 2.0 update, and retail for \$449.

■ **ProVerb 200:** ART is offering a memory expansion update to all current ProVerb owners. The update expands the ProVerb's 100 preset basic memory capacity to 200 presets. The package modifications can be retrograded to existing ProVerbs with a RAM chip EPROM that includes a built-in battery backup board. The replacement includes 90 new reverb presets, and installation must be done by ART.

- ART (Applied Research & Technology, Inc.), 215 Tremont St, Rochester, NY 14608. Tel: (716) 436-2720. \$85 retail price.

■ **SX01 MIDISAX:** Artisyn is providing several hardware and software modifications for their MIDI wind controller. Polyphonic capabilities are now available, with up to four notes per chord, and 12 chords on any one chord map. Over 30 factory pre-programmed chord maps are provided, as well as room for 16 user-definable maps. The layering channel now operates in ADD mode (layered channel sounds with main channel), ALT mode (alternating between the two), and you now have the ability to gate the layering channel with a footswitch or pitch wheel. Memory expansion allows for 32 factory preset patches and 16 user programmable; real-time playing range is expanded to seven octaves; and automatic air and lip sensitivities are enhanced for easier user setting. Also, the reed flex transducer now features a modular connector for easier and more accurate insertion and disconnection.

- Artisyn, PO Box 209, West Linn, OR 97068. Tel: (503) 295-1915. Update will cost \$50, new SX01 retails for \$1695.

■ **TX16W sampler:** Yamaha has announced a new 100-disk sample library and a new version 2.1 automated operating software. Two twelve-disk sets from the London Research & Development facility are available. The first set, *Orchestral Collection*, contains sounds which were all sampled in the same acoustic "space" for easier blending of samples. The 76-disk American contribution ranges from acoustic to electronic instruments, to sound effects and multi-instrument performance disks.

The new software update allows for pitch detection, automated mapping of samples, global editing, simplified copying procedure, and an "Undo" feature to replace the old "buffer" system, for easier editing. Memory is reallocated to allow for 128 timbres instead of 64 to work with, and eight banks to choose from. Each bank contains 32 performances and 64 waves, totalling 256 performances and 512 waves.

- Yamaha Music Corp. USA, 6600 Orangethorpe Ave, Buena Park, CA 90620. Tel: (714) 522-9011. Version 2.1 operating system software and its accompanying manual is free to current TX16W owners. Library disks are available from Yamaha dealers.

Manufacturers, if you have information about new software or hardware upgrades or revision changes that you want MT readers to know about, send it to: Updates and Upgrades, Music Technology, 22024 Lassen St., Suite 118, Chatsworth, CA 91311.

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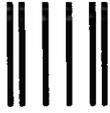
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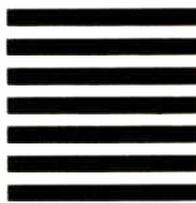


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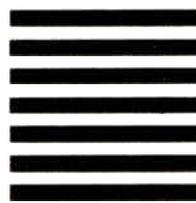


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IN PAST ISSUES

• FEBRUARY 1987

Interviews with Frank Zappa, Robert Irving and Seigen Ono. Reviews include Oberheim DPXI, Roland RD300 piano, Jam Factory and Dr. T's KCS software, and Mandala video-MIDI instrument. Technology features on hard disks, MIDI Mode 4 and percussion.

• MARCH 1987

Interviews with Adrian Belew, Peter Hammill, Jeff Lorber and Michael Stearns. Reviews include Yamaha DX7II, Sequential Studio 440, Korg SGI piano, Simmons SPM8:2 mixer, Barcus Berry processors, Mega Mix and Intelligent Music's M software. Technology features on bandwidth jargon, MIDI Modes, and the Sample Dump Standard.

• MAY 1987

Interviews with Allan Holdsworth, Holger Czukay, Kim Ryrie and Steven Randall. On test are the Casio SK2100 keyboard, Roland MK570, Yamaha RX5, Kahler Human Clock, Alesis Midiverb II and ART DRI reverbs, and Texture and ClickTracks software. Technology articles on drum programming and producing stereo samples.

• JUNE 1987

Interviews with Jerry Goodman, Bill Bruford, Richard Horowitz and Sussan Deihim. Reviews on Casio FZ1, Roland D50, 360 Systems MIDIMerge+, Steinberg's Cosmo software, and Kawai R50 and Korg DDD5 drum machines. Features on Mac MIDI workstations, MIDI delays and creative drum programming.

• JULY 1987

Interviews with Ryuichi Sakamoto, Geoff Downes, and Cutting Crew. Reviews on the Korg DS8, 48 Track PC II, Yamaha TX8IZ and MDFI, Passport Master Tracks Pro, and part 2 of the Roland D50. Creative drum programming continues, feature on DX7IID upgrades, and Sounds Natural series on recreating sounds of acoustic instruments begins.

• AUGUST 1987

Laurie Anderson, Danny Elfman and Man Jumping interviews. On test are Upbeat, MESA, Kawai's K5, and Simmons MTX9 Expander. MIDI basics series begins, creative drum programming and recreating sounds of acoustic instruments continues.

• SEPTEMBER 1987

Interviews with Steve Roach, Mike Lindup and Wally Badarou. Reviews of Yamaha's TX802, Bacchus TX8IZ Editor/Librarian for IBM, Kawai R50, and E! Version 2.0. Part Six on creative drum programming, part 3 on synthesizing and sampling sound of acoustic instruments, and a new series on the art of looping begins.

• OCTOBER 1987

Interviews with Todd Rundgren, Peter and Ina Wolf, and Living in a Box. Testing the Roland MT32, Hybrid

MT NOVEMBER 1988

Arts ADAP, IBM Music Feature, Garfield Time Commander and Yamaha's QX3 sequencer and REX50 processor. Creative drum programming ends, MIDI basics and looping continue.

• NOVEMBER 1987

Kitaro, Daniel Lanois and Amin Bhatia are interviewed. Reviews include the Keytek CTS-2000, Beam Team Transform software, Oberon Music Publishing software, RSF SD140 Sampling Drum Machine, Roland VP70, Twelve Tone Systems Cakewalk Sequencer, and Yamaha TX802. MIDI Basics continues, the third part of The Art of Looping, and The Fairlight Series III is discussed in the first of two parts.

• DECEMBER 1987

Interviews feature Jean-Luc Ponty, Jon Hassell and Michael Hoenig. Reviews uncover the Roland TR626, Boss MPD4, Music Mouse, Stepp DGX, Savant Audio Edit8000, Casio MIDI Guitars, Akai Wind Controllers, and Southworth Music Systems MIDIPaint/Jambox4+. Technological features include Part 2 of the Fairlight Series III Primer, an overview of wind synthesis, and the report from October's AES Show. MIDI Basics ends.

• JANUARY 1988

Interviews with Tony Kaye and Trevor Rabin of Yes and Lucia Hwong. Reviews include the Korg DRM1, Roland GP8, Digidesign Q-Sheet, IVL Pitchrider 4000 Mark II, Mark of the Unicorn Performer 2.2, and Roland PM16. A feature on MIDI switchers and a beginner's lesson in scoring to video accompany an article on subtractive synthesis.

• FEBRUARY '88

Interviews with Rush, Brian Eno and Peter Erskine. The new Computer Notes section includes reviews of Dominant Functions' TIFF, Steinberg and Drumware S900 editors. Equipment reviews focus on Ensoniq's SQ80, 360 Systems Pro MIDI Bass, Artisan's MIDISax, the Kurzweil 1000, Yamaha's RX7, and Simmons' Silicon Mallet. Articles on sampler quality and using envelopes effectively are featured.

• MARCH 1988

Interviews with Steve Reich and Marcus Miller. Features on Local Area Networks, Computer Networks, MIDI Automation, MIDI Processors and the Winter NAMM Show. Reviews of Elka Master Keyboard, Yamaha WX7, Ensoniq Performance Sampler, Alesis MMTB Sequencer, IBM Sequencers, Hybrid Arts EZ Score Plus.

