

TRANSONIQ HACKER

The Independent News Magazine for Ensoniq Users

The EPS In "Forward Motion"

by Craig Anderton

It's one thing to own a keyboard; it's another to push it to the limit in the context of a crucial real-world project. Recently, this was just what happened with the EPS as I was working to complete my first solo album, "Forward Motion." In the process I learned a lot about what the EPS can do, and thought I'd pass these tips along to other musicians who might find themselves using the EPS on recording projects.

First, a little background. For economic, scheduling, and artistic reasons, I wanted to record and mix my album at home. At first the record company was skeptical, but when I explained that all the instruments would be sequenced and mixed in real time directly to DAT--thus eliminating any hiss or distortion caused by conventional tape--they were willing to give it a shot. However, on the demos I'd done that sold the label on the concept, I'd overdubbed a lot of Emulator II and synthesizer sounds on tape and synched those to the sequencer. Some means had to be found to recreate those overdubs, and the EPS, with its eight available instruments and 20 voices, was the answer.

For example, I used a lot of OB-8 for brass and string sounds, but the OB-8 is neither multi-timbral nor does it respond to controller 7 messages, which are the basis of MIDI automated mixdown. I simply dedicated the OB-8 to producing a single complex sound, and sampled the OB8 sounds originally used for overdubs into the EPS. Of course, this also added polyphonic aftertouch, velocity, and other goodies not present in the OB-8.

Dealing with the E-II overdubs was only slightly more problematic. I tried sampling the E-II audio output directly to the EPS audio input, but the results were not all

that great. The solution was to grab an E-II sound with *Sound Designer*, save it to disk as a Sound Designer file, then open up *Alchemy*, import the file, convert the sample rate, and send it over to the EPS (*Alchemy* doesn't support the E-II directly).

As with the OB-8, using the EPS gave me some options I didn't have with the E-II. On a multi-sampled E-II oboe, for example, the loop occurred quite late in each sample (which averaged a couple of seconds) and included some vibrato. With *Alchemy*, I was able to loop a steady-state waveform much closer to the beginning of the sample, and add vibrato in the EPS using poly aftertouch. Not only was the sample size cut to about 20% of the original, it ended up being more expressive, and you didn't have problems where the vibrato would speed up for higher notes and slow down for lower ones.

Eventually I built up a pretty decent collection of synth sounds, which eventually formed the basis of my three "Signature Series" disks, now being marketed by Ensoniq. In addition to these sounds and the ported E-II sounds, I also used "Slam Bass" from the *Claude Gaudette Signature Series* disk for the bass part in the title tune, and Pop Horns and Fretless Bass from the standard Ensoniq library. (Some of the sounds I used are slated for Volume 2 of the *Signature Series* should Volume 1 do well enough to justify a second volume.)

In some cases I got away with 12 or 16 voice mode, which gave more output and a nominal increase in fidelity for some sounds. Most of the time I needed all 20 voices, though; for one tune, I had six instruments loaded up and believe me, they needed 20 voices! Still, it was nice to

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have the option to trade off level for voices.

ORGANIZING WITH THE EPS

I had never fully appreciated the "Bank" concept before doing the album, but I sure do now. I created a custom disk for each song which included the samples used on the song, the levels for each instrument, and in many cases, the sys ex data used by other instruments in the tune. I found the EPS MIDI data recorder function to be so simple, reliable, and easy to use that I eventually stopped using my computer for this application. When it was time to do a mix, I'd just boot up my EPS disk and everything would be ready to go. If I made small tweaks in the instrument levels, I'd re-save the bank.

Although I expected to use the EPS sequencer to off-load some of the parts from my main sequencer, it turned out that Master Tracks Pro running on a Mac Plus could handle all the controller, poly aftertouch, and other data (which added up to a quarter megabyte for some tunes). Actually, I like having all my sequence data in one place (just like I want to have all the sys ex in one place too), but if I start running out of MIDI channels or memory in the future, I'm sure the EPS sequencer will be pressed into use.

AUTOMATED MIXING

One of the greatest features of the EPS is that when in Multi mode (the only mode used in this project), each instrument responds to its own controller #7 messages, thus allowing for automated MIDI mixdown. This was a feature I used to the hilt to minimize the number of moves I'd have to actually make during the mixdown process.

