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MUSIC TECHNOLOGY

TODD

VIENNA TALKS Peter & Ina Wolf

ON TEST

Yamaha QX3 Roland MT32 Kawai M8000 JL Cooper MAGI IBM Music Feature Hybrid Arts ADAP Garfield Time Commander

> **PREVIEW** Akai's Wind Controllers

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VOLUME 2, NUMBER 3 OCTOBER 1987

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HAVE YOU HUGGED YOUR SEQUENCER TODAY?

WHEN YOU WALK up to an instrument for the first time, you're more than likely going to recognize features that you've come to expect on such instruments. It's like a car; you notice if there's no steering wheel or passenger seat. But if they're there, you may not take much notice of them. Instead, your attention may be drawn towards an oddshaped dashboard.

Likewise with sequencers. There are certain features that *must* be included in order to match the competition, but in general, "extra" features rarely make the sequencer much more than a MIDI data recorder. This is fine if that's all you want from a sequencer, but if your imagination has ever been captured by some of the more unusual editing features on computer-based sequencers, chances are that the next time you go shopping for a sequencer, your expectations will be higher.

Dr. T's did a fine job of bringing a spot of spontaneity to sequencers with the Commodore 64-based KCS, and bless them, they haven't abandoned the nested and parallel sequence playback that characterizes the KCS' Open mode, despite the fact that these features do not fall into the mainstream. Their C64-based algorithmic composer program seemed to flag the start of a new phase of synthesizer control, but now when you read about new sequencers (hardware or software), the emphasis seems to be more on "the tapeless studio" method than on new music.

There was a time when it was OK to have a sequencer on stage, and to manipulate prerecorded segments in performance. Old modular analog sequencers and early digital sequencers accommodated the performer who wanted to make transitions from one sequence to another on the fly. It was risky, though - things could go wrong if you didn't hit the right buttons at the right times, but it seems to me that this is just the sort of challenge that musicians thrive on. If there was no risk involved, there would be no tension, no bum notes, and certainly no excitement. It's up to the musician to bring out the instrument's character in a performance.

Of course, there is more to making a sequencer performance-oriented than just giving it the ability to automatically load several songs in any order so that you can walk away and play another instrument. At the very least it should be possible to activate sequences whenever you feel like it. Dr. Ts KCS, is one of the first MIDI sequencers to allow this, but it only responds to key presses on the computer. There's nothing wrong with playing a sequencer if it feels right, and there are alternatives to activating sequences from a computer keyboard. Given the right software and a MIDI trigger of some kind, any number of musical responses could be activated. This is why Intelligent Music's M and Jam Factory are such important programs right now – they can respond to a spontaneous performance, and the responses needn't sound robotic, or just plain corny.

Sequencers are already starting to become the center of MIDI systems, and I wouldn't be surprised if eventually MIDI systems could behave as a single instrument with a definable character, rather than as an electronic mocking bird that just spits out whatever it's been fed. The programmed character of such instruments could be as much a part of the composition as any notes performed live, and it would still take a virtuoso to bring the music to life. Not exactly rock 'n' roll, but hopefully this could lead to some new, emotional electronic music.

It's all very nice to talk about this, but in reality someone has to make these instruments. Computer-based systems are logical first step, since they can use MIDI to integrate existing synthesizers and samplers into a system. The hardware exists already, so it's clearly not impossible. Some companies are already sneaking a few clever features into their sequencer programs, and with a bit of luck, other companies will catch on as well.

It would be great if the synths themselves could have programmable personalities, but at a time when manufacturers are responding to demands of musicians faster than ever before, synths are being designed to fit into well-defined categories. Not that I want to slag off MIDI synth manufacturers for following trends, but I'd love to see a few more of them taking risks.

Perhaps it isn't reasonable at this point to expect "intelligent" behavior from synths just yet since it's still a pretty obscure idea as far as the general public is concerned. But give it time. Perhaps "responsive" features will one day replace arpeggiators on \$99 keyboards. You know, if we're not careful, this could be fun. \blacksquare Rick Davies

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Dear Russell,

Thanks for the beautiful engineering you did on my demo tape. I used it to get signed to a song writing deal...with the possibility of an album project! Plus, I used the advance money to buy a 4 track home studio.

By the way, I was shocked to find out that the digital reverb you used on my vocals was for sale at the same music store I bought my 4 track system from. I assumed that anything used in a 24 track studio would be real expensive. Why didn't you tell me MIDIVERB II is only \$399? And easy to use. Are you afraid I'll never come back?

Don't worry, I'm ready to book some more time. After all, you still have 20 more tracks than I do. But I'm catching up with you on MIDIVERB IIs. You have four and I have two.

Best Regards, Allen



MIDIVERB II is made by Alesis

T. T. T.

and is a 16 bit, 15kHz bandwidth digital effects processor with 99 musical programs. 85 db dynamic range. Plate, room, chamber, hall, and cavernous reverbs. Gated and reverse reverbs. Chorus, flange, delays, and special effects. MIDI mapping of 32 patch changes. Instantaneous, glitch free program change. Stereo in and out. 1/4" jacks. 19" rack mountable. Super quiet. Spectacular sounding. \$399 retail price.

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Husband-and-wife team Peter and Ina Wolf have been highly successful as producers and writers for other artists. Now, as Vienna, they've decided to strike out on their own.

Living in a Box

An eponymous debut single took this British band high in the singles charts. Marcus Vere is determined to repeat the success of that single and discusses the technology behind the sound.

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As wind synthesis attracts increasing interest, manufacturers are developing more and more products to meet the need. These new wind controllers promise to make an important impact, as our preview reveals.

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The newest product featuring Linear Arithmetic (L/A) Synthesis is a multitimbral expander that includes a built-in reverb and other impressive features.

Hybrid Arts ADAP 37

The eagerly awaited 16-bit digital audio processing system for the Atari ST has arrived and with it may come a new outlook on stereo sampling.

IBM Music Feature 48

The new plug-in card from Big Blue provides low-cost, high-quality audio capabilities and a MIDI interface for the PC and compatibles.

Todd Rundgren

With the reissue of 18 albums this year, a Broadway musical, a UNICEF benefit and two soundtracks in the works, Todd Rundgren still finds time to talk tech.

Kawai M8000

This new full-size master keyboard controller has the capability to remotely coordinate an entire MIDI system, with a wide variety of real-time performance controls.

Yamaha QX3

62

The latest hardware sequencer from Yamaha offers 16 tracks, extensive editing capabilities, and the convenience of a builtin floppy disk drive.

CTOBER

SAMPLING

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Like other samplers which have been released within the last few years, Akai's S900 has been extensively upgraded to add a number of new features. We look at the latest firmware, a new optional hardware update and version 2.0 system software.

The Art of Looping Part II

The second of our three-part series examines the mysteries of crossfade looping, explains how its various incarnations work and offers more tips on how to make best use of the process.

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JL Cooper MAGI

The new Mixer Automated Gain Interface brings MIDI-controlled automation to the recording enthusiast. Our in-brief review looks at the capabilities of the system.

Yamaha REX50

The latest signal processor from Yamaha is aimed at guitarists, and includes many of the features of the SPX90 as well as a few new twists for about half the price.

PROGRAMMING

We Can't Go On

. . . Beating Like This forever, and this month is our seventh and final installment. Drum bugs (and other assorted nasties) are the topic at hand and their applications for use in triggering electronic drum brains from acoustic drums and other natural objects is thoroughly examined.

Garfield Time Commander

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Whether your system is hungry for drum triggers or SMPTE stripes, the Garfield Time Commander gives you something to sink your teeth into.

TECHNOLOGY Newsdesk

From software to firmware, mods to expanders - if it's new and noteworthy, it's here!

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Creative patches for the CZI0I and Matrix 6 highlight our monthly column of readers' efforts and we introduce PatchWare, a news section devoted entirely to information on professionally produced sound and patches.

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The third part in our continuing series on MIDI basics looks at sequencers, their capabilities and their place in a typical MIDI studio

MIDI

AKAI X7000 MORE THAN A GREAT VALUE



At \$1399.95, the X7000 Digital Sampling Keyboard offers the best value around ... and a whole lot more

MORE SOUNDS: The X7000 holds 16 independent samples, each up to 8 seconds in length.

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MORE MIDI MODES: The X7000 has 9 different MIDI modes to choose from, 5 of which are unique to Akai.

MORE RECORDING FEATURES: The X7000 also includes an overdub mode for combining samples together.

MORE USER-FRIENDLY: The X7000's 16-character LCD display easily guides you through all functions.

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The Akai X7000 combines 12-bit sampling resolution, 40 kHz sampling rate, and 16 independent samples to create the best sounding, affordable digital sampling keyboard available.

SEE YOUR LOCAL AKAI DEALER AND ASK FOR A FREE DEMO.



NEWS

Yamaha's MSSI synchronizer can lock any clock-driven MIDI device to SMPTE.

MODULATION CONTROLLER FOR YOUR CZ

Blacet Research has introduced the Instant Mod, a small printed circuit board which contains a variable rate LFO and interface circuitry for the Casio CZI0I. The board is powered by the CZ and fits above the pitch-bender of the synth. Modulation depth of Instant Mod is controlled by the CZ Bend Range control, and the Soft Pot modulation depth control can be touched anywhere to provide the amount of modulation available at that point.

Instant Mod does not affect the operation of the internal LFO or Pitch Bender. It requires the addition of two holes to the CZ case and the need to solder three wires onto the CZ printed circuit board.

The unit is available for \$39 (post paid in the US).

MORE FROM Blacet Research, 18405 Old Monte Rio Road, Guerneville, CA 95446. Tel: (707) 869-9164 MT OCTOBER 1987

NEW MIDI SYNCHRONIZER

Integrating MIDI and SMPTE is becoming increasingly important as studios search for more cost-effective means of producing soundtracks and smaller independent producers gain ground with their films. Another company addressing that need is Yamaha, with the introduction of the MSSI MIDI Synchronizer. The MSSI, which is compatible with all four SMPTE formats, can lock any clock-driven MIDI device to SMPTE timecode being replayed from a multitrack or video tape. It also includes a SMPTE timecode generator, allowing you to stripe either of those tapes with timecode tracks. An internal memory permits storage of tempo data for 10 different "songs," and a chain mode automatically plays banks in sequence. Internal memory data can also be saved to external RAM4 data cartridges. The MSSI can be programmed to transmit MIDI program change and control change messages. Ν

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An editing mode makes it possible to make changes to recorded tempo or MIDI event data, and provides cut and paste and microscope-style editing. A I6-character backlit liquid-crystal display shows the operating modes, some programming data and user prompts. In addition, the front panel incorporates an LED Time Code display, which shows SMPTE timecode values in hours, minutes, seconds, frames and bits; a MIDI Data display, which shows the bank, measure, beat and tempo data; a Sync Lock indicator, which indicates whether the MSSI is in non-sync or sync mode; and Run and Metronome LEDs.

The rear panel includes one MIDI In and two MIDI Outs, a footswitch jack, a Metronome Out jack, SMPTE In and Out jacks, and a Click In jack and Level control. The MSSI weighs in at a mere 8.38 lbs. Suggested retail price is \$1195.

MORE FROM Yamaha Music Corporation, Digital Musical Instruments Division, PO Box 6600, Buena Park, CA 90620.

SOUND LIKE A KURZWEIL

Kurzweil Music Systems has introduced the 1000 series, a new line of programmable, rack-mountable, multi-timbral expanders which are compatible with any MIDI controller. First in the series is the Kurzweil 1000PX, which offers a whopping 24 voices of sounds from the Kurzweil 250 including grand piano, string section, choir, Hammond B3 organ, trumpet, acoustic



The Kurzweil 1000PX offers 128 preset sounds, with room for 64 user-defined programs.

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VISA



IBM GOODIES GROWING

A new graphic editing system for the TX802/DX7II and your IBM PC is available from Bacchus Software Systems. The program enables graphic fractional level scaling and envelope editing in a visual medium, providing complete access to all TX802/DX7II voice parameters and compatibility with the original DX/TX sixoperator synthesizers.

Tone generators can be linked together to play chords of up to 16 notes. The Microtune Editor allows creation of separate microtonal scales for each instrument, and program change and control change tables are also programmable. The graphic control panels with "buttons" and sliders are used to provide access to TX802 front panel functions.

The suggested retail price is \$249. MORE FROM Bacchus Software Systems, 2210 Wilshire Boulevard, #330, Santa Monica, CA 90403. Tel: (213) 820-9145

while playing back another and allows easy restructuring of the lists. It has a suggested list price of \$99.

Cakewalk users may also be interested in the Copyist File Interface Utility, designed to integrate Cakewalk and Dr. T's The Copyist. A sample Cakeshel.Bat batch file lets you use The Copyist as an auxiliary conventional music notation editor, while the Shell command automatically translates the work file to The Copyist format, run The Copyist, translate back to Cakewalk's format, and return to Cakewalk. The interface utility has a suggested list price of \$49.

MORE FROM Twelve Tone Systems, PO Box 226, Watertown, MA 02272. Tel: (617) 924-7937

TEXTURE ENHANCES AMIGA

Texture 2.0 for the Commodore Amiga has been announced from Magnetic Music. Music can be recorded, edited and assembled into Blocks (patterns), and patterns can be organized and rearranged to form Songs and variations. Texture Patterns are 24 tracks deep and are defined by Beat Length. Any time signature or segment length can be assigned, and fractional beats (to a maximum resolution of 1/24) can be created. The program offers 24 tracks \times 96 patterns. Repeat, Tempo offset, Transposition and Muting by Track are programmable in Link Mode, and patterns can be assigned to any of 99 sections for one Song. Texture utilizes full real-time interaction, allowing access to most commands while the music is playing. All I6 MIDI channels may be controlled simultaneously.

Editing features include manual and programmable punch in/out, insert and delete (MIDI events), block move, blend, transpose, quantize, filtering and fill. There are five programmable Timebase rates, programmable ritard and accelerando, and playback locate functions.

MORE FROM Magnetic Music, Rt. #1, North Smith Road, Lagrangeville, NY 12540. Tel: (94) 677-8586

OFFBEAT

We regret that we inadvertently hit a couple of bummers in "We Can't Go On Beating Like This", (MT September '87). First, Airtriggers do not come with a cord; second, the actual price of Airdrums is \$1899. We regret any inconvenience this may have caused to our readers or to Palmtree Instruments.

It understands more than sine language.



The new TX81Z is the first FM tone generator from Yamaha that offers eight different waveforms for each operator. So besides sine waves, now there are seven other exciting waveforms you can play with.

This not only increases the almost limitless sound possibilities of FM, it also gives the four-operator TX81Z a "six-op" sound. Yet the TX81Z is still compatible with other Yamaha fouroperator synths and tone generators.

The TX81Z's Play Single mode lets you play voices with 8-note polyphony. There are five banks of 32 voices to choose from, including 128 preset voices and 32 user voices, programmable from the front panel.

Twenty-four additional performance memories let you play up to eight voices at one time. Instrument 1, for instance, could be a piano voice with 5-note polyphony while instruments 2, 3 and 4 could be monophonic voices. Note limits, MIDI reception channel, voice numbers, detune and volume settings for each instrument can be instantly changed in this mode. Eleven preset and two user-programmable micro-tunings let you play a harpsichord voice, for instance, in authentic mean-tone temperament, or gongs and bells in Balinese gamelan scales.

And three effects including Pan, Transposed Delay and Chord Set (which assigns up to fcur notes to be sounded by a single incoming note) let you add greater expressiveness to your music.

And you get all this at a price that translates into a great deal.

Hear the new TX81Z FM tone generator at your Yamaha Digital Musical Instrument dealer. For more information, write: Yamaha Music Corporation, USA, Digital Musical Instrument Division, P.O. Box 6600, Buena Park, CA 90622. In Canada: Yamaha Canada Music Ltd., 135 Milner Avenue, Scarborough, Ont., MIS 3RI.

Century of Quality



WE DON'T HAVE TO PRAISE THE D-50

Dan Goldstein, International Associate Editor, Music Technology: The D-50 was the single most exciting instrument at the 1987 Winter NAMM show. It's something that's genuinely new and that's why it will have an impact. For players on stage, it has more power sonically than any comparable digital synthesizer. The sound has got the sort of punch that will take it through a mix in a way that's not possible with most digital synths. Studio players will like the D-50 for its versatility. And I think hard-core synthesizer programmers will be attracted by the breadth of its sound structure. Dominic Milano, Editor, Keyboard: The D-50 has a wonderful sound. At its price point, it should appeal to just about everybody. The D-50's approach to synthesis - which lets you take PCM samples and combine them with digitally synthesized portions makes more sense than just about anything I've seen

in the last couple of years. It takes the best aspects of what MIDI allows you to do with layering sounds from different instruments and puts it all together in one machine. It's intelligent and very powerful, and I think it will have a musical impact that will show up in what people hear on record.

David Pratt, Associate Editor, *Upbeat*: I think the D-50 sounds very good. It's very user friendly—it's not intimidating. Musicians are always looking for new sounds, they're always searching for something different—sounds they haven't heard before. I think they'll definitely be looking at the D-50.

Bob O'Donnell, Associate Editor, *Music Technology*: I think the D-50 is an incredible value for the price you've got real high quality sound and all the signal processing built in. I think the fact that digital signal processing is incorporated into it is going to be the start of a very interesting trend in which all the elements for creating a complete sound will be contained in a single instrument.



THE EXPERTS ARE DOING IT FOR US.

Ted Greenwald, Assistant Editor, *Keyboard* (NAMM Winter Market Wrap-Up): The Indefatigable Roland led the way with the D-50 Digital Synthesizer, the obvious highlight of their prolific new offerings and possibly of the entire show.

Bill Lewis, Senior Editor, *Music, Computers & Software*: Roland has managed to meld the complexities of computer controlled synthesis with an ease of programming. This, along with the combination of sampled with synthesized waveforms points the way to the future of sound creation. **Jock Baird,** Editor, *Musician*: Five months after its Anaheim introduction, the D-50 has no challengers as 'Best New Synth of the Year.' What's also interesting is that with programs like its Developer's Workshop, Roland is trying to jump-start the same support web of sound and computer-editor programmers that took a couple of years to grow up around other synthesizers.

Craig Anderton, Editor, *Electronic Musician*: As Editor of Electronic Musician magazine it's easy to gauge a product's impact by the degree of reader interest. Based on what I've been hearing, Roland has a real hit on their hands with the D-50. **Simon Trask**, *Music Technology*:

Whichever way you look at it, the D-50 is one hell of a good instrument and one that has already booked itself a place in the synthesizer's hall of fame.



WE COULDN'T HAVE SAID IT BETTER IF WE'D SAID IT OURSELVES





1987 RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685 5141

Take MIDI to the MAX with the MX-8.

Now you can take maximum advantage of MIDI's limitless potential—conveniently and affordably—with the MX-8 MIDI Patchbay/ Processor from Digital Music Corp.

Combining versatile 6 x 8 patching capability with an incredible array of processing functions, the MX-8 gives you the power and flexibility of a rack-full of outboard hardware. All in one, easy-to-use device. All for just \$395!

No other MIDI peripheral puts this much control at your fingertips:

Patchbay requirements are met quickly and easily with complete routing flexibility for six inputs to any of eight outputs. Merge MIDI data from any two inputs. Dual MIDI Delays are independently programmable in milliseconds or as note-value and tempo. You can even specify the number of repeats and their velocity... and echo to a different MIDI channel.

Mapping lets you split your master keyboard into four zones to control multiple slaves and set a velocity "cross-switch" point to add or switch sounds when you play harder.

Patch-Chaining enables the MX-8 to send up to eight program changes with each setup.

MIDI Filters can be set on two separate inputs to remove any data from the MIDI stream. **Transpose** up or down five octaves on an individual channel or globally.

Channel-Shifting reassigns data from one channel to another... or offsets all channels.

Each function is easily controlled and clearly displayed on the MX-8's front panel. You can even name and store up to 50 setups for immediate recall. Or, use optional software for computer control of the MX-8 with unlimited diskstorage of setups.

It's all the power you'll ever need to take MIDI to the max. The MX-8 MIDI Patchbay/ Processor from Digital Music Corp. Available at better music stores everywhere.

The Total MIDI Patchbay/Processor from Digital Music Corp.

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READERS' LETTERS

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

Dear Music Technology,

Since September, 1985, CRSG (Concordia University's campus radio station) has presented "Waveforms," a show I produce, as an alternative to their alternative music format. The weekly show presents electro-acoustic, contemporary and avant-garde musics in a weekly one-hour spot focusing on the art and techniques of new music. A monthly column titled "Electroacousticity" and several feature articles appear regularly in the station's program guide "Reargarde" which receives a city-wide free distribution of 10,000 copies monthly. The show will soon be broadcast on more Canadian universities as well.

I would love to hear from your readers if they have tapes or ideas to share. Please have them write to me, c/o Concordia University, CRSG, 1455 de Maisonneuve, Montreal, Quebec H3G IM8, Canada.

I enjoy your mag. The "Sounds Natural" articles were great. More of the same, please. Michael Gericke

Montreal, Canada

Dear Music Technology,

Having just purchased my magic Korg SQ8, pocket-sized sequencer, I was glad to read your review of it, for it helped me develop a way to overcome some of the SQ8's major architecture limitations.

When Mr. Bob O'Donnell said that he was able to record one multi-timbral sequence on tracks I-4 and another on tracks 5-8, and also with the suggestion to record two independent eight-track sequences by use of the Measure Memory Function, he gave me a good idea (thanks, Mr. Bob) and I started planning a bouncing operation, as I'd do with a multi-track recorder. By combining all three of these ideas you can have many independent sequences. The procedure may be done by first recording say, a bass line for the first song on track I, and then starting the bass line for the second song from the measure where the first one stopped, or by leaving a blank bar, as an interval between the two songs. I do this on seven tracks and then when it is completed, I turn tracks I-7 on play mode and track 8 on record mode, push the start key and the SQ8 bounces all the MIDI data in the seven alternate tracks onto track 8, through the MIDI connectors (In/Thru) of a synthesizer. If I need more than two chained songs, I'll repeat the procedure and bounce everything onto track 7, etc.

At this point, the Fast Forward Record Mode, which Mr. Bob referred to as an "odd" feature, becomes useful. I don't need to bounce every sequence I write in a tedious normal speed, instead I can do it much faster.

I can listen to what I'm doing through the synthesizer I'm using if I connect the SQ8 to the synth's MIDI In and Thru jacks, but it also works with only one MIDI cable plugged in the SQ8's In and Out connectors. Of course, I cannot hear anything in this way, but it gets the job done.

I can also use this procedure to perform some editing. If I have converted the recorded data into playable information (by hitting the Reset button) and hear a mistake, then I don't have to erase the whole track. I may simply bounce it onto another track in Fast Forward Recording mode, up to the point at which the mistake appears, then stop bouncing and continue from the keyboard, not forgetting to switch the MIDI cable from the synth's Out to Thru.

Mauricio de Souza Amaro Rio de Janeiro, Brazil

Thanks Maurício, the tips you've provided to other SQ8 users should prove valuable.



MT OCTOBER 1987

One thing that needs to be pointed out, however, is that each track on the SQ8 can only record information on one MIDI channel, so the tracks that are bounced down must all be recorded on the same channel. Consequently, the multi-timbral sequences are only possible if the connected synth can play different timbres in different split zones on the same MIDI channel. L

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Dear Music Technology,

Regarding Dan Goldsteins' comments on the new Alesis HRI6 drum machine (NAMM report, MT August '87) – while I agree in concept that individual outs for each pad would be the ultimate, there are ways to effectively utilize the two stereo outs. You can achieve the flexibility of processing more than four pads by syncing the pattern and doing multi-takes, alternating the output assignments each time – if you've got lots of tracks or are willing to bounce for a final drum mix.

Regarding Home & Studio Recording -OK, great . . . I'll buy it because it's my gig. But please tell the truth: will all of the reviews on tabe machines and outboard effects now be in H&SR instead of MT, or both? Will any reviews pertinent to recording and recording gear be in MT and not in H&SR? I now subscribe to MT and think it's great but hope you are planning all info about recording to be in the new mag, because when I send in the bucks for a subscription I'll have to let my MT subscription expire. Remember, you are servicing an artist's needs and while most of your interviews are with those who are doing well, the other 8million of us are not rolling in dough . . . Excuse me while I get back to my Korg Poly 61 (non-MIDI).

Mark Zapalik Concord, CA

You're not the only one who's interested in just what will be going into MT and what will be going into H&SR. Overlapping of articles will be kept to a minimum perhaps an in-brief review of a signal processor would appear in MT and a full 3-4 pager be written for H&SR. To give you an idea, the first issue of H&SR has gone to press and includes articles on MIDI in the Studio, indepth reviews including the Yamaha MT2X recorder and Bimix 1280 console, and educational features such as "All About Delays" and "Studio 101." The intent is to make the magazines complementary to each other, rather than repetitive. You may find you'll really want subscriptions to both!

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R E V I E W



The new wind controllers from Akai promise to both bring an entirely new group of musicians into the world of MIDI and raise the level of expression possible with electronic instruments.

SO FAR WE'VE had MIDI keyboards, MIDI remote keyboards and MIDI guitars, not to mention a whole host of performance controllers designed to generate MIDI information in a variety of weird and wonderful ways. Do we really need any more? Evidently Akai is convinced we do, because their EVI and EWI are MIDI instruments designed for brass players.

The EVI (Electronic Valve Instrument or "eevie") and the EWI (Electronic Wind Instrument or "eewie") are aimed at trumpet players and saxophone players, respectively – although the ease with which they can be played suggests Akai would like to see them in more widespread use eventually. Both are designed for use with the EWV2000 voicing unit, making them instruments in their own right rather than pure controllers, although the MIDI Out socket on the EWV – along with some of its higher functions – make them potentially powerful tools.

The EWV2000 is essentially a dual VCO monophonic synth module possessing 64 voice programs, ramp, triangle, square and ramp & triangle wave options; two completely independent filters and amplifiers and a particularly comprehensive set of control parameters specifically designed to get the best out of the EVI and EWI. The EWV is also capable of reprocessing an audio signal generated by a slave instrument, but more on that later.

To appreciate the degree of control the EWV offers over its voices, it's necessary to look at the expression available from the controllers. The EVI, as its name suggests, is a descendent of the trumpet. There is a mouthpiece, a set of three touch-sensitive switches in place of the valves (with a second set alongside for alternative fingerings) and a bell which isn't – a bell,

Preview by Tim Goodyer.

that is. Instead it contains a fourth valve, to assist fingering, and a set of roller sensors switching across the octave for instrument's seven octave range. Yes seven. Just like the EWI. Underneath the "valves" there are two thumb sensors: one for pitch-bend and another for what Akai calls Vibrate. This is not to be confused with vibrato as it does not introduce a fixed rate of pitch modulation. Rather, it affects the pitch of the instrument in a similar way to a trumpet player altering lip pressure on the mouthpiece.

The EWI has no bell at all, and the keys have been replaced by touch-sensitive switches. These, again, retain a similarity to their woodwind ancestor's in layout, but this time the fingering has been simplified by applying the same pattern for each octave of the EWI's range. Behind these keys are the roller octave switches (left thumb) and pitch-bend and Glide sensors (right thumb).

With both the EVI and EWI, it's the mouthpiece that's the secret to playability, for neither requires the technique of their acoustic parents. Instead they detect air pressure, from being blown, and lip pressure for expression. The EVI uses mouth pressure for switching in the Glide function while the EWI uses it as its Vibrate sensor. If this sounds confusing, rest assured it all makes a lot more sense with the controllers in your hands/mouth.

The true appeal of these instruments is in their potential for expressive playing. And a look at the expression control parameters of the EWV shows why. Vibrate information can be routed to VCO, PWM, VCF, VCA and pitch-bend; and Breath pressure can be routed to VCO, PWM, VCF, Filter Resonance and VCA. Add to that real-time control of Breath sensitivity, Glide and pitch-bend and you get some idea of what's going on. And don't forget, each VCO/VCF/VCA is independent of the other – including modifiers.

Pause for breath (sorry). As previously mentioned, the EWV is capable of reprocessing a sound generated by a slave instrument under MIDI control. This involves a simple Audio In routed to the VCA, VCF and so on, of oscillator one and opens new areas of articulation for any MIDI-equipped synth.