• APRIL 1988

Interviews with Thomas Dolby, The Christians and Carl Stone. Previews of Korg M1 and S1; reviews of Alesis HR16, Sting EW2 MIDI Wind Controller, Passport Master Tracks Pro ST, Lyre FDSOft, C-Lab Creator. Features on additive synthesis, MIDI processors and computer user groups.

• MAY 1988

Interviews with Lee Ritenour, The Fents, John Abercrombie and four professional programmers. Reviews of Axxess Mapper, Lync LN4, Yamaha TX16W, E! for the DX7II, Simmons SDX, Korg 707, Passport Score and Opcode Cue 2.0. Features on Multitasking, Additive Synthesis, and the Frankfurt Trade Show.

• JUNE 1988

Interviews with Jan Hammer, Jane Siberry and Patrick O'Hearn. Reviews of E-mu Emax SE HD, Roland S550, Twister PAC, DigiTech DSP128, Kawai KI, Blank Software's Alchemy and MIDI Concepts Concepts: One. Features on sampling guitars for string sounds, Digital Pianos and Hard Disk Recording. A new series on Sound Systems for synths begins.

• JULY 1988

Interviews with Earth, Wind and Fire, Larry Fast and Richard Burmer. On Stage with Miles Davis. Reviews of Korg M1, KMX MIDI Central and Merge/Select, Triton Sound Process, Forte Mentor, Akai/Linn MPC60, AKG ADR 68K, Southworth One-Step, Drumware GenWave/12, Personal Composer 2.0, and MIDI Mouse CZ. Features on Music Notation, Wind Synthesis, Vocal Sampling and the Minimoog. The series on Synth Sound Systems ends.

• AUGUST 1988

Interviews with Critti Politti, Michael Shrieve and the first of the genre pieces concentrates on Contemporary Christian artists. Reviews of Emulator III, Roland D110, Casio PG380, Graphic Notes, Dr. T's KCS with MPE and PVG, Roland PC Desktop Studio, and Steinberg's The Ear. Preview of Yamaha G10. Features on Copy Protection, Vocal Sampling II, Intro to Digital Audio, and ARP 2600.

• SEPTEMBER 1988

Interviews with Joe Zawinul and Aswad and the genre piece is on Hip Hop producers. On Stage with The Dregs. Reviews of Oberheim Matrix 1000, Casio VZ1, Yamaha MIDI Grand, Digidesign Turbosynth, Sonus SuperScore. New series on the AudioFrame begins, the series on Digital Audio ends. Other features on the Oberheim SEM, Bass Sampling, and the Summer NAMM Report.

• OCTOBER 1988

Interviews with Andy Summers and Frank Harris, and a report on Hi-Tech Heavy Metal. Reviews of Roland D20, 360 Systems MIDI Patcher, Simmons Portakit, Passac Sentient Six, SMPTE-to-MIDI converters, PCC MIDI Manager 7, Dr. T's S900 Pro Sample Editor, Dr. T's K5 editor, and SoundQuest SQ80/ESQ editor. Features on Algorithmic Composition, Interactive Music and Programming Tricks and the second part of the AudioFrame series.

THE BIG SCORE

Set against the rustic panorama of Utah's Rocky Mountains, Robert Redford's Sundance Institute is a hi-tech summer camp for aspiring film composers. Alan Silvestri, Ralph Grierson and Don Walker conduct a guided tour, extolling and berating the beast called MIDI. Interviews by Deborah Parisi.

THE SUNDANCE INSTITUTE, hidden away from civilization amidst soaring pines and streams teeming with trout in Provo Canyon, Utah, is becoming a part of the American dream. Artists – specifically playwrights, filmmakers, dancers and composers – from across the nation submit their works, hoping that their efforts will be selected from among hundreds of applicants. If chosen, they are rewarded with a three-week stay at the institute and bestowed with a new, if indistinct, title: Fellow.

Fellows get to hang out, or perhaps more precisely, make contact with, the "Resource Composers:" big guns in film scoring like Henry Mancini, Bruce Broughton and Alan Silvestri, as well as the founder of the institute, Robert Redford.

While the rustic cedar cabins and winding forest trails at Sundance might fool you into thinking you've enrolled in a summer camp for the elite, the hours are long, the pressure intense, and the goals inspiring.

Nancy Laird Chance, one of the fortunate four chosen for this summer's Film Composers' session, explains her attendance: "I saw an article in the paper about this laboratory for people who want to score to picture, and I just called Information and said, 'Where is Sundance?' Once I got that number, the people said, 'Call LA.' So I called LA and said, 'How do I apply for this?' And they said, 'Well . . . the deadline's in six days.' And I said, 'Well, just tell me what I have to send and I'll send it.' So I put a demo tape into a Federal Express package, and here I am!"

In less than three weeks, Nancy is discussing the ins, outs and throughs of music technology. Drenched in DX7s, computer sequencing and Fairlight sounds, her enthusiasm is reminiscent of nearly everyone's first exposure to MIDI. "It's like everybody around me is speaking another language. I hadn't even seen synthesizers until two weeks ago. All I can do here, really, is write the kind of music I know how to write (Nancy is a trained composer, coming out of Bryn Mawr and Columbia). Of course, if you tend to write orchestral kinds of lines, you soon realize that a synthesizer keyboard cannot play like that. They just see an off and on switch. And the joining of the notes is different. Also, an individual note cannot change its timbre as a player could change it in the middle of note, so . . . it's a

completely different kind of music. And it's terribly exciting."

Nancy, of course, wouldn't have come to this level of understanding in three weeks without the painstaking, generous, full-time giving by the technical staff and Resource Composers.

Technical participants are also tops in their fields. Ralph Grierson, one of the keyboardists contributing his talent, has performed with the LA Philharmonic, worked with the likes of Pierre Boulez, Lukas Foss and Aaron Copeland, and has scored to picture himself. Peter Kaye, the Fairlight programmer, is also a television music director and composer for the film *Born in East LA* and for MTV's *Ten Second Films*. Tim Boyle, the recording engineer, has mixed a half-dozen films in the last year alone, including *Throw Mama From the Train*, *Serpent and the Rainbow*, and *Bill and Ted's Excellent Adventure*. The rest of the tech folk carry around resumes just as impressive. Most are accomplished composers in their own right, and come to Sundance to teach, to create, and maybe to meet those who have made even more of a name for themselves. While the goal at Sundance isn't really to make contacts, spending a few days with the likes of Alan Silvestri and Henry Mancini can't hurt a career, either.

ALAN SILVESTRI COMES at film scoring from a seemingly skewed path, one which early on had little to do with the film industry. After leaving school to try his luck as a guitar player in Las Vegas, he ended up in Los Angeles for what turned out to be a bogus job. Misfortune did an about-face when the only person he had met in LA asked if he might be interested in scoring a picture.

"He was a lyricist and didn't write music at all, really, and when this producer called him, he put him on hold and called me." The response? "'Let's do it. Take it. Say yes.' So I went out and bought Earl Hagen's film score book, and picked up the Knudsen timing book, and worked through them in one night to learn what click tracks were and how timing worked. It turned out that I had to deliver 65 minutes of music in nine days for this film, so I borrowed a bunch of instruments and hired some friends, and we went in and made this movie score. And it

worked! It was a film called *The Doberman Gang*, and the next thing I knew, I was a film composer."

Silvestri didn't exactly have it made at that point, though; the trail he traveled was carved with detours, derailments and despair. "You'd think that after working for that long on such a successful TV show (he scored the TV series *CHiPs* for over four years) that you're going to be able to get work and go on. But it was almost a year. Nothing. Couldn't get arrested. At that point we had our first and only baby, and she was terribly ill upon birth. I begged and borrowed and stole for an episode of another cop show, and then they hated it. They just hated it. And finally it was the realization: Here I am again. I can't do this any more. I'm going to get a real job.

"Right after that, I got a phone call from the former music editor from *CHiPs* wanting to know what I was doing. 'I'm just about never doing anything these days,' I said. He said, 'Well, would you be interested in just trying something for this film I'm doing? Don't get put-off by the title, it's a little strange – it's called *Romancing the Stone*.' So I said, 'Sure.'" After speaking with the director, Silvestri was asked to produce a three-minute demo tape for a scene "where a guy and a girl are running through the jungle, and it's raining," by noon the next day.