SEPARATE OUTPUTS

For serious studio work, the OEX 8-output expander is essential. With this I could take out individual instruments for specialized processing or EQ, although in some cases, it was better to use the standard stereo inputs. With a 20 input mixer, I would sometimes find myself running out of inputs, and for pad and background sounds it would often be more efficient to sum a bunch of EPS instruments into the stereo outs, and use the OEX just for lead or other strategically-important sounds.

LIMITATIONS

The main EPS limitations are fidelity and memory. The sound quality is certainly fine, but it's not as good as the 16-bit CD medium itself. Still, in the context of a mix with a bunch of other sounds going on, this isn't much of a problem, if at all.

The lack of memory expansion means that you can't, for example, sample a vocal and fly it in (unless it's a pretty short vocal; fortunately, "Forward Motion" is all instrumental). But I'm not sure that's the point--where the EPS excels to me is not as a digital audio recorder but as a flexible musical instrument. The large sound library, poly pressure, Multi mode, and gobs of voices helped me create expressive parts, and overall that was more important to the grand scheme of things than a couple more bits or a few more K of RAM.

VOICE LIMITATIONS

20 voices is a lot, but when you're talking about lots of instruments, some with long release times, even 20 isn't enough. For many parts, I edited durations at the sequencer so notes don't overlap unless absolutely necessary. This was particularly the case with bass, which after editing would usually need only one voice. I also found it advantageous to sometimes remove chorusing within an EPS instrument

(chorusing is usually obtained by copying a layer and detuning it) and use an external signal processor instead, thus freeing up another voice. The same would go for sounds with a second release time on the amplitude generators; these long sustains would often get cut off anyway, and besides, natural reverb sounds better.

IN CLOSING

The EPS, like the Emulator II and HR-16, was one of those rare instruments with which I had an instant bond; if anything, I like it more after using it this extensively. The EPS served me real well and made it possible to record a true "desktop CD," yet somehow, I suspect there are still many things to be learned deep within its operating system. I'll keep you posted if I find out anything else.

(Note: *Forward Motion*, by Craig Anderton with Spencer Brewer, is scheduled for release on July 10th on the Sona Gaia label, distributed by MCA. The CD stock number is ND-62757; the cassette, NC-62757).



Bio: Craig Anderton, a recognized authority in the field of musical electronics, is the author of MIDI for Musicians, The Complete Guide to the Alesis HR-16 and MMT-8, and seven other books. He has played on, mixed, or produced several singles and nine albums, including David Arkenstone's Valley in the Clouds for Narada Productions. He is currently Editor-in-Chief of Electronic Musician magazine.

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Gee, the start of our fifth year. Thanks to all our readers, writers, advertisers, and Ensoniq!

* * *

Ensoniq announces the release of Operating System 2.4 for the EPS. This new O.S. fixes the following functions:

Patch Select status received from MIDI.

Editing sequence tracks using a bar range within the track.

QUANTIZE function no longer interferes with initial program changes.

Recording a track no longer resets the GOTO bar.

When auditioning changes within a track, controllers are no longer reset at the end of the newly recorded portion.

DELETE SEQUENCE command.

Recording inbound program changes.

Disk errors during LOAD SONG operations.

In response to consumer requests, the following new functions have also been added:

COPY DISK function has been implemented; it appears on the COMMAND/SYSTEM page as "COPY/BACKUP/RESTORE."

If autolooping is off, going to the 99th percent of a sample will take you directly to the last sample. Going to the 0th percent of a sample will take you directly to the first sample.

Program changes are always sent on MIDI instruments when they are selected or when they appear in a sequence, regardless of whether that program change was the last one sent on that channel. Previous operating systems would not resend the same program change that had already been sent on the same channel.

Tap Tempo has been implemented. If you tap on the ENTER button while the TEMPO parameter is underlined and the sequencer is running, the TEMPO parameter will use the last interval between taps as the duration of a quarter note.

Ensoniq recommends that you call your local dealer to schedule an appointment to copy this new O.S. to your own double-sided disk.

* * *

An EPS Audio Output Boost Kit is now available as a factory authorized upgrade. This upgrade boosts the EPS's audio output by 6 db. It is designed for EPSs with serial numbers lower than 16582; all subsequent units already have this upgrade installed at the factory.