Leaving the audio signal for a while, MIDI information itself is also under the control of Breath intensity, allowing externally-generated sounds and effects to be brought in when desired by extra breath pressure. The EWV also sends breath, volume, aftertouch, program change and transpose information over MIDI.

Although the EWV is a monophonic synth, it is capable of transmitting fournote chords over MIDI. These are determined as having the root in the note you're playing and generated by the slave synthesizer. The EWV offers a selection of H chords, from minors and sevenths to sus 4ths and 6/9ths. And each note may be programmed with any one of these chords so you're not restricted to a parallel interval as you are by, say, setting oscillator two to a major 5th on oscillator one. In this way it's possible to string together a chord accompaniment to just about any piece of music - and in case you were wondering, that's programmable too.

PRICES EVI with EVV/2000, \$1999; EVVI with EVV/2000, \$1999

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We hope we made the point that there are a lot more than 50 sound disks available for the Mirage, but we just couldn't hold the ad agency back from using the song title pun.



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READERS' TAPES

M Reviewed by Yung Dragen.

THE FLOODGATES HAVE opened. I have received more tapes this past month than in the previous six, ranging from three-song demos with a personal letter to tapes with full portfolios on the artist. What can I say? I'm flabbergasted. Thank you, thank you, thank you!

We'll start off this month with a cassette

of two "albums" - Transcending the Magnetosphere and Egg and Shoulders - by Larry M. Smiley of Independence, Ohio. Larry uses a Juno 60, DX100, Mirage, MKS80 and a bit of guitar (including a heavily modified Silvertone that he sent a photo and detailed history of) to weave a cross between raga and trance music. He confesses as influences Jarre, Ravi Shankar and Eno, and adds that he has tried to market these tapes to new age labels. Now, I admit to liking some new age stuff for mellowing-out from time to time. However, too much of it is simply too wimpy (to my ears) for any extended listening. Smiley, fortunately, has a touch



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Fairlight is a trademark of Fairlight Instruments, Pty. Ltd. Macintosh is a trademark licensed to Apple Computer Inc., Master Sampler Collection and ScoreKeeper are trademarks of Sound Genesis Corp. more adventure in his writing and buzziness in his tones and therefore manages to sustain at least *my* interest. Mildly humorous titles such as 'Egg and Shoulders,' 'Intricate Latchwork,' 'Bedazzled Banshee,' and 'Oriental Lentils' also show a more well-adjusted than reverent approach to the style, which is refreshing. This stuff may still need a little more polishing around the edges to be accepted by Windham Hill or the like, but if you would like a cross between Shankar and, say, Fripp & Eno, write Larry (particularly for Egg and Shoulders).



An Egg and Shoulders pose from Larry M. Smiley.

Over on the dirge side of the background music spectrum is *Long Pig* by Chicago's **Straightjacketbazooka** (yep, that's one word), consisting of Mike Rawnsley on Fender Mustang bass, Casio RZI drum machine, and a pair of Roland DR pads; and Pat Dovan on a pair of Moogs and a Casio SKI. The duo recorded their music through an ART reverb, a couple of dbx's, a few guitar footpedals, and a Kustom mixer onto a Fostex XIS (yea, now tech!). Their cassette insert and



gig poster have interesting grey-scaled photos of what looks to be some sort of an American Indian spirit stick (long wooden pole with a head of feathers and various things hanging from it) on a hill. The music is dark, with sporadic but insistent tribal drum machine, a well-rounded bass guitar sent through a phase shifter and chorus (I can tell – I have a '66 Gibson EB3 that I like to process exactly the same way), and

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Straightjacketbazooka supply this month's background tribal dirge . . .

echoed chanting and declarations, all against a backdrop of hissing, rumbling, and flanger feedback (with occasional majestic synth chords rising out of the murk). The five-song tape (with such inspirational titles as 'Printing Press Preacher' and 'Bright Shiny Day' – the latter featuring the title repeated over and over in a slow, crazed, cynical voice) was over far too quickly. If you are into tribal dirge at all, check these folks out. But be warned – there is simply *no* high end on this tape.

Which brings us, somehow, on this wandering, zen-like path of confusion, to the pleasant, three-song demo of LA-rock (laid back, etc) by Peter D. Bruce of Portchester, New York. Peter moved to this country from England several years ago and mentions in his letter how hard it is to keep up a band situation when one has a traveling job. Therefore, he "decided the next best thing to do, if I was to retain any sanity, was to sell the second bed and build a studio" Included in this studio is a solid collection of guitars (a Yamaha acoustic, a Strat, a Gibson SG, and a Squire bass), a Casio CZI0I and Korg DW8000, a Roland TR707, an Atari 520ST running Steinberg's Pro24, and a variety of your typical home-studio recorders and the such. Peter also admits, "After several failed attempts at vocal recordings, my songwriting follows the instrumental road - unfortunate really, as I feel they scream out for vocals." Such a realistic attitude must be applauded - I have heard several demo tapes of reasonably good music ruined by mediocre singing by would-be Bowies.

Anyway, the songs range from the light MT OCTOBER 1987

'Coco Cabana' to the engaging 'Night Rain' (with a really cool trick of doubling the synth bass and kick drum on some staccato hits) to the slightly mushy, spacey 'Stellar Flight,' Peter mentions that 'Stellar' is his favorite, maybe because it is the one of the set that doesn't cry out for vocals unfortunately, it was my least favorite. The pieces feature some nice drum machine work (but Peter - cool off a bit on the shattering rim shot on 'Night Rain,' okay?), lively synth bass, and good Korg textures on top. His writing style is a bit more lightweight than I usually prefer (and shows almost no reference to the rock/ funk/reggae background that he claims), but pleasant nonetheless - and well-done. to boot.

The one thing that these tapes drilled into my head was that, despite exhortations of other MT authors that we should all ditch our drum machines in favor of samplers, some of us simply can't afford to do it – and with some thought and care, it *is* possible to come up with some inoffensive (even interesting) patterns out of them. We're all doing what we can, right? Until next month...

Contact addresses:

Larry M. Smiley 6322 Timberlane Drive, Independence, OH, 44I3I Straightjacketbazooka c/o Mike Rawnsley, 3358 North Sheffield, Chicago, IL, 60657 Peter Bruce 370 Westchester Ave., 7E, Portchester, NY, 10573

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



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IN BORNINESF Kawai M8000 MIDI Controller Keyboard



First came piano-like controllers, followed by designs more closely resembling synthesizer keyboards. Kawai just may have combined the best of both worlds. Review by Deborah Parisi.

GETTING THE BOXES up the stairs to the office was no easy feat. It really wasn't that the keyboard itself weighs 62lbs, and the separately packaged stand another 20 or so (we have plenty of burly guys hanging around that can handle that). It was the weight plus the length of the thing – sort of like carrying a 6' couch up a circular staircase.

But when the stand was set up and the keyboard unwrapped, it was obviously worth the effort. With 88 full-sized keys, an impressive dashboard, and a rear panel packed with MIDI ports, I knew this was an instrument worthy of the name. I couldn't (and didn't) wait to get my hands on it.

It's tempting to say that the action is like an acoustic piano's, but the truth is that action can vary dramatically even between same-name pianos. Generally speaking, however, the M8000 feels more like a piano than a synth because of the weighted keys – perhaps a bit spongier than a firm-action grand.

The M8000 allows control of four separate MIDI instruments (or groups of instruments) using programmable "busses." The four Buss Select keys, located below the four Buss Sliders, correspond to the four MIDI Outs and make it easy to enable or disable any combination of instruments with single keystrokes. To daisy chain your keyboards or modules, MIDI Out A can be used alone, and the M8000 powers-up ready for this configuration. By pressing and holding both the Cancel and Enter keys while turning on 20 the power, each of the four busses is routed to a separate MIDI Out. Unfortunately, there is no indicator to tell you that the four outs have been activated; you have to put your faith in the keyboard. Kawai has thoughtfully provided a MIDI In as well, allowing you to hook up an external MIDI controller to pass information on to the four MIDI Outs. While this disables the keyboard and the external controllers, the wheel and rear panel controls (for pedals, etc) will still work. There is also an External Keyboard buss which will let you send MIDI data from the M8000 as well as from your DX7 (or whatever), as assigned to specific MIDI Outs. Remarkable, indeed.

Each of the four MIDI Outs can be limited to a specific note range by setting the Zone parameter in Edit Mode. This is another easily accomplished task (as are virtually all of the editing functions). All you have to do is get into the Zone parameter, hit the appropriate Buss Select key and strike the low and high notes for that particular zone. I was a little put off by the blinking LEDs – the manual said the lights would keep flashing if I tried to put the high note of the zone below the set low note. Be forewarned: the lights keep flashing no matter what you do.

Synth players have come to expect control over velocity and aftertouch sensitivity, and Kawai has provided two ways of altering these settings. Sensitivity levels can either be set and stored in Edit Mode or be modified with the sliders on the left side of the front panel (particularly useful for real-time adjustments). Changes made in the Edit Mode are assignable to individual MIDI Outs, while slider adjustments affect all busses simultaneously. Velocity and pressure sensitivity edits are scaled from 0-3, with 0 disabling and 3 intensifying the effect.

There is also a Master Volume Control slider which alters the volume of all instruments connected to the keyboard as long as they can respond to volume data. One of the M8000's more unique features is its Detune facility, which transmits programmable tuning offsets to each buss in the form of small Pitch Bend messages – great for adding a bit of "warmth" to your synth ensemble.

A "link" feature is included primarily for live performance and allows you to link your programmed configurations together in order to access them quickly and easily. Once you have several presets fixed in memory, linking them is a matter of pressing Link and Write together and entering the numbers (up to 32) in the order you want to be able to access them. You can advance or go back to links via footswitch or with the increment key.

The M8000 offers several ways to control your drum machine. The Song Select button lets you access any pre-recorded tracks, the Tempo key allows you to set the tempo from 30 to 350 beats per minute, and the Start and Stop/Cont buttons let you do the obvious. By pressing down the Stop/Cont key and holding it while pressing the Start key, you can have a drum machine or sequencer begin at the same time you begin playing the keyboard. Of course, if you can trigger your drum machine's sounds over MIDI, you can also program patterns from the M8000.

Although a built-in arpeggiator may not be a major selling point on an instrument in this price range, Kawai has chosen not to leave one out either, and has taken care not to overlook essentials like the ability to sync the arpeggiator and transmitted MIDI clocks to the same time base.

The back panel provides footswitch inputs for Start/Stop, Program Advance, Portamento, Damper and a spare assignable, and two pedal inputs for volume and an assignable continuous controller. Basically, if you like to tell your keyboard what to do with your feet, you're going to have a field day with the M8000.

Kawai's Master Keyboard Controller is a luxury model designed for the really serious MIDI manipulator. But beware – it's really addictive. Play with it once and it may well become the center of your music system.

PRICE \$1895, with stand

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JL Cooper MAGI



JL Cooper's latest entry in the MIDIMation series provides effective remote automation for your console with the minimum of hassle. Review by Chris Many.

AUTOMATING YOUR CONSOLE is the latest in the ever-increasing number of uses manufacturers have found for MIDI. Several products already offer this facility, and with the release of the Mixer Automated Gain Interface (MAGI), JL Cooper have added their entry into the fray. MAGI consists of a 3U rackmountable brain which connects via a ribbon cable to a set of VCA's housed in a IU chassis. Completing the package is a fader assembly (available in eight-, 16-, 24-, 32-channel configurations) which or connects to the VCA unit via a telephonestyle jack. MAGI also includes a set of mutes and a computer interface that provides substantial automation control within a compact and friendly system.

MAGI hooks up fairly simply. Just route the cables (1/4" phone) from the VCAs to the insert points of your console. Two types of remote units are available; either an eight-fader unit that is bank-switchable to control up to 56 tracks (including eight sub-group masters), or a 16-, 24- or 32fader control unit which provides instant access to each track individually (no bank switches necessary) plus four sub-group assignments. Each remote also has individual track mutes and sub-group mute masters. These faders and mutes will now take the place of your console controls, and you'll use these to do your mixing.

You'll also need a SAM unit (SMPTE Automation Manager) and preferably a SAM Disk for storage of your mixes (although this isn't mandatory, as you can save your moves to tape or dump them via System Exclusive to a sequencer or some storage device). SAM is the central manager of JL Cooper's automation product and essentially reads, writes and locks to SMPTE, synchronizing MAGI's moves and storing them in its internal 22 memory.

Using SMPTE to sync your mixes means you'll need to dedicate one track for code; but even if you've never worked with SMPTE before, you'll quickly realize why this is becoming the sync method of choice for musicians. You can also use SMPTE to drive many of the latest sequencing products. Being able to quickly lock up to any point in your mix or sequence without hassle is a real pleasure.

Mixing is simple and doesn't require much learning on the part of the engineer or producer. MAGI was designed to be as invisible as possible to the user and succeeds on this point. Mixing with MAGI is almost identical to the way you've always mixed; no need to boot computer programs or to learn new commands. Once it's installed in your system, you just move the faders, mute your tracks, and so on. Each time you make a new pass through a mix, MAGI updates its memory, merging your latest moves with the previous mix, until you're satisfied. Without a SAM Disk, you'll have to be somewhat careful with your mixing as editing some of your moves can be a bit tricky. (You'll have to think twice about convenience vs. cost: |L Cooper socks you for almost \$1000 for the disk drive.) The SAM disk automatically backs up the last four mixes you've done; so if you didn't like the mute you just made, you can quickly recall the mix before. Otherwise, you'll have to run the tape again and unmute your track immediately following your previous mute move.

Thanks to MAGI's computer interface, if you own an Atari ST or Macintosh, you'll be able to see the fader automation on the computer screen, which adds a very useful visual dimension to your mixing. Because the physical faders do not necessarily correspond with the actual location of the VCA, fine tuning without a computer can be difficult. If you were about to remix a soft section of your music into a hotter version, for example, you could experience jumps in the volume as you try to access each track. There are LEDs above each fader on the remote unit that tell you when the physical fader matches the VCA level, and this solution *is* helpful; but being able to look at a screen and see each fader and mute move occur in real time makes it much easier.

You may find the remote faders a little hard to get used to as they are positioned much more closely together than those on a regular console. And again, because the faders have no need to control analog sound (they are only voltage controllers), inexpensive faders have been used in the manufacture of the remotes, lending a different feel altogether. These are small matters, though, when you have an automated console that virtually any engineer/producer can use within minutes. VĊAs themselves The are very transparent; MAGI employs dbx chips, and you can upgrade to an even higher quality VCA if you want.

Overall, MAGI provides good value for the money, working best when you have a fully configured MIDImation setup (MAGI, SAM and SAM Disk). There may not be a lot of frills, but when you can find any music enhancement system that requires very little learning time, remains hassle free and works just like it's supposed to, that's something you'll want to check out.

PRICES MAGI (general 16-track configuration) \$2390 (price varies with size of unit); SAM \$849; SAM Disk \$995

MORE FROM JL Cooper Electronics, 1931 Pontius Avenue, West LA, CA 90025. Tel: (213) 473-8771 MT OCTOBER 1987

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R E V I E W



Roland MT32 Multitimbral Synth Expander

This inexpensive little box of tricks features a repackaged, multitimbral version of Linear Arithmetic (L/A) synthesis along with an additional thirty percussion sounds. Review by Simon Trask.

S HI-TECH RECORDING moves steadily towards the tapeless studio, the emphasis is on an increasing number of sequenced parts - which of course places greater demands the sonic capabilities of the instrument(s) being sequenced. Obviously a monotimbral instrument can only play a single sound at a time - a rather limiting state of affairs where sequencing is involved. Cue the multitimbral instrument. And you don't have to look far nowadays to see that manufacturers are coming up with the goods in this area. Ensoniq's ESQI, Korg's DS8, Yamaha's FB0I, TX8IZ and TX802, and Kawai's K5 and K5M all offer sophisticated multitimbral implementations, ie. the ability to play multiple

sounds (timbres) at the same time.

Roland experimented with has "multitimbrality" previously on their MKS7 Super Quartet expander, which combined three synth parts and a rhythm part. The company's latest multitimbral offering is the MT32 expander, which provides the by-now renowned L/A synthesis of the D50 synth in eight polyphonic Parts together with a Rhythm Part which uses 30 PCM drum and percussion samples. Each Part is accessible on a separate MIDI channel. What will no doubt frustrate potential studio-based users of the MT32 is the lack of any individual outputs for the drum voices, or even of separate outputs for the Rhythm Part on the one hand and the synth Parts on the other hand. Instead, everything comes out of a single pair of stereo outputs.

Photography Goodver & Ellis

The MT32 retains the same sound parameters as the D50, and can in fact be edited using the D50 or the PG1000 programmer – though the results can't be stored to the MT32. However, missing are the D50's chorus, EQ, and Chase Play mode. But onboard reverb is still the order of the day, though with four rather than 32 reverb types. And no, you can't apply different reverb settings to different parts.

For the record, the MT32 was developed for Roland's Contemporary Keyboards division (ie. its origins lie in the home keyboard market). Yet clearly the instrument will find its way into a lot of home and pro studios, as well as being an MT OCTOBER 1987 attractive proposition for MIDI guitarists and so we have the unusual situation of a hi-tech musical instrument being marketed by both the Home and Pro divisions of RolandCorp US.

In attempting to straddle the two markets, Roland has come up with an instrument which functions on two levels: on one level it's a preset instrument with an easy-to-understand front panel, on another level it's a programmable instrument with greater operational flexibility if you hook it up to a suitable computer-based editing program. To this end, the MT32's manual includes comprehensive System Exclusive data. Roland will apparently be releasing editing software for the IBM PC, which seems to be their adopted computer. But clearly, third-party software developers will be weighing in with their own software for the likes of the Atari St and Apple Mac.

Preset Delights

THE MT32 COMES with I28 preset Timbres (sounds) onboard, which are divided into 17 Sound Groups: Piano, Organ, Keyboard, Synth Brass, Synth Bass, Synth I, Synth 2, Strings, Guitar, Bass, Wind I, Wind 2, Brass, Mallet, Special, Percussion, and Effects. The number of sounds in each group varies from four to eleven.

Overall, the sounds are of the same quality as those to be found on the D50, though perhaps more variable - and some could do with a bit of the D50's chorusing to fill them out.

Brass and synth-brass both offer powerful sounds, with piercing trumpets and horns in particular benefiting from the PCM attack samples, while the synth-brass sounds have the typical gruffness of a Roland synth section.

The MT32 doesn't feature as full or as varied a complement of string sounds as are to be found on the D50, but nonetheless maintains the standard set by that instrument - and the ethereal "Soundtrack" puts in yet another appearance.

Fretless and acoustic bass sounds are effective, but a better range of bass sounds (including some rich, resonant efforts) wouldn't have gone amiss.

Among the best sounds are tuned percussion, plucked string instruments and woodwinds of both Western and Eastern persuasions, which for the most part have great clarity and presence. There are also some very impressive percussion sounds, including the deeply resonant "Taiko" - a rather large Japanese drum, I presume.

Roland has also provided a good range of shimmering, atmospheric sounds such as Fantasy, Atmosphere (of course) and Echo Bell.

Effects include orchestral hit, telephone, bird tweet and one-note jam (hold a note MT OCTOBER 1987

down and you've got a rather messy rhythm section courtesy of looping PCM partials).

Unfortunately, the acoustic and electric pianos let the side down, being for the most part too thin to sound particularly convincing. On a more positive note, the electric and pipe organ sounds are much better, and there's a very lively and welldetailed harpsichord sound.

Incidentally, Roland has included a preset sound list in the manual which also lists how many partials are used by each sound - very handy, as it turns out.

Sound Organization

NO DOUBT YOU'VE figured out by now what the MT of the MT32's name stands for (and no, it's not Music Technology). The 32, however, refers to the fact that 32 partials can be played simultaneously. "Partials?" I hear you say. Well, if you haven't read the D50 review which But looked at in another way, it's possible to use a maximum of 32 percussion sounds at the same time.

Roland has given the MT32 a feature called Partial Reserve, which allows you to allocate a fixed number of partials to each Part (within the total of 32), so that you can always be confident of being able to play five-note string chords, for example.

Partial Reserve is one of the many features of the MT32 that are to all intents and purposes hidden from you unless you have suitable software, as mentioned earlier. For the moment, let's concentrate on what you can do from the MT32's front panel. There are six Part buttons (five synth plus Rhythm), four buttons labeled Sound Group, Sound, Volume and Master Volume, and a Select/Volume knob. You can select Parts 6-8 by pressing the Master Volume button and Part I-3 buttons respectively.

Pressing the Master Volume and Volume

Sounds "Overall, the sounds are of the same quality as those to be found on the D50, though perhaps more variable - and some could do with a bit of the D50's chorusing to fill them out."

appeared in MT June and July '87 I'll recap briefly. A "partial" is a complete sound which can be either a synthesized sound or PCM-sampled attack waveform (primarily, but not exclusively, from acoustic instruments such as pianos, strings, trumpets, horns and tuned percussion). These can be played individually or combined in groups of from two to four partials. Anyone looking for a more detailed explanation should refer back to the aforementioned D50 review.

Each of the eight synth Parts on the MT32 can be assigned a separate "timbre" (to use Roland's term) of from one to four partials. Now imagine that you've assigned to Part One a two-partial bass sound made up of a sampled double-bass bowed attack and a synthesized bass sustain/release. On Part Two is a four-partial string sound, while on Part Three is a two-partial French horn sound. The bass and horn lines are monophonic, while the string part consists of sustained five-note chords. That's 24 partials. With, say, a two-partial electric piano sound you could play a further four notes at a time; if the electric piano sound used four partials you could play a maximum of two notes at once. However, as partials are allocated dynamically among the Parts, if your string part is reduced to three-note chords or even dropped out altogether, you'd have more partials available for any of the other parts.

But the sounds of the MT32's Rhythm Part also enter into this equation, as each percussion sound is a single partial. So if you're running the Rhythm Part from a sequencer you'll need to bear in mind that the more dense your rhythm track the less partials will be available for the synth Parts.

buttons allows you to change the reverb mode on a scale of 0-10 using the Select/ Volume knob. This actually seems to change the reverb time setting, with zero being no reverb; as it's a global parameter, a zero setting is a quick means of taking off the reverb for all sounds if you want to substitute external processing - which is one up on the D50. Default setting is Hall, which tends to be quite noisy on longer settings - particularly at the tail end of the reverb.

Master Volume plus Sound Group allows you to alter the MT32's master tuning between 427.5-452.6Hz, while Master Volume plus Sound allows you to set a Unit number from I-32. If you're using more than one MT32, giving each one a different unit number will allow them to be addressed individually for editing purposes (ie. using System Exclusive).

Pressing Master Volume and Part Four allows you to set MIDI Overflow mode, which passes on any received notes via MIDI Out when all 32 partials are in use. Master Volume plus Part Six allows you to alter the default channel settings of the synth Parts from 2-9 to I-8, while Master Volume plus Part R (Rhythm) is a convenient way of resetting the MT32 should you get any hanging notes.

And that's the limit to what you can do from the MT32's front panel. Despite the combined button pushes, front-panel operation is simplicity itself because Roland has presented you with limited options.

Good news is that Roland has given the MT32 plenty of performance flexibility through making pitch-bend and MIDI controllers (in this case modulation, volume, panning, expression and hold) independent for each synth Part. So now you can use the sustain pedal for those electric piano chordal washes on one Part and the pitch-bend wheel for that wailing lead synth solo on another Part. And of course individual pitch-bend control makes the MT32 suitable for MIDI guitarists.

What is a shame is that the MT32's sounds won't respond to aftertouch. But on a more positive note Roland has included the new Reset All Controllers message (controller code I2I) which turns off all continuous controllers.

Behind the Scenes

E

IN ADDITION TO the 128 preset timbres the MT32 has 64 user-programmable timbre memories. However, these aren't accessible from the instrument's front panel, nor can they be called up via MIDI patch change commands. Yes, you'll have to get yourself an editing program (and, of course, a computer if you haven't taken the leap yet), which may come with some banks of sounds specifically for loading into the user timbre memory.

If you're starting to get a bit confused, let me explain in a little more detail how the MT32's sounds are organized. Together with the 128 preset sounds and 64 user sounds are 128 Patches. Each Patch calls up a single timbre from either the preset or the user memory, and additionally allows you to define a transposition value (+/-24 semitones), fine tune value (+/-50 cents), bender range (0-24 semitones), assign mode (more on this later) and reverb on/off for that timbre. Needless to say, none of these parameters can be altered from the front panel, in keeping with Roland's intention to keep matters as simple as possible for the Home market.

The default Patch-to-timbre assignment is Patch one to preset timbre one thru Patch 128 to preset timbre 128. However, these assignments can be changed via System Exclusive using editing software, so that, for instance, Patch one could call up user timbre 27.

Clearly there's a lot more flexibility buried in the MT32 than is at first apparent. The Rhythm Part also reveals itself as being more sophisticated than it at first seems – though again this will depend on the capabilities of any editing software you end up buying. Not only can you alter the default MIDI note assignments and pan values for the 30 PCM drum and percussion samples, but each MIDI note (24-87) can also be given its own output level and reverb on/off setting. The latter is particularly valuable as you can be selective about which percussion sounds you want the MT32's reverb to take effect on. making use of the fine tune Patch parameter mentioned earlier, you could layer the same sound and detune it.

Finally, the aforementioned Assign mode, which can be programmed for each Patch. There are four options which determine whether priority should be given to first or last notes, and whether repeated notes should be reassigned to the same voice or given a new voice. This is good news for MIDI guitarists, as it means that repeated notes on a single string (ie.

Reverb "The expander's built-in reverb takes on new flexibility with external intervention, as via System Exclusive commands you can select any one of four reverb types together with reverb time and level."

Even more interesting is that, as well as the PCM samples that are dedicated to the Rhythm Part, you can incorporate any of the user timbres into the MIDI note assignment "map," which obviously greatly increases the sonic flexibility of the Rhythm Part. In this case, the MIDI note assignment defines the pitch of the timbre. Remembering that up to 32 partials can be allocated to the Rhythm Part (albeit at the expense of the other Parts), you could build up a sophisticated rhythm track using just the MT32.

The expander's built-in reverb also takes on new flexibility with external intervention, as via System Exclusive commands you can select any one of four reverb types (room, hall, plate, and tap delay) together with reverb time and level.

As mentioned earlier, the MT32 has default MIDI channel given been assignments for each Part. The eight synth Parts can be on either channels 2-9 or I-8, while the Rhythm Part remains on channel 10. However, as you might expect from this instrument by now, these assignments can be changed from editing software via System Exclusive commands. Each Part can be allocated to any one of MIDI channels I-16. Not only can you reassign Parts to suit your own system, but obviously you can assign more than one Part to the same MIDI channel so that you can layer timbres - a useful way of creating a composite sound with more than four partials. By on the same MIDI channel) can be reassigned to the same voice. In fact, this feature was apparently suggested by Roland's guitar division.

Conclusions

ROLAND IS UNDOUBTEDLY onto a winner with the MT32. Multitimbral L/A sounds for under \$700 are going to be too much for anyone enamored of Roland's synthesis system to resist, despite complaints about lack of individual outs and the need to invest in a computer and editing software to get the most out of the instrument. Clearly such software will appear before long, and as many home and pro studio owners already have a computer, the cost of editing software by itself won't be prohibitive.

The preset sounds that Roland has provided are up to the quality of those found on the D50, while the range of sounds is broad enough to keep many people happy for some time ('til the sound libraries start to appear on disk, anyway).

The MT32 should sit happily in any studio, and while you're at it, start considering the multitimbral power that three MT32s (at not much more than the price of a D50) would give you. Now you're talking.

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SAMPLING EXPANDABILITY Akai S9V2.0 & ASK90



Akai has updated their popular S900 sampler with the convenience of audio triggering and significantly improved sample editing and processing features. Review by Chris Jenkins.

NLY THREE YEARS ago, the gentle art of sampling was enjoyed by a rich or privileged few. But that was before the Ensoniq Mirage and the Akai S612 sampler. Now, of course, because the "affordable" sampler was as inevitable as it was desirable, things have changed even more. Akai and their 612 were among the first, though, and consequently, established a place for themselves in the history of music technology.