"I had an 8-track machine, and the original Linndrum, and the DX7. No board, no outboard gear. The boxes and owners' manuals were still on the floor. So I plugged it all in, and basically put together a rhythm track, which ultimately was the track that we used in the film. I got a call from Michael Douglas, met with him on Tuesday, and the deal was made that night. And in a sense, the rest is history. But that's how tenuous it is. I always call myself 'Composer By Default.' I couldn't get away from it – I tried, believe me – I tried."

The "rest is history" part ain't no hype or ego trip. Since *Romancing the Stone*, Silvestri has scored *Back to the Future*, *Predator*, *The Boy Who Could Fly*, and *Who Framed Roger Rabbit?* And along the way, Alan's seen some dramatic changes – in technology, in approaches to writing and recording music, and in his own home studio.

"The beginnings of my home studio were invaluable," he says. "If I'd had to go out and book a 25-piece orchestra at 9 o'clock at night, I wouldn't have gotten that job.



Photography John Schaefer

"For *Romancing the Stone*, I was just starting to have some electronics at my disposal. I had the (Rhodes) Chroma, which attracted me because it was one of the only keyboards that I could afford that had the beginnings of a computer interface. I was using an Apple II to drive it, but it was very cumbersome. It was like having an outboard motor on the space shuttle. You had to go out there to pull a chord off. But, hey, it was the future, and I knew it.

"At that point, I had a home VHS and got transfers, but I wasn't even locked into code yet. Luckily it's improved since then. Now I've done films completely electronically, and other films, like *Predator*, which have a lot of electronics playing live with an 88-piece orchestra. That's been fun, with the electronics tracking with the orchestra, rather than doing overlays and being locked into things. I never put the electronic material down on multitrack. We run it all live with sequencers locked to timecode, so even after the orchestra is there I can still go back and change voices and make adjustments. Then we just mix all that live so that it never goes to tape."

The Chroma has naturally been replaced, as needs and financial resources have grown. "The Synclavier is the center of my system now, but I own and use a lot of other gear – a couple of DX7s, a couple of D50s, a couple of DW8000s, a TX816 rack, a couple of digital pianos, a Prophet VS, the Linn 9000, a

Super Jupiter – all kinds of stuff.

"There are a lot of great ready-made sounds in these other pieces of gear," he says in justification of the array. "Also, even as powerful as the Synclavier is, I'm still based on a 32-voice system. More voices are available; but it's a lot of money. The sequencer on the Synclavier is 200 tracks, so when you trigger a MIDI device, you're not using up any of the Synclavier voices. For certain kinds of things, I can have a lot going on without eating up my Synclavier voices.

"I'm convinced, and have been for a long time, that direct-to-hard disk is the future of the audio-visual industry," he adds, "but not because of the amount of storage. It's got more to do with controllability and ease of manipulating the data. When you have removed mechanics, coarse mechanics, from

Silvestri: "I'm convinced that direct-to-hard disk is the future of the audio-visual industry. It's like having a material to work with that's as hard as granite, but you can just take a fingernail and put an eyelash in."

the equation, you have immediate access to an enormous amount of material, and the possibility of combining sounds. It's the malleability of the medium. It's like trying to make a sculpture. All of a sudden you have a material to work with that's as hard as granite, but you can just take a fingernail and put an eyelash in. You see? Even though it's as hard as granite, you can still work in the medium.

"I take very big advantage of what the technology allows – I love what it can do and how it can move – but it's really only a tool, whether it's a violin or a Synclavier. You can hit nails, or you can go out and try to dig weeds with a hammer. How you use the tool will determine the results."

Perhaps the most popular film of the year, *Who Framed Roger Rabbit?*, was a challenge in more ways than one. Alan put about 18 months into the score, escalating his efforts during the last 10. One of the most technically challenging scenes has become one of the highlights.

"Do you remember the piano duet between Daffy and Donald? The director didn't want to use animated pianos; he wanted to use real pianos, which he did. Recording it wasn't that difficult, with

Synclaviers and sequencers, but filming it was a real trick. How could we get the keys to move?

"The Disney duck is Donald; the Warner Bros. duck is Daffy. Those characters have never been allowed to appear together in film, which was one of the unique things of this picture. So this was clearly the battle of the bands, and 'The Hungarian Rhapsody' is ▶



Photography Rosemarie Rounseville

Alan Silvestri, with poster of his latest friend: "When somebody is having their first day with a stiff neck, it can be real comforting to know that it's going to end."

▶ really set up so you can do that. It's 'Can you top this?' So we did all these crazed speeds, because we wanted it to ultimately be a cartoon scene in a way that a human could never do it. We used three Synclaviers, then went to London with the symphony and recorded the piece with timecode onto Nagra tapes. JL Cooper invented a card that would take standard MIDI data and translate it for Marantz player pianos. The special effects guys in London gutted two pianos, put in Marantz player piano mechanisms, JL Cooper pouched over these two cards for us – they were the only two that existed – and we plugged them into these pianos.

"As the machine was singing, the Nagra was locked in sync with the camera, the Nagra was feeding timecode to the Synclavier, the Synclavier sequence was triggering two different MIDI channels to each piano, and the pianos actually played the notes of the Hungarian Rhapsody. So what we were able to do was shoot tight shots on these pianos actually playing the piece. And the animation was added later. It

was an exciting use of the technology, because there was no other way you could have done this. That's the kind of thing that technology is incredible at."

These stories and more are but one of the gifts Silvestri brings to Sundance. "I like having the chance talking to people who are trying to break into the business," he says. "When I got there, I really found that everybody was starved for some honesty. Most of what people want to know from me had to do with business; it didn't have to do with music. I was pleased with that, because you really aren't going to help anybody a hell of a lot with their music in one night.

"I talk to them just as a fellow traveler in all of this," he adds. "And what this is, or what it's not, about. The questions end up being, 'When you hit your head on this ledge, what was that like?' And, 'When you fell down in this hole, what happened?' And I end up saying, 'Oh, yeah! I absolutely remember that hole. I fell down, and I had a stiff neck for three days, but it went away.' When somebody is having their first day with

a stiff neck, it can be real comforting to know that it's going to end, and you can keep walking."

Silvestri is able to give pragmatic advice to "wannabes" as well. "You have to look for things that are under your control. You can't make somebody hire you; you can only work on your craft. And with the advent of the musical electronic age, people now have the possibility to develop without it all being on-the-job training. I learned how to write for film by writing to film. Now, with an inexpensive video machine and a few synthesizers, you can tape a show off of television and you can write a cue for a scene. And you can see it – and that's amazing."

WHILE PARTICIPATION OF major composers is limited to a day here, an evening there, many of the technical staff at Sundance begin work before the sessions begin and work 10-16 hour days for the duration. The electronic facilities are not permanent installations; equipment is selected, borrowed from manufacturers, installed and torn down in a few weeks.

Don Walker, who in real life is a Creative Technician (a relatively new job title, that; in a nutshell, means he makes a living helping musicians and composers set up keyboard racks that they can relate to), explains: "David Newman (the Creative Director, or over-see, at Sundance) and I sat down and designed a studio six months ago, and put together a list of all the dream equipment that we could possibly imagine. Basically, we posed the question, 'If I was a starting composer and I was walking into a studio to record my first tune, what kind of tape recorder would be there? What kind of mixing console? What kind of speakers? What kind of synthesizers?' Dave and I imagined it, and we got in touch with all of the manufacturers – I guess it was like 25 different manufacturers donated all this dream equipment – and we put it together in three days. Two studios in three days, and it all works and it's all perfect. And people are busy doing what they should be doing with technology: making music."

The Sundance agenda includes presenting a system very similar to what the industry professionals are actually doing in their own home studios. Don Walker seems best at presenting the overall picture. "We had a concept when we first started out about the whole Sundance program," he says, "a way of interfacing people with technology on a step-by-step basis. First there are the small rooms, where the fellows start out with a DX7, a video machine and a piece of music paper, so they can write, look at the picture and experiment playing notes. Then there is a room with the Auricle time processor (See MT April '87 for review), so that they could build a variable click track as the basis for their music, and see it locked to picture, play

along with it, experiment, try things out.