The upgrade kit is free of charge from Ensoniq, and is available from and must be installed by your local Ensoniq Authorized Service Facility. You will be responsible for the labor charge set by the service facility, as this does not constitute a warranty repair.

* * *

We've been receiving reports that the sequencer functions in Dr. T's Librarian for the ESQ won't work with ESQ O.S. 3.5.

* * *

Transoniq Hacker is typically on a 4-week, 4-week, 5-week schedule. You should receive the next issue (#50) in approximately 4 weeks.

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MIRAGE 24-HOUR HOTLINE: M.U.G. 914-963-1768.

SEQUENCING - Larry Church, Danlar Music, 503-692-3663. Call anytime.

SQ-80 QUESTIONS - Michael Mortilla, 805-966-7252 weekends and after 5 p.m. Pacific Time.

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ESQ-1 AND SQ-80 QUESTIONS - Tom McCaffrey. ESQUPA. 215-830-0241, before 11 p.m. Eastern Time.

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SAMPLING & MOVING SAMPLES - "Mr. Wavesample" - Jack Loesch, (201) 264-3512. Eastern Time (N.J.). Call after 6:00 P.M.

MIDI USERS - Eric Baragar, Canadian MIDI Users Group, (613) 392-6296 during business hours, Eastern Time (Toronto, ONT) or call MIDILINE BBS at (613) 966-6823 24 hours.

SAMPLING - Mark Wyar, (216) 323-1205. Eastern time zone (OH). Calls between 6 pm and 11 pm.

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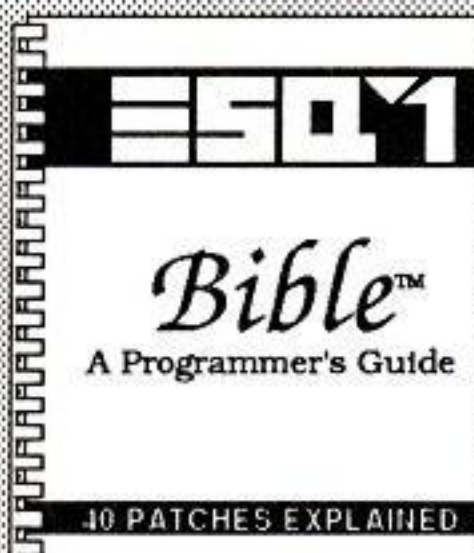
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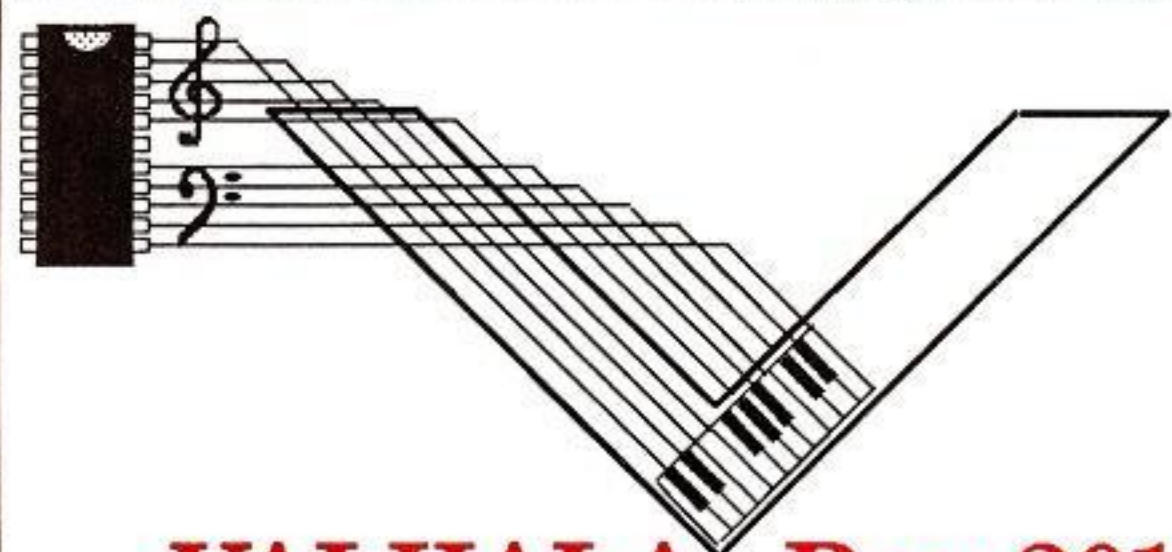
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Multisamples On The ESQ-1 And SQ-80: How to Misuse Them Effectively