By today's standards the S6l2 is a little primitive, but Akai has managed to follow it up with a nice line of samplers – the S900 and X7000 – all of which have helped keep the name Akai on the lips of artists and studio engineers alike. In particular, the S900 rack-mounting module has become something of an industry standard as well as being Akai's flagship.

Version I.2

ALTHOUGH THE S900 offers excellent sound quality and sample editing facilities, there has already been one firmware update - the I.2 version. This adds several features to the \$900, including One Shot, designed to ease use with MIDI drum machines that send MIDI Note Off signals after each beat. It also involves a Previous Sample Bandwidth display, MIDI Program Change disable option, and MIDI Volume send and receive. All these represent a worthwhile improvement on the S900 and are available as a free EPROM update through your dealer should you have one of the earlier models. (\$900's have come standard with 1.2 software for some time, so the update is not always necessary.)

Version S9V2.0

EVEN MORE EXCITING is the version S9V2.0 upgrade. This takes the form of a single 3.5" disk, booted at the start of every working session. It significantly improves the S900's sample editing and processing features, bringing it closer to the standard of more expensive instruments.

First of all, the S9V2.0 disk is a copyprotected program disk and not to be confused with a sample disk. This system disk is either inserted before powering up, or booted from page one in disk mode. Once loaded, it brings up the display "Akai S900 version 2.0, X-Fade looping, Filter ADSR, Pretrig," and so on. The S900 then defaults to Tone Program ready for operation.

In all, the update bestows 10 new functions on the S900. So let's go through them in the order they might be encountered in operation.

Pre-trigger Recording might sound like a feature from a Zlatna Panega product (see MT April '87), but in fact, it's an invisible update to the sample recording process. It's designed to avoid losing the start of sounds with a sharp attack when using an audio trigger to record. In order to do this, it makes recording start 2000 points before the input signal reaches the trigger voltage; so for an audio bandwidth of I6kHz,

2000×25 microseconds gives a 50 millisecond advance.

Added to Page 6 of the Edit Sample mode is an Auto function which sets the

are now possible using the \$900 alone. Dynamic Filtering is the new Page I7 of Edit Program mode. Although there's no resonance setting, the filter ADSR is useful

for cleaning up sounds which otherwise

tend to hiss during their decay. Attack,

Decay, Sustain, Release and Amount of

effect are set from Page 17, while basic

filter Value, Velocity Response and Key-

mode is Velocity Release Note On. This

makes it possible to set a long or a short

release time according to the MIDI velocity

Added to page 10 of the Edit Program

filter are set as before.

"Anything from tape clicks, to synth triggers, to contact mics can be used to trigger the S900, but the ideal trigger would be a Simmons-type percussion pad."

start point to the beginning of a quiet sample, or one where there is a gap before the sound.

Another invisible, but important, addition is to One Shot mode. The S900 will now operate properly when receiving Note Off signals from drum machines,



Figure I. Diagrams from Akai S9V2.0 software handbook. A) Example of Crossfade Loop Operation. B) Dynamic Filtering.



even if the One Shot facility is not switched on. It's now also possible to change the release time of sounds, although attack must still be set to zero.

A powerful new function added as Page 13 of the sample mode is Crossfade Looping. Crossfading the loop point of a sample makes it much easier to obtain a glitch-free loop. After defining the sample start, end and loop length in the normal way, Page 13 allows you to define the crossfade length and rename the crossfaded sound (to distinguish it from the original). This can be used with either normal or alternating loops, hiding glitches by combining the loop point with data from outside the loop. (For more info, see The Art of Looping elsewhere in this issue.)

Dynamic filtering is another technique that's previously only been available to S900 owners if they owned an Akai AX60, AX73 or VX90 synthesizer. Using the I3pin DIN connecting socket, these analog synths can be used to add dynamic filtering, chorus, and modulation effects to sampled sounds, which can then be mixed with synthesizer patches. Most of these features

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Page 17 of there's no DSR is useful be used increasing the release times of percussive noises when a key is struck hard. An adjustment to the velocity crossfade function on Page 15 of Edit sample mode, allows samples to be combined using

allows samples to be combined using velocity crossfade. So it's no longer necessary to have one specified as Soft Sample and one as Loud Sample.

Edit Program mode, on Page 4, now allows you to vary the velocity crossfade mixing rate according to MIDI velocity. A new function added to Page 14 also allows the Time Skew of the velocity crossfade to be adjusted, delaying one sample with respect to the other.

received and is particularly effective for

Also in Edit Program mode is the Key Group Copy routine on Page 3. This allows the parameters of any key group to be



S

placed in memory, then copied to any other key group, considerably decreasing also now available from the ASK90, an interface board which can be triggered

from eight discrete audio sources.

Anything from tape clicks, to synth

triggers, to contact mics can be used, but

the ideal trigger would be a Simmons-type

mono jack inputs, mounted in a space

formed by removing a panel from below

the S900's output sockets. Fitting the

board is a fairly straightforward task

requiring an iron nerve but no soldering.

Once fitted and powered up, the

The board features eight standard 1/4"

"An adjustment to the velocity crossfade function allows samples to be combined using velocity crossfade, so it's no longer necessary to have one specified as Soft Sample and one as Loud Sample."

percussion pad.

the amount of time spent on defining, say, multi-split percussion programs.

While many of the subsidiary functions are useful, the Crossfade Looping and Dynamic Filtering alone make the S9V2.0 update worth investigating.

ASK90

WHILE IT'S ALREADY possible to trigger the S900 from MIDI drum machines or pads, the convenience of audio triggering is



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previously dormant Utility option gives a Drum Inputs On/Off display.

Editing functions using the numeric pad and control wheel are exactly the same as other S900 functions. Input sensitivity can be set to two ranges; low (AC-DC I0 volts maximum) or high (AC 200 mVolt minimum). The sensitivity for each channel can also be adjusted independently on Page 4.

Each drum page allows you to choose an audio channel (I-8) for editing, then offers a further set of functions. Page 2 features MIDI channels I-I6, pitch off MIDI signal I-I27, and sound "on time" from I-9999 milliseconds. A MIDI Note Off signal will be generated if a voice is retriggered during the "on" time.

Page 3 offers "capture time" (detection time of the interface board) setting of I-20 milliseconds. With longer capture times, the accuracy of sound detection increases but the generation time is delayed. The maximum audio level during capture time is converted to MIDI velocity data. Recovery time (I-99msec) is also set on this page.

Page 4 displays a bar graph for trigger level. Gain and trigger threshold are adjusted in the same way sampling levels are set in the standard sampling process. Bear in mind that MIDI data generated by the interface board appears at the S900's MIDI Out, so it can also be used to control other samplers, or drum machines.

Edited data and drum sounds can still be stored in the normal way, using the save functions on the disk mode page. However, to save time, a ninth page is also added to the disk menu; Load/Save Drum Setting. Note that you can only save one drum setting per disk using this method.

To get you started, the board comes with a disk of drum samples including bass, snare, three toms, rimshot, cowbell, metal, open and closed hi-hats and ride and crash cymbals. There are also three programs on the disk; one with a small dynamic range, one with a large one, and one without cymbals. Akai's sound library also includes several drum kits which can be reprogrammed, or of course you can create your own.

The ASK90 represents an ideal way to make the S900 more accessible to "conventional" drummers; and considering the machine's popularity for multi-split percussion programming, it looks likely to be a big success.

Finally, there's more good news in the pipeline for Akai S900 owners. The launch of the hard disk sample storage option will keep the Akai well up among the front runners like the Emulator, and prove again that Akai's combination of user-friendliness and expandability has given birth to a world-beating musical instrument.

PRICES S9V2.0 System Disk, \$89; ASK90, \$329 MORE FROM Akai Professional, c/o IMC, PO Box 2344, Fort Worth, TX 76II3. Tel: (817) 336-5IH

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talking with V·I·E·N·N·A



The husband-and-wife team of Peter and Ina Wolf has had impressive chart success writing and producing songs for other artists. Now, with 'Talking With The Heart,' their first single as Vienna, they're trying to reach the top on their own. Interview by Bob O'Donnell.

R ECEIVING OFFERS FROM seven major record companies is not the kind of thing that many artists can claim to have happened to them, particularly if they're not exactly household names. But when Peter and Ina Wolf decided they wanted to get a new record contract, that was the dilemma they faced. As if that wasn't enough, the interest was coming from the higher-ups. "We were meeting with all the record company presidents," Peter recalls.

Of course, you may be asking yourself, "Who are these people and why were so many people interested in putting out their new record?" Well, perhaps a quick glance at their songwriting and producing resumé will clear up the confusion. Maybe you've heard of Starship's 'Sarah' or El DeBarge's 'Who's Johnny?,' two number one hits that were penned by the pair. And then there's Wang Chung's number one single 'Everyone Have Fun Tonight,' which Peter produced, and Starship's 'We Built This City,' which he co-wrote and produced. And the Commodores' 'Nightshift' and Heart's recent eponymous LP both featured the keyboard, arranging and production work of Peter Wolf. Finally, there's the new Kenny Loggins record, to which the two contributed a song, and on which Peter is producing a few cuts, and the forthcoming Nik Kershaw album, which is coming up next. All told, this was certainly enough to attract the attention of several labels.

The duo ultimately chose Warner Brothers, and the result of that happy collaboration is their new album Guess What?, an impressively produced record of groove-oriented pop. As typified by the striking 'Talking With The Heart,' their first single, all of the LP's various dance grooves

hotography Peter Figen

M U S I

and ballads highlight Ina's powerfully expressive voice and Peter's impeccable playing and production skills – including some innovative work on Alois, his Synclavier system.

The record is their first on Warner Bros., but it's not their first LP. They had recorded two other albums as Wolf+Wolf, one on a small German label and one on Motown's Morocco label, but neither one matched the success of their outside work. They changed their name after deciding that the old one "sounded too much like a law firm," and renamed themselves after the European city that they had both come from. Along with the name change came a new resolve to do more of their own music for themselves.

"Despite Peter's involvement in producing other bands, we always knew

"producer" because he feels that the path he has taken to get there leads to an unfortunate conclusion. "Being the keyboard player, you often become the arranger, and having success in arrangements you then get a shot at production. But once you've been a producer you get labeled with that and I don't like that."

PETER DOES LIKE his Synclavier, though. In fact, he likes it so much he's given it a name, Alois. "Alois is a very common Viennese name, it's like what 'Buddy' would be in America," he explains. "I was working with another producer who used the Synclavier for production techniques and he called his Sydney. The inventor of the Synclavier is

"I'm not just another producer making a record. I'm very much a musician and songwriter who's worked very hard to come up with an album of our own music."

that we wanted to pursue our own music," says Ina (nee Christina), who is also the lyricist, "and that eventually, we were going to do another album."

"At a certain point we said, 'Yeah, now the time is right again'," Peter adds, "and we decided to just drop everything and do it."

Enthusiasm of that sort seems to typify the pair, who were eager to discuss their work. "I think the music on this record is more sophisticated than on our other albums," Peter explains. "Plus, the more we write together, the better we get at it." Ina adds that another change is the increasing American influence. "We're European and I don't think we'll ever lose that touch, nor do we want to, but we've been in the US for about 12 years now and I think we've adjusted to the market we're in."

The two are equally eager to dispel any misconceptions about their work which may arise. "I'm not just another producer making a record," Peter states adamantly. "I'm very much a musician and songwriter who's worked very hard to come up with an album of our own music.

"Besides, what does it mean to be a producer, anyway?" he continues. "That's total bullshit to me. I will always be a player and a musician. I mean I didn't study music to become a producer. I studied it because I love music and because I'm a piano player. Nowadays, with the Synclavier, being able to play an instrument that has keys also lets you be a great drummer if you have it in your head, or a great horn section or string section. So all of a sudden there is this incredibly powerful tool which allows you, if you're a good arranger, to 'perform' on any instrument and have it sound like the real thing because, basically, it is the real thing."

Peter reacts strongly to the word

Sydney Alonzo and since there was already a Sydney I said, 'How about Al?' and then that triggered Alois."

Currently, Alois consists of a 16-voice unit with the polyphonic sampling option, 100kHz sampling rate, individual outputs and the complete music printing package. "The fabulous thing about the Synclavier." Peter enthuses, "is that everything sounds so real. You are only limited by your imagination, so whatever you dream up is totally do-able and instantly do-able."

That is, if you can play it. A jazz player and former member of Frank Zappa's Mothers of Invention, Peter Wolf has no deficiencies in the playing department and consequently is better able to take advantage of the Synclavier's capabilities than most other users. One of the main uses that he has for the instrument is to become the rhythm section.

"I've always been intrigued by rhythm sections. Yes, I'm a piano player, but I also played drums when I was a kid, and I played and studied bass and guitar, and I've played a lot of piano, bass, and drums trio gigs. So I've always been interested in the Idea of having an immense amount of control over what was happening behind me. And in the bass and drum department, there were very few rhythm sections that I really loved. There was Marcus Miller and Jeff Porcaro or Vinnie Colaiuta and Patrick O'Hearn, but those rarely happened. I mean out of playing one hundred times there's probably only once or twice where everything falls into place. Like where the bass player plays notes that are not only right, but also open up your imagination while you're playing. Now, with the Synclavier, though, I can be the bass player. I'm in control so I can play those bass notes that I love myself. I can also play those drum licks that make me go, 'Ooh, yeah!' "

Peter goes about using the instrument in a rather interesting fashion. He takes advantage of the on-board sequencer, but not in the manner that you would expect. "I just sit down at the Synclavier, listen to the track I'm working on and play, like the bass line, from top to bottom, once. I generally don't quantize that much, except for a few drum lines - but not all drum parts. Hi-hats, for example, I rarely do because I hate machines. I hate it when the rhythm feels like a Linndrum machine, it's terrible; it just doesn't rock. What I prefer to do is put up a hi-hat sound and not do a loop or corrections, just play like a drummer would play a hi-hat part from top to bottom. In other words, do a performance."

Before I can object, he adds, "You see, I have a hi-hat sound with eighteen different samples across the keyboard, so nobody in the world can tell me, 'Hey, that's a machine.' Every time you hear the sound of a stick hitting it's a different sample, it's a different dynamic."

He takes a similar approach with playing bass drum parts. He doesn't use any type of percussion controller, but actually plays the parts on the keyboard. "I sample one bass drum a bunch of different times and then put the samples on different parts of the keyboard. Then I change the tuning, the octave ratio, so that when I play a half-step away it's not really a half-step but more like a few cents. That way I can play different notes and it doesn't sound like a scale. It also makes it sound more realistic because that's what a bass drum does; the skin vibrates at a slightly different pitch depending on how hard you hit it with the beater, but it's not like an octave or fifth away."

As much as Wolf likes his Synclavier, one task he doesn't use it for is songwriting. "The Synclavier's the fastest thing on earth for production purposes, but it's not fast enough for writing. I write music in my head, basically, and the only thing that's fast enough is a piano, where you can sit down and fly through the stuff. I'm not one of those guys that puts up a little beat on the drum machine and then maybe a bass line, I just don't do things that way. The song is the song, and I worry about doing the arrangement later."

Another influence on the songwriting, of course, are the lyrics which Ina writes. According to her, the pair's songwriting process does not follow a set pattern, but it often begins with the lyric first. "For a while I had a very hard time, I have to admit. I would write something and fight against changing it with my life. Of course that doesn't work in the long run, so it's become more and more of a collaboration."

"We're constantly around each other," Peter continues, explaining their unique working relationship, "and if Ina has an idea, she can just turn around and ask me, 'Hey, what do you think of this?' So we work on a 24-hour-a-day kind of situation and it's really great. I can't think of anything that would work better."

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AKING THE APPROACH that he does when he produces both Vienna's music (he actually served as co-producer on the record along with Dennis Lambert) and other U artists', sound is a major concern for Peter Wolf. In particular, he's interested in coming up with unique sounds. To that end, he has built up an enormous library of samples for his Synclavier and patches for his two Yamaha TX816 racks, none of which he ever uses more than once. "I very much believe in not wanting to repeat myself, so for example, if I pull up a patch

like anything else is one he admitted that's unlikely to be duplicated anywhere else.

"I had been doing background vocals with Grack Slick for the Starship record when the funniest thing happened to me. Normally, if I get a great background part at a certain point, I'll mix all the parts, sample it into the Synclavier and then start manipulating it. I'll play along with the track and see where else the part works, just for kicks, in case something triggers my imagination and gives me other ideas. So I had this sampled background part in the Synclavier and all of a sudden the power went down. Well, we were worried that something happened to the tape so we jumped over to the multitrack and checked it out to make sure everything was fine and then I went to the Synclavier and hit a key. Now something happened to the computer

"Nowadays, with the Synclavier, being able to play an instrument that has keys also lets you be a great drummer if you have it in your head."

on the TX816 I change the individual sounds in a combination so that the final sound is always different. I don't keep presets, so if someone said, 'I want you to create the sound just like on 'Nightshift,' or another song of yours,' I couldn't. I would know what to go for, but it would be slightly different, and I think that's important."

"I don't ever want to get into a rut where I would say, 'Oh, you want the 'Nightshift' sound? Plunk, here it is.' Otherwise you have those same kind of noises on every record you do and I don't want that. 'We Built This City' shouldn't sound like 'Who's Johnny?,' and 'Everyone Have Fun Tonight' shouldn't sound like 'Talking With The Heart' because then the Wang Chung identity and the Starship identity and the Vienna identity would all be the same, which would be terrible.'

Peter holds identical beliefs for sampling as well. "When I work with an artist on a record, like when we did our record, we do nothing else but take samples for a few days. I'll get incredible drum sounds and then only use them on that record. After we're done with them, that's it, they go into the rock 'n' roll museum.

"I know some people think that certain sounds become a trademark," he notes, "but who cares? When all this stuff starts melting into a big pot and you turn on Power 106 [an LA top 40 station] and everything sounds like Janet Jackson, I could puke. I can't believe it.

"In my own little way I'm trying to change that by not ever using the same sounds," Peter comments. "I think there are certain rules that you have to set up for yourself about these kinds of things, otherwise people will walk all over you."

One sample in Wolf's library that he thinks will never be criticized for sounding

inside there and it changed part of the information on that sample and it went from being like a seven-second background vocal sample to like a 50-second sample of the weirdest noises I've ever heard in my life. I can't really explain it, but it's like some space garble combined with something that's somewhat reminiscent of a vocal. I don't know how it got there, but it's the most amazing sample I've ever heard in my life."

Or as Ina shrewdly replies, "It's Alois singing."

"There's nobody who could emulate that kind of a thing or make it purposely," Peter continues. In fact, he says, "NED should come out with a little program where the computer purposely changes the information around and offers all kinds of variations because no synthesizer could do that."

In addition to the sampling possibilities of his favorite instrument, Wolf creates unique sounds on it by manipulating and combining various existing sounds. Toward the end of the album's title cut, for example, there's an interesting solo which, on first listening, sounds like a distorted piano. "It's actually a combination of a sitar, an alto sax and an acoustic piano tuned two octaves lower than normal," he explains. "Don't ask me why I used those particular sounds, it just sounded good. I heard it and went, 'Yeah, that sounds strange.'

"What I actually had in mind was something I had done a few years ago, when I played a Minimoog into a cranked Marshall and into a talk box. I tried it again with a special talk box I had built for me, but it just wasn't right. So I tried the sitar with the low piano and then I put the alto harmonics behind it so that it would groove a little bit."

Wolf's mention of the Minimoog brings up the point that he does own other synths, including a DX7 for controlling his TX816s (he also has a KX88 and a KX5 remote for the same purpose), an eight-piece Oberheim modular system, a Prophet V, a Roland Jupiter, a Chroma and the aforementioned Minimoog, but he claims that he rarely uses them anymore. He does use and endorse Bosendorfer pianos and AKG mics which, interestingly enough, are both made by Austrian companies, but for synth purposes he relies almost completely on Alois. Asked about his preference, he refers to another source, "As a famous English poet once said, 'My taste is very simple. I'm always immediately satisfied with the best.' For me and what I do, I think the Synclavier is the best."

N SPITE OF what he may say about his machines, though, it's apparent that Peter Wolf's main concern is making emotional music. "I'm just drawn to emotion, and the more emotion you can get in music, the better it is.

"When I go to a concert, for example, I don't want to hear the same thing that's on the record. As a musician, my main concern is that I hear something that's better than the record, something that touches me at that moment. I want to get the feeling that the night after, there will be a different kind of magic happening because the players in the band will play or sing something that they didn't the night before.

"You see, I'm an old jazz cat and jazz, for me, is not just the music, but a way of life where you go for things that you believe in. You hear something in your head and you go for it; you know exactly what it is and you just do it. And if you don't ever do those things, like if you work with sequencers and they always play exactly the same notes again and again, then the music will always be good, but it will never be great. I need that possibility of greatness, even though sometimes it might not happen. That's why I love to see Miles Davis, because if he's not on it will be alright, but if he's on it's going to be unbelievable. Those are the kind of events that made me become a musician and made Ina become a singer."

Wolf doesn't see any incongruities with the fact that he makes extensive use of a machine to produce his work because, for him, it all boils down to music and emotion. "I'm not one of those guys that punches in for every note, I like a performance. You can punch in if you mess up somewhere, but the music has got to feel right. Similarly, Ina's not a singer that sings one word at a time and then has to have the track put together; I hate that stuff. It's got to be magic because if it doesn't have that swing, it don't mean a thing."
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Hybrid Arts ADAP Soundrack



B EFORE READING THIS article, make sure your computer can't read over your shoulder. This may come as a shock, but beware: Home computers are inserting radiocontrolled processors in human brains and are starting to take over the world via modem. Next time the phone rings and no one answers, load up a game of Pacman and order a corned beef sandwich on rye.

Ooops . . . wrong magazine. Well, now that I have your attention, I do have some great news. Hybrid Arts has finally released their I6-bit stereo sampling machine, the ADAP Soundrack.

ADAP (Analog/Digital Audio Processor) comes in the form of a single space 19" rack (which is the main ADAP unit), a sample digitizer (a gray box that connects into the ST's cartridge port) and the ADAP master software disk. Quarter-inch inputs and outputs are the ADAP's connection to the audio world. The ADAP system, which supports six-voice polyphony, runs on the Atari ST computer (containing at least one Meg of RAM). At the 44.1kHz sampling MT OCTOBER 1987 The wait is over. The affordable, Atari ST-based, 16-bit stereo sampling sound processor from Hybrid Arts has arrived and it may change the way you think about sampling.

Review by Scott Gershin.

rate, a one Meg ST will hold 18 seconds of sampling time or in stereo mode, nine seconds for each channel. Additional hardware features such as a hard disk expander, allowing for stereo direct-todisk recording, will be made available in the future.

ADAP's software consists of five different screens: the edit screen, the keyboard screen, the rack screen, a spectrum analyzer and an oscilloscope. Since the system is software based, Hybrid Arts can keep up with the growing needs of the synth world. ADAP has been created as an open-ended system, and updates are already in alpha testing; and Hybrid Arts has informed me of a long list of features they are planning to add to the ADAP system. (More on these later.)

The Look - Vogue or What?

THE EDIT SCREEN is where most of the activity on ADAP occurs. The screen is laid out with the top portion dedicated to the manipulation and display of the sample. The bottom section is a series of software toggles and commands. From this screen you can save and load files into the system. One of the many great features of ADAP is the ability to load sound files from other samplers via the Atari disk drive. You can then manipulate those files using the Edit screen as well as the other screens. The files that can be loaded at present are the Akai \$900, Mirage, Prophet 2000, E-mu Emax, Korg DSSI, and Roland samplers. Later in the article I'll be more specific on what I think about the system, but for now

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I will quickly state YEAH! It's about time someone came up with a unit that can access the different sample formats and manipulate the samples instead of just being able to play them back.

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For the couch potatoes, or those not using a MIDI keyboard (eg. for postproduction television or film), ADAP has the capability of playing the samples from implementation was somewhat weak, but I was told the next revision will be released in October – mere weeks after this review is published.

The new MIDI features will include implementation of MIDI Mode 4, pitchbend during playback, positional crossfade, velocity crossfade, and having the use of all 128 MIDI notes instead of the 61 keys that

"The sound quality is definitely happening. During my tests I compared it with material I had on a Sony F1, and I didn't find any degradation to the sound."

the computer by clicking the Play square. When clicked by the mouse, the computer will play back everything in memory. Hybrid Arts has also included a Play Range square that allows you to play back only the part of the screen that has been highlighted. Highlighting a part of the screen is accomplished by dragging the mouse over the section of screen that one wants to manipulate or edit.

Just below the Play Range square is the MIDI Enable toggle which lets you trigger samples via a MIDI keyboard. One drawback is that once in MIDI mode, the screen freezes up and the mouse becomes inoperable. By pressing return, the mouse and computer are restored to full function. In the version that I used the MIDI are currently accessible. Other features in the upcoming revision will include a memory indicator, the ability to edit in compressed mode (which I will cover later), further file capabilities and SMPTE triggering, which will allow different samples to be triggered at a designated time code number. A definite plus in the TV biz.

Editing

LET'S TAKE A look at some of the editing capabilities that ADAP includes. Cut, Copy and Insert (paste) squares allow you to reconfigure parts of a sample by cutting and pasting different portions. Cut removes the section of the sample that is



highlighted by the mouse and places it into buffer memory. It can be retrieved by inserting it back into the sample at a different position. You can either choose a single insert or can specify the number of times the insert should be repeated.

These features have proven themselves

invaluable to me when I'm creating sound effects for television. Occasionally I run across a sound that is perfect for the needs of a specific project except for an occasional click, pop, or unwanted stomach growl that could be time consuming to splice physically. By entering it into the sampler (which shall remain unspecified except for the quarter of a million dollar price tag), I can extract all the unwanted data in a matter of minutes and become the hero of the hour (until I give them my bill). ADAP can do it equally well and it isn't even a tenth of the cost.

Swap Buf/Rnge enables the ADAP soundrack to toggle between active memory and buffer memory. By enabling the Mix square, you can mix together the information in buffer memory with that of the memory that is currently being viewed or highlighted. This provides the ability to stack sounds as well as to create new hybrids by mixing the two different files together. Try mixing a cymbal with a reversed cymbal at the signal peak.

Which leads me to the next feature: Reverse Sample. As you would expect, this

allows a highlighted section of the sample to be reversed. (Trivia: Birds sound the same backwards as they do forwards.)



Another way of manipulating a sample is by altering the volume of a sound. Sometimes sampling from tape creates a signal that isn't loud enough, but with ADAP, all you have to do is record the sample and digitally increase the volume – without increasing the noise. Ya-Hoooo! ADAP also allows you to draw and create an envelope to control the volume. (So much for getting stuck with a four-stage envelope.)

If you don't have a MIDI controller, the Stretch and Squeeze function will allow you to change the pitch of the sample. I don't know if I agree with the terminology, but then I wasn't consulted on whether a watermelon has "pits" or "seeds," either.

For those of you who thought you saw God after reading the previous few lines, you should really enjoy the feature that enables a sample or portion of the sample to become inverted. Since ADAP works in stereo, try offsetting the right side from the left and then invert the right side.

If you need a little continuity in your life, ADAP has two types of looping capabilities. The sample can be looped during sustain and/or during the release stages of the sample. And yes, each one can be crossfaded. On the right-hand side of the screen there are two S's and two R's, surrounded by a square box. All you have to do is drag each of the squares to a portion of the sample that you want to be looped and then order out for pizza. By displacing the same lettered squares from each other, you can do crossfade looping. For those of you who work at sampling, these features have a great amount of power and flexibility.

Since indecision and experimentation are a large part of sound designing, ADAP can undo any edit previously made. Be aware, however, that if the edit that you want was created more than one edit ago, you can't get it back with an "undo"

no editing capabilities in Compress Mode, but I was told that this will be possible in the "October" revision.

From the Edit page, you can choose between the left or right channel or stereo. For the ST user with a color monitor, the left side is distinguished from the right side by color. (Since I don't have a high



operation. (Just keep backing-up your samples on disk.)

To wrap up the features of the Edit page, ADAP allows you to be able to zoom in and out, both vertically and horizontally. This is a must for doing precise sample editing and manipulating. While zoomed-in on your sample, the visual artist portion of your brain will be able to draw, redraw, or fix a sample by simply redrawing a section of it. You can draw your own waveforms (I recommend that you do this while zoomed if you're creating samples higher than 10Hz). For sample hackers, fixing up those slightly clipped sounds by redrawing the waves should keep you busy on Friday night.