“Next they move to the programming studio which serves as an electronic orchestrating room. They can lock all the MIDI instruments up to picture, look at their cue, put it in the sequencer, and experiment with the timbres, experiment with the writing.

“Then they’re ready to move on into the big room, which is a simulation of a professional Hollywood studio, with players like Rick Marvin and Ralph Grierson, the top keyboard players in town, and guys like Peter Kaye, assisting with his specialized area, maybe voicing of a chord, or a working with a particular sample on the Fairlight.

“That’s what it’s set up for, to basically throw somebody into a professional environment and give them the same kind of care and attention that the Resource Composers can afford, but that people starting out in film composing careers can’t.”



Nancy Laird Chance conducts the Utah Symphony as one of her assignments at the Institute.



Ralph Grierson provides keyboard chops and technical know-how for Fellows at Sundance.

Don is responsible for introducing Ralph Grierson to Sundance. “Don Walker is the technician who helps build my racks and keep my studio running, and he asked me if I would be interested in coming,” Grierson says. “And I said ‘Sure.’ It’s fascinating to see how excited the film composers are about everything. When you work in the business 10 months of the year, you see a lot of cynical people, people who’ve lost that kind of spark, and it’s great to kind of re-establish communication with that. And it’s so beautiful here. Who wouldn’t want to come?”

Grierson’s keyboard work has been featured in literally thousands of hours of studio sessions for television, recordings and film, yet only recently has he begun to toy with scoring to picture himself. Although he’s obviously enjoying himself at the keyboards at Sundance, his vision for the future of synthesizers is irrepresible. Punctuating our conversation about music and Sundance are sophisticated complaints regarding what technology has to offer:

“Nobody seems to realize that we’re in an entire world of MIDI – we’re talking electronic orchestras – and the way you get an orchestral sound is through variety. In an orchestra you have strings and brass and woodwinds, and with electronics you have Yamaha, you have Roland, you have Korg, you have Fairlight. Even though every synthesizer tries to sound like everything – they all have brass, strings, etc – each of them has an area that’s their strength. When you put them together in combination with others, that’s what provides the overall ensemble sound. It’s the variety.

“I understand that I only represent two or three per cent of the market, but I’m still impatient with the fact that manufacturers settle for so much less than they can, with the understanding that they have to make their money. They go out and sell their products, and they don’t really improve it ▶

► until the sales slow down. We're sitting right now, for example, on a system that Don Buchla is behind, and which has an acronym I hope will be changed, called WIMP. It stands for Wideband Interface for Musical Performance. This system has the capability of being a truly expressive way of producing electronic music in that it is so much faster – 32 times faster than MIDI, for example. It piggybacks MIDI on 3% of its bandwidth, and allows for a complete performance gesture musically.

"There's a chip out there right now that will make MIDI four times faster than it is," Grierson continues, "and I've heard that it's even been installed in some of the new equipment. No one's introduced it because they're afraid of antiquating instruments before they're all sold. Well, I would say to them, 'Fine, well and good;' but we've got to keep the standards improving.

"There's a constant frustration in having a new synthesizer every six months, but not yet a controller that anywhere approaches the piano in terms of how sophisticated and subtle it can be. If you're going to bend a note, have vibrato, play several notes with polyphonic afterpressure, the fact is that it clogs up the MIDI stream so badly as to make it almost unusable.

"I understand that I'm not an easy person to please," he concludes. "I just want so much – I can see so much there, you know? I'm just afraid that if they don't continue the development, we're going to end up with keyboard instruments which are not capable of being as expressive as any of the other instruments."

Although Grierson's criticisms may seem harsh, they're offered with an eye to the future of music. "I really want to be positive, even in criticism," he says. "Some things are really impressive. At home, I'm using the Macintosh, mostly with Performer and Composer. I have a SMPTE box, although what I've been doing lately is using the Auricle. From my Fostex 16-track machine, I

WELL – IS MIDI DEAD?

RALPH GRIERSON BRINGS up some complaints about MIDI echoed by many people: it's antiquated; it's too slow; it doesn't carry enough expression for non-keyboardists; there are faster things out there, but the industry's holding back.

Ralph is in no way wrong. MIDI is five years old now; it's based on an original concept of layering one black-and-white keyboard with another, and technology and hardware that was cheaply available back then. It's simply not designed for what people want to do with it now. But in the middle of these complaints, a few additional questions need to be asked, such as: where would we be without it? What if MIDI changed radically every six months, and no instruments from any other six-month period were compatible? Will the market accept a new interface that adds significant cost onto every instrument (from a "toy" on up)? How can an instrument accept something faster than MIDI, when at least half of the currently available products can't even deal with present-day MIDI running at full speed (for more details, see 'The Last Word on MIDI Delays' in the June '87 issue)?

Despite the ivory-tower technician label most people apply to Don Buchla, he has been pioneering ways to get more expressiveness into electronic music since Day One. (He was there, too; he and Robert Moog independently came up with voltage-controlled synthesis within one year of each other, with still no clear indication of who was first – some say it was indeed Don.) And for the record, I'm a fan of his work. However, I am unaware of any current widespread manufacturers' support of WIMP. By the same token, instrument manufacturers are going to have to get severely off their rear ends to design in hardware and write MIDI (or WIMP) drivers that can keep up with that sort of transmission speed.

The chip Ralph describes was developed by Yamaha a couple of years ago as a computer communications chip, that can handle serial communications up to 125KBaud (four times MIDI's speed). This chip does indeed appear in some instruments. However, even one times MIDI speed is too fast for some MIDI instruments, and Yamaha in particular is interested in the perpetuation of MIDI as a *standard* – in other words, not turning products into bad investments for users.

The powers that steer MIDI are indeed actively looking into a way to create a higher-speed upgrade path for MIDI without obsoleting the existing body of products (details cannot be divulged, because premature release may ensure another round of incompatibility worse than when MIDI was first released). There is still plenty of room inside of MIDI for adding new controllers and rules; the truth is, not many people are actively pursuing these aside from complaining about the lack of them. Finally, remember that standards are wonderful (again: where would we be without MIDI?), but as soon as you agree on a standard, you have frozen progress. ■ Chris Meyer

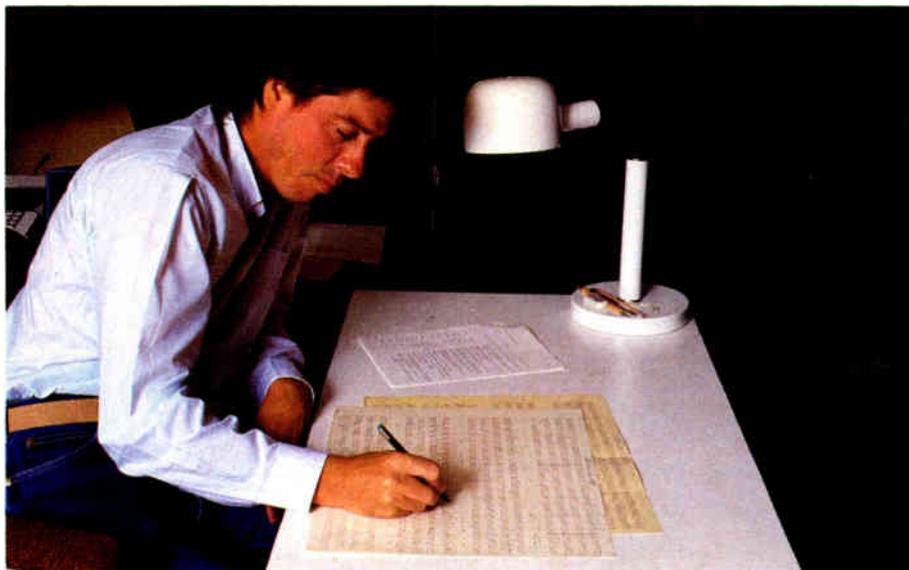
read SMPTE through a Fostex 4050, which triggers the start on the Auricle, which then triggers the Macintosh and drives everything. And it is amazing. It all actually works, without any significant delays."