by Sam S. Mims

One area of the ESQ-1 (and SQ-80) that has always intrigued me has been the multisampled waveforms, and how they can be misused to make good patches. Kind of a strange way of thinking, but what I'm talking about is using the multisamples in ways they weren't intended to be used. I employed the techniques mentioned here to program several of the patches in my Soundset 1 and 2 collections (from Syntaur Productions), but there were still some grey areas that I hadn't quite figured out. After John Ludbrook's question in last month's "Hackerpatch," I poked and prodded the keyboard some more, did some experiments, and made some calls to Ensoniq. Here's what I found out.

A BIT OF BACKGROUND...

First of all, Ensoniq's manual tells us that there are eight sampled waveforms in the ESQ: BASS, PIANO, EL PNO, VOICE1, VOICE2, KICK, REED, and ORGAN. Of these PIANO, VOICE1, and VOICE2 are said to be multisampled. And it is these waveforms - most notably the PIANO - that lend themselves to the methods I'll be preaching.

I set up a fairly simple patch, WAVEXP, to do the experimenting on. So punch it in, if you will, and we'll get rolling. As it stands, WAVEXP plays the piano waveform on OSC 1 alone, wide open and unembellished. Listen to the sound closely as you play up the keyboard, and you'll be able to hear the split points (headphones will help). The first split is between D#1 and E1. The next is between B1 and C2, and you will soon see that the splits occur every eight notes - between G2 and G#2, D#3 and E3, and so on.

Now, try raising OCT of OSC 1 to +1, and notice that the split points have moved an octave up as well; this is just as you would expect. By changing the tuning of SEMI, the splits again move with the pitch, always staying between the same notes, regardless of which keys play those notes. And this brings up the question of the day: If you want to play C2, say, but you want to use the sample below it (the one that ends at B1), how can you stretch this sample upward to do that?

TRICKS UP THE SLEEVE

The easiest solution is to spin the pitch bend wheel, hitting B1 and just bending it up a half step. Of course, that's pretty cumbersome, but it does lead us down that magical road of discovery. Aha! we say - the mod wheel can always be set up to do whatever the pitch bend wheel does, so just apply WHEEL as a modulator to OSC 1, with a DEPTH of +02, and there you have it. Cranking up the wheel raises all the splits a half step.

This, though, is still a bit cumbersome; we don't want a patch where the mod wheel has to be up in order for the sound to work. But we're on to something here - by using a "modulator" (the mod wheel), we can sidestep the multisample points. And if one modulator can do it, another can. So what modulator can be used to hold the pitch up on its own? An obvious choice is an envelope, but those darned envelopes always seem to want to return to zero sooner or later. For sounds that cut off quickly, this wouldn't be a problem, as the modulating envelope's release could be set very long - much longer than the release of the amplitude envelope. But for sounds with long releases, there could still be trouble here.

The ideal solution is not at all what one would expect. To hold the oscillator constantly above (or below) pitch, we can use an LFO. It's sort of a contradiction in terms - an unchanging oscillator? Stranger than fiction, but it is easily done; in fact, LFO 1 is set up this way in WAVEXP. Essentially, we take a square wave and set its frequency to zero. With RESET=ON, the LFO will always begin at full, and with a zero frequency, it will never change from there. So the LFO outputs a constant positive signal. And using this as an oscillator mod shoots the oscillator's frequency right up (or down, if applied negatively), without it crossing any multisample split points.

You can hear this for yourself in WAVEXP. Just switch DCA 1 to OFF, and DCA 2 to ON, and this will play only the piano sample after it is first modulated up an octave and then lowered back to its original frequency via the OCT setting. In other words, you'll hear the same pitch, but of a sample that has been modulated out of its intended range. By toggling between the two DCAs, you can get a good A/B comparison of the normal and manipulated sounds.