One trick of making the most out of your memory is to sample at double speed, which uses only half the normal amount of

resolution (black and white) monitor, I'm not sure how each side is differentiated on one of those.)

Last but not least, the sampling rate can be controlled from this page. (Full sampling rate is 44.1kHz, but you can also choose 3I.25kHz or 22kHz.) Remember you're still balancing between sample rate and time.

The Rack

A GREAT IDEA which was incorporated into the Soundrack is a "rack" of softwaregenerated signal processing. This can be used in conjunction with the edit screen or as a stand-alone way of processing incoming information. Currently the rack consists of three "devices," the first of

"As a studio device that doesn't get moved by the hour, ADAP and the Atari fit the bill."

memory, and then to play the sample down an octave. Hybrid Arts decided to help out by including a data compression mode which uses up only half the amount of memory as compared to the normal mode. This gives the sampler every advantage of being able to record longer samples. In the version I received for review, there were MT OCTOBER 1987

which is a function generator (wave generator) which can toggle through a series of waveforms: sine, sawtooth, ramp, and square wave. The frequency can also be adjusted by the rack. This is a good way of incorporating different wave shapes into the sampler.

The other two processors are an echo





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device and a pitch modulator. At this stage, the processors are very basic; but as we speak (or read in this case), people are burning the midnight oil to create new signal processors. Because the rack is software based, updates are easily incorporated. At present I don't think the rack has begun to reach its potential, but I'm excited to see what new features Hybrid Arts can conjure up and to what depth they will go into the world of complex processors. As a trivial note, the rack screen is set up to look like a rack setup. Perhaps the band of the future will have a couple dozen Atari monitors, each containing the modular effects rack screen. Bets are on Zappa or Devo

Oscilloscope

THIS SCREEN IS particularly useful in monitoring the gain of the incoming signal so that distortion and clipping don't occur. The screen will also show a representation of the signal entering the system. A "freeze" function will be incorporated in the next update which will allow the operator to freeze a moment in time and then be able to evaluate the complex waveform.

Spectrum

THE SPECTRUM SCREEN provides the MIDI-hacker and serious operators with a spectral analysis of the sample. Unlike the Fairlight and the Synclavier, however, it is only two dimensional. You get what you pay for – and in this case you get quite a bit for the present and even more when you consider the potential. The current screen is very simplistic, but as all good software users know, "It's in the next update."

The Management Department

THE KEYBOARD SCREEN is the file and sample manager. From this page, you can assign a sample or file to a range on the keyboard – which is illustrated on the top portion of the screen – by highlighting the name and dragging it over the desired keyboard area. The assignment of which MIDI channel is to be used when and where is also made on the keyboard page.

What Do I Want to Do when I Grow Up?

NOW THAT I'VE covered the main features of the ADAP Soundrack, let's discuss and review some of the uses. First, for those of you who are concerned with the lack of advanced MIDI implementation, the folks at Hybrid Arts informed me that MT OCTOBER 1987

World Radio History

it was not their goal to create another sampler but to create a device that can manipulate sound and be known as more of a "sound processor." Since the Atari is you'll be impressed by the sound quality, which is, after all, the most important part of any musical device. In this case, hearing is believing. The only awkwardness in the

"While zoomed-in on your sample, the visual artist portion of your brain will be able to draw, redraw, or fix a sample by simply redrawing a section of it."

not exactly a *rugged* computer, using it in a live situation would force you to deal with the usual problems that go with taking computers on the road. As a studio device that doesn't get moved by the hour, ADAP and the Atari fit the bill.

The sound quality is definitely happening. During my tests I compared it with material I had on a Sony FI digital recorder and I didn't find any degradationto the sound. ADAP unfortunately lacks the ability to affect the tonal portion of the sound since, at this time, the unit has no filtering. On the flip side, ADAP has a lot to offer those of you working in the sound effects industry or those who just enjoy manipulating sounds and samples. ADAP provides a lot of the features found on devices that can cost ten times or more the price of the Soundrack.

Because most of the sound manipulation I've been creating for television has been done with the use of synthesizers and audio processors, I find that the ability to cut and paste sounds without having to wait for the computer to download them into a sampler is a big plus.

I do recommend that those of you who are interested in ADAP also invest in a Mega ST or a 1040 upgraded to handle four Megabytes. I found that one Meg was used up quickly, and to really get the manipulating power, four Megs of internal RAM is recommended.

Something that I've covered briefly so far is the ability for ADAP to read the disks from other samplers. This feature alone makes this package very tempting. I loaded in some samples I had for my S900, and they loaded without problem and sounded great. The only thing that is different is that ADAP sees all the samples as one long sample, so after loading in the file I had to separate the sounds into individual components.

Finally the Conclusion

IF YOU'VE AUTOMATICALLY jumped to the end to read the conclusion, remember that you won't collect your two hundred dollars when passing "Go."

If you're one of those people who is still suspicious of the ADAP, I recommend checking out the unit for yourself. I think MT OCTOBER 1987 system is that the Digitizer has to be connected to the cartridge port, effectively making your terminal wider, and its connector is a piece of protruding PC board that *could* easily break off. The reason for the box being so close is attributed to the speed of transferring data over a certain distance.

So if you're interested in investing in a sophisticated sampling processor, this might be what you're looking for – as long as you're willing to play the software game.

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hotography Ed Colo

TODD RUNDGR THE EVER-POPULAR TORTURED ARTIST SPEAKS

What is there to do when you're not producing bands like XTC and Bourgois Tagg, writing for a Broadway musical, scoring films, performing benefits for UNICEF, and preparing to record your next solo album? A US tour as a one-man band seems to fit the bill for Todd Rundgren.

ROM A MUSICIAN'S standpoint, Todd is a pioneer - not only for exploring the music industry with his many experimental solo recordings in the '70s, but also for his work with Utopia, the progressive rock outfit which made its debut in 1974. But one way or the other, the mark of Todd Rundgren is left MT OCTOBER 1987

Interview by Rick Davies.

on everything he touches, and even Utopia displayed a sense of humor very unlike other progressive bands (as became very obvious on Deface the Music, a Beatle-esque spoof).

Now, nearly twenty years since the release of the first Nazz album, Rhino Records is re-releasing the entire Todd Rundgren catalog on CD and direct-tometal mastered vinyl. And to rop it off, Todd's current T.R. in '88 US tour is being promoted with the slogan "Am I President Yet?" And that's hardly the whole story.

Back in the April issue of MT, we had a look at how Todd was performing solo, with the aid of an IBM-based sequencer

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► (Texture, written by Utopia-fellow Roger Powell, naturally), a rack-full of samplers, a couple of keyboards, and a Fairlight CVI (Computer Video Instrument). I had the chance to catch Todd in interview mode between two Los Angeles performances. He doesn't express a fondness for interviews and seems to prefer to get on with projects

at hand, leaving fame for those who really want it. If his catalog and production credits don't make it clear enough, the fact that he's still going after two decades in the music business makes it clear that Todd Rundgren has plenty to talk about.

"In general I *enjoy* playing, I enjoy singing. The biggest drag about touring is just the traveling part. It hasn't been so bad this tour because we have large breaks. The thing is that if I had a band, I would have to be working a lot harder because you have to be making more salaries, and you can't take off a week and leave everybody sitting around – you have to pay them for the week. In that respect, it's made the whole touring thing a lot easier by doing it all myself."

Doing it all himself is probably what Todd Rundgren is best known for. This approach has allowed Todd to produce music on his own terms (for the most part), and to take it in any direction he chooses – regardless of current trends. Still, his determination hasn't alienated him from the just finished mastering the forthcoming album by Bourgois Tagg, leaving a break in his schedule for the tour.

Gone is the IBM clone and the Texture sequences. An MC500 has taken their place, though Todd now waits for the upcoming software option that will make the MC500 more performance-oriented. Still, the technology is on hand to serve as

"I don't think anybody, or any combination of machines, could have done a better job than Prairie Prince did – no matter how much time they spent trying."

public, but rather it has earned him a dedicated cult following worldwide.

One thing that Todd's fans can rest assured of is that his next album is not going to be like the last. Still, there is a feeling of continuity from one project to the next, whether he's producing an album for himself or someone else. Most recently, Todd produced XTC's Skylarking album, and at the time of this interview, he had



Todd's backup band, and not to dominate, and Todd has no problem leaving it alone while he performs several of his classic tunes like 'Love of the Common Man' and 'Can We Still Be Friends' on acoustic guitar or his recently-acquired Roland digital piano.

While it might seem as though MIDI and sequencers and recording go hand in hand, Todd makes it clear that the role of technology changes when he's back in the studio.

"MIDI is a useful thing for slaving other keyboards, but as far as using it for sequencing or something like that, I hardly depend on it at all.

"The one album that I was involved in that I really tried to make heavy use of sequencing and things like that, was one of the more miserable studio experiences in my life, and I think that a lot of people will agree that it makes a studio experience extremely miserable. It removes all the human vitality out of the process when you get down to like nit-picking a note at a time, and I don't think music was ever meant to be that - at least music that is performed for other people. If you're a conductor, you can rehearse the hell out of the orchestra to get them to play exactly a certain way, but everyone realizes that when you perform it live, there are factors that you will never have control over that make this performance so worthwhile and different from others - that make it an event.

"I suppose it's justifiable in the studio to say that you are going for an ultimate performance because it's going to be played over and over again. But people make the mistake of thinking that it's the *machine* that's capable of delivering the ultimate performance as opposed to some inspired human performance – it's the mistakes that characterize the performance."

It might seem like a bit extreme to rule out sampling technology in the same breath as sequencers, but Todd really does find the whole concept of drum sound replacement "bogus."

"I never have, and probably never would, replace the drums I record. I make them sound as good as I possibly can. I think they sound *better* than sampled drums. I think you can tell it was a person playing them, and I prefer that. In cetain respects, you may have some technical thing that goes wrong during the course of a part that you didn't detect. You may have to replace one snare in the intro, or a couple of snare beats in the bridge, or something like that, but I would rather do anything than program the drums at this point. There are too many good drummers around to go through the hassle of programming drums.

"I have done a lot of programming, but that is, to me, not representative of the best music I've done. I'm not the world's best drummer by a long shot, but I think the records where I play drums sound better than the records where I program drums."

Strange to hear this from the man who brought the world A Cappella, the all-vocal 1985 album created with a blend of vocal overdubs and samples.

"Since I was using sampled vocal sounds the only way I could do it was to trigger them with machines. But I would say even *that* was kept to a minimum on the A *Cappella* album. I did one or two songs where the machines triggered some vocal drum sounds. And then most other instances, I actually played them by hand, playing the keys, you know. That was an Emulator I. It was a crappy sound, but the only thing available to me at the time."

ODD PLANS ON finishing up his soundtrack work by October, and then will start on his next solo album. The approach he's going to take next comes as no surprise. "I'm going to use lots of players. I've met a lot of good players recently, and I want to have a chance to interact with them and give them something that gets them excited, and watch what happens. You see, that's the other good thing that's missing when you play with machines; they don't get excited. They don't ever think that this is, you know, fun. I think that becomes apparent in a record. You can tell when players are getting excited - they speed up.

"When I was working with XTC, they had all these theories about how to make the synthetic drums sound like a real person because they have no drummer. We did one song using a drum machine, 'Supergirl,' and that again was the most horrible experience of the album in terms of putting together a rhythm track. It was just a total nightmare. We spent an entire day, and at the end of the day we had the bass drum and the snare drum. It had this effect of causing everybody just to listen to it too hard, almost every single beat. You know, we'd go through and lay it down, and say 'Fine,' and someone would say 'No, let's go back and change this one beat.' The reason why was because you could go back and change the one drum beat - so then everybody insists on going back and changing the drum beat. If it had been a

real player, none of that would ever come under consideration.

"In some ways it's more work, more headache. You start to think that you could reproduce what would be the ultimate drum performance according to some



drummer. They would do things like, in order to simulate a real drummer's excitement, during the course of a song, slowly speed the machine up. (Laughs.) That's just like some kind of a dodge to try and make it sound more *real*. You want it to sound real, get a drummer – it's easier, much easier as far as I'm concerned. I don't think anybody, or any combination of *machines* could have done a better job than Prairie Prince did – no matter how much time they spent trying."

Todd's production focuses on other things than just the downbeat, and he has

too heavy. So using graphic equalization, I have the ability to find exactly what that frequency is, and notch it out, or find the weak frequencies in a voice and give them a little bit of a boost - to be able to put a little of a crystaline clarity without sibilance getting too severe. I have my own special set-up for getting rid of excess sibilance so that I can keep the voice present without becoming too hissy - and that's the combination of side-chain equalization and gating using a gating limiter. I use, for instance, a Gain Brain gating limiter in the side chain with Maxi-Q EQ to pick out the sibilant frequencies and then side-chain into the Gain Brain and adjust it accordingly.

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"It's essentially a modular de-esser. I haven't found a de-esser that works transparently enough, but this is extremely transparent. Most de-essers don't give you control over the attack, release and all the other factors that a limiter gives you control over. I suppose somebody makes one.

"I have Drawmer gates and they have the ability to do the same thing, but they are just too brutal in the way they work. I've always found the sound to be too obvious. The gate response is too obvious when you're using it as a de-esser. I think the Drawmers work real well as gates.

"I don't have any problem with sound. Sound is a transparent thing. At least in my work, I very rarely get off on some sound tangent. We may get off on a tangent looking for sounds; for instance when you're doing keyboard overdubs, you want to get something that's original. That can

"When you're doing keyboard overdubs, you want to get something that's original. That can take a long time considering all the sounds that have been used already."

set up his own studio in upstate New York to fit the bill. "In terms of effects, I invest most of them in the vocals – various ways to get vocals to sound interesting. I haven't found that an Exciter is necessary for me. I have extensive EQ and I also have special techniques that I use when I record the voice to make it sound present, the way I like to hear it.

"If you have a good mic, then you don't need any of the other junk, really. A good mic and a good, clean compressor. I've always preferred a good condenser mic, usually a Neumann of some kind, and I usually use an 1176 (Urei) limiter with the fastest attack and release times.

"Vocals are probably the most dynamic instrument; the one that covers the broadest frequency range. In my studio I have graphic equalization on every channel, and that's one thing that helps me get the vocal sound I like. I can notch out specific frequencies in a person's voice that will sometimes overload. Everyone has a certain area of their voice that, in terms of timbre of the voice, will tend, when they get close to a microphone, to come on a little bit take a long time considering all the sounds that have been used already.

"I would do anything to avoid using machinery in the studio if possible. I consider the creation of music a particularly *human* exercise. It's fine having a machine play it – in some instances it can certainly be technically correct in that respect – but machines don't listen to music. So I think that the bottom line is that people want something a little more aesthetic, and it's often just much more trouble to program something than to get somebody to play it. I think the only justification for programming is if you want that mechanized, Kraftwerk effect."

EQUENCERS HAVE PLAYED their part in Todd's music over the years, as evidenced on the very electronic *Initiation*, on which he and Roger Powell put together some heavyweight textures.

"Well, even that was kind of meatball. I was doing that on the fly, half of it. A lot of that stuff that's at the end of the second \blacktriangleright

more texture.

▶ side is the result of several days of patching up this old-style synthesis. This was in the mid-'70s; this was a giant wall of Moog synthesizers, with the old kind of analog sequencer. The number of notes you could get into a sequence was a factor of how many sequencer modules you had, rather than memory or something like that. So you could load them all up with some kind of melody, but you could change it by switching them off. You could switch off one element of the sequencer and it would suddenly change the whole rhythmic and melodic structure of the song without having to get in there and do things like note editing. So over the course of about two or three days we did a lot of experimentation and recorded it all. And then afterwards cut it up and edited it into something semi-musical, and overdubbed guitar and other things on top to give it

"It was initially a 'performance' in that respect; we set up a machine according to some performance parameters, turned on the tape, turned it on, and went through and started changing things. Changing melodic elements, changing a transposition, switching sequencers in and out, changing some of the filtering and stuff like that, and then afterwards going back and editing out the sort of bad transitions - where we did something by accident, or something just didn't sound right."

With all the hoopla going around about digital recording and editing, Todd prefers to stick with tape formats which allow him to use the tried and true cut and splice methods he's developed over the years.

Tape editing remains one of Todd's most powerful production skills, and something which, in these days when sequencers and samplers are promoted as the cure for all that ails you, more musicians would do well to recognize.

"On the last album that I produced, with Bourgois Tagg, while we were mastering, we were cutting pieces out saying: 'This is too long. Cut this out

"I had mixed the Skylarking album to a Mitsubishi digital format only because you could cut the tape. You can splice that format, and the kind of production the XTC album was, there was splicing all through it. The way I do mixes, I don't do automated mix-down. I tend to mix in pieces - a lot of pieces. I may be mixing a verse at a time. Because the way I have the board set up I may have three different types of ambiences and EQs set up for different parts of the song, and I have to go through and mix them - mix one part, and

major labels, conglomeratized and started running it from the accountant's office. And only those things that sold, and only those things that pandered, were things that were encouraged and tolerated. And that's why music sucks.

"I don't think that in a major way this came from within the industry, and it can't necessarily be blamed on an audience. As a matter of fact, Frampton Comes Alive was the result of a cult following. It was a cult following that pushed that album (laughs with irony) into a position where it could

"For getting rid of excess sibilance so that I can keep the voice present without becoming too hissy - I use a combination of side-chain equalization and gating using a gating limiter."

adjust, mix another part and adjust, then go back and splice them all together.

"The first album that I did direct to metal was the XTC album, that I thought came out great. There was a lot of program on it, but it sounded fine. And Rhino is putting out all the re-releases of my albums on direct-to-metal master"

Todd's production is definitely Todd's, no question. Yet he is also a virtuoso when it comes to recreating the sound of other eras. On Faithful and Deface the Music, this fact was made loud and clear. Put alongside the volumes of other Rundgren originals, these seem to indicate that something different is going on inside this fellow's head.

"Well yeah, I'm kind of stuck in that phase. I depend heavily on the material, rather than impose production values. I think my influences pre-date even '60s pop music. It's just that my personal feeling is that in the '70s, particularly because of certain records like Frampton Comes Alive, and stuff like that, record companies got into this mega-million, multi-million seller album concept. When that happened, everything crawled out from under the rug and got into the record business. Multinational corporations bought up all the

become a multi-million seller. And once that happened, everything went to shit.

"And I remember it clearly. It used to take the Rolling Stones a couple of months to sell a million records even if they were one of the most popular bands still in existence. If somebody sold two or three million albums, that was considered 'Wow!' Then Frampton Comes Alive sells eight million albums. Five to eight million albums suddenly is the yardstick for anything."

It's safe to say that Todd also has built a cult status for himself in a similar way. But on his current solo tour/Presidential campaign, the stage gear is adorned with messages like "Fawn Hall Shredding Party" and "Reagan Lied," and his performance features Todd perfectly at home in his portable performance rig, with the classic set of songs that his fans have been waiting to hear on the re-mastered releases.

He has a live solo guitar performance coming up for a UNICEF telethon which will be internationally broadcast. Then there's the music for Joe Papp's 'Up Against It' to be completed, and the soundtracks to 'Elvira, Mistress of the Dark' and 'Zippyvision,' and a new solo album, of course.

Is he a true star yet? You bet.





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IBM Music Feature Yamaha Playrec Sequencer



The new plug-in card for PCs and compatibles marks Big Blue's entry into the world of synthesis

F I HAD been called upon five years ago to predict which computer manufacturer would be most likely to endear themselves to the heart of the music world, I probably would have chosen Apple Corp. After all, the image they projected then, and still do to a certain extent, was that of the maverick, standing up to a de facto computer standard (MS-DOS), and offering an alternative way to work with computers. Its founders were the epitome of the American Dream, building a multi-million dollar-a-year operation up from the garage where they started. The whole stature of the company was such that they were bound to produce products that would meet with the enthusiastic approval of the musical world. With the introduction of the Mac and its icons, drop down menus and general user friendliness, along with some (at the time) highly sophisticated sequencing software, it would have made my prediction come true. 48

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and MIDI. Review by Chris Many.

If at the same time I had been called upon to select the manufacturer least inclined to forward the marriage of music and computers, I would have picked IBM. A staid, mainstream computer company, long known for its Mainframe products that, at the time, was quickly carving up the business sector with the IBM PC, I figured Big Blue would be slow to recognize the merits and market of the music world. My prediction would have come true there. too, if it wasn't for the introduction of the "Clone," the "Compatible," and the subsequent drastic drop in price.

With the introduction of cost-effective PCs and Roland's MPU-40I, it's suddenly become a market for a growing number of software designers. There are plenty of excellent sequencing programs available for the IBM PC/compatibles and more and more, we're seeing studio and home musicians opt for a computer that will perform their music and double as a business machine. And how about all the

men and women who wear gray suits during the day, and turn into metal freaks at night? An enormous base of IBM PCs exists in the business community, and lots of the people who are familiar with a PC/ XT or AT at the office are going to feel very comfortable about using a clone in their home environment. For the cost of a MIDI card, an inexpensive synth and a sequencing package (easily less than a grand these days), this huge base can enter the MIDI world as well.

Now IBM may be a bit slow to react sometimes, but once a decision is made, it's usually carried through in a big way not always successfully (witness PC Jr.), but at least with some corporate muscle and money behind it. Finally realizing that there is a market for music, IBM has entered the music foray with a surprising product: the IBM Music Feature.

Rather than spend mega bucks on R&D, IBM wisely looked over the field of music manufacturers and entered into a MT OCTOBER 1987

relationship with one of the big guys to create and market a product under the IBM banner. Guess who? None other than the company who made FM what it is today - Yamaha. So we now have two big corporations walking hand in hand, (hopefully) coordinating the best of both worlds into a product that will bring music to millions of PC owners.

What It Is, What It Is

THE IBM MUSIC Feature (MF for short) is a card that fits in a slot in your PC, just like any other peripheral card does. It contains two output jacks for stereo speakers, a headphone jack and a MIDI adapter jack. Also included is a MIDI box with In, Out and Thru ports which you connect to the back of the card. Unfortunately, the interface is not compatible with Roland's MPU-401. The reasoning given for this is because of the buss architecture of the IBM MF and some very intensive and intimate I/O between the PC and the card - as opposed to the cable protocol of the MPU-401. But with all the software currently in existence for the PC which is MPU compatible, it seems a bit short-sighted to omit the compatibility factor. The existing software packages will need to be redone to support the MF, so now we have one more "standard" to contend with. But enough of that. How does the card sound?

I must admit I approached this product somewhat sceptically. I had worked with other synth cards for the IBM within the past year, and each one was noisy virtually unusable in a recording situation. The signals constantly flowing across the computer's motherboard makes for hum and other annoying sound qualities which are verboten in any recording environment, home or studio. So after inserting the card and hooking everything up, the first thing I did was boot up my computer and crank the speakers to the max. Hiss, of course, was there, but that's all. No 60 cycle hum, no buzz, no electric crosstalk. just the normal sound you'll get when you open the gain up all the way. So far so good.

Now you have to be able to get to the sounds on the card and the IBM MF package also includes a small program with a demo on it which allows you to do just that. (You can't really do anything extensive without some kind of software support.) So on booting up the program, I asked for the Sound Demo first. Lo and behold, it sounded just like one of Yamaha's recent four operator synths (what did you expect?). As a matter of fact, it sounds exactly like an FB0I. And that's just what it is: an FB01 on a card, with stereo outputs and a MIDI interface kit. It may not cause non-PC/clone owners to drop everything and buy a new computer, but for those musicians who MT OCTOBER 1987



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already own a PC, it is certainly well worth further investigation.

Like the FB0I, the card is eight-note polyphonic and multi-timbral. If you want, though, you can have up to four of them in your PC at once, which amounts to 32 clean, independent FM voices. Not bad.

Another nice point to be aware of is that software houses are already lined up and developing programs that will take advantage of the MF, including Texture (distributed by Dr. Ts) and Personal Composer from Jim Miller. Electronic Arts, Alfred Publishing Co., and Electronic Courseware Systems are all developing programs that are geared more towards the consumer and educational markets. The first software product to support it, however, is a sequencing package from Yamaha (surprise, surprise), called PlayRec.

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Sequencing with PlayRec

PLAYREC ACTUALLY CONSISTS of two sequencing packages in one: an entry level program, geared to the "non-musician" (lots of fun to play around with) and a moderately acceptable implementation of the same program for the home recording enthusiast. Professionals can use it, too, it's just that nowadays you can get lots of programs to manipulate music, and a serious composer will find things missing from PlayRec that are readily available in

other programs. (For example, there are no tape sync functions. The best you can do is to have PlayRec driven by a drum machine or some other MIDI device, which is itself driven by sync pulse from tape.)

Anyway, the sequencer is linear in nature, instead of being a drum machine pattern link-type. There are no cut and paste functions included per se, and sequences are laid in as you would on a multitrack. When overdubbing on the same track, you can either merge the material you just recorded with music already on the track or replace the track with the material you just recorded. No punching in and out, and no note editing; in short, a rudimentary sequencer that lets you play around with the IBM Music Feature and is oriented towards the firsttime user

This does not detract from the quality of the FB01 on a card, however, and as more and more companies come out with pro level software it will come into its own as a useful addition to your PC setup. You can use it as an external instrument right away, by setting it into Single mode and using another computer and software package to sequence your music but, of course, this would negate many of the advantages of a computer-based synth.

Some parts of the PlayRec program are fun, though. The Accompaniment Block is one such feature that takes its cue from

those little (and some not so little) organs you see in the piano shops in your local mall. Parts for Chords, Bass and Percussion are preprogrammed and automatically generated by PlayRec when you press a single key. Thirty-two rhythm patterns are included for Big Bands, Swing, Reggae, Disco, Rock and Country. They're not much good for anything other than playing around or showing off your MF to friends, but you can program your own patterns and store them. You can also mix the levels of the instruments, assign stereo playback location, quantize them and set the duration value of the notes.

A chord generator is also available in the accompaniment mode which lets you play a chord with your left hand while PlayRec configures the appropriate backup, so you're not just stuck with majors and minors. Keep in mind, though, MF is an eight-voice, polytimbral synth; so if you are using seven voices in your accompaniment pattern, that leaves one monophonic lead part available to play in the right hand. If you have two, three or four cards installed, this makes life a lot easier, and you could create some pretty full sounding FM sequences.

Voice Functions

THE PROGRAM ALSO allows you to access some basic voice and configuration parameters of the card. First, you can





choose one of three available keyboard modes that are available on the MF: Single. which plays only one assigned voice (eightnote poly), Dual mode, layering two voices together (four-note poly) or Split mode, in which you can split the keyboard where you want, assigning different sounds to a lower and upper keyboard section (fournote poly). Any of the 336 voices are available for selection, including an unlimited (except for the size of your disk) storage capacity for your own or thirdparty voices. You'll have to load these into the designated banks, but having an FB01 with its own on-line source of different sounds is very handy.

Voice editing is simple. The documentation is written in layman's terms, making it easy for consumers to find their way through digital and FM synthesis. Although a short paragraph does mention how FM synthesis works, users are referred to the bibliography for further information. Instead of dealing with operators, envelope generators and scaling, you can edit any sound by altering the five available parameters. Articulation (the attack portion of the envelope), Sustain (also handling the decay function), Brightness (controlling the modulator's output level), Coloration (carrier feedback) and Vibrato (LFO controls) are the parameters you can alter directly from within the PlayRec program, as well as



overall volume and transposition of the voice. It's certainly easier to confront changing the brightness of an instrument than it is to figure out the DX method of raising or lowering the volume of one operator or another in relation to the others. Control is somewhat limited, but for the broad marketplace. I'm sure this editing capability is more than adequate.

Features for configuration editing are exactly like those found on the FB0I. You have control over Panning (L, R or both), Portamento, Pitch Bend, Octave transposition, Detuning, Range assignment of notes, Poly/Mono options and MIDI channel assignments.

As mentioned above, the MF is a multitimbral sound source, but the card

operates a little differently from the FB0I in the multiple mode. On an FB0I, if you chain more than one together, it's an even/ odd proposition on playback; evennumbered notes sound on the first FB0I, odd numbered on the second. A much smarter implementation has heen corrected on the IBM MF - you just add to the number of accessible voices, and when you run out on the first card, then you go on to the next one. None of this even/odd assignment.