THE RELATIVE EASE composers have scoring to picture nowadays stands as testimonial to the inventiveness and expertise of instrument design engineers. In my discussions at Sundance, however, I was continually reminded of a character developed by Edward G. Robinson in an old Bogart movie. Bogart asks the hard-edged hood something like, "What is it you want, Rocko? What is it that'll really make you happy?"

"More," comes the greedy reply. "That's it! I want more!" ■

Many thanks to all of the people who helped, especially Nancy Laird Chance, Jane Brockman, Tim Boyle, David Newman, Krys Newman, Alan Silvestri, Don Walker, Doug Masla, Peter Kaye, Ralph Grierson and Rito Lambert. For those who gave so freely of their not-so-free time and didn't end up as part of this article, forgive me. Cuts and edits are as painful in writing as they are in the creation of music. – DP

For further information on the programs at The Sundance Institute, telephone their Los Angeles office directly at (818) 954-4776. Selection for next summer's Fellows begins in Spring 1989.



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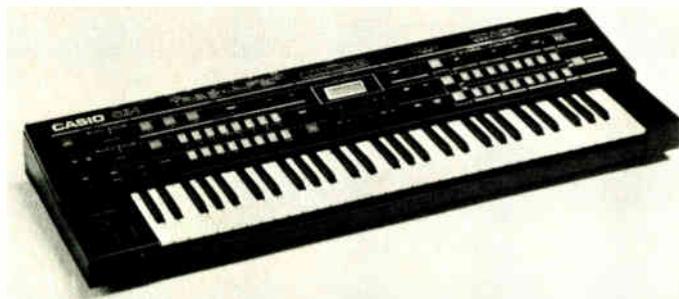
PATCH W O R K

Tired of playing the same old factory patches on your synths? Well, start programming! And once you finish some of your sonic creations, send them on a patch chart (along with a blank one for artwork purposes) to: Patchwork, Music Technology, 22024 Lassen St., Suite 118, Chatsworth, CA 91311. We'd also appreciate it greatly if you sent a demo tape of them as well, seeing as we do not own or always have access to one of every synth known to mankind (wouldn't that be nice...).

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Rhodes
David Sanini, Goleta, CA

OK, yes, there probably are a million Rhodes patches already out there, but this offering for the CZ series synths does have a very nice ring to it - a bell-like electric piano ring, that is. David comments that you can adjust the DCA release rates, vibrato depth, and fine detune to taste, all of which will allow you to add your own personal touch to the sound. For a variation you can also use the I+I' line select. Enjoy. ■



TONE NAME		CARTRIDGE NO.	TONE NO.

PARAMETER		DEFINE				VIBRATO				OCTAVE	
LINE SELECT	MODULATION	+/ -	OCTAVE	NOTE	FINE	WAVE	DELAY	RATE	DEPTH	+/ -	RANGE
1+2	ON	+	3	10	7	1	52	8	9	0	0
(1-2) (1-1)	(ON/OFF)	(+/-)	(0-9)	(0-11)	(0-99)	(1-4)	(0-99)	(0-99)	(0-99)	(+/-)	(0-1)

1

DCO 1

WAVE FORM	FIRST	SECOND	VELOCITY
1	0		0
(1-8)	(0-9)		(0-15)

STEP	1	2	3	4	5	6	7	8	VELOCITY
RATE	99								(0-99)
LEVEL	0								(0-99)
SUSPEND									

DCW 1

KEY FOLLOW	VELOCITY
2	0
(0-9)	(0-15)

STEP	1	2	3	4	5	6	7	8	VELOCITY
RATE	83								(0-99)
LEVEL	0								(0-99)
SUSPEND									

DCA 1

KEY FOLLOW	LEVEL	VELOCITY
0	15	1
(0-9)	(0-15)	(0-15)

STEP	1	2	3	4	5	6	7	8	VELOCITY
RATE	99	25							(0-99)
LEVEL	99	0							(0-99)
SUSPEND									

2

DCO 2

WAVE FORM	FIRST	SECOND	VELOCITY
2	0		0
(1-8)	(0-9)		(0-15)

STEP	1	2	3	4	5	6	7	8	VELOCITY
RATE	50								(0-99)
LEVEL	0								(0-99)
SUSPEND									

DCW 2

KEY FOLLOW	VELOCITY
7	0
(0-9)	(0-15)

STEP	1	2	3	4	5	6	7	8	VELOCITY
RATE	99	31							(0-99)
LEVEL	99	0							(0-99)
SUSPEND									

DCA 2

KEY FOLLOW	LEVEL	VELOCITY
2	15	0
(0-9)	(0-15)	(0-15)

STEP	1	2	3	4	5	6	7	8	VELOCITY
RATE	92	27	25						(0-99)
LEVEL	82	50	0						(0-99)
SUSPEND									

COMMENT:

ENSONIQ ESQ1
BWave
Brian Gingrich, Chicago, IL

Brian's very unusual, but very interesting patch is a slowly evolving sound that uses the ESQ's LFOs to modulate the VCAs so that the instrument's three oscillators fade into and out of audibility at various pitches. Brian mentions that it sounds best with chords using stacked fourths and fifths, though I think it even sounds interesting on single notes. As a guide to tweaking, Brian suggests changing the oscillators' semitone adjustments to alter the parallel intervals. Good stuff. ■



	OCT	SEMI	FINE	WAVE	MOD1	DEPTH	MOD2	DEPTH
OSC1	+1	2	0	FORM1	OFF		OFF	
OSC2	-1	0	0	BASS	OFF		OFF	
OSC3	0	07	0	BELL	LFO 1	+0	OFF	

	LEVEL	OUTPUT	MOD1	DEPTH	MOD2	DEPTH
DCA1	33	ON	OFF	0	LFO 1	+63
DCA2	26	ON	LFO 2	+53	OFF	0
DCA3	31	ON	LFO 3	+63	OFF	0

	FREQ	0	KEYBD	MOD1	DEPTH	MOD2	DEPTH
FILTER	60	02	0	LFO 1	-6	LFO 2	+8

	FINAL VOL(ENV4)	PAN	PAN MODULATOR	DEPTH
DCA4	63	9	LFO 2	+53

	FREQ	RESET	HUMAN	WAVE	L1	DELAY	L2	MOD
LFO1	04	OFF	OFF	TR1	40	0	0	OFF
LFO2	05	OFF	OFF	TR1	63	0	0	OFF
LFO3	07	OFF	ON	TR1	51	0	0	MHEEL

	L1	L2	L3	LV	TIV	T1	T2	T3	T4	TK
ENV1										
ENV2										
ENV3										
ENV4	0	+63	+63	0	9	14	50	0	56	0

	SYNC	AM	MONO	GLIDE	YC	ENV	OSC	CYC
MODES	OFF	OFF	OFF		OFF	OFF	OFF	OFF

	SPL/L	S/PROG	LAYER	L PROG	SPLIT	S.PROG	S KEY
SPL/L	OFF		OFF		OFF		

NEWS: For **Ensoniq Mirage** owners, a new software package, the **Synthbank Volume 2** from **Cybersoniq**, includes not only sound patches, but also waveforms for additive synthesis. Sixteen computer-generated digital FM wavetables are at your disposal to manipulate and create unique synthesized sounds, or combine with your samples for the combined synth/sample sound so popular today. **Synthbank Volume 2** will cost you \$39.95, while the older version, **Volume 1**, runs for \$32.95. You can get both volumes for \$64.95, or if you're a current owner of **Volume 1** you can purchase **Volume 2** for just \$32.95. Got all that? If not, call or write to: **Cybersoniq**, 295 Park Avenue South 5R, New York, NY 10010. Tel: (212) 995-0989.

REVIEW: Mixed feelings, that's what I get from the new **Korg M1** sounds from **New Man Studios**, decidedly mixed feelings. On the one hand, I'm sure there are a lot of people, like me, who are excited by the speed at which these sounds appeared. I can easily imagine proud new **M1** owners chomping at the bit for more sounds for their machine - there's a lot of sonic potential in there that didn't get explored in the generally excellent factory patches. On the other hand, having gotten a taste of the quality of sounds that the instrument is capable of via these factory patches, they're no doubt going to expect that level of quality or higher from third party vendors. Here, unfortunately, is where my frustration with this package lies. Don't get me wrong, there's some good stuff here - in fact, some very good stuff - but I can't help thinking that if a bit more time had been spent fine tuning **New Man's Pro Studio Block Series #1** group of 100 programs and 100 combinations, they would've been that much better.