LET'S GET PRACTICAL

"Eureka!," some of you may be hollering. More likely, you're wondering what's the big dang deal. Well, funny you should ask. Let's imagine that we want to program an acoustic guitar sound. Or a banjo, or a mandolin. All of these instruments use stretched strings a couple or three feet long that vibrate to make their characteristic sound. If there were such a sampled string in the ESQ's wavetable, the patch would be easy. But there are samples of longer and bigger vibrating strings, in the PIANO and BASS waveforms. By "cheating" out of the piano's multisampled range, say upward an octave, we get a "sample" of a vibrating string of half the

ESQ-1 PROG: WAVEXP										BY SAM MIMS	
	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH			
OSC 1	0	0	0	PIANO	OFF	-	OFF	-			
OSC 2	-1	0	5	PIANO	LFO1	49	OFF	-			
OSC 3	-	-	-	-	-	-	-	-			
LEVEL OUTPUT MOD#1 DEPTH MOD#2 DEPTH											
DCA 1	63	ON	OFF	-	OFF	-					
DCA 2	-	OFF	OFF	-	OFF	-					
DCA 3	-	OFF	OFF	-	OFF	-					
FREQ Q KEYBD MOD#1 DEPTH MOD#2 DEPTH											
FILTER	127	0	0	OFF	-	OFF	-				
FINAL VOL PAN PAN MOD DEPTH											
DCA 4	63	8	OFF	-							
FREQ RESET HUMAN WAV L1 DELAY L2 MOD											
LFO 1	0	ON	OFF	SQR	63	63	63	OFF			
LFO 2	-	-	-	-	-	-	-	-			
LFO 3	-	-	-	-	-	-	-	-			
L1 L2 L3 LV T1V T1 T2 T3 T4 TK											
ENV 1	-	-	-	-	-	-	-	-	-	-	
ENV 2	-	-	-	-	-	-	-	-	-	-	
ENV 3	-	-	-	-	-	-	-	-	-	-	
ENV 4	63	63	63	0	0	0	0	0	0	0	
SYNC AM MONO GLIDE VC ENV OSC CYC											
MODES	OFF	OFF	OFF	0	OFF	OFF	OFF	OFF			
SPLIT/LAYER S/L PRG LAYER LAYER PRG SPLIT SPLIT PRG SPLIT KEY											
	OFF	-	OFF	-	OFF	-					

length and half the size - exactly what we need!

So there is a practical application of this madness. As an illustration of the result, I've included a patch called MANDLN (a mandolin), from Soundset 1. Here, LFO 3 is the "unchanging oscillator" which works on the PIANO waveform. (The other LFOs simulate the strumming; note that they are modulated by ENV 2, which stops the strumming when a key is lifted, thereby letting the note ring.) The realistic sound of this patch would not have been possible without the "misuse" of the piano multisample.

ESQ-1 PROG: MANDLN										BY: SAM MIMS	
	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH			
OSC 1	-1	8	24	PIANO	ENV1	3	LFO3	63			
OSC 2	1	5	30	FORMT 1	ENV1	4	LFO3	-25			
OSC 3	-	-	-	-	-	-	-	-			
	LEVEL	OUTPUT		MOD#1	DEPTH	MOD#2	DEPTH				
DCA 1	2	ON		ENV4	63	LFO1	-42				
DCA 2	2	ON		ENV4	63	LFO2	-32				
DCA 3	-	-		-	-	-	-				
	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH				
FILTER	25	2	28	ENV3	48	OFF	-				
	FINAL VOL	PAN	PAN MOD	DEPTH							
DCA 4											
	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD			
LFO 1	44	ON	ON	SAW	0	0	0	ENV2			
LFO 2	43	ON	ON	SAW	0	0	0	ENV2			
LFO 3	0	ON	OFF	SQR	63	0	0	OFF			
	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK	
ENV 1	0	7	0	63	0	0	3	5	0	0	
ENV 2	0	36	39	0	0	2	1	38	5	22	
ENV 3	63	38	31	63	0	2	44	39	20	32	
ENV 4	52	56	48	15	0	3	22	37	46	50	
	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC			
MODES	OFF	OFF	OFF	0	ON	ON	ON	OFF			
	SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY				
	OFF	-	OFF	-	OFF	-	-				

Note that you can "cheat" beyond the split points to any degree you desire - it doesn't have to be strictly an octave. Use whatever works best for the timbre you're after, then retune to correct pitch using the OCT, SEMI, and FINE controls.