Summations

ALTHOUGH THERE ARE no new breakthroughs here, it is certainly refreshing to see IBM putting out a lowcost, high-quality expansion card like the Music Feature. If you already own a PC or clone/compatible, you should seriously consider adding one of these cards. If you don't own a PC - well, it's your decision whether you'll want to buy one to use this product; it would certainly be cheaper to get an FB01. All in all, though, good value for the money and a smart move by IBM. And Yamaha.

PRICES IBM Music Feature \$495; Yamaha PlayRec \$79

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we can't go on **BEATING LIKE THIS** part 7



The seventh and final segment of our series on electronic percussion examines a few bugs - as well as a few unusual places to stick them. Text by Matt Isaacson.

N OUR QUEST to explore the length and breadth of The Great Chain Of Electronic Percussion Being (As It Now Is), we have found ourselves in some rather off-route zones which bring the very meaning of the word "percussion" into question. We were confronted by controllers whose playing techniques were quite alien to the average percussionist, despite the inclusion of the word "drum" in their names. As this quest draws to a close, we once again pick up the well-marked trail, at least for a time, and 52

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find that, the end of the trail leads to some relatively basic devices at the very beginning of The Great Chain.

A few months back, we presented an indepth look at electronic drum pads – how they're used, how they're put together, and why. When we tore one apart, we found very little inside. The actual sensing element was a tiny disc of metal and crystal lodged in the center of the pad – all the rest was just packaging, more or less. Here, we will investigate what happens when the tiny disc is brought forth from its bulky package and used on its own in an application – that of triggering electronics from actual drums.

The Subjects

I OBTAINED PRODUCTS from three different manufacturers for evaluation – the Barcus-Berry Model 2050, the Techtonics BEATMASTER SDT, and the Phi Technologies PHI TRAC. They have more similarities to one another than differences, so I'll start with a generic MT OCTOBER 1987

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description and point out differences as they come up.

First, the transducer itself - as described above, is a small metal and crystal disc which does the actual "picking up." For those of you who just gotta know everything, the crystal is made of ceramic which has been formulated to exhibit the property of piezoelectricity, in which stresses applied to the crystal cause voltages to appear between its two faces. Connections for bringing out the voltage are made via the metal mounting disc on one face, and a thin film of silver deposited on the other face. Similar technology is at the heart of contact microphone devices such as the Hot Dot. (Barcus-Berry have long been involved with contact-mic products - in fact, the literature accompanying the 2050 deals primarily with its uses in sound reinforcement, and then goes on to discuss electronic triggering applications.) Incidentally, piezoelectricity is a two-way thing voltages applied to a piezoceramic crystal will stress and deform it, which is the basis of such things as piezo supertweeters and piezo beepers (more on this point later).

The transducer element is encapsulated in some way to protect it and its fragile connections. Techtonics and Barcus-Berry employ the "black goo" method in which the entire transducer and cable are coated by a continuous film of "stuff," while Phi Tech opts for a sealed aluminum can for the transducer. It is worth noting that Phi Tech claims their transducer is capable of withstanding direct stick hits (and I can personally vouch for this), whereas both of the other two manufacturers warned that direct hits would be likely to cause damage. The Barcus-Berry transducer element is the winner in the low size and weight category, but both it and the Techtonics could have benefited from a bit of extra beef in the transducer packaging, probably without affecting their performance in most drumming applications. It's true that most capable drummers usually hit the drumhead just where they want to, but accidents will happen The thin signal cable runs 6-8" to a small housing which, in the simplest case (Phi-Trac) is nothing more than a 1/4" phone jack. Standard 1/4" audio cables are used to make the connection to the device being triggered.

The basis of such a mic/trigger is that the transducer is small and lightweight enough to ride directly on a drumhead and pick up all of its vibrations without noticeably changing its sound, especially since it is generally mounted near the edge of the head where its effect is the smallest (and it is safest from renegade drumsticks!). Phi Tech and Barcus-Berry achieve this connection by means of small double-sided adhesive foam rubber pads which are sticky enough to provide a semi-MT OCTOBER 1987

permanent mounting and thin enough to acoustically couple the transducer to the head, rather than isolate it. (They both come with extra pads, in case you change your mind about the best positioning for the transducer - although in the case of the Barcus-Berry, the tenacity with which the adhesive held was enough to dissuade me from trying to move it, for fear of damaging the transducer.) Techtonics comes across lower-tech here with instructions to use duct tape (bring your own) - however, both of the others grant that duct tape may be necessary with their units to remedy a troublesome mounting or to provide additional mechanical damping for the transducer itself. Besides, if your supply of those nifty little pads suddenly runs short one Saturday night, guess what you're gonna wind up using instead (two words, first word starts with "d").

Barcus-Berry and Phi both also use double-sided adhesive pads to affix the connector holder to the drum shell somewhere out of sight below the rim, without the need to drill holes or otherwise permanently deface the drum shell. It is worth mentioning, though, that here, too, the double-sided adhesive stuff worked so well as to be virtually unremovable from the drum shell without



Barcus-Berry - the winner in the low size and weight category.

recourse to some kind of solvent. If your drums have a particularly nice finish, you may actually not want to utilize one of these stick-on pads unless you can live with the possibility that the connector holder may become permanently installed – well, they're pretty small, anyway. The holders allow for easy removal of the connector when desired, but these units are clearly intended to stay with their drums when the set is broken down (again, extra points for the durable transducer packaging used by Phi).

By contrast, the Techtonics connector mounts directly on the drum rim by means of a clever spring-metal clip (hence the SDT, or Standard Drum Trigger, is also available as the BDT, or Bass Drum Trigger, with a larger clip for the larger rim of a bass drum). There's a good reason for the rim-mount - the connector is mounted in a small box containing a bat-handle on/ off switch and a sensitivity-adjustment knob on top, allowing each pickup to be trimmed as necessary without getting up from the set or turning one's back to it (to face the rack of electronics), as well as providing for the quick defeat of an individual trigger by the drummer. (This mounting method also nicely skirts the problems of adhesive pads discussed above - no adhesive anything is applied to the drum shell itself.) I was somewhat disappointed to learn that there is no active electronics (eg. a preamp) inside the box. A preamp would have been good news for a number of reasons, especially in contact-mic applications - the extremely high output impedance of untreated piezoceramics makes them a poor bet for sending a clean signal for any distance through a noisy stage environment, and a

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The Techtonics SDT mounts directly on the drum rim by a clever spring-metal clip.

poor match for the inputs of most amplifiers as well. The Barcus-Berry literature advises that in sound reinforcement applications, a preamp will be needed for optimum performance.

Of somewhat questionable justifiability is the oversized bat-handle switch used to switch the transducer in and out. Easy to find in a hurry, even without looking – but it's not inconceivable that a wild stick swing might cut the signal off (or perhaps break **>**





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the switch - drummers are animals, you know). One further departure of the Techtonics unit is that the transducer itself plugs into the control module through a connector instead of being hard-wired. The designer alludes to the fact that "drummers have a tendency to break things" - this connector makes replacement of the transducer quick and easy, and the cost of a replacement transducer is in fact less than that of a drumhead (although again, carry replacements or you'll be stuck until next Monday). Apart from that, however, it is clear that one would not want to pack up and move a drum set with these control modules still attached, as they are relatively large and exposed. The extra connector means that the modules can be quickly stripped from the set without also undoing the transducers - a big time-saver, especially if one were to opt for cement instead of duct tape on the transducers.

The Tests

TESTS WERE DONE with the transducers running directly into the analog trigger inputs of an electronic drum brain, as well as going into the MIDI inputs of same via a "generic" pad-to-MIDI converter. Audio was provided by a 100W amp driving a very efficient PA speaker – it was at the other end of the room, but loud enough (at times) to overshadow the drums as I sat behind the set – sort of like what might happen on the average club stage.

Just as the trigger pickups are basically similar in design, they exhibited no major differences in performance. The Phi Trac is notable for having an *absurdly* hot signal output (I almost felt that I could plug it straight into a speaker and expect to hear something). No preamp needed here, at least for trigger applications. Having once trimmed the trigger input sensitivity (or, in the case of the Techtonics, the sensitivity of the trigger itself), however, all units behaved more or less identically. Hence, back to general remarks.

Isolation between drums was not much of a problem. The difference in level between a direct hit on the drumhead and vibrations originating elsewhere in the set and carried onto the drumhead from its edges is quite large, and the latter are evidently ignored by a properly-trimmed trigger input. Literature accompanying the Phi Tech and Techtonics units even go so far as to suggest mounting a pickup on the rim of a drum in addition to the one on the drumhead, making the drum rim a separate trigger device. One might imagine that at extremely high monitor volumes, the triggered electronic sound might itself be enough to retrigger its own trigger input, giving rise to the drum version of feedback (the Phi Tech documentation alludes to this possibility). While in the right hands this might become the vehicle for an as-yet MT OCTOBER 1987

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Drum Workshop's Reek Havoc demonstrated his own innovative use of transducers at the Chicago NAMM Show with Drum Fruit.

unseen and no doubt thrilling form of virtuoso performance, I didn't find it easy to achieve – and chose not to sacrifice my eardrums for the sake of art.

One subtle problem I did note was that of an audible delay between the direct sound of a struck drum and the electronic sound which was triggered by it. This has nothing to do with the pickups themselves - the delay comes partly from the chain of electronics (I might guess anywhere from 3-7 milli-seconds, especially with the padto-MIDI converter in line), but mostly from the fact that the monitor speaker was



The Hand is yet another of Dan Dauz's controller creations.

fifteen feet away (that's about 15msec). Another possible contributing factor is that of rapid multiple-triggering, which would act to delay the *apparent* attack of the MT OCTOBER 1987 triggered sound – this was hard to confirm, though. This problem is in one sense unique to acoustic drum triggering, in that "silent" electronic pads don't give the player a sonic time reference against which to hear the electronic sound, even though the actual delays involved are the same, multiple-triggering excepted.

There was one serious problem common to all of the pickups - namely that the response to fast playing was only fair, at best. Again, this is not really the fault of the pickups, but is a consequence of the way in which they are being used. As already discussed, they are basically contact microphones. The output they produce is not a trigger pulse, but an audio signal representing the vibrations of the drumhead to which they are attached. The sound of a struck drumhead goes through very characteristic envelopes of timbre as well as volume - it starts with the sharp stick-impact sound, immediately followed by a rapidly decaying burst of near-white noise, which in turn gives way to a more "tonal," specific sound as the energy of the stick hit resolves into the major vibratory modes of the head. Even when struck rapidly enough so that the drum produces a "sustained" sound, the human ear is able to resolve the individual strokes by keyingin to the timbre envelopes. To your average drum-brain trigger input, though, this looks like just so much noise. The input has no capacity for trigger recognizing timbre information in the incoming signal - only the signal envelope is significant. Preferably, it appears as a very brief "spike" such as is produced by electronic pads, but this is not the case with the output of these acoustic drum pickups. In general, the larger and/or lesswell-damped a drum was, the poorer were the results obtained in triggering from it. (This may be one reason why, for example,



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Oingo Boingo's Johnny Hernandez, who prefers real drums to drum pads for triggering his electronic sounds, plays on a set consisting entirely of very small drums and a DW-style electronic kick pedal – the visual mismatch to some of the huge sounds being played from these little drums can be quite entertaining.)

Stroke and velocity tracking were fairly good on an undamped snare drum up to moderate speeds of single-stroke roll, but pushing it all the way up to "fast" tended to cause irregular response or even outright paralysis of the electronics, because the trigger signal never dropped below the triggering threshold. On the other hand, triggering from a large, tubby floor tom could produce gravelly multiple triggers even from a single stroke because of the amount of time it takes for the head to stop ringing. Adding damping to a drum invariably improved the reliability of the triggering, although of course the sound of the drum was altered in the process. Ultimately, this method of triggering will be most satisfactory for those drummers who prefer highly-damped drums in the first place, or who are very laid-back in their approach to playing (ie. those who stick to more basic rhythmic playing and avoid a lot of fast fill work).

Whether or not you fit into one of those categories, there is some help available in the form of the Simmons MTM pad-to-MIDI converter unit. Unique among such interface boxes, it includes a handful of trigger input processing options aimed at precisely this problem (which, by the way, is the same problem one might experience



The Dauz Baseball satisfies two fantasies at once – Fernando Valenzuela meets Steve Gadd.

in a recording situation when trying to replace a drum sound on a master tape, using the original drum recording to trigger the new sound). These acoustic drum triggers as a group place a big burden on the device which they are triggering to make sense of the "wall of voltage" which

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they present at times. The Techtonics unit, had it included some active electronics of its own, might have been in a slightly better position than the other pickups to offload some of this burden (and give itself a bit of an edge over the others in the process). sake, then by all means save your money and put some of these nifty little doodads to work. After all, if "real" drum pads can be conceptually reduced to pieces of plastic and rubber with piezo discs on them, it follows that the uses to which these discs



The Boot has to be customized to the individual's shoe size.

However, a quick glance at the Simmons MTM manual's description of its trigger signal processing features confirms that neither the problem nor its treatment are trivial. Features such as "dynamic hold-off" (in which new triggers are blocked for a varying amount of time, depending upon the velocity of the last hit) and "percent above last threshold" (which allows new triggers to occur even though rapid playing has kept the trigger input signal envelope from dropping down below the normal "idling" threshold level) were not likely to have been squeezed into this little module - at any rate, not without requiring the use of jeweler's tools to make adjustments.

The Other Possibilities

AS STRIPPED-DOWN as these pickups may seem when viewed in comparison to drum pads and such, there is still one further step possible in the direction of hardware minimalism. As I mentioned earlier, the essential piezo transducer element used in all of these gadgets has much in common with the computer piezo "buzzer" element which is available in any Radio Shack for as little as one dollar, or even less if you know where to look. In fact, open up most any drum pad and that is pretty much what you're gonna find inside. I am not about to suggest, however, that you should save your money by using these on your drum set in place of one of the pickups discussed above - that extra money buys you a device which is engineered to the task, and a degree of convenience and roadworthiness which only a large amount of tinkering could hope to substitute for.

On the other hand, if your needs are not typical, or if you love tinkering for its own MT OCTOBER 1987 can be put in the name of triggering are limited only by one's imagination (although I suppose that physical coordination and public-decency laws come into the picture at some point). For a classic example of what can be done in this area, Laurie Anderson's drum-suit dance in her concert film Home Of The Brave is required viewing – and the most well-known, but not the only, use of this idea.

Another person who has taken some real initiative in this area is Doug Dauz of California. In addition to his own design of a compact, spring-cushioned drum pad (which is an actual product, available for purchase and reportedly doing quite well for him), he sent us along a few of his oneof-a-kind creations, some of which are pictured around the text of this article. These include The Boot (for those with an irrepressible urge to tap their toes in time with the music), The Hand (one trigger pad for each fingertip and a comfortable place to rest your palm), The Baseball (keep it in the infield, though) and last but not least, The Disc (strap it on wherever it fits!). Hey - it's more fun than yard work, you know - why not see what you can invent?

Long may you beat.

PRICES Barcus-Berry 2050, \$42; Techtonics Beatmaster SDT, \$36.95; Phi Technologies Phi Trac, six for \$199.50 (some dealers will sell individually) MORE FROM Barcus-Berry Electronics, 5381 Production Drive, Huntington Beach, CA 92649. Tel: (714) 897-6766

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The third part of our series on MIDI fundamentals examines the challenges and possibilities offered by MIDI sequencers and looks at their place in a typical electronic music studio. Text by Bob O'Donnell.

ONSIDERING THE NUMBER of references to MIDI in our magazine, it's easy to fall under the impression that the whole musical world revolves around this four-letter acronym. In some ways, that's not far from the truth because so many people are using it to do so many different things. If you've been following this series, you've probably already spotted some of these possibilities, but this month we're going to look at one of the most powerful and most important - but also most confusing - applications available: MIDI sequencing.

Before jumping into an explanation of sequencing, however, let's spend a second regrouping and reviewing the basic concepts of MIDI. As pointed out in part one, MIDI is a hardware and software communication standard that allows various pieces of musical equipment to "talk" with one another in an intelligent fashion. The "conversation" which occurs consists of packets of data or messages sent over a MIDI cable that describe musical events – using "events" in a very broad sense here. If you connect two instruments, as described in the second part, then the messages sent from the "master" instrument will tell the "slave" instrument(s) exactly what to do. The end result is that the various instruments will work together as a unified system.

What's a Sequencer?

AT ITS MOST basic level, a sequencer can be thought of as an extra pair (or extra pairs) of hands which plays back music that has been programmed into it. The programming need not be a tedious or confusing process, though; rather, it can be as simple as playing something on a MIDI keyboard. In fact, all you have to usually do with a sequencer is hit "Record" and then start playing. After you've finished you hit "Play" and the sequencer will automatically play the keyboard, not unlike a player piano. Sequencers also usually allow you to enter notes one at a time, however, so you can also use them to create music that you wouldn't normally be able to play.

One of the greatest things about sequencers is that they can play many different things at once, because you can overdub on them. Most sequencers, like tape recorders, have several tracks for recording different parts. If you want each part to be played on separate synthesizers, all you have to do is change MIDI channels before you record each part and the sequencers can record basic Note On Channel Voice messages, but they can't all record MIDI controller information, such as aftertouch or sustain pedal, and other less-common MIDI messages. Similarly, most sequencers allow you to cut and copy sections of music, but not all of them permit you to get in and manipulate the data at the event level - like altering individual note velocities or pitch-bend messages.

Recording a Sequence

A BASIC SEQUENCING setup is shown in Figure I. To record a sequence you need to choose a MIDI channel on the keyboard, set a tempo on the sequencer and hit "Record." The reason for setting a tempo

"Sequencers can generally do more than just record MIDI data; they also allow you to edit it and play it back, and that's where their real power lies."

sequencer will remember all the different parts and their channel assignments, keeping them independent. On playback the sequencer will send the information out to whatever instruments you have to connect to it. So a sequencer fits into the system as a sort of centerpiece; it sends MIDI data to each of the individual pieces and acts as the main control center.

A sequencer can provide these capabilities because its primary function is to record MIDI data. In fact, that's why you may hear some sequencers - such as National Logic MIDI DJ or the new Alesis MMT8 - referred to as MIDI Recorders. Sequencers do not record audio information, however, they only store MIDI messages of various types.

Sequencer Types

SEQUENCERS BASICALLY COME in two varieties: stand-alone hardware devices (including the "built-in" varieties like that found on the ESQI) and software programs designed to run on various personal computers. Each of the varieties has its advantages and disadvantages, making your specific needs the most important factor in determining which kind to use. Hardware sequencers' primary benefit is their portability and their general ease of use, but they often lack the memory and extensive editing options software with dedicated available programs. Computer-based sequencers, on the other hand, require a MIDI interface for your computer, but allow you to see and work with a great deal of information at once.

The other important difference between various types of sequencers - and this is regardless of whether they are a hardware or software product - is the kind of MIDI data they can record and the extent to which you can edit that information. All is that a sequencer records the length of the notes as well as the pitches and it needs to have some sort of reference to determine how long the notes are. When you start the recording process most sequencers put out a click (metronome) at the tempo you've selected so you can play along with it.

Though it is their main function, sequencers can generally do more than just record MIDI data; they also allow you to edit it and play it back, and that's where their real power lies. Whether you want to erase, copy, or transpose an entire section of music, or just fix the velocity level on that C# in bar 62, a sequencer can, depending on its specific features, provide that flexibility.

Sequencers can also be understood as storage devices for any musical ideas that you may have. Though the obvious analogy is to tape recorders, they actually turn MIDI data into a form of storage that retains a similar amount of detail as traditional music notation. Sequencers record the notes that are played, their volume level, their length, as well as initial parameters such as time signature and tempo. This similarity has resulted in the development of software programs which convert MIDI sequence data into standard notation.

The Messages

SEQUENCERS PRODUCE ANY type of MIDI messages which they are capable of recording because they simply "play back" the data that is recorded into their memory. In addition to the Channel Voice messages covered last month, sequencers can produce and respond to System messages such as System Real Time Clock and System Common Song Select and Song Position Pointer messages. (Considering that a sequencer often acts as a system controller this is rather appropriate - see, this stuff does make logical sense.)

Clock messages are used to maintain sync between two or more devices which depend upon timing information, such as a drum machine and a sequencer. In other words, the MIDI Clock messages ensure that the two devices will play at the same tempo and the Start, Stop and Continue commands, which also fall under the banner of System Real Time messages, make sure that the instruments start and stop together. The MIDI specification calls for 24 clocks to be sent per guarter note D and the speed at which these clock messages go out over the MIDI cable determines the tempo at which the music will play.

Song Select messages basically function like Program Change commands for sequencers; they inform the receiving instrument - usually a drum machine or a sequencer - to call up a specific song number. (Most sequencers divide their memory into patterns and songs, with songs being an ordered collection of patterns.) Song Position Pointer messages, on the other hand, refer to the location within a song. Devices which implement this important type of MIDI message keep track of the number of sixteenth notes that have occurred since the beginning of the song and determine the location based upon this count. If a device which recognizes song position pointer data



receives a message, it will autolocate to the appropriate point in the currently selected song.

The additional advantage that some sequencers offer is the ability to also record and remember the timbres used to play the music. Depending on the level of sophistication you want to get involved in, as well as the capabilities of the sequencer you're using, you can do this either with Program Change commands or actually store the synth program parameters via System Exclusive messages.

The System Setup

OK. NOW IT'S time for fun. To really understand how a sequencer works and >

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why it's such a useful tool, you need some more specific practical examples. Starting from where we left off on our system last month, the master keyboard and expander module are connected via a MIDI switcher box. So the first thing that needs to be done is to connect the sequencer into the system (see Figure 2). In this example, the MIDI Out of the master keyboard is routed to the sequencer's MIDI In and vice versa and the expander can be controlled by either of the two - depending on which input is switched in as the controller. Because the sequencer initially has no information to send to the expander, the original setup should have the keyboard controlling it.

Before you can begin recording with the sequencer, you need to decide which channel you want to record on. You also channel can be thought of as a subset of a track. For example, some sequencers have only two tracks – such as Yamaha's QX7 and QX2I – but each of these tracks can hold independent note information for each of the 16 MIDI channels.

So unlike tape recorders, a two-track sequencer can hold multiple channels of musical data without any degradation whatsoever - remember, sequencers do not record audio. Instead of bouncing down, as you would on a multitrack tape recorder, sequencers which have a limited number of tracks generally have a Merge function which allows you to combine separate information on different MIDI channels onto the same track. Some sophisticated sequencers also include an "unmerge" function which allows you to re-separate individual channels after

"An important difference between various types of sequencers is the kind of MIDI data they can record and the extent to which you can edit that information."

need to make sure your keyboard controller is in Omni Off (Mode 3 or 4) because with sequencers, independent channels become essential. Generally, you choose the channel by determining the transmit channel of the keyboard - the sequencer will record that information as well as the notes you play - but some sequencers require that you enter a channel for each track. One interesting "channel" feature that some sequencers have is a "rechannelize" function, which allows them to adjust the channel number of the information they receive. If you own a DX7, which can only transmit on MIDI channel I, or if changing channels on your synth is a difficult process, this feature is a life-saver.

And speaking of channels, it's time to clear up the common misconception about the difference between tracks and channels. A channel refers to the MIDI channel that the notes or other MIDI information was recorded on, while a track is generally the location in memory where that information was stored. Hence a 60 they've been combined – a feature which people who work with audio recorders would kill for.

Other sequencers feature a huge numbers of tracks (would 256 be enough for you?), each of which typically can contain information on a single MIDI channel, if not on all 16 channels. The reason for having such a large number of tracks is to be able to easily edit the various independent lines – sequencer editing is often done by track – as well as providing the capability to compare a number of different versions of a particular musical line, such as different takes of a solo.

Another point to be aware of is that some sequencers can simultaneously record on multiple MIDI channels. If you have a sophisticated master keyboard which can transmit on more than one MIDI channel or if you're dumping a sequence from one sequencer to another, this feature can save you a great deal of time.

The last point that has to be considered before you begin recording has to do with

filters - not the kind found on your synth or in your coffee machine, but data filters. Many sequencers have the capability to selectively ignore certain incoming MIDI messages to preserve memory and you need to decide which type of messages you want to record and which ones you feel you can ignore. Continuous controllers such as aftertouch and pitch-bend, for example, eat up a great deal of memory because each of the location messages they constantly send out takes up almost as much memory as a note on message. Consequently, unless you really need to record aftertouch, pitch-bend and so on, you may want to filter them out.

One other possibility is to sequence a particular line without pitch-bend and then add that later on. You can do that in two different ways: firstly, you can record a separate track of pitch-bend information alone and then merge that with the notes you've already recorded - remember, sequencers record MIDI information, not necessarily just notes. The second way is to use the pitch-bend wheel as the sequence plays back through the synth, so that when you do record onto audio tape you can have the pitch-bends (or modulation via the mod wheel) on the final tape without having to waste space in your sequencer. This may not be the most elegant or accurate solution, but it does work.

A Sequencer in the System

ONCE YOU'VE CONFIGURED everything to your liking you can begin sequencing. Pick a track, double check your mode and channel status on the master synth, hit "Record" and play something inspiring (or at least try to . . .). Assume that the master keyboard can only play one timbre at a time, but that the expander is multi-timbral – that is, it can play a number of different patches at the same time by responding to multiple MIDI channels. (As soon as you start to do any sequencing, you learn to appreciate the importance of multi-timbral operation.)

When you hit "Play" you should hear a MT OCTOBER 1987

roughly equivalent performance of what you played into the sequencer, though it will depend somewhat on the settings of features like quantization and other things specific to individual products. You can adjust the tempo as much as you want and you won't affect the pitch because, again, sequencers merely record MIDI messages – which are nothing more than a stream of numbers.

You shouldn't hear anything from the expander because its input, at this point in time, is being controlled by the keyboard. Even if you change the setting on the MIDI switcher, the expander will only respond to the sequenced data if any of its receiving channels matches up with the sequencer's output. If you want a sound from the expander to be layered on top of the sound from the master keyboard, then make sure the channel for that specific patch does coincide with the channel for that note info, but otherwise put them on different channels.

To record the next track, the first one using voices from the expander, you need to make a few small adjustments. First, choose the MIDI channel you want to record this track on and select it as the transmit channel on the master keyboard, and the receive channel on the sequencer if your sequencer requires you to do this and the expander; they all need to match up. Second, make sure the controlling input of the expander is set to the keyboard. Third, check to see that the receiving channel of the master synth is the same as the channel its track was originally recorded on - that is, if your synth can operate on different send and receive channels. (If not, I'll explain how you can overcome this problem.) Finally, turn the local control of your master keyboard off again, if you can.

The reason for these last two steps can be summed up in one word: monitoring. You'll probably want the sequencer to play back the first part you recorded on the master keyboard as you record this second track, but if the local control is on, you'll end up having both parts playing on the master synth. If you only have a limited number of notes available, you'll quickly run out and quickly become frustrated.

To record a third track, you need to again select the appropriate MIDI channels and then make one more small change: switch the expander's controlling input to the sequencer. If you try to play something now, however, you'll probably not hear anything because the MIDI data from the keyboard is going into the sequencer and staying there. Of course you could connect the sequencer's MIDI Thru to the expander's MIDI In, but then you wouldn't be able to hear the previously sequenced parts coming from the sequencer's MIDI Out.

"So how can I hear both?" Glad you MT OCTOBER 1987 asked. Most sequencers have a function called MIDI echo - or something along those lines - which basically combines the incoming MIDI data from the controller with outgoing sequenced data by "echoing" the incoming MIDI information into the rest of the system via the sequencer's MIDI Out port. In other words, a MIDI echo feature merges what would normally be MIDI Thru data with the MIDI Out information. (By the way, you could have set the expander to have been controlled by the sequencer from the start, but for purposes of the example, I wanted to explain the possible routings of the MIDI data.)

If your master keyboard can't transmit

somewhere into the existing sequence.