James Newman of **New Man** explains that **Series #1** was "designed to give a versatile palette of sounds to work with." It includes roughly ten programs each of keyboards, organ/rhythm, bass/guitar, strings/voice, **New Age**, brass/woodwinds, orchestra/combo, foreign lands, synth, and bells/FX. The foreign lands section (it's my description, not **New Man's**) includes sounds that are reminiscent of the areas they're named for: 'Asian M1,' 'Bedouin,' 'Trinidad,' 'Africimba,' 'Sitar' and 'Shanghai' basically all sound as you would expect them to.

As a general comment, I found most of the programming on the individual programs to be pretty good. Obviously a fair amount of attention was given to some details, like selecting the appropriate built-in effects as well as routings for aftertouch, velocity, etc. For example, a lot of the bass/guitar patches as well as some others in the **Series** use aftertouch controlled pitch-bend, which can be effective - though I found it a bit overdone in some cases.

One general problem I ran into is that many of the patches were somewhat lackluster. They didn't have a lot of personality to them and hence, didn't really stick in my mind as I worked my way through the choices. None of them were really bad, but not too many struck me as really great. I also noticed some similarities to a few factory patches, though I think that probably stems more from the fact that the samples aboard the **M1** are particularly distinctive. If a patch uses a unique-sounding sample, it's going to sound familiar.

The strong points of the package in my opinion are the organs, strings, synth and effects sounds. The 'B-3', 'Theater Ps' (pipes, I believe) and 'ArcoString' patches are all particularly effective, as are 'Synthos', 'DigiFlange' and 'Oberheim.' (If you ever had any doubts about whether the **M1** can sound big, warm and analog, this last patch should destroy them.)

I found the **Combinations** provided in **Series #1** to be rather weak, and got the feeling that many of them were afterthoughts and that not a whole lot of planning went into them. There were exceptions - notably 'Full Ranks,' 'Duo Strings' and 'Orchestral' - but there were also a lot of useless combinations that had things like various drum sounds layered with strings or horns.

So, what's the verdict? Well, seeing as there isn't really anything else out there, I can't help but recommend the **Pro Studio Block Series #1** to those of you who are dying for new sounds. And even for those who aren't, I think that if you're willing to live with pretty good patches and don't expect incredible ones, this package offers some nice alternatives to the factory sounds. The **Series #1** patches are available on **RAM cards** for \$115 and on **Quick Disks** in **Yamaha MDFI** format (a rather strange choice in my mind) for \$30 plus \$3 for postage and handling in the US and \$7 for overseas. For more info contact: **New Man Studios**, 1530 Kingsvalley Highway, Dallas, OR 97338. Tel: (503) 623-2849. ■ **Bob O'Donnell**

To Trigger those Big, Sampled Sounds from your Acoustic Drums, you'll Need a MIDI Interface, a Sampler, a Mixer and a Reverb ... or



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INPUT OUTPUT

Our new Input/Output column is your chance to get the answers you can't seem to find anywhere else. Send your questions or comments to our resident team of tech experts at: *Music Technology, 22024 Lassen Street, Suite 118, Chatsworth, CA 91311.*

Q I bought an Alesis MMT8 in February and I've been unsuccessful in my attempts to get it to work with my Juno 106. The Juno, by the way, works fine with my Yamaha QX21. The MMT8 works just fine in the music store where I bought it. (Of course it does.)

I'm out of things to try and theories to apply - Help!

P.S. The main problem seems to be rooted in MIDI note off transmission . . . I get a lot of hung notes and notes that sustain longer than I've played. This is all in the context of basslines (single note lines).

Ali Rahman
Chicago, IL

A Roland provided a few more theories and things to apply. There's a three-position switch on the back of the Juno 106 labeled MIDI 1, 2, and 3. MIDI 1 receives just notes; MIDI 2 receives notes and program changes; MIDI 3 receives notes, program changes, and system exclusive information. They suggested using the MIDI 1 or 2 positions, in case the MMT8 was sending out some system exclusive message that might be confusing the Juno 106.

Alesis said they haven't heard of the problem before, but asked for a copy of your letter (which we sent them) and promised to follow up personally. I hope it gets fixed - fellow writer Yung Dragen sent us a copy of your tape (a humorous funk group called 'One Nation'), and we're curious to hear what you come up with next . . . - CM

Q I am a wind synthesist using a Yamaha WX7 professionally, and I have a question that none of the "experts" around here can answer to my satisfaction.

The problem concerns the "thudding" and "grittiness" I encounter when attacking and releasing notes when routing continuous controllers such as MIDI volume or aftertouch to control overall volume. Having started with a Yamaha TX81Z and DX7, I originally thought the problem was limited to FM equipment, but upon recently purchasing an Akai S900, I find myself still plagued by this problem. What exactly am I hearing, and what is causing it? Is it quantizing noise due to the continuous controller's stepped range of 0-127? Why don't I hear it when I slowly crescendo and decrescendo? It seems to be related to a rapid change of values which occurs when I start and stop the sound with the tongue.

If it is caused by the discrete steps of the controller, is there any hardware out there that can smooth these out? Is it even theoretically possible to achieve the natural, analog-type smoothness I am seeking using a MIDI continuous controller? Maybe something like a MIDI-controlled analog VCA that I could run the audio signal from my synths through? This would be on the order of what the Akai EWI/EVI synth module does, with the added ability of being accessible via MIDI instead of just their own wind controller.

Is there any hope? Please answer. I need help!

Steven Galante
Skokie, IL

A I called a product representative at Yamaha, who tried to recreate your problem and said he could only cause a thud under a couple of special circumstances. One was while using a patch on the TX81Z where velocity affected loudness and timbre, he started a note softly (causing a

small note-on velocity to be sent), and increased the volume using breath. Then, he fingered a new note, causing a new note with a high note-on velocity, which caused a large volume and timbre jump. The other way he could make it happen is by playing a soft note immediately after changing a performance patch on the TX81Z. Doing so resets the volume on the TX81Z to full, and the following soft note would make it jump suddenly to a lower value.

I then talked to Sal Gallina (one of the main forces behind the WX7 - see interview December '87), and he said he has the problem all the time. After an interesting, animated discussion about how virtually all current synthesizers and samplers are designed for keyboardists, and not other types of musicians, he mentioned he has had good results with an Oberheim Xpander, and that a several minute check-out on a Casio VZ1 (see review September '88) was encouraging.

Your problem does indeed seem to be rooted in discontinuous jumps in MIDI controller values. As you've noticed by playing slow crescendo and decrescendos, MIDI's 128 values tend to be smooth enough (even though Sal wished the full 14-bit range was used more often), but the problem comes when any MIDI controller scans the value to send every several milliseconds. The value may have changed smoothly but quickly over that period of time, causing a large discontinuous value to be sent. I know of no devices that smooth out these jumps inside of MIDI, but JL Cooper makes two devices with analog VCAs that might replicate the Akai's effect for you. His Expression Plus can (among other things) take a MIDI controller and have it control a built-in VCA, and its use was echoed by Sal as a possible solution. Jim Cooper himself also suggests looking into the Mix Mate (reviewed elsewhere in this issue) - in one of its "lobo" modes, it acts like eight VCAs that respond to MIDI volume for \$200 more than the Expression Plus. - CM

More From . . .

If there was a product mentioned anywhere in this issue of MT that you would like to know more about, check out the list below. You can write or call any (or all!) of the manufacturers for complete product literature.

4030 Synchronizer: Fostex Corp. of America, 15431 Blackburn Ave, Norwalk, CA 90650. Tel: (213) 921-1112.

4050: Fostex; see 4030.

A880: RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040. Tel: (213) 685-5141.

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

Amiga: Commodore Business Machines, Inc, 1200 Wilson Dr, West Chester, PA 19380. Tel: (215) 431-9100.

Apple II/e: Apple Computer, Inc, 20525 Mariani Ave, Cupertino, CA 95014. Tel: (408) 996-1010.