BUT WAIT, THERE'S MORE!

Readers working for that gold star will have taken note of another strange anomaly in MANDLN: not only is the multisampled PIANO waveform modulated by LFO 3, but so is FORMT 1. Not only is this latter wave not multisampled, but it's a synthesized waveform; according to the manual, it was created by "Time-Domain Formant-Wave-Function Synthesis." Don't worry - I'm not going to get into what that is. But why modulate a *synthesized* wave around by this odd method?

Hey, I didn't know either, so I called Ensoniq. All I knew is that the FORMT 1 wave sounded different when modulated, and it worked for the MANDLN patch. As a matter of fact, when just about any waveform is substituted for the PIANO waves in WAVEXP, you can hear differences between OSC 1 and OSC 2; it's as if *all* the waveforms are multisampled.

Well, this may be true, sort of. Unlike analog synthesizers, whose oscillators actually oscillate, the ESQ-1 and SQ-80 are wavetable synths. The oscillators here are really software; they go to a table, look up a waveform, and use that data to produce

the sound. In the case of the sampled waves, the table contains the digitized versions of each of the multisamples. And for the standard synthesized waveforms, the process has to be similar. While these waveforms are essentially created from an algorithm, it is not the algorithm itself that is stored in the wavetable - it is the calculated results from that algorithm. In other words, the data is stored so that it "looks" like a sampled wave. Jim Bogia, of Ensoniq, explains.

"You have to not mix oranges and apples, so to speak. So we had to take a bunch of algorithms and make them look and act like wavesamples, simply in order to sit comfortably with the other waveforms that were in there. But they are, in a sense, multisampled. There are several sawtooth waves, for instance, across the length of the keyboard, which is why, even though they're not true samples, you still hear that difference in timbre."

But if these relatively simple waveforms were created by an algorithm, why can't they the computer generate just one wave that works across the whole keyboard? *"I think it's just the way the structure of the waveform ROM is set up,"* Bogia explains. *"Those are stored in the same area that the actual multisamples are stored in, so they sort of have to 'look like a duck, walk like a duck.'"*

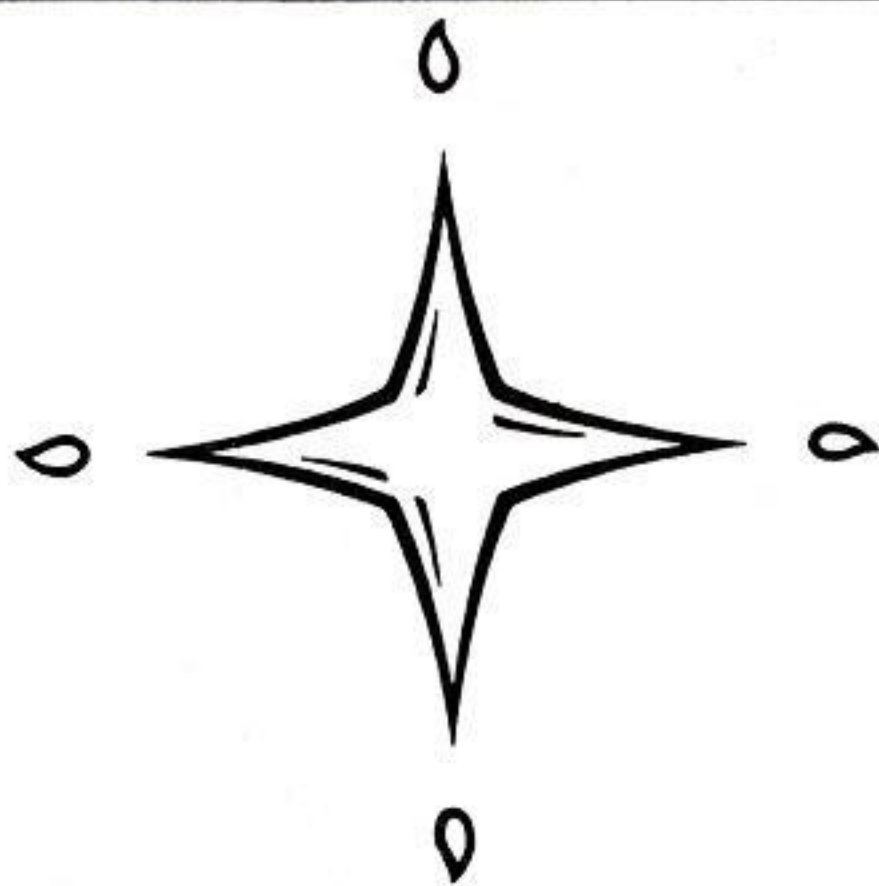
So, the crux of the matter is that the oscillator is looking up a synthesized-then-digitized waveform, instead of looking up the algorithm that actually creates that waveform. And because these simpler waves are also multisampled - sort of - modulating them around can create slightly different textures to the sound. Note that some of these differences are fairly obvious, and some are all but inaudible. By using WAVEXP with each of the different ESQ waveforms, I found that all of the additive synth waveforms (SYNTH 1, 2, and 3) and all of the band-limited waveforms (PULSE2, SQR 2, 4 OCTS, PRIME, BASS 2, E PNO2, OCTAVE, and OCT+5) produced no audible change when modulated. Nor did BELL, SINE, and - oddly enough - the sampled ORGAN.