If your timing is not quite as good as it should be, most sequencers have a feature called quantization, or auto-correct, which can help you tighten up your music. Though a few different types are available, the most common form of quantization moves the position of the beginning of a Note On message to a multiple of the chosen note value. In English that means if you select a quantize value of sixteenth notes, every note will be moved to a point where it coincides with sixteenth notes. Most sequencers offer a number of different quantization levels, so you can "correct" different parts of your music to different degrees, but if it's overused,

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"Editing features on sequencers may not always be as flexible as a piece of paper, a pencil and an eraser, but they do offer a number of interesting possibilities . . ."

and receive on different channels and it doesn't have a Local Off feature, you can still sequence using the basic method I've described but you need to make a few small changes. First, you have to change the order in which the tracks are recorded: the expander tracks need to be done at the beginning. By using this method, all you have to worry about is changing the transmit channel on the master keyboard for every different part you record. The receive channel's setting doesn't make any difference until you record the final part, using the voices from the master keyboard. The second thing you have to do is even easier: turn down the volume on the master keyboard to simulate the local off feature. Though there is a difference in the internal operations of the synthesizer, this will work just as well.

Editing

IF, FOR SOME reason, you're not happy with the masterpiece you've begun to create, there's still hope. One of the most important aspects of sequencing is the capability to go back and change the MIDI data so that the final result, the music, sounds like you want it to. Editing features on sequencers may not always be as flexible as a piece of paper, a pencil and an eraser, but they do offer a number of interesting possibilities, including some things that would be impossible with tape. As mentioned above, the specific editing features vary wildly from sequencer to sequencer, but it's certainly worthwhile to explore some of the options available.

On a very basic level, nearly every sequencer on the market allows you to easily and quickly transpose any music you've recorded into it. With the cut, copy and paste functions found in many software programs – and some hardware products – you may also be able to transpose just one small section of a piece and then add it quantization can rob a sequence of any human feel.

Another important feature with which you can fine tune your sequence is step editing, or step recording. Up until this point, all the examples have been using real-time recording, which is similar to recording with audio tape. You hit "Record" and play along with a click supplied by the sequencer. Sequencers can also record MIDI data one step at a time, however, so if your keyboard chops aren't up to snuff you can still take advantage of sequencers by inputting notes or chords one at a time. The implementation of step recording - which is often referred to as an editing function, differs among most products, but generally they only allow you to enter note data, including velocity levels, and some Channel Voice messages such as program changes.

With the various types of features available on different sequencers, most of them save their sequence data in a proprietary format. A recent addition to the MIDI specification promises to change all that, however. The MIDI File addendum outlines a standard format for sequencer files which will allow sequences recorded on one sequencer to be played back by and edited on a different one. In addition to saving time when transferring sequences between different products, this new type of System Exclusive data will permit you to take advantage of the best features in several sequencers. For example, you can record a sequence on a product with a good input stage and then edit it on another sequencer which you feel has better editing features. The creation of MIDI Files may also lead to the development of powerful generic editing software programs and other interesting new products.

Next month we'll bring rhythm into the picture by adding a drum machine to the system. Until then, happy sequencing!

Yamaha QX3 Sequencer



HERE DO THESE letters and numbers for product names come from, anyway? I mean, we all know that "X" is this magical, mystical symbol that most hitech synth manufacturers feel compelled to include in order to ward off the dreaded curse of Low Sales, but where did the "Q" come from? I haven't the vaguest idea, really.

At least we know where the "3" came from, since the QX3 represents Yamaha's latest entry in the dedicated sequencer sweepstakes - about halfway between the small, consumer-oriented QX5 and the large, super-duper QXI. Halfway, that is, in price but by no means halfway in features. The QX3 offers so many more advanced features than the QXI, you can almost 62

Following in the footsteps of the QX5, Yamaha's latest in their line of dedicated sequencers offers numerous editing capabilities and the flexibility of a multi-purpose, built-in disk drive.

Review by Howard Massey.

hear the sound of QXI owners' hair being torn from their heads. Mass suicide à la lonestown can be avoided, however, if you realize that the QX3 is actually somewhat compatible with the QXI and that a good deal of data can freely be transferred between the two sequencers.

But let's begin at the beginning (good, original thinking, eh? Well, that's what I'm paid for). The QX3 is, first and foremost, a l6-track sequencer, offering a total memory capacity of about 48,000 notes

with velocity. As a point of comparison, the QXI has an 80,000-note capacity, although it offers only eight tracks of recording. The QXI also offers eight discrete MIDI outputs - one per track - while the QX3 has only two, but any track can be routed to either or both MIDI outputs. An assignable routing scheme of this sort can be a great help when transmitting dense sequence tracks (ie. tracks containing large amounts of controller or SysEx data) along with other, less dense tracks. In effect, it MT OCTOBER 1987 helps to unclog the MIDI traffic jam that can occur in such circumstances: simply route the dense track out of its own port, while the remaining data exits via the remaining output.

One major factor to keep in mind is that the QX3's internal memory is volatile. In other words, like most computers (but unlike most sequencers, synthesizers, and backlit display and - *finally* - Yamaha provides a contrast control so as to make viewing at different angles possible. On the left-hand side is a forty-key keypad (yes, you read right: *forty* keys!) plus several function and cursor keys and an "Enter" key that unfortunately is located where a computer keyboard spacebar normally is. I'm sure you get used to having it there

Disk Drive "Disk operations are a snap, thanks largely to the dedicated "Load," "Save," and "MDR" switches, which keep you from having to fumble through job tables."

drum machines), it forgets everything but its operating system when you turn the power off. Fortunately, there is an onboard $3\frac{1}{2}$ " disk drive for fast and easy data storage – but you'll need to remember to use it often, and you'll have to be careful not to let your kid brother trip over the power cord when you're in the middle of your latest masterpiece. The disk drive can also be used to store generic MIDI storage files (called MDR files) – but more about these later.

The OX3 is also a little unusual in that the transmitting channel number is itself not recorded. Instead, each of the 16 tracks holds data which can then be routed to any outgoing MIDI channel. You accomplish this with a simple command, and a similar one is used for the receive channel routing. For example, tracks one through sixteen can be set to receive MIDI channels one through sixteen, respectively, so that any instruments transmitting on channel nine, for example, can only be recorded on track nine. Changing this is very easy, and you can even select Omni receive for any track (so that it will record incoming data from any MIDI channel - but bear in mind that, since the channel numbers themselves are not recorded, it will be difficult if not impossible to unmerge the data afterwards). This system can take a little getting used to but it is ultimately very flexible and easier to work with than you may think - especially since it correlates closely with audio routing schemes you may already be used to in multitrack recording. In fact, with its dedicated "Run" and "Record" switches and Record Ready controls (where LEDs blink just like the equivalent lights on a multitrack), the QX3 is closer in concept to the standard multitrack recorder than many other sequencers. Like a multitrack recorder, you can put any number of tracks in record simultaneously (and each may be recording the same or different data, depending upon how their channel assignments are set) and you can bounce tracks together to an unlimited degree.

From the Outside In

FIRST, THE DISPLAY. For a dedicated hardware sequencer, this Is quite a good one: two lines of forty characters each in a MT OCTOBER 1987

eventually; but for those who toil over computers and/or typewriters a good deal of the time, it would probably be easier to find it over on the right-hand side. This is a minor quibble, though.

Each of the forty keys can perform several different functions - some enter note values, others enter timing values, and still others enter dynamics or act just like plain numeric entry keys. All these keys can double as character keys when used in conjunction with the "Character" key, and lower as well as upper-case letters are supported when naming tracks and files. The ubiquitous Yamaha "Shift" and "Job" keys are present as well, allowing you to perform a myriad of other functions. The "Shift" key calls up a series of different commands all printed in green, while the job table of the QX3 is silkscreened on the front panel. A couple of very special function keys, labeled "FI" and "F2," are also available. They give you the option of predefining a macro of up to 128 keystrokes and then executing those keystrokes instantly. This is a wonderful timesaver when entering in repetitive data or long strings of notes or System Exclusive commands.

Immediately to the right of the keypad is a series of eight switches, numbered "1/9" through "8/16." These act as record ready switches for the various tracks when in record mode, and as mute switches when resolution of 384 clocks per beat. The only reason this may have some impact is if you use the QX3 to play back sequences that were created originally in the QXI – quantization will have to take place in the process and may lead to unsatisfactory results if the QXI sequence had a lot of syncopated or arhythmic data.

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Beneath the rotary dial and its four function switches are eight larger and three smaller switches that are responsible for most of the normal sequencing activities. Included are separate switches for loading and saving operations (to disk), an MDR switch for generic MIDI data transfers, separate "Record," "Stop," and "Run" switches, an "Edit" switch, and a very handy "Exit" switch which allows you to abort any operation or exit from any mode back to play mode. Three location switches are also available, labeled "Top," "Loc I," and "2-3," which allow you to quickly cycle to either the top of your sequence, to a predetermined autolocate point (Location I), or to loop between two other predetermined autolocate points (Locations 2 and 3). This last feature is particularly useful if you want to work on one small piece of your sequence and need to keep listening or punching in until you get it right. It's worth noting that these three switches very closely emulate positional switches commonly found in multitrack remotes - obviously, someone at Yamaha has been spending a lot of time in the recording studio! Seriously, this is vet another nice touch that makes the operation of the OX3 second nature to anyone who's ever operated a multitrack tape machine.

Working It Out

AS WITH THE smaller QX5, there are three kinds of record modes: real-time, punch-in, and step record. The punch-in record mode of the QX3 is quite a bit more comprehensive, however, offering no less than three different types of punch-in

Editing "The QX3 includes an excellent new feature called Spot Extract which permits you to do highly exotic manipulations like extracting the first beat of every bar and moving it slightly forward in time."

in play mode. Immediately beneath them are four switches, labeled "Tempo," "Measure," "Step," and "Clock." These determine some of the functions of the single rotary dial. While vaguely reminiscent of the so-called "alpha" dial used in some Roland products, it has small incremental clicks, making it easier to use for fine data entry than a smoothly-rotating control. Depending on which of the four above-mentioned switches are pressed, the dial will change tempo or step through events in memory by measure, step, or clock.

The QX3 uses 96 clocks per beat, unlike the QXI, which used a rather over-the-top

recording: "Just," which allows you to punch in and out on the fly, either by pressing the "Enter" and "Exit" keys or by using a footpedal; "Meas," which works the same way but automatically punches in and out at the next available "top of measure" mark; and "Auto," which allows you to preset both punch-in and -out points and simply executes them automatically.

Real-time recording is extremely straightforward but, while real-time playback can easily be looped, real-time recording cannot; you won't be able to simply keep zipping through the track over and over and stop when you get a good take. Not a major complaint, but something that could perhaps make life a little easier for the user. Step recording is pretty much everything you've become used to, except that the presence of dedicated note, note duration, and dynamics keys makes the task a whole lot easier. You can also enter notes directly from your MIDI keyboard, though only note numbers and not velocity increments are recorded – meaning that you'll still have to manually enter velocity values. I

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QXI can also be transferred and converted to QX3 files. QX3 files can be sent to the QXI as well, though only tracks I-8 will be transmitted.

You can easily get around this problem by merging the QX3 data in tracks 9-16 over to any of the first eight tracks before transmitting. You can also use the QX3 disk drive to back up DX7IIFD disks, since both instruments use the same type of disk format. The advantage of doing so is that

Step recording "Step recording is pretty much everything you've become used to, except that the presence of dedicated note, note duration, and dynamics keys makes the task a whole lot easier."

think this is a real shame, because a sound can change drastically when you strike a key harder or softer. It would have been nice to at least be able to see what the velocity value is when the key is struck. The built-in MIDI monitor will let you do just that, but it's a royal pain to keep switching between monitor mode and step record mode.

The QX3, in common with the QX5, is capable of recording and playing back System Exclusive data as well as the channel data traditionally stored by most other sequencers. This not only allows you to create generic Bulk MDR (MIDI Data Recorder) files on their own (which the QXI and DX7IIFD can do), but also allows you to incorporate parameter changes into a sequence itself! This is an exciting new area in sequencing and one which more and more artists will hopefully begin taking advantage of in the months ahead.

All kinds of incoming MIDI data - Note, Controller Changes, Velocity, System Exclusive, and so on - can be viewed when the MIDI Monitor mode is selected, and this can be a big aid when troubleshooting. Any of these events can be selectively filtered out, and the QX3 can also send and/or respond to pretty much all of the applicable MIDI System Common commands, including Song Select and, of course, Song Position Pointer. In fact, incoming Song Select data will actually cause the OX3 to seek the equivalently numbered song file and load it from disk into memory - all from a remote command!

Disk operations are a snap, thanks largely to the dedicated "Load," "Save." and "MDR" switches, which keep you from having to fumble through job tables or use double-click or shift/select-type operations found on other Yamaha products. Up to II2 files can be stored on a double-sided disk, with a total disk capacity of 720K. As mentioned above, files may be of several different varieties: sequences (called "songs"), song chains (collections of songs in a particular order), system setups, bulk (MDR), or bulk chains. The drive can also read "E-seq" files created with the CX5M MIDI recorder program or some Electone consumer instruments. Files created in the 64

the memory buffer of the QX3 is much, much larger than that of the DX7IIFD, so that backing up takes much less time and requires far fewer changes of disk. A status light on the front panel goes on whenever the drive is in operation so you know when not to insert or remove a disk.

The QX3 can either use its internal clock or can be synchronized to an external clock, either FSK or MIDI clock. Somewhat surprisingly for a sequencer in this price range, it tracks neither SMPTE nor MTC, though various kinds of external converter boxes are available which can convert these to MIDI clock. As mentioned above, MIDI Song Position Pointer and Song Select messages can be both received and transmitted. When the QX3 is listening to an external clock signal, a status LED lights up. This is a nice touch which can save you many embarrassing moments of trouble-shooting if you're wondering why pressing the "Run" button produces no response.

If you are using the QX3's internal clock, you have the option of using a nifty feature called Relative Tempo Record. What you can do with it is use the rotary dial to alter the tempo of a sequence while listening to a playback, and have these tempo changes embedded into a separate, "I7th" track and stored as relative percentages of the starting tempo. A similar feature is actually found on quite a few sequencers and sequencer programs, but what makes it unique in the QX3 is that the tempo changes are displayed as absolute values on the display while you are making them. Thus, if you've created a sequence at, say, 120bpm and you know that you need it to speed up to precisely 132bpm at a certain bar, you simply dial up twelve increments at the exact moment and you'll see "I32bpm" in the display. This will actually get recorded as a 110% tempo in the track data stream, but the important thing is that you don't have to guess - you can actually go directly to the absolute tempo value you want, at the time you want it to change.

Tied in with this concept is an exciting feature that can be considered one of the major strengths of the QX3. Referred to as

Time Display, it allows you to view exact timings of any sequence or specified measures within any sequence, in familiar hours, minutes and seconds. If tempo changes are made with the rotary dial, the new resulting absolute time is instantly calculated and displayed. This will surely be a boon to score and jingle writers, who usually need to time events to a very fine degree. By giving the task of doing these calculations to the microprocessor, it takes the guesswork out of making tempo changes in order to speed up or stretch out a musical event.

Editing

EDITING FEATURES, AS mentioned above, are extensive. Any track can be edited at any time (unlike, for example, the QX5, which only allows you to edit track I) and events can be easily changed, deleted, or inserted. Because the only kind of editor here is a MIDI event editor, however, you might have to search through an awful lot of data to find the one event that needs changing. For this reason, the QX3 incorporates a terrific function called Event Display. What it allows you to do is specify which types of events you wish to have displayed and which you don't want to see. Note-on messages are also transmitted while stepping through events (accomplished by the measure, step, or clock with the rotary dial) while in edit mode. For any of you out there who have ever had to sift through an event editor filled with 892 separate aftertouch messages in order to find a note that needed changing, you will greatly appreciate this feature. Any of the following events can be displayed or not displayed: Note On/Off, Controller Change, Pitch-bend, Program Change, Aftertouch, System Exclusive, or relative tempo.

Data can, of course, be bounced from track to track and merged freely. Extensive extraction functions are also available that let you pull out specific data for bouncing or deleting. These include the ability to extract only specific notes (set by note range), or Controller, Pitch-bend, Program Change, Aftertouch, or System Exclusive data. An excellent new extraction process featured in the QX3 is called Spot Extract. Although it doesn't remove stains from ties nor extricate your dog from under the porch, it does allow you to remove data within a very specific time range (determined by clocks, and remember, there are 96 of these suckers per quarter note). Consequently, you can do highly exotic manipulations, like extracting the first beat of every bar and moving it slightly forward in time (with the Clock Shift function) or increasing its velocity slightly (with the Velocity Modify function). Another advanced application of this is to quantize only specific events within a MT OCTOBER 1987

measure – useful, since the Quantize function (which, incidentally, is destructive – so copy your tracks before quantizing!) can only be initiated by measure.

While I'm on the subject of quantization, I should mention that this function quantizes all events – not just note-on messages. Potentially problematic if you've got a track with smooth controller changes or many program changes. The manual therefore advises that you extract out note data to a different track and quantize it separately before merging it back to the original track. This seems to be a convoluted solution to a simple problem, and it would have been nice to be able to specify to the QX3 that note events only should be quantized, or not, as the case may be.

Measures can be copied from place to place within a track or to other tracks and new measures can be created and inserted at any points. Whole measures can also be deleted or simply erased, where the data inside the measure is removed and the measure becomes blank. Any or all notes within measures can be transposed especially useful when using the QX3 to control a drum machine that has different instruments assigned to different notes. The gate times (note duration) of all notes within a measure or measures can be modified, as can the velocity values. Crescendos and decrescendos can instantly be created over specified measures by using the Crescendo function and specifying the depth of increase or decrease in velocity values. The QX3 even includes a somewhat silly pair of functions called Chord Sort and Chord Separate that allow you to make arpeggios out of chords. This is something you might expect to find to save to disk first. Bear in mind also that you can't do any recording or event editing while in Chain mode, so if you need to overdub to a pair of sequences strung together, you'll first need to use File Include and combine the two sequences into one.

Finally, the QX3 incorporates an MDR (MIDI Data Recorder) mode, which allows its drive to be used for generic MIDI data storage. Virtually identical to the MDR function in the DX7IIFD, this feature's implementation in the QX3 adds the ability to initiate bulk dump requests. You accomplish this by using the Bulk Dump Request job and simply entering in the hex code for the request needed by your instrument (which can usually be found in the owner's manual). In this way, patch or sequence data from even non-Yamaha instruments can be stored in the OX3 disk drive. Because the input buffer is a massive 480K, you can even use this to store most sampler data. Hats must go off to Yamaha for providing an onboard generic data storage system that works and is easy to use.

The Final Analysis

SO WHAT CONCLUSION can be reached? Well, it's clear that with the QX3, Yamaha has built one of the most comprehensive, feature-laden sequencers available at any price, much less at under \$1600. It's also relatively easy to use, particularly if you've had any experience before with multitrack recording and/or the Yamaha type of "job" approach to multiple functions. The major advantage of using a dedicated hardware sequencer like this one is its roadworthiness, and the memory capacity of the QX3 is not only

Capacity "The QX3 is, first and foremost, a 16-track sequencer, offering a total memory capacity of about 48,000 notes with velocity."

on a small sequencer mounted in a home organ but not in a full-blown professional product like the QX3. Still, it can be fun.

Another handy edit mode job is called File Include, which allows you to call up any sequence file from disk and insert it into your current sequence at any point - a little like a merge file function in a word processor. It effectively allows you to create a Song Chain within your Song. But the QX3 also includes an easy-to-use formal Chain function that allows you to string together up to 99 sequences (or bulk, or system files) in any order you like, with up to 99 playbacks per sequence. These can be played through non-stop, or with pauses inserted that require manual pressing of the "Run" switch or footswitch - making this perfect for on-stage use. The only complaint here is that entering this mode erases all song data currently in the volatile memory (you will, however, get a warning first), so you'll have to remember MT OCTOBER 1987

large enough to store a whole gig's worth of sequences, it's also large enough to store pretty much all the data from all of your other instruments as well. The ability to record multiple tracks simultaneously makes MIDI data transfers from other software-based sequencers a piece of cake, though most users will probably find that the fine editing controls of the QX3 make it an excellent sequencer for editing as well as for live playback. The only major complaint lies in its use of volatile memory, which is negated somewhat by the onboard disk drive. In short, if you're doing any kind of serious sequencing work - and especially if you're performing live - it's hard to imagine any sequencer available today delivering more bang for the buck than the QX3.

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ThE Art Of

part two

OOPING IS NOT an easy art to master. It requires lots of patience and a good deal of cunning. And despite all *that*, there are some samples that simply refuse to have a click-free loop imposed upon them.

Basic Theory

REMEMBER, A LOOP is all about repeating a sound over and over. The sound at the loop splice points must be identical for the loop to be seamless (a white wall connecting with a white wall is much harder to detect than a white wall joining with a blue one). In the case of unidirectional ("forwards only") loops, the sound must flow cleanly from the loop end to the loop start. In the case of bidirectional ("backwards/forwards") loops, the sound must flow cleanly from going forward to flowing backward at the loop points.

To review again why a loop may click, there are two culprits to fight. First, there may be uneven amplitudes (instantaneous levels of the sample) at the "splice" point where the loops are supposed to join up. Most samplers, fortunately, have built-in software tools in the form of zero-crossing detectors and the like to help combat this (because zero level *always* matches up with zero level, for instance).

The second cause of clicking is harder to combat. Even if zero-crossings are found, the sample may be just plain *different* at the two loop points – either subtly (as in the case where the slopes of the signal differ at the loop points) or radically (as in the white and blue wall analogy). The autocorrelation software routines in some samplers (ones that try to match up those slopes) help a bit, but some loops simply can't be tamed.

A sign in one of my doctor's offices reads "Chiropractic First; Drugs Second; Surgery

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Now that your loop points are poised for action, crossfade looping could be just what you need for a seamless sound.

Text by Chris Meyer.

Last." Well, where those aforementioned zero crossing detectors and autocorrelators are like drugs, crossfade looping is like surgery - the loop is so hard to heal, the sound itself will have to be altered to *make* it work. And in the same way that some people choose elective surgery for facelifts and the such, I'll quite often find myself using crossfade looping to make a "good" loop that much better.

This surgery consists of making the sound on the two sides of the loop splice as compatible as possible. The changes should not be abrupt – that would be worse than the original loop point itself. Therefore, the

sound should evolve into an "optimum" waveform at the loop seam and then fade back to normalcy so that it continues much as it originally did, thus reducing discontinuities (and clicks) while retaining as much of the sound's character as possible. This "optimum" waveform is created by cross-pollinating information from both sides of the loop splice – thus the name "crossfade looping."

Unidirectional Crossfading

Forwards only loops are the most common, because they are easier to make work on their own right (for the inherent



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problems with backwards/forwards loops, refer to last month's installment). Therefore, that's the type that will be described first.

The classic unidirectional crossfade algorithm ("algorithm" being a fancy computerese term for a software method or technique) involves making the information at both loop points an even mix of what was originally at the two loop points. To create the new sample, the algorithm starts fading out the original sample somewhere before the loop start point, while fading in the portion of the original sample which started at an equal distance ahead of the loop end point. The result is a new sample which starts and ends the same as the original, but is altered in and around the loop portion. When the sound hits the loop splice point, there should be the aforementioned even mix. After the loop point the algorithm starts fading the original sound back in to full level while fading out material from an equal distance after the other loop point. It pulls the same trick simultaneously with the other loop point.

To illustrate this, look at Figure I. The diagram shows a special sample where the sound is of full and constant level for the first half, and silent for the second half (how different can you get?). The loop points are placed quarter of the way into the sound from both ends - in other words, in the exact middle of the two different portions of the sound.

Figure 2 shows what the sound looks like after it has been crossfaded. With this particular sample, it is very easy to see how the crossfade is progressing before and after the loop points, with the sound being exactly the same at the loop points.

Crossfading obviously needs portions of the sound before and after the loop points to "fold back" into the sound. If the loop points are too close to the ends of the sound (or each other), there is less material to fold back in, and, therefore, the crossfade has to be shorter (see Figure 3). If the sound is radically different at the two loop points (like it is with the given example), the shorter crossfade is much more abrupt and ultimately less successful as far as the ear is concerned. But I'm getting ahead of myself (there's a "tips" section at the end) - the point here is that loop point spacing becomes a touch more critical with crossfade looping, since it limits how long the crossfade can be.

Figure 4 illustrates a second form of unidirectional crossfade looping that is a little less democratic but perhaps more successful. This says that instead of both loop points compromising over what the sample sounds like at the splice point, one loop point has to end up sounding exactly like the other one did originally. In other words, before one of the loop points, the original sound starts to fade out (replaced >



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by the sound an equal distance in front of the other loop point) until it is faded out all the way – replaced entirely by the sound from the other loop point. Afterwards, things fade back to normal. The other loop point is left untouched.

The advantage here is that loop point placement is far less critical, particularly if the sound never intends to travel beyond the loop end point ("release" loops are what we called them last month). Therefore, one just needs enough sound in front of the first loop and enough distance between the loops (tho' half of what is needed for the classical method). The disadvantage is that far more radical changes are being inflicted upon the sound (albeit, for a good cause, and over a shorter area). The E-mu Systems EIII will be the first commercial sampler that I know of to implement this technique.

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Bidirectional Crossfading

Backwards/forwards loops are a different critter – instead of the sound continuing onward (as if there was no loop at all) or jumping from one loop point to another (à la unidirectional looping), it turns around and goes back the other way (kind of like a ball or a slamdancer bouncing off a wall). The mix at the loop point should be even between the sound going forward and the sound going backward.

In Figure 5 there's another example of a radical sound - one that is silence before and after the loop points, but has full amplitude in between. Figure 6 shows it after crossfading - notice that the sound at the loop point is the same reflecting back as if it had continued beyond the loop point. The problem develops because the sound before and after the loop is different than it is inside the loop; it really doesn't work well to have it fold in with what was there. In more normal examples, this isn't nearly the problem it is here (I'll discuss more serious problems later), but samples that are seriously weird on the other sides of the loop points are yet another thing to watch out for before hitting that magic "execute" button.

Another vagrancy of bidirectional looping is that there are two loop points to deal with – you have a turnaround to deal with at both ends of the loop. Unfortunately, many crossfade algorithms treat them the same and crossfade them both over the same distance and at the same time when perhaps only one of them needs crossfading. The Sequential Studio 440 is the only commercial sampler I know of that treats them as separate entities; no doubt, others will do the same in the future.

Linear versus Equal Power

Hopefully this crossfading business is starting to sound pretty easy and straightforward, but there's still a kink or





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two left. One is deciding exactly how you crossfade the sound information together.

Well, you just sort of crossfade it, right? Well, not exactly – you have a couple of choices here. The loudness of a sound does not exactly correspond to just adding the levels together sample by sample. A straight 50%/50% mix (the *linear* method) will quite often result in the sound *dipping* in loudness right at the crossfade point.

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Why? Well, if the sounds being faded together are very different, they don't reinforce each other very well when added together either on paper or in the air. In Figure 7, we've done a linear unidirectional crossfade of white noise (although it may always *sound* the same, you can't get a more different waveform from point to point than true noise). You can see where some slight dips in amplitude occur at the loop points.

The solution to this is an equal power crossfade. Without going into a lot of math, suffice it to say that "power" perceived loudness - follows a "squared" (as in 2 squared) relationship as opposed to a linear one. Therefore (to pull a bunch of boring math out of thin air that you don't really have to know), at the loop points, we want both sounds being mixed together to each be I divided by the square root of 2 (roughly 71%) in loudness, not l over 2 (50%). Likewise, whenever the sounds at your loop points are rather different because of a lot of reverb, chorusing or whatever (and here's where visual editors from the likes of Digidesign, Steinberg, or Drumware come in handy you can actually look and see they're different), choose equal power crossfading.

What happens if the sounds are very similar? Well, an equal power crossfade adds them in too high, resulting in an amplitude peak instead of dip at the loop points (see Figure 8). If a sound is pretty constant in tone along its length, with no beating or the like (such as single horns, and so on), use linear crossfading.

Other Problems in Looping Land

There is one more warning that needs to be passed on about crossfade looping before moving on to tips and suggestions. This one applies solely to bidirectional crossfading. You may remember last month's warning that some sounds, such as those shaped like a sawtooth wave, cannot be turned around. Try to turn around and go back in the middle of a sawtooth, and suddenly you look like a triangle wave for an instant.