AudioFile: AMS/Calrec (Advanced Music Systems), PO Box 31864, Seattle, WA 98103. Tel: (206) 633-1956.

AudioFrame: WaveFrame Corporation, 4725 Walnut Street, Boulder, CO 80301. Tel: (303) 447-1572.

BI6: Fostex; see 4030.

Composer: Mark of the Unicorn, Inc, 222 Third Street, Cambridge, MA 02142. Tel: (617) 576-2760.

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

CZI01: Casio, Inc, 570 Mt. Pleasant Ave, Dover, NJ 07801. Tel: (201) 361-5400.

D4: Toa Electronics, Inc, 601 Gateway Blvd, South San Francisco, CA 94080. Tel: (415) 588-2538.

DS0/DSS0: Roland; see A880.

Fostex DDL: Fostex; see 4030.

DMP7: Yamaha Music Corp. USA, 6600 Orangethorpe Ave, Buena Park, CA 90620. Tel: (714) 522-9011.

Deluxe Music Construction Set: Electronic Arts, 1820 Gateway Dr, San Mateo, CA 94404. Tel: (415) 571-7171.

Dr. Click: Garfield Electronics, PO Box 1941, Burbank, CA 91507. Tel: (213) 434-6643.

DW8000: Korg USA, Inc, 89 Frost Street, Westbury, NY 11590. Tel: (516) 333-9100.

DX7/DX7II: Yamaha; see DMP7.

E2: Fostex; see 4030.

Emax: E-mu Systems, 1600 Green Hills Rd, Scotts Valley, CA 95066. Tel: (408) 438-1921.

Emulator III: E-mu Systems; see Emax.

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

ESQ1: Ensoniq; see EPS.

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

Fairlight CMI III: Fairlight Instruments, Inc, 2945 Westwood Blvd, Los Angeles, CA 90064. Tel: (213) 470-6280.

FB01: Yamaha; see DMP7.

HR16: Alesis Corporation, 3630 Holdrege Ave, Los Angeles, CA 90016. Tel: (213) 467-8000.

JX3P: Roland; see A880.

KMP68: Korg; see DW8000.

KMT60: Korg; see DW8000.

KX76: Yamaha; see DMP7.

Lexicon 200: Lexicon Inc, 100 Beaver St, Waltham, MA 02154. Tel: (617) 891-6790.

Linn drum & Linn 9000: formerly made by Linn Electronics.

M: Intelligent Music, PO Box 8748, Albany, NY 12208. Tel: (518) 434-4110.

Macintosh: Apple; see Apple II/e.

MAV8: Kawai America Corp, 2055 E. University Dr, Compton, CA 90224. Tel: (213) 631-1771.

Matrix 6: Oberheim-E.C.C., 2015 Davie Ave, Commerce, CA 90040. Tel: (213) 725-7870.

MCS2: Yamaha; see DMP7.

MEP4: Yamaha; see DMP7.

Merge Select: KMX, 4378 Avenida Prado, Thousand Oaks, CA 91360. Tel: (818) 584-5814.

MFC2: Yamaha; see DMP7.

MIDI Central I: KMX; see Merge Select.

MIDI Merge+: 360 Systems, 18740 Oxnard, Tarzana, CA 91356. Tel: (818) 342-3127.

MIDI Patcher: 360 Systems; see MIDI Merge.

Mirage: Ensoniq; see EPS.

MJC8: Yamaha; see DMP7.

MKS20: Roland; see A880.

MM4: Roland; see A880.

MPU401: Roland; see A880.

MSB+: JL Cooper Electronics, 1931 Pontius Ave, Los Angeles, CA 90025. Tel: (213) 473-8771.

MSB 16/20: J.L. Cooper; see MSB+.

MT32: Roland; see A880.

Multimix: Hill Audio, 5002B North Royal Atlanta Dr, Tucker, GA 30084. Tel: (404) 934-1851.

MV802: Yamaha; see DMP7.

MX8: Digital Music Corp, 5312-J Derry Ave, Agoura Hills, CA 91301. Tel: (818) 991-3881.

Octapad: Roland; see A880.

OPUS: Lexicon; see Lexicon 200.

Oraltune: Intelligent Music; see M.

Patchworks: Resonate, Inc, PO Box 996, Menlo Park, CA 94026. Tel: (415) 323-5022.

Performer: Mark of the Unicorn; see Composer.

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

PortaStudio: Tascam/TEAC Corp. of America, 7733 Telegraph Rd, Montebello, CA 90640. Tel: (213) 726-0303.

Prophet VS: formerly made by Sequential Circuits Inc.

RI000: Yamaha; see DMP7.

Ramsa 8816: Panasonic Industrial Company, 6550 Katella Ave, Cypress, CA 90630. Tel: (714) 895-7200.

RevS: Yamaha; see DMP7.

Riff: Intelligent Music; see M.

RM804: Yamaha; see DMP7.

Rockman: Scholz Research & Development, Inc. (SR&D), 1560 Trapelo Rd, Waltham, MA 02154. Tel: (617) 890-5211.

Roland DS0 Editor & Roland DS0 Librarian: Zero One Research, PO Box 301, Brisbane, CA 94005. Tel: (415) 467-5007.

S900: Akai; see EWI.

Sampling Grand (SG1): Korg; see DW8000.

SPX90: Yamaha; see DMP7.

SQ80: Ensoniq; see EPS.

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

Studer 24-track: Studer Revox America, Inc, 1425 Elm Hill Pike, Nashville, TN 37210. Tel: (615) 254-5651.

Studio Plus II: Opcode; see Cue.

Super Jupiter: Roland; see A880.

Synclavier: New England Digital, 49 North Main St, White River Junction, VT 05001. Tel: (802) 295-5800.

TBI: Casio; see CZI01.

TX7: Yamaha; see DMP7.

TXI6W: Yamaha; see DMP7.

TX802: Yamaha; see DMP7.

TX816: Yamaha; see DMP7.

TX81Z: Yamaha; see DMP7.

Usenet: Whole Earth Electronic Link, 27 Gate Five Rd, Sausalito, CA 94965. Tel: (415) 332-4335.

WX7: Yamaha; see DMP7.

Xpander: Oberheim-E.C.C.; see Matrix 6.

YME8: Yamaha; see DMP7.

Zeta-Three: Adams-Smith, 34 Tower St, Hudson, MA 01749. Tel: (617) 562-3801.

Softwind Instruments' Synthophone MIDI Saxophone

Manufactured by a Swiss company, this new dedicated MIDI wind controller takes a unique approach: it uses a real saxophone. *Review by Michael Andreas.*

FROM THE COUNTRY whose master craftsmen have given us some of the world's finest watches, most delicious chocolates, and hills "alive with the sound of music," comes the latest addition to the family of MIDI wind instruments. This new arrival is different from all the others that have been reviewed in these pages in that it uses a real saxophone (a Yamaha YAS23 student model alto sax) as its basic driver. However, by the time Softwind Instruments (Bern, Switzerland) gets done with it, the similarity between the Synthophone and the original instrument is purely superficial.

Background

SOME OF THE earliest wind synths were based on the concept of using sensors mounted on a real sax to drive a synthesizer. Bill Perkins' "Perkophone" (see article in our inaugural issue) and Sal Gallina's pre-MIDI sax tinkering (see "The Power of Wind," in MT December '87) were pioneering designs of this type and forerunners to the Synthophone. Surprisingly though, the first "Synthophone" was not sax based. It was a wooden "stick" with a set of Boëhm-based keys mounted on it, which was connected to a dedicated analog synthesizer. Later, a saxophone-based instrument was developed, and then MIDI was implemented.

Upon opening the case of the Synthophone, the first difference you notice between it and a normal alto sax is the umbilical cord that connects the neck to the body of the instrument. It cannot be removed, so the neck and body of the sax are always attached. Immediately you might ask, "What if I have a favorite neck I want to use on it?" Save it. The Synthophone cannot be played like a normal saxophone, because air does not flow through it. Basically this instrument is an alto sax transmogrified (thanks Calvin, thanks Hobbes) into a "dedicated" MIDI wind driver. The bell of the sax is sealed shut, and the body of the horn is filled with wires, contacts and computer circuit boards. You soon realize that the Syntho-



Photography Rose Ronseville

phone has more in common with Yamaha's WX7 than their alto sax.