And now, we can start to answer John Ludbrook's question. By modulating the OCTAVE waveform in his BASWEH patch, no audible change in timbre is accomplished, hence my recommendation to not do this. The problem was that, by starting out with such a low octave, then modulating the wave so far into the upper register, John exceeded the range of the waveform that is stored in the wavetable. When this occurs, higher octaves begin to "wrap around" - essentially playing the same pitches as higher and higher keys are played.

And there you have it. Simple question, simple answer. ■

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Sequencing For Those of Us With 10 Thumbs

by Gary Dinsmore

This article will cover some basic techniques for creating some nice sounding songs. These techniques will allow less than professional keyboard artists to create technically difficult pieces in easily manageable lumps. I use this technique to create the accompaniment for the youth choir that I direct. It does several things for me. I can rehearse the choir without tying up an accompanist. I can direct the choir without playing and directing at the same time, I can use music that is technically beyond my capability, and I can use a distinctive instrument like the trumpet to play the melody line during early practices to help the young players learn the song, and then remove it (mute it) later.

Many of my pieces use piano as the principle instrument. I always load at least two tracks with the piano. I have banks created that load the piano in track 1 for example, and then copy it to track 2. To do this load the first piano from the disk. Next select that track with the "INSTRUMENT/TRACK" button. Now press an empty instrument button, and press "ENTER/YES". That instrument will be copied to the second instrument button without taking up any more memory. I now save this combination as a bank since this is one of my basic setups. To save this bank have these instruments alone in memory and no sequences loaded. Press "COMMAND" then "INSTRUMENT" and scroll to the page titled "SAVE BANK". Press "ENTER/YES" and give the bank a unique name. I call this one "Grand Duo". This technique can be used to create much more elaborate arrangements of instruments, but I will not carry this discussion any further.

The second step is to study the music and divide it into logical blocks. The blocks should be phrase length chunks of the song, and will be at logical spots in the song where there are repeats. I will use as an example the song "Dominique" by Soeur Courire, O.P., (Copyright 1962 by Editions Primavera, s. a., Bruxelles, I. and Copyright 1963 by General Music Publishing Co., Inc. New York, N.Y.) This song has seven verses. It consists of a two bar introduction, a sixteen bar chorus that jumps to the coda at the fourteenth bar on the last verse. There is a 10 bar verse that jumps back, D.S. al Coda, to the start of the chorus. It is in cut time so I recorded it in 2/2 time. Start out by creating "SEQUENCE 2" and set the time signature to 2/2. "COMMAND" and double click on "INSTRUMENT" brings up the "CREATE NEW SEQUENCE" page. Press "ENTER/YES" and the default name "SEQUENCE 2" is created. You may change the name to something meaningful like "CHORUS" or "MES 2-15", but recently I have just started leaving the default name there. I do like to keep the sequences in strict order. I do this by deleting "SEQUENCE 1", then I go back and create a new "SEQUENCE 1" and set the time signature to the correct 2/2.