The problem that occurs when you try to crossfade a sawtooth-like wave is even worse. Imagine taking two sawtooths – one ramping upward, and one ramping downward (this is exactly like one going forwards and one in reverse). Now imagine adding them together in equal **D**



amounts, like crossfading will try to do. What happens? If lined up exactly, they cancel each other out! Don't believe it? Look at Figure 9, which is an attempt at just this. (Those ambitious with a piece of graph paper can try this - try slipping the backwards sawtooth against the forwards one so that its sharp drop lines up with the middle of the other. Now add them together. The result? A square wave, which also happens to be rather un-sawtooth like.) What does this mean to you, the user? Keep a backup of any bidirectionally looped sound you try to crossfade (yes, I know you're supposed to do that all the time, but we all know how cocky or careless we can become) - it may still click, or even end up worse, by the time the microprocessor's done chewing on it. Anything that looks even vaguely like a sawtooth (slowly goes down, then suddenly goes back up) is such a candidate.

Other Sundry Tricks

CROSSFADE LOOPING IS quite often sold as an instant cure-all – just press that execute button, friend, and all of your looping troubles will go away. This is true most of the time; at least the click goes away. But there are still a few precautions that can be taken to ensure aesthetic, as well as simple mathematic, success:

- Number one, and this is perhaps the most important tip, get a good loop (ignoring the click) first. Be happy with the way it fits in with the natural progression of the sound (washing back and forth, and so on) - all of the things we suggested you do with a normal loop last month. Then use any autoloopers your sampler may have once to get the nicest crossings in the vicinity of your nice loop. Then crossfade it. Nothing is a sure bet in this world, but GI/ GO (garbage in/garbage out) certainly applies here.

- In general, the longer the crossfade, the better. This takes some strategic

placement of loop points to get the most out of the sound. In the case of classic even-mix crossfading, the maximum crossfade possible (without creating other problems) is the *shortest* of the following three lengths: the distance between the start of the sound and the loop start point, the distance between the loop end point and the end of the sound, and half the distance between the loop points. In the case of the 100% method (unidirectional), it is the shorter of either the distance between the loop points or the distance between the start of the sound and the loop start point.

- Exception to every rule time. Some people claim that if the sound is very similar around the loop points ("wellcorrelated", etc) and the problem is only the click and *not* dissimilar sound, then you should make the smallest surgical incision possible: crossfade only about one wave's worth of the sound. How do you calculate the length of one wave if you don't have a visual editor? Take the sampling rate and divide it by the pitch of the sound (ie. 3I,250kHz divided by 440Hz). The result is the number of individual samples ("words" of data, or whatever) in one wave.

- Remember that parts of the sample before and after the loop points will be needed to fold back in during the crossfade. So, to avoid problems, you should make your raw sample longer than you would normally, and place the loop end marker away from the end of the sound to give yourself room to work. (If you use a release-type loop, you can throw away the excess later). The same goes for the start of the sound - if the loop start point is right after the attack portion of the sound (the horn blip, or whatever), part of the attack will be folded in around the loop end. I do one of two things to avoid "foldin" problems and still try for the longest possible crossfade (mentioned above). The first involves roughly dividing the sound

into fifths, placing the loop start two-fifths of the way into the sound, and then placing the loop end four-fifths of the way into the sound. This leaves a fifth of the sample length untouched for the attack and best places the loop points for maximum folding. The other is to temporarily move the start point of the sound after the attack (audition and edit the sound until none of it remains), loop the sound, and then put the start of the sound back at the start of the sample. Since most looping routines aren't allowed to touch anything before the start or after the end, the attack is kept safe.

- Do not try crossfading to cure an inherent problem in the sound, such as a large amplitude (loud at the start, quiet at the end) or timbral change (bassy at one end, thin and out of phase at the other). I've tried this many a time in hopes of "smoothing out" bumps or washes in the sound, and it usually just ends up worse. I cannot emphasize enough trying to match the natural ebb and flow of the sound when you try to get a loop in the first place, and then using crossfading to smooth it out.

- A basic rule of sampling is to turn all effects – such as chorusing, LFO's, reverb, etc – off and record the sound as dry as possible. This is because all of those little variables wreak havoc on the process of trying to find a pair of correlated zero crossings. Well, with crossfading hanging around, you'll quite often end up better off if you throw these things in - a complex sound is easier to crossfade convincingly and tends to be a more musically pleasing sound in the first place.

In the next installment, all we have learned about looping – and a bunch of other talents, such as trimming, enveloping, and so on – gets applied to sampling some older synthesizers in hopes of adding some more sounds to our sample library. Until then

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BOXing OUT!

The musician with the boyish grin is Marcus Vere, the man behind the music behind the British band, Living in a Box. Having established themselves here with their eponymously-titled hit single, the band is now working hard to live up to the reputation it's earned them. Interview by Tim Goodyer.

IES, LIES, LIES. Living in a Box have not just been working in LA with some company whose name they can't divulge. They are not playing with some new series computer whose name they can't reveal because it's still a prototype. And they did write their own songs, rather than leave it to this mystery computer armed only with their 72 personality imprints. They do, however, have a nice line in humor, a high-charting debut single and an excellent album of electronic pop to their name.

The man currently feeding me these untruths is one Marcus Vere, keyboard player, songwriter, comedian and one third of Living in a Box. Throughout the photo session he's promised me the interview won't be serious, yet mention MIDI or songwriting and he's right on the ball – though there's still room for a little of what he refers to as "sport."

"Normally when we do interviews I make up these stories about what we were doing before Living in a Box. In Holland, Tich was president of the Ben Hur Society, Richard headed a parachute display team in MT OCTOBER 1987





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y \$35.40) attached Bridlington, and I was a marine biologist studying the Loch Ness Monster. Over there they take you dead seriously every time. *That's* good sport."

Living in a Box became Living in a Box in August 1985. Prior to that, vocalist Richard Darbyshire had been involved with a band called Zu Zu Sharks, while drummer Anthony 'Tich' Critchlow and Vere were already writing material together and looking for a singer.

Vere continues: "I'd heard about Richard from various sources and, as he was doing some of his solo stuff in the same studio as we were recording Living in a Box,' we tried it out. That was the first song we did. Then we did two more, 'Love is the Art' and 'Generate the Wave,' which we took round the record companies.

"While we were playing 'Living in a Box' in one A&R man's office, Richard was playing his solo stuff in another office at the same company. It was hugely embarrassing at the time but then, when it all came together, we managed to merge our abilities and our material. We were lucky that we all got on so well as friends, because we were forced into the situation where one minute Richard was singing on a couple of our tracks as a session singer, and the next he was signing a contract with two guys he hardly knew."

Things moved quickly after that: a fiveyear deal with Chrysalis, a storming dance single making the Top 20, and an album following hard on its heels – the stuff of which dreams are made. Too often, though, the promise of a first single turns out unfulfillable. Vere accepts the challenge.

"The impact of the first single was so enormous; it came from nowhere and shot straight up the charts. The vice-president of marketing in the US said it's the fastest single they've had in four years. It's established the name – obviously because it's eponymous – but we've also got longevity, we've got a quality to the music. We didn't release the album with any big splash, and we're not relying on a huge sales campaign and photos in all the right pop magazines. It's selling really well by word of mouth, and that's nice. It's a real album and it makes the point we're a real band.

"You're just as likely to see me leaping around in a video as you are to see me here talking about Emulators and MIDI. I think it's important that people realize we have that dimension. There's more to Living in a Box than 'Living in a Box,' but that will only be proven when we're sitting round this table in a year or two's time, and I'm sure we will be."

Vere's faith in his project is born out by soul legend Bobby Womack, who's recorded his own version of 'Living in a Box' – though half of the lyrics have been translated into Spanish for his "street people." And not content with that, he may also be appearing on the band's next single. MT OCTOBER 1987 "It's not definite yet, but he may be duetting with Richard on 'So the Story Goes,' " confirms Vere. "It's either him or Al Green."

HE BAND'S FIRST album was recorded at Galaxy Studios in Hollywood and produced by ex-Landscaper Richard James Burgess. "Bill Burgess," corrects Vere, and we're off on another Living in a Box 'Strange But True' anecdote.

"The studio looked like the inside of a pimp's car," he recalls, "all purple velvet and mirrors. And while we were there, Burgess managed to blow up the monitoring system. He was mucking about with the Lexicon and suddenly this huge electronic feedback started to build up. It it. But I still prefer the SP12, not only for its reliability, but for its sound."

The rest of the album's sound textures are the products of Vere's hi-tech keyboards – tempered with the talents of carefully chosen guest musicians. Paul Jackson Jr. supplied the tasteful guitar, Paulinho Da Costa the percussion, Mark Isham the trumpet, and Freddy Washington the bass where the Minimoog couldn't cut it.

"We used various other keyboard players as well. I got all the ideas and the basic programs together, and then I wanted someone with more of an oversight on the whole record to come in and say 'I see this, this and this' that I couldn't see. And it worked; they saw directions I didn't see because I'd been living with some of the tracks for nearly two years."

"If you get too stuck into your equipment, you won't write a good song that's when you should employ somebody else to write songs for you."

gathered so quickly that he didn't have time to do anything about it, and the speakers actually exploded. All the computers went down and there was smoke coming out of the cabinets. I was shit scared.

"Eventually a guy in an Indiana Jones hat came in to repair it all, and four hours of studio time later, we were ready to go. Then Burgess did it again.

"After that we called him Wild Bill Burgess, but he won't take kindly to me telling you all this"

With luck, he won't read it. But Burgess' participation in the recording of *Living in a* Box has helped produce an album of serious pop songs – from the insistent dance beat of 'Living in a Box,' through the R&B of 'Human Story,' to the token ballad 'From Beginning to End.'

"Bill's a good guy to work with because he doesn't drag your ideas off in any strange direction – he listens to your demo and goes with the feeling of that."

Evidence of Burgess' influence over the sound of the album, however, is easily found in the disc's rhythm tracks. For although Critchlow's drumming skills are held in near reverence by Vere, the groove of Living in a Box is almost exclusively electronically generated.

"Burgess is a Linn 9000 man and we're SP12 men," Vere comments. "He was lucky enough to have his 9000 working throughout, because if it had broken down, we'd never have let him forget it. It was a bit unfortunate, though, because Tich normally programs the SP12 and it took him a few days to get into the 9000. Once you've got a song in the SP12 you can't just change the tom-tom pattern in just the third verse, whereas you can on the 9000. I don't know why they never got that together on the SP12. The clocking is good on the 9000 as well – it's got a good feel to Vere's hardware rundown for the album reads like just about any modern equipment listing – Emulator, Super Jupiter, DX7, TX816, Akai S900 and so on – but stops short of Fairlight or Synclavier indulgence. Technology has been a good and loyal friend of Living in a Box, but Vere is cautious about letting it get the upper hand.

"If you get the right gear, the whole of the Top 20 will flash before you. I'd be the first to admit I haven't got the deepest knowledge of knob-twiddling, but I think that's to my advantage at this point. If you get too stuck in your equipment, you're not going to write a good song. And that's when you should employ somebody else to write your songs for you.

"I get nervously excited when I get new equipment because I wonder just how close to the edge I am. When I'm sitting around at two o'clock in the morning not being able to write something because I can't work the equipment, that's energy lost. I want to be able to do something quickly and make it sound real, loud and hard. That's what excites me."

> TITH THE INITIAL excitement of the album out of the way, Vere is concentrating on improving his home recording facilities. As we speak, two engineers are

burrowing around the back of an Akai 1412 recorder, an Atari computer is running a new Steinberg Pro24 sequencing package, and a Roland D50 is due to show up at any moment.

"I've got a few hundred dollars involved here, but it's nothing to what you get into when you listen to the people at Syco [an exclusive music store in London] about what's coming up. I'd gone as far as l wanted to go, and I would have hung on **>**

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with the QX1 even longer had it not been for the shortage of tracks. Eight just wasn't enough; I was getting into such a mess running out of tracks and swapping things around – so I turned to the Pro24. It's very flexible and a lot quicker. But if you haven't got a groove and you haven't got a but for writing, I got a bit sick of sticking my hands down the back of the TX rack every five minutes switching leads.

"I'm going to transfer all the programs from the QX1 to the Steinberg in real time and take it from there. I'd been saving all my sounds on it, too, but I found that, if I

"Once you've got a song in the SP12 you can't just change the tom-tom pattern in just the third verse, whereas you can on the 9000 . . . "

tune, then it's all a waste of time."

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That said, Vere has taken full advantage of technology to enable him to produce his music.

"I first programmed 'Living in a Box' on a Roland MC202. Remember them? Then I got into the QX1, now I'm on to the Steinberg Pro24 and whatever comes out next week. The Steinberg's my new toy at the moment, though it's been out a while. It's taken me until now to get round to it because I've been so busy.

"Working with the QX1, I found I was using the TX816 for almost the complete song – bass on one; piano split across two and three; sequences on four and five; brass on six, seven and eight; then link up the Super Jupiter to put that little bit of analog on the top. Now I'm getting a patchbay organized where I can use all eight modules to get much bigger sounds. I used it like that when we were recording the album, got a new idea for a song, I had to dump all my sounds back into the QX on the particular song bank I was using before I could start. Either that, or I was going to tie myself to all the sounds I'd just been using. Then I was spending more time doing that than I was writing new songs.

"It took me about an hour, I suppose, to get the SP12 pattern organized in Song mode, changing all the sounds in the TX rack and linking it all up. By the time I'd done all that, I'd forgotten what I was trying to do in the first place. I'm going to hang on to the QX1, though, partly because it's not worth anything, and partly because we might need it for live work."

An overdue addition to Vere's equipment is an E-mu Systems Emax.

"We never got into too much serious sampling on the album, so I bought the Emax to investigate that. I've also got the Emax with the HD organized – that's coming out in about two or three months. Plus there's the Compact Disc (CD ROM) sound-loading situation coming out about three or four months after that.

"Until now, I've only been taking stuff off CD or 12-inchers into the SP12 on a drum basis – drum sounds, short vocal sounds, things like that. One example I can give away to everybody that wants a *huge* snare drum is a record called 'Artificial Heart' by Cherelle. After about 15 seconds of the 12-inch, there's a gap before this huge snare and you can get at it really easily. That's a Jam and Lewis snare, so it's a belter. We used it on 'Living in a Box' and we're going to carry on using it."

> NLIKE MANY MUSICIANS, Marcus Vere prefers to start again from scratch in the studio, rather than use his demos as the basis for a final recording.

"I don't like to produce anything too much, because then you find you can't take it on anywhere," he explains. "The demos are just there to get the song together and throw in some good sounds.

"Prince amuses me. He's supposed to be taking music into new areas, the leading light of a new musical direction. But what he's got out at the moment is an album of demos."

Although their second single, 'Scales of

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Justice,' hasn't climbed the charts with the

same vigor as its predecessor, Living in a Box now have their first live dates on their minds - though mention of live

playing isn't met with the enthusiasm I might have expected.

"Don't terrify me," says a startled Vere. "We haven't done anything yet so we don't really know how it's going to work out. We're going to start with eight club dates in the US at the beginning of October. In America there's quite an 'anti' attitude to being a studio band and having a one-off catchy little ditty. Unless people realize there's more to the band than that, we might get a bad reaction. So the idea is to go over there, do a few dates and get a bit of a live presence.

"It involves making a decision on live playing, sequencing, sampling and tapes, and we haven't quite made up our minds how

to get around it yet. With the music being 90% keyboard-based and only three of us in the band, it's difficult to cover everything unless I end up with lots of tape and sequencers and not very much live playing to do. I'll probably be getting another keyboard player in and working it all out with him.

"I want to get down to the raw edge of the songs: bass, drums, guitar, vocals, and top-line keyboards. When you're playing in a club it wants to be loud and thrashy, with Richard singing his heart out. Somebody sitting behind a mixing desk pulling faders up and down really only detracts from the essence of a song."

The live shows will also mark the return of Anthony Critchlow as the band's drummer, although the details have still to be ironed out.

"We'll try keeping the bass drum on tape with the toms and snare live around it. We thought about taking a percussionist out, but we'll either use sequencers or triggers from Tich. He'll be using a couple of Simmons pads, so he'll have quite a high profile triggering samples. There are certain songs where it's all hands to the deck, like 'So the Story Goes' that took ages to get together in the studio, and we can only do that live if we use samples. We were thinking of using an Octapad, but they're so small that if there's anything that needs playing as opposed to just triggering, it's a bit impractical. We'll see."

The band is already hard at work on the writing and recording of a second album.

"We've already written four tracks which we're really pleased with, but I've now got to transfer them to all this new gear. The second album is going to be a lot harder than the first one: we're going to tear down a lot of the scaffolding in terms of the sequencers and subtleties and go more into the bass, drums and vocals right in your face approach. I'm looking forward to it."

And as if that weren't enough to keep three young men off the streets, their overactive sense of humor has already lined up another project for them. I

"Is there a heavy metal band called Axis?," Vere inquires anxiously. "If there isn't, we're going to call our heavy metal alter-ego Axis. It's such an awful name, it's brilliant. We've written a track called 'Powerdive' – In the heat of the night/in the dark of the city/I'm dragging your love around baby/How could something so wrong seem so right – brilliant. We're going to send it to our American A&R department and see if they'll sign us – again."

Nothing if not versatile, this Living in a Box.



48 TRACK PC "A Champ"

Chris Many, Music Technology, July '87: "... Easy to understand ... uncluttered ... easy to use. A number of fascinating new editing features and a host of tools for film and video scoring ... Certainly it is geared towards the professional user, but it also provides the beginning sequence programmer with an easy route to follow. All told, an excellent investment."

Paul Grupp, MCS Magazine, July '87: "... flexible ... slick ... the best note/ event editor I've seen on an sequencer to date ... a champ."

The Complete Guide To MIDI Software: "Subtly powerful

Duanne Hitching, Grammy winner: "I use the 48 Track all the time. I just used the software on a movie to be released next year. It is great!"

Jay Logan, producer of platinum Vicious Rumours: "I have seven computers in my studio, including the PC, Mac, Atari and Amiga. I've tried all the software, and the 48 Track is the one for me. It's fast, it does everything, and it's simple to use."

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YAMAHA REX50 Digital Signal Processor

Now that digital multi-effects have beat the \$500 barrier, Yamaha have brought programmability into the game with the guitar-oriented REX50. Review by Rick Davies.

S UNASSUMING AS it may appear, a rack-mount chassis adds more to the cost of a musical device than you might imagine. Whether that has anything to do with Yamaha's decision to package their latest digital effect device, the REX50, in an attractive non-rack chassis remains to be seen after weighing up the new features against the cost.

At first sight, the REX50's sleek profile gives the impression that perhaps it would be at home on the floor alongside a set of stomp boxes, but a good look puts an end to that. The location of the LCD and LED display windows, and the small rectangular controls make it obvious that feet are not welcome on this front panel. It actually makes a nice table-top effect, if space 76 allows. Weighing in at under four pounds, it's just the sort of unit that's tempting to stick into a shoulder bag and haul along to a session or gig. Certainly *not* the sort of thing you're likely to do with an effects rack.

Connections

IN TRUE GUITAR effects fashion, the REX50 provides ¹/₄" audio inputs and outputs on the back panel. This brings us straight to something which needs to be clarified – although the REX50 provides left and right inputs and outputs, and stereo effects are possible, the inputs are not processed separately. The two inputs are summed and then processed together to produce the stereo effects. You can then mix the separate inputs in with the

effect. This makes the two inputs suitable for running the REX50 as an in-line effect for instruments (typically synths) with stereo outputs. For in-line guitar processing, plugging into only the left input sets up the REX50 for monophonic operation; though the dry input signal appears at both outputs.

Since inexpensive mixers or multitrackers tend to offer limited effects send facilities, it seems that monophonic operation would be suitable for lowbudget recording setups. There is no monophonic output option, and though it might seem like a waste not to take advantage of the stereo processing at every turn, a mono output would come in handy when there is a shortage of mixer inputs (for in-line operation or auxiliary returns), though there are only a handful of effects where this is a problem (as will be pointed out shortly).

Completing the back panel are two 1/4" footswitch inputs, which provide for effect bypassing and program selection; an input level trim pot - an improvement over the original SPX90 which only had an input level switch; a Stereo Mix toggle button for switching the dry input signal(s) in and out of the stereo outputs; and a single MIDI In port. The Stereo Mix toggle is only really effective if the effect/dry Balance parameter is set lower than 100% (which it isn't in any of the factory presets, by the way), but it does provide a simple way to go from in-line to auxiliary operation without having to reprogram the REX. The omission of other MIDI ports ceases to be a valid reason for criticism when you notice how tidy Yamaha have been in packing the rear panel. To add more inputs or outputs surely would have required a larger chassis, and consequently a higher cost, so this isn't likely to spoil the picnic.

Like other Yamaha pro audio gear, and unlike so many of their musical instruments, the REX50 connects directly to power outlets rather than relying on a detachable power adaptor – a pleasant surprise from such a low-cost device.

Program Selection

THE CONTROL PANEL is tiny, with a mere eight switches handling program selection, editing, storing and bypassing. On power-up the REX50 is in preset mode, and any of the 90 effects programs can be easily recalled by adjusting the program number in the LED display MT OCTOBER 1987 window using the up and down arrow switches, and then pressing the Recall button. This is a reasonable alternative to having numerical switches for random access to programs, and certainly delivers the goods with minimal controls. As each program number is displayed, the LCD window displays the program name (eg. "Rev Reverb & Gate" or "Distortion + Rev Plate").

There are two alternatives to this method of program selection. One is to use MIDI Program Change commands. The REX accommodates these with four separate lookup tables, each with a corresponding MIDI channel, so the REX can respond differently to four MIDI sources. Not exactly a mainstream application, but it's there. Yamaha's MFCI MIDI foot controller is an obvious candidate for this function, though the \$275 tag might not make it a first choice for program selection if the REX50 is the only MIDI device getting the benefit of its versatility. The REX50's Memory footswitch input provides the second alternative; it's an easy way to step through a programmable series of effects and a cost-effective way around the non-MIDI blues.

Having got past the control side of program selection, how does the REX50 sound when you get there? Well, the first impression the REX50 gives is that it is an SPX90-type programmable signal processor with guitar-oriented effects (like distortion) thrown in. This is pretty much the case, but there have been, of course, some compromises made to keep the REX50 at its \$495 price point, and its controls familiar to guitarists. There are 30 basic effects which are permanently stored in programs I-30. These basic programs do a good job of showing off the REX's basic features, but after working with it for a couple of hours, I found the need to store variations on these in the userprogrammable memories, 31-90 - which are initially programmed with duplicates of the factory programs.

The REX50 generates its digital effects by digitizing incoming audio into 16-bit words at a 3lkHz sample rate, with a resultant 12kHz effects bandwidth. Since natural reverberation tends to contain little harmonic content over 10kHz, this limitation is not very drastic in the case of most of the REX50's effects, and in the cases where the effect bandwidth might be expected to be higher, such as the delay and modulation effects, the limitation can be masked to some degree by the dry signal.

What does all this mean? The REX50 sounds great. I tried it out both as an inline effect with a couple of guitars, and as a stereo send on a portable four-track. In the case of one of the guitars, I found that turning the input trim pot up full did not MT OCTOBER 1987 provide enough gain to get the best signalto-noise ratio, and some breathing was detectable most of the time. Putting a preamp before the REX did away with this problem. On other guitars, I had no problem at all, and as an auxiliary send, it performed marvelously.

The Effects

THE SIX BASIC reverb types (hall, plate, vocal, room, early reflections, and gated) all sounded smooth when tested with guitars, drum machines and synths. I think keep the REX50 quiet when you're not playing. The EQ controls, however, are a real pleasure to have on hand. Distortion can also be combined with reverb, delay or modulation effects, but control is reduced to just the distortion amount.

The unit also has compression, gate and panning effects which perform well, but given the l2kHz bandwidth, these are not really the sort of effects that would compare to their analog equivalents. Nice to have around in any case. Owners of SPX90s might point out that the REX50

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Effects "The first impression the REX50 gives is that it is an SPX90-type programmable signal processor with guitar-oriented effects thrown in."

that because the REX50 is designed with guitarists in mind, Yamaha have done a great job of making a wide variety of ambiences possible with very few variable parameters. The hall, room, vocal and plate programs provide variable reverb time, pre-delay, high frequency damping and high- and low-pass filter cutoff frequencies, and these did as good a job as you might expect for tailoring basic reverb effects.

Not being a big fan of buckets of reverb on guitars, I found the Early Reflections and Gate reverb programs particularly useful for enhancing the guitar tone without being overpowering. Playing with the Room Size and Type parameters proved to be most effective.

Two basic stereo delay effects are included. The Stereo Echo effect produces two discrete delays with independent delay times and feedback settings. The Delay L&R effect is similar to the Stereo Echo in its controls, but the two delay signals are summed with the input for feedback, thus producing interactive delays. For example, a short left delay can be imposed on a long right delay, something which I found worked very well when combined with volume pedal work. In the case of the Stereo Echo program, I found the lack of a monophonic output a limitation, but the L&R configuration compensates nicely.

The flange, chorus, phasing, and nowfamous Symphonic effects are enough in themselves to make the REX a desirable package. They sound clean and add a reliable shimmer to just about anything you put through them. Great stuff.

Like most low-cost pitch shifters, the REX50 has its glitches, but given the option, it earns its keep when shifting small intervals for thickening effects. As with the SPX90, MIDI Note On messages can perform real-time control of the two separate pitch shifts, making it fair game for sequencer control.

The distortion effect on its own is very usable, and provides control over the distortion amount, midrange frequency and boost, treble boost, trigger level and release time. These last two controls help has no Freeze, Parametric EQ, or Delayed Vibrato effects, and they'd be right. But given the choice, I'd pick the distortion effect over these for gultar applications, so it's no real loss.

The one problem I had with the REX50 was in trying to get it to do everything. Not that it couldn't perform each task individually, but when I started using a volume pedal, I found myself wishing I could insert it between the distortion and reverb in order to get better signal-tonoise performance. But this is a digital signal processor, and there is no way to insert the analog world between these two points. Not for \$495, at least. I suppose the obvious thing to do is use two REX50's - such a purchase would come out to little more than a single SPX90II (which are running for \$845 with the recently quadrupled freeze memory). Something to think about . . .

Conclusions

I BELIEVE THAT in live performance situations a good number of guitarists will do just fine with the REX50 as the main effects device in their setup. In small recording setups, the REX50 would work wonders as an inexpensive jack of all trades which could help print good sounds on tape initially, and also spice them up in the mixdown.

I know that non-programmable digital signal processors have offered a good selection of effects for relatively few bucks, but given the option, I'd say that programmability is worth every extra penny, especially when it comes to delays and pitch shifts. The REX50 lets you get in there and tweak to your heart's content with a mere handful of parameters. Even if the REX50 had no distortion effects, it would be worth the money, but it does, it sounds good, and I'll bet that guitar effects will never be the same.

PRICE \$495

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NOVEMBER 1986

• Synth king Howard Jones talks recording and programming, David Sylvian comes clean, and we track down The Philip Glass Ensemble, and touring keyboardist Greg Whelchel.

On test are Akai's MX73 master keyboard, the Ensoniq Digital Piano, the Unique DBM controller keyboard, the Fostex E16 multitrack, Dynacord's ADDone drum module, the Korg DDD1 drum machine, Steinberg's Pro24 sequencing software for the Atari ST, Yamaha's FB01 FM synthesis module, and the Roland DEP5 multi-processor.

We get the lowdown on mixdown, examine the SPX90's MIDI Mode 4, and continue our guides to sequencing, FM programming, and creative sampling.

JANUARY 1987

• Svnth-pop pioneers, OMD, feature alongside Heaven 17 and avant-garde composer Morton Subotnick.

The review roll-call includes the E-mu Emax and Akai X7000 sampling keyboards, the Kawai R100 drum machine, Yamaha's QX5 sequencer, Stepp DG1 guitar synth, Tascam Porta Two, and Steinberg's ProCreator software for the Atari ST.

We start an overview of hard disk technology, conclude our series on creative mixing techniques, and see how guitarists can benefit from MIDI Mode 4.

FEBRUARY 1987

• The enigma of contemporary music - Frank Zappa - talks tech in a rare in-depth interview and Robert Irving III, keyboardist with Miles Davis, tells how he coped with the pressure of following in the footsteps of Herbie Hancock and Chick Corea. Also featured is Japanese composer/ arranger Seigen Ono.