The desirability of such a device is obvious: you don't have to learn a new instrument, you play one you (as a sax player) are already familiar with, and you have an easier time getting through airport security checks with something that looks like a sax than you would with an EWI or WX7. Given these obvious advantages, how does the Synthophone stack up to these and other MIDI wind synths on less obvious points? Read on . . .

The Setup

FOR A SAX player, setting up the Synthophone is a somewhat new experience - the wire connecting the neck to the body is only the beginning. There is no cork on the neck; instead, there is a five-pin male MIDI connector which plugs into a female connector in the mouthpiece (you have to get used to not twisting on your mouthpiece). The mouthpiece (which is a customized and somewhat elongated version of a stock Yamaha unit) is like the body of the sax, in that the player's air column does not flow through it. Instead, it is vented through a hole which is drilled through the supplied reeds. The reeds are standard Rico cane reeds which have had a metal flange mounted onto their tables. At the tip of this flange is a small magnet which interacts with a sensor mounted in the mouthpiece.

Included with the Synthophone are four of the above-mentioned reeds in varying strengths (which didn't seem to make much difference), a small tool kit for making some fine adjustments on the instrument (which we'll get to later), a set of MIDI cables, a neck strap, polishing cloth, the power supply/interface box, and a fairly comprehensive and easily understood manual, all of which are enclosed in a very sturdy sax case.

After assembling the horn, you connect it (via MIDI cables) to its power supply/interface box (which has two MIDI Out ports but will transmit on only one MIDI

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channel at a time) and then into the synth(s) of your choice.

Performance Controls

ALL THE MIDI controls on the Synthophone are extracted directly from the instrument and are triggered using fingering combinations that aren't normally utilized in the standard sax technique. Initially, this is akin to learning a new word processing program, in that you have to remember what each of these "Function Control" fingerings does (ie. holding down the high "D" key and side "C" keys while depressing your low "C" key will transpose the instrument down an octave).

By employing these various Function fingerings, you can: play beyond the normal range of the saxophone; remotely change voices (presets) on your synth; change MIDI channels (1-16); and adjust breath control sensitivity, volume control sensitivity, aftertouch sensitivity, and modulation control sensitivity (using lip pressure

Playability *"The Synthophone's response is better than any of the wind synths I've played and the dynamic response is also excellent."*

on the reed in the same way you would use the Mod Wheel on a synth). You can also use these Function controls to transpose the instrument up or down two octaves, pitch the instrument (in either Bb, C, or Eb), and adjust the Lip Pressure/Pitch Bend sensitivity. There is even a "Panic" function which resets all the basic parameters to their default setting (you want to use this only in real emergencies because you'll have to reset all your Function parameters).

However, the most impressive "Function Key" assignments are those which allow the performer to play harmonies of up to five voices, with a choice of inversions. You can even program these chords to play within a specified "tonality." For instance, if you set the "tonality" to the key of "C," fingering a "C" will produce a C-major chord, "D" and "E" will produce Minor chords, "F" and "G" will be Major chords, etc. A "Freeze-Harmony" function is also available which permits the harmonic voices to move in parallel motion.

The basic range of the Synthophone (that which can be performed without the use of the instrument octave shifts) is the same as a saxophone's with the exception that you can easily extend down a fourth to E below the sax's low Bb and up a full octave above high F while still using basic sax fingerings. As mentioned above, the basic instrument can be transposed up or down two octaves, which gives it a total range of more than seven octaves. These octave changes however, can only be activated during a rest (a couple of beats in a moderate tempo will suffice).

Finally, to help a player feel "at home" with the Synthophone, Softwind Instru-

ments will print a set of personalized altissimo fingerings onto a new EPROM chip for your instrument (this is a free service to registered owners of these instruments as are all EPROM updates for the first year of ownership).

Playing the Instrument

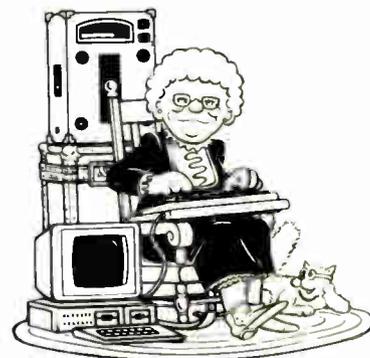
UNFORTUNATELY, I HAD some initial problems both with the setting up of the Synthophone and (probably more telling) with some of the basic design of the instrument. My first issue was with the reeds. Even though four of these specially mounted reeds are supplied with the Synthophone, where does one get new ones? Your choice is to either pull the mounting off your old reed and re-glue it onto a new one (and don't forget to drill a vent hole), or write to Switzerland for new ones. I would have preferred Softwind use one of the several synthetic reeds available, and to include about a dozen of these in

the package (real reeds start getting pretty ripe after a few months of use). I also had to use some tape to mask off part of the vent hole - if you're going to phrase like a string section, you will want to use circular breathing, which I found much easier with a smaller vent through the reed.

My next problem was that I couldn't get the harmony function to work consistently. I could add the voices to my basic pitch (all harmonies are added under the fingered pitch), but getting the inversion I wanted was at best an "iffy" proposition. (However, during the times when it did work, it offered some interesting and novel possibilities for live performance.) Part of this problem could be attributed to the "Lip Pressure" setting on the instrument (Lip Pressure is supposed to implement the inversion voicing of these chords). But, even after going into the body of the instrument and adjusting the Lip Pressure trim, I attained only a marginal improvement. I also tried several reeds, synths, and various timbres, all to no avail. This is the kind of thing that made me hope that the instrument I was using was defective, because there were other aspects of the Synthophone I really admired.

The most basic of these is that the Synthophone is an easy instrument to get used to. And having a sax that extends from low "E" to double high "F" (utilizing what are basically normal fingerings) allows the player to cover a very wide range without having to readjust his/her technique. But most important is that the Synthophone's response is better than any of the wind synths I've played (there must be a quantizing function included in the Synthophone's computer, because I rarely

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had the octave glitch or extra note problems inherent in most other wind synths). The dynamic response was also excellent on the Synthophone (even on synths that don't respond to Breath Control). Speaking of which, the Synthophone can send MIDI Volume, breath control, aftertouch, modulation and pitch-bend messages, depending on how you program the instrument and how you play it.

I was also impressed by the Yamaha sax. For a student model, it is a well-constructed instrument and the key design makes it immediately comfortable to anyone used to playing Yamaha or Selmer saxes.

Summary

WHILE WRITING THIS review I remembered that one of the first discussions I had concerning MIDI wind synths centered on the question of whether the ideal instrument would be one that assumes the form of an already existing instrument (in this case, a saxophone) or one that starts from

scratch. Reviewing the Synthophone allowed me to address both sides of this argument.

Personally, even though there are some aspects of the Synthophone I really did like, I noticed that some of the "limitations" of the sax did creep into my playing. I found this particularly noticeable in the way I started approaching certain timbres. For some reason (which I haven't yet figured out), I feel more comfortable with wind synths in a Clarinet or Soprano Sax based configuration (ie. the EWI, WX7 and Sting). Also, the concept of paying a hefty price for a wind synth that uses a real horn but precludes you from playing the horn seemed fairly bizarre to me (especially because the saxophone is one of the more difficult sounds to synthesize).

Because of this, it seems that in the realm of horn-based MIDI instruments, the Synthophone will get a lot of competition from the Pitchrider (see review in MT January '88) which is a pickup attached to a pitch-to-MIDI converter and sells for considerably less.

Although I did find some endearing qualities about the Synthophone (the ability to play very expressively on any voicing module, and the fact that the technical response on the Synthophone is the best I've encountered on any MIDI wind driver), I still think that the way the function keys work are a difficult adjustment to make. I also believe that it wasn't really necessary to place all the "brains" inside the instrument. A remote foot controller (à la the Yamaha WX7's and Pitchrider's) would be a much more effective solution and would also allow for the storage of several presets of the Performance Controls.

But for someone who has money to spend and who wants to be able to access MIDI synths with the minimum of re-learning a new instrument, I think the Synthophone could be an attractive alternative. ■

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