Reviews include the Oberheim DPX1 sample replay unit, Roland RD300 piano, Jam Factory & Dr. T's KCS software, and the revolutionary Mandala video-MIDI instrument.

On the feature front we continue our investigations into the worlds of hard-disk technology and MIDI Mode 4 for guitarists, and take a look at how modern percussionists can keep in time with the times.

MARCH 1987

• We reveal why Adrian Belew is one of the world's most innovative modern guitarists, and the unusual method employed in recording Peter Hammill's latest album. Also in conversation are jazz-fusion keyboardist Jeff Lorber and filmsoundtrack composer Michael Stearns.

Being put to the test are the Yamaha DX711, Sequential Studio 440, Korg SG1 piano, Simmons SPM8:2 mixer, Barcus Berry processors, and MegaMix and Intelligent Music's 'M' software.

Bandwidth jargon is deciphered, MIDI Modes are dissected, and experiments carried out to the Sample Dump Standard.

MAY 1987

• Allan Holdsworth, one of the leading advocates of guitar synthesis, and eccentric composer Holger Czukay, talk to our intrepid reporters, while Kim Ryrie, Fairlight's co-founder, and Steven Randall, designer of the Stepp guitar, speak frankly about their technological achievements.

On test are the Casio SK2100 keyboard, Roland MKS70, Yamaha RX5, Kahler Human Clock, Alesis MIDIverb II and ART DR1 reverbs, and Texture and ClickTracks software.

We assess the Apple Mac II, continue our drum programming series, and explain how your sampler can produce stereo samples.

IUNE 1987

• Fusion pioneer and former Mahavishnu violinist Jerry Goodman discusses his new work with us, and Bill Bruford, characteristically in the vanguard of new technology, talks about electronic percussion as an art form which is distinct from acoustic drumming. We also interview Richard Horowitz and Sussan Deihim on their unique, new electronic and vocal recordings.

Our reviews check out the Casio FZ1 sampling keyboard, the Roland D50 synthesizer (Part 1), 360 Systems MIDIMerge+, Steinberg's Cosmo software, and the Kawai R50 and Korg DDD5 drum machines.

We also find some ways to speed up Macintosh MIDI workstations, get the story straight regarding MIDI delays and we conclude our interview with Kim Ryrie. The third part of our series on creative drum programming assesses the relative merits of different trigger-to-MIDI converters.

IULY 1987

• Ryuichi Sakamoto, Yellow Magic Orchestra's founder, shares perceptions on his latest album and plans for the future. Geoff Downes, former Yes and Asia keyboardist, discusses his personal history with synthesizers, while Cutting Crew talks about their unique blend of guitars, guitar synths and other music machines.

Our in-depth reviews highlight the Korg DS8 synth, 48 Track PC II, Yamaha TX81Z and MDF1, Passport Master Tracks Pro, as well as Part 2 of our in-depth look at the Roland D50.

The fourth segment of our series on creative drum programming looks at electronic drum pads, and the DX7IID upgrades are examined. We begin a new series on recreating the sound of acoustic instruments with a focus on the trumpet.

SEPTEMBER 1987

· Synthesist and composer Steve Roach discusses the fine art of programming, and Level 42 keyboardist Mike Lindup and co-producer Wally Badarou talk about their rise to the top in two separate interviews.

Reviews uncover lota Systems' MIDI Fader, Yamaha's TX802 FM synth module, the Bacchus TX81Z Editor/Librarian for the IBM, the Kawai R50, and Grey Matter Response's E! Version 2.0 upgrade for the DX7. We also offer in-brief looks at the Alesis HR16 & MMT8, Sequential's Prophet 3000, and Perfect Patch from Aegix.

The sixth part in our series on drum programming examines new hand-held percussion controllers, and the third installment of our series on synthesizing and sampling the sound of acoustic instruments focuses on the snare drum. We begin a new series on the art of looping and offer an article on the ways and means of just intonation.



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This is the page where MT's editorial team invites you, the readers, to share your synthesizer programs. Send us your favorite sounds on a copy of an owner's manual chart accompanied by a short demo tape. Include a description of each sound and write your full name and address on each chart. If we publish your patch, you'll be rewarded with a complimentary one year's subscription to MUSIC TECHNOLOGY. Interested? Then get twiddling and get scribbling!

Send your sounds to: Patchwork, MUSIC TECHNOLOGY, 7361 Topanga Canyon Blvd., Canoga Park, CA 91303. ■

CASIO CZIOI Dreamdust David Hare, Longmont, CO David explains that his patch sounds "like a harp with a flute-like chiff, rather than a pluck" when played staccato, and we agree. Sustained notes, on the other hand, take on a rounder sound and fade out with a bit of vibrato, making the patch suitable for a number of different applications. The basic sound comes from line I and the "dusty" chiff is provided by a detuned DCO2 under the control of a tight attack envelope on DCA2. Enjoy.



MT OCTOBER 1987



Making use of the Matrix 6's unique capabilities, Eric has created a patch that comes close to the sound of a sampled "yeah." He explains that "FM provides the high harmonics in the voice and LFO2 is triggered above its normal starting point to modulate oscillator 2, creating the human accent." He also used an inverted envelope on VCA 2 to further shape the sound. Eric adds that the patch can be played

tonally by holding down p	edal 2 for a choir effect and	suggests its best range	(for an accented "yeah")
is from the D below mid	dle C to the E above middle	e C. Yeaahhh! 🔳	

	0	1	2	3	4	5	6	7		9
00	Freq	Fr/Lf1	Sync	Pw	PW/L12	Wave	Wsel	Levers	Keybd	Click
DCO1	61	28	3	31	0	0	OFF	BOTH	KEYBD	OFF
10	Freq	Fr/Lf1	Detune	Pw	PW/Lf2	Wave	Wsel	Levers	Keybd	Click
DCO2	0	28	+2	24	0	0	BOTH	BOTH	KEYBD	OFF
20	Mix	Freq	Fr/En1	Fr/Prs	Res	Levers	Keybd	E-VCA	VCA/Vel	VCA/En2
VCFNCA	31	15	+53	0	0	OFF	KEYBD	63	0	0
30	FM	FM/En3	FM/Prs	Trackin	Track1	Track2	Track3	Track4	Track5	
FM/TRCK	63	0	0	GATE	0	15	31	42	63	
40	R1 Spd	Trigger	R2 Spd	Trigger	Port	Spd/Vel	Mode	Legato	Keymode	
RMP/PRT	0	STRIG	0	STRIG	0	0	LINEAR	OFF	REASGN	
50	Delay	Attack	Decay	Sustain	Release	Атр	Amp/Vel	Trigger	Mode	Lfitrig
ENV1	0	38	25	10	0	35	0	STRIG	NORM	NORMAL
60	Delay	Attack	Decay	Sustain	Release	Атр	Amp/Vel	Trigger	Mode	Lfitrig
ENV 2	10	20	0	63	1	63	0	STRIG	NORM	NORMAL
70	Delay	Attack	Decay	Sustain	Release	Атр	Amp/Vel	Trigger	Mode	Lf1trig
ENV 3	0	18	50	0	0	63	0	STRIG	NORM	NORMAL
80	Speed	Sp/Pra	Wave	Retrig	Amp	Amp/Rp2	Trigger	Lag	Sample	
LFO 1	63	0	RANDM	0	0	+63	OFF	ON	KEYBD	
90	Speed	Sp/Pra	Wave	Retrig	Amp	Amp/Rp2	Trigger	Lag	Sample	
1505	28	0	TRI	58	63	0	STRIG	OFF	KEYBD	

Matrix Modulation

	Source	Amount	Destination
0	ENV3	+54	VCFRS
1	ENV3	+20	LISPO
2	LF02	+63	DC02F
3	TRAK	+63	VCA2
4	GATE	+46	E2 DEL
5	ENV2	-63	VCA1
6	PED2	-63	L2AMP
7			
. 8			
9			

Performance Notes

Best range for normal "Yeah" is D below Middle C to E above Middle C. Range for tonal "Yeah" is expanded. Key must be held down for complete envelope.

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MT OCTOBER 1987

10017 **STARTING** THIS MONTH. MT is announcing new sound packages from professional programmers and other patch-related news in this addition to the R PatchWork column. Appropriately enough, our first item is from Patch/Works Music 0 Software (no relation) of New York. Q-Spectrum is the company's new set of sounds for the Ensonig ESQI. Two G volumes of 80 sounds each (both programmed by Jed Weaver) are available R in ROM cartridge, RAM cartridge, data cassette or disk (ESQapade for the ST) More information is available from Patch/ A format. Each volume contains a variety of Works Music Software, PO Box 450, New excellent sounds, both acoustic-based and York, NY 10024, Tel: (212) 873-2390.

electronic-oriented, arranged in logical

order. The emphasis is on keyboards as

well as percussion and bass sounds, and

each sound offers intelligent real-time

control via the mod wheel (eg. chorus, EQ,

vibrato and so on). 80-sound ROMs are

\$49.95, 80-sound RAMs are \$69.95, a 160-

sound ROM (both volumes) is \$79.95, a

160-sound RAM is \$134.95, data cassettes

or disks are \$34.95 per volume, and a

demo tape of the sounds is available for \$5.

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Music Sales Corporation has announced a new series of books with patches for the DX7 and the CZI0I entitled IOO Patches for the DX7 and IOO Patches for the CZI01. Each of the books (there are three volumes for the DX and two for the CZ) includes 100 patches covering a wide variety of sounds that can be plugged into the respective synths. If you want to do your own programming, each book includes a few blank patch charts for

sounds of your own. The books retail for \$6.95 each. More information is available from Music Sales Corp., 24 E. 22nd St., New York, NY 10010, Tel: (212) 254-2100.

Real Usable Sounds, a division of Alexander Publishing, has also announced a new patch book for the DX7. Called the DX7 Patch Fake Book, the publication includes 160 new sounds created by Jeff Fair, Scott Frankfurt, Lorenz Rychner, Clark Spangler, Larry Steelman and Cosmo Watts. The book lists the parameters for each patch as well as info about how to best use them. It retails for \$24.95. The company has also introduced a Patch Fake Book for Roland's D50 which includes 64 patches programmed by Dan Walker and retails for \$21.95. Finally, the company announced the availability of a number of data cassettes for popular synths, all of which retail for \$29.95. Invisible Aftertouch and Rock DW8000 are two sets of 64 sounds for Korg's DW8000. Rock Juno is a set of 64 sounds for Roland's Alpha Juno I. Orchestral Set and Beyond the Orchestra are two sets of 100 sounds and 50 splits each for the Oberheim Matrix 6/ 6R, and Rock DXI00 is a set of 96 sounds for Yamaha's four-operator FM synths (DX27/100, 2I, TX8IZ). More information is available from Alexander Publishing, 14536 Roscoe Blvd., Suite IIO, Panorama City, CA 9!402, Tel: (818) 892-0111.

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Garfield Electronics Time Commander



The new sync box from Garfield allows sequencers to follow your live playing and provides a very complete timebase and timebase-conversion system with a myriad of standard and "trick" features. Review by Matt Isaacson.

HOUGH ITS NOT the first device of its type to be brought to market, the Time Commander (TC) from Garfield Electronics is perhaps the first one to succeed in its tasks. For those who have been awaiting the appearance of such a box, it will come as a godsend. It has many studio applications, including all of the features of the original Garfield Doctor Click – and I could find none which did not work as claimed. There are some problems, but whether these are real issues for an individual user depends upon how that person plans to use it – read on.

Front Panel and Basics

THE FRONT PANEL is deceptively simple in appearance, looking much like a firstgeneration digital delay line. There are only eight knobs and a few LEDs. "Gain" adjusts the sensitivity to incoming audio/pulse trigger signals from miked drums, electronic pads, and so on. "Mask" sets the amount of time following recognition of a trigger before the next trigger will be allowed through. This can be helpful for tightening up "trashy" trigger sources and applies to both audio/pulse signals and MT OCTOBER 1987 MIDI event triggering. The Input LED winks each time a trigger event is recognized and stays on for the duration of the Mask interval.

The remaining knobs are all 10-position rotary switches, five of which have simple 0-9 settings. "Window" sets the amount of time surrounding each beat of the internal metronome during which a trigger event is "seen" by TC and used to update the current tempo ("beat" here generally refers to quarter-note time). This control, more than any other, is the key to this system in that it allows the player to play more or less naturally without fear of confusing the tempo-tracking – and, importantly, the precise operation of this control is documented in a simple table early in the manual.

For each Window setting, the corresponding rhythmic value and number of clocks (in timebase of 384 per beat) is

given, allowing you to intelligently choose (if that is your style) the appropriate setting for whatever you are playing at the moment. (It's worth noting here that all of TC's performance controls are "live" at all times, subject to a two-beat delay, so you can change them while you are playing - if you have got a free hand.) The same table also indicates "the other side" of this control by indicating the maximum percentage tempo change per beat which can be effected by live playing under each setting. The inherent trade-off in this tempo-tracking system is that narrowing down the Window to help TC track fast, complex playing will restrict your ability to directly control the tempo - and it gets harder at faster tempi since the Window shrinks proportionately. What this boils down to is that you must, to some extent, play "with" TC once it is running in order to control it. Coming in out of the blue will probably result in it either ignoring you or misinterpreting what you are doing.

to a The manual likens "Damping" flywheel which controls the relative reluctance or eagerness of TC to change its tempo in response to trigger events which are ahead of or behind its own beat - one would stick to the low end of the range in order to be able to effect rapid tempo changes, or to the high end if the object was to avoid unwanted tempo changes. Count-In allows you to specify a number of beats from I through 8 which precede a manual (tracking) or internal-play start (under internal play TC will start and run at the current tempo and provides an audible metronome count-in). A setting of zero gives an instant start without countin, while a setting of 9 results in "on-beat punch-in" following a tap on the Play footswitch, prior to which a tempo can be established and modified indefinitely via trigger events. The live applications of this feature will be fairly obvious to anyone who's ever been to a concert where the singer says "Now lemme hear y'all putcha hands to-getha"

The "Lead/Lag" control consists of a pair of knobs which act together to create a single two-digit setting. This control



S T U D

time-shifts the outgoing clock stream in relation to TC's internal metronome and tempo tracking processes in order to compensate for the inherent delays of the slave sequencer and, in turn, the response delays of any synths (or whatever) being controlled by the sequencer. A third, less obvious source of delay is the transit time of sound from the monitors back to the player - at Imsec per foot, this could easily outweigh the combined effects of the other delays on a large stage. Without this feature, you would constantly have to play slightly ahead of the music in order not to continually drag the tempo down. The range is a hefty 50msec in either direction, with an option that adds on another 100msec in the shift-forward direction.

Only the rotary IO-position "Input selector switch gives any Source" indication of the true depth of function. Trkl and Trk2 are two slightly different methods of tracking incoming trigger events and are where most of the action is for live playing. (They have no direct relationship to the Inputs I and 2 on the back panel. In fact, it is never necessary to select a tracking trigger source - MIDI and both trigger Inputs are always live in the tracking modes unless specifically disabled by options.) Trkl treats all incoming trigger events equally, while Trk2 maintains separate tracking processes for odd and even beats. The assumption behind Trk2 is that odd and even beats are being played alternately by kick and snare, and that the snare beats are coming in a bit off-center between the kick beats (a concept which those of us who have grown up with drum boxes may have a hard time grasping) - to use the manual's example, "with a 'laid back' feel" (ah, California). Under the more simple-minded Trkl tracking mode, such a rhythm would cause TC to change tempo on every beat.

This seems like a good time to mention that getting TC to operate in its basic, obvious tracking mode right out of the box was, in a word, easy. All I had to do was hook it up (drum pad into Input I, footswitch Into the Play/Generate footswitch jack, MIDI Out to sequencer), turn it on and start banging. The addition of a MIDI trigger source was as simple as running MIDI Out from a keyboard or Octapad into TC's MIDI In - no other setup steps were necessary. This attests to both an excellent choice of factory settings and the fact that, in general, the unit does what it is supposed to do. Also, a visual banging on something else by the time the music starts. TC follows your reasonable tempo variations within the limits of the Window and Damping settings you have chosen, or ploughs ahead at a constant rate if you give it no rhythmic input.

Meanwhile, a virtual torrent of sync signals is streaming out of the rear panel. MIDI clocks, sync clocks at 24, 48, 96 and 384 pulses per quarter-note, Roland DIN sync and Korg DIN sync are all available

Tracking "It is never necessary to select a tracking trigger source – MIDI and both trigger Inputs are always live in the tracking modes unless specifically disabled."

inspection of the innards (prompted by the need to install a production-release ROM which arrived hot on the heels of my evaluation unit) leads me to believe that in the absence of serious provocation, there should be little likelihood of mechanical problems – things are clean-looking, well laid-out and very solid.

Tracking Mode Operation

BEFORE GOING ON to the more advanced functions available via the other Input Source selections, let's take a closer look at operations in the live tracking modes. At power-up, the Play LED is off and the Status LED blinks slowly to indicate that TC is ready for you to do your thing. Perform a count-in on a pad, keyboard, or whatever, for the required number of beats (which can be half-notes followed by guarter-notes, or all guarternotes, provided that the total number is equal to the setting of the Count-In switch), and you're off - the Play LED comes on and the Status LED flashes crisply on the beat. The count-in, by the way, does not include the beginning downbeat of play - you play only the beats leading up to the downbeat and can be off

simultaneously from separate outputs. MIDI and DIN-sync gear are automatically started via their clock signals. The Click output normally ceases after the count-in but can optionally be enabled to continue while TC is playing, to provide a click-track style output as well. The same output has a ring connection which can be used to drive a standard short-to-ground footswitch input – when run into the Start/Stop switch jack on a sync-clock driven sequencer or drum machine, these too can be automatically controlled.

While Playing, hitting and holding the Play footswitch for a couple of seconds puts you back to square one. You can perform manual count-in again, or start an automatic one by hitting the Play switch once more (it takes off again at your most recent tempo). Alternatively, a brief tap on the Play switch while in Play will pause TC, indicated by a slow flash of both Status and Play LEDs. While paused, all sync input is ignored and the unit won't restart itself. From here, another tap on the switch gets you ready to restart on the next trigger event (read "MIDI continue"). This lets you stop anywhere in mid-sequence, do whatever you will for whatever amount of time, and then resume sequencer performance where you left off. The uses for such a feature are obvious. Unfortunately they are somewhat diminished in this case by the fact that the pause action is neither immediate nor aligned to the beat, making it difficult to control the exact stopping point - you're liable to wind up hanging on some odd clock in mid-beat, which sounds pretty clumsy when you resume.

MIDI

THE MIDI IMPLEMENTATION on this device is very respectable. At the basic level, incoming MIDI Note On messages can act as triggers. An option is available which lets you specify, by playing a note into TC, notes above that key to be ignored for this purpose, so that, for MT OCTOBER 1987



example, the tempo tracking can be confined to following a left-hand bass line while ignoring the right-hand melody/ harmony/solo. A recently added feature provides for setting a lower limit key number as well, by hitting both keys at once. By using an Octapad with two pads set to the same key number, or by overdubbing the same note onto two tracks of my cheesebox keyboard sequencer and playing that into TC, it was possible to narrow the tracking range down to a single key.

Of course, all of these note messages are merged into the MIDI Out along with the clock stream, where they can be echoed through the sequencer down-line to whatever instrument you are actually playing. This raises the possibility of more or less free-time recording in which the sequencer is in effect synchronized to the notes it is recording, making it unnecessary to play along with a metronome from the sequencer. In fact, this does work, but is successful in proportion to how metronomic a player you are. Depending upon the Window and Damping settings, a minor rush or drag of the tempo on your part will either cause the TC tempo to change slightly, or will merely result in you drifting slightly off from the beat being maintained by TC. Either way, if you do not stay aware of what TC is actually doing, the recorded results may be quite different from what you played, especially if you were using Input Autocorrection on your sequencer. For this reason I found it helpful to keep an audible metronome going, either from the sequencer or from TC's Click output; but if you're smooth enough, it should be possible to do without this.

Much use is made of MIDI program changes to access various options and settings. This is a good idea on some levels - if you use a DX7, program change is a single-stroke action which makes no sound and in general will have no effect on things such as drum machines. For example, this message, as when your Octapad or other MIDI controller is able to send program changes on an otherwise unused channel. However, most keyboard synthesizers, including the DX7, lack this ability, while the bank/patch organization of others (such as Roland) makes certain program-change sequences rather awkward. Other MIDI options let you mimic actions of the footswitches, convert program change messages to song select messages for remotely cueing a new sequence, keep the metronome running after count-in, and so on.

Oh – I almost forgot (really) – TC accepts MIDI clocking as a sync input if the Input Source selector is set to MIDI (in contrast to all of the above stuff, which applies to the TrkI/2 live tracking modes). It does the magical conversion of MIDI clocks to all sync clock outputs, and sends out a MIDI clock stream as well, complete with start, stop and continue messages – although it does not echo things such as song-position pointers. If you really need that, there's always the MIDI Thru jack. There are a few other slick MIDI tricks which space does not permit me to cover here.

More Options

PERHAPS THE WORST thing about the MIDI control and option system is what it doesn't do. There is another list of useful options which are accessed by a rather bizarre sequence of actions culminating in turning the power on. Not surprisingly, these are referred to as the power-up options. To set one of these options, you dial in its number on the Lead/Lag knobs, hold down the Play footswitch, and turn the power on. (Having done this, you must of course restore the desired Lead/Lag setting.) This must have seemed a clever idea to whoever thought of it - no extra special switch needed, almost impossible to actuate accidentally, no clash with normal operating modes. The appeal fades somewhat, however, when you discover

Click conversion "MIDI clocks, sync clocks in timebase 24, 48, 96 and 384 (pulses per quarter-note), Roland DIN sync and Korg DIN sync are all available simultaneously from separate outputs."

programs I-10 can act as a decimal keypad for digits I-9 and 0, respectively, for setting a three-digit initial tempo, as long as the program changes come in spaced less than three seconds apart. Other switch-type options are toggled by sending the associated program change twice within a three-second period. One such option lets you use the program 16 program-change message as a silent trigger event for Count-In and tempo tracking – again, just fine if nothing else out there is listening to MT OCTOBER 1987 that all option settings are lost when you turn off the power. (A quick second peak inside confirms that there is no battery backup for the operating RAM.) This method lets you set one, and only one, of these options at any time. About a third of these options - fortunately, the most commonly-needed ones - are also adjustable via MIDI, which lessens the jolt somewhat; although these too must be reselected each time you turn on the power. This may be just as well, since there is no direct readout of the



status of these options while TC is powered up. In all fairness, many of the other power-up options are relatively obscure, and I suspect that most of the impossible combinations can be gotten around or are never needed anyway.

Basic External Sync Modes

FOUR OF THE Input Source settings are for use with standard sync clock Inputs from various older drum machines and such. The names of the settings indicate the type of clock expected: 24, 48, O/L and R/Y (for Oberheim/Linn and Roland/ Yamaha FSK respectively). Operation is slightly different from Trk1/2 modes. Startup is automatic upon receiving an incoming clock stream, taking the Count-In setting into account (again, 0-8 beats or on-beat footswitch start with Count-In set to 9). The Play footswitch also lets you pause and resume on the beat – it seems odd that it does not also do this in live tracking mode.

The incoming sync signal is converted to all forms of sync output except for SMPTE, which again are available simultaneously at their separate outputs. The Lead/Lag control is available in these modes to facilitate sync-up of a sequencer to existing tape tracks recorded against a sync clock pulse track – now, however, the settings represent clock pulses rather than milliseconds.

Click Track Sync

THIS FEATURE PROVIDES the means for synchronizing sequencers to material recorded without direct relationship to a sync track, or with only a quarter-note clicktrack for sync – especially where tempo variations are part of the music. This is done by a rather clrcuitous process. First, a clicktrack must be created on the master tape if not already present. This is done by hand with any convenient audio or MIDI



trigger routed through TC and taken out as a clean click signal through the Click output. Next, the recorded clicktrack Is run back into TC's Input. TC is operated in Record mode and stores a beat-by-beat tempo map in its internal memory. Finally, TC is put into Play mode, and with the clicktrack still fed in as a reference, will generate clock outputs which are synchronized with the original source material and follow any tempo variation precisely and with neither slippage nor surge (since it has the tempo map to refer to at every beat).

This works impressively well, and it's only when you stop to consider some of the details that things begin to seem less than rosy. First, the fact that the basic reference - the clicktrack itself - exists in analog form on a tape track (which is accessible only in real time) means that editing, should it become necessary for any reason, will be slow and difficult at best. TC does not provide any means for editing the data stored within it - there is no such thing as a spot fix (admittedly this would be difficult given the state of TC's front panel). This is made all the worse by the problem encountered earlier, namely lack of battery backup. The standard 850-beat memory, which works out to roughly seven minutes at nominal disco tempo, can be expanded to 3900 beats (over half an hour of beats) by the substitution of a single RAM chip - this would not unduly tax your average backup battery. What with all the inputs and outputs this device has, one might expect to see a MIDI or cassette data dump and load facility of some kind in lieu of built-in non-volatile storage, but none is in evidence. Consider having to spend ten minutes or more reloading an amount of information which

separate clicktrack In addition to the timecode track (which nowadays is probably already there anyway) and offer both tempo editing down to the beat level as well as battery backed-up memory and/ or some convenient form of external storage and recall. One of these, the Roland SBX80, has been around for at least a couple of years and is more or less an industry standard. All the more surprising is that TC offers SMPTE and MIDI time code modes of operation.

Which brings me to . . .

SMPTE and MTC Operation

TC WILL READ and generate both SMPTE and MIDI time code in both 25 and 30 frames-per-second non-drop-frame format. As far as I was able to understand, it will also read, but not generate, 30fps drop-frame code in both SMPTE and MTC flavors. In addition, it will generate MTC from a SMPTE Input - this will become increasingly important as the new crop of MTC-ready MIDI sequencers starts to arrive. When synchronized to one of these timecodes, TC will generate all varieties of clock output based on the tempo currently in effect, as set via a knob-twiddling trick not unlike that used for setting power-up options. Using this tempo and the internally fixed start time of 15 seconds, if timecode with a time greater than 00:00:15:00:00 should suddenly appear at one of the inputs, TC will perform SMPTE/ MTC chase sync with MIDI gear by means of song-position pointers computed to correspond to the time being sent into it. This occurs promptly within a second or two of the appearance of the timecode. However, it will not do this simultaneously with the above-mentioned SMPTE-to-

Chase sync "TC will perform SMPTE/MTC chase sync with MIDI gear by means of song-position pointers computed to correspond to the time being sent into it."

is small by even drum machine standards every time you turn the power on, and you may at least decide to forego the extra memory. For short spots, it's probably adequate though.

Finally, this feature does not operate in any way in conjunction with SMPTE, which is intended for just such applications. This is surprising given that there are at least two fairly well-known units on the market which do precisely the same thing in the SMPTE domain without the need for a 86 MTC conversion. As bemoaned above, there unfortunately seems to be no provision under SMPTE/MTC for dealing with varying tempo, which could limit its appeal to those heavily involved in film and/or video.

Conclusion

MOST OF THE serious problems I have noted can be corrected without too much pain. The manual should be cleaned up – there's guite a bit of redundancy, in spite of

which it still often seems necessary to read the whole thing; certain sections should be consolidated, and the tendency to tell you everything about something all at once should be reined in. A reference card would be a good compromise step printing it on the top panel is helpful and a nice touch, but inevitably some of the details are already out of date. A RAM backup battery could easily be tacked on there's lots of room left in the box. MIDI or cassette dump of tempo maps could probably be wedged into the firmware, provided some way can be devised to initiate it that doesn't involve turning off the power. Finally, the missing link between tempo mapping and timecode should be found if at all possible, even if tempo-map editing remains an impossibility.

Garfield and company have created a system which attempts to be many useful products in one box and which succeeds admirably in most cases. The live tracking modes put it in a class by itself, and anyone who is able to use this and most or all of the other functions has found themselves a bargain. People will no doubt complain about the front panel, or about some feature or another being not quite right, but I suspect that even if none of the above problems are solved, they'll learn to live with it and will use it – and that it'll be around for some time to come.

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