Let us digress for a moment and I will describe how I have my studio set up. I have my Ensoniq EPS MIDI'd to a Roland TR505 drum machine. I use the drum machine in the pattern play mode to play a strong drum rhythm appropriate to the music style. On the third "EDIT SONG/SEQ" page I change the "CLOCK SOURCE" to "MIDI". I have the EPS's small start/stop pedal hooked to the drum machine. This combination starts the drum machine and the record function at the same instant on the up stroke of the start/stop pedal. I find it real easy to cut in precisely with this combination. I do this because I have a terrible habit of leading EPS's built in click by about 5 clocks. The consequence of this is that I lose a lot of notes into the preceding measure when I copy cuts from one sequence to another. If you are using the EPS for

your drum voices, and want to use the drum track to form the backbone for the song, create a one measure drum sequence. Quantize it as I will describe later in this article, then "APPEND" it to itself enough times to make the correct length sequence.

Now I select "SEQUENCE 01". (At this point I have both 1 and 2 created but nothing recorded in either.) Press "EDIT" then "SONG/SEQ" and scroll to "SEQUENCE 01". Next select the first instrument you wish to record. I will either start with the simple melody line or the bass line notes.

With the drum machine I set a reasonable tempo rather close to the correct tempo if I can manage it. I practice the selected phrase a couple times to fix the tempo in my mind. Now press "RECORD" on the sequencer. The "MIDI" and "REC" lights will flash, but the recording will not start until you press the start/stop pedal and release it. I count out a measure, and release the pedal as I play the first chord. With "Dominique" I started with the two measure introduction. I played two measures of the alternating bass chords and stopped the sequencer with the start/stop pedal again. If I got exactly two measures I keep the sequence whether or not I got the notes right. This sets the length of the sequence, and I don't have to "CHANGE SEQUENCE LENGTH" later. When I get a recording as perfect as I can get, I save it on a disk. I now quantize this to 1/4th notes to pull the bass line exactly onto the beat. This is optional, of course. I rarely quantize the melody line because the music becomes too perfect, and loses its style. I have found that for me, quantizing the bass line holds the rest of the rhythms together.

I now record the melody and fill tracks. I use one of two techniques. I will either record these on separate tracks and merge them down to one track later, or if the music is well within my technical capability, I will record with the "RECORD MODE" set to "ADD" instead of "REPLACE". In the "ADD" mode, however, you cannot save "so-so" versions with the intention of trying for a better version later. Once you "KEEP" it the old version is no longer available to "ADD" to.

Save this sequence again when you have it perfect.

Select "SEQUENCE 2" and repeat the steps. I recorded the 14 measures from the intro to the coda sign.

Next find the "EDIT SONG STEPS" page. Press "COMMAND" then double click on "SONG/SEQ" and scroll left one page. Press "ENTER/YES" to start, and the EPS will show you the following display: "INS *UNDEFINED* 01.01". Scroll up and down to find "SEQUENCE 01" or the name you created for the intro, then press "ENTER/YES". The entry under "STEP" will change to 02, and the name will change back to "*UNDEFINED*". This indicates you are now ready to insert the second step of the song. Scroll again to find "SEQUENCE 02" or the name you created for the chorus. Again press "ENTER/YES". You will now be on step 03. At this time we want to get out of the edit mode, and name the song and save it. Press "CANCEL/NO" to exit the "EDIT SONG STEPS" mode. Next scroll to the "SAVE SONG + ALL SEQS" page. It is five pages to the right, or press "COMMAND" "SONG/SEQ" "4" in quick sequence to dial it direct. Press "ENTER/YES" and give the song a name and save it with "ENTER/YES". I now go back and delete the original first sequence to keep my disks clean. To do this press "LOAD" "SONG/SEQ", and scroll through the names until you find the sequence name. Hold the

"LOAD" button, and press "CANCEL/NO". The EPS will ask you "DELETE sequence 01 name?". Answer this with "ENTER/YES" to complete the command, or "CANCEL/NO" to abort.

For *Dominique*, the next sequence was 12 measures long, and included the last two measures of the chorus and all of the verse. When that was perfect, I went again to the "EDIT SONG STEPS" mode and added sequence 3 to the song. I then placed a second copy of sequence 2, the chorus, after that, and saved it again. Finally I sequenced the Coda and added it to the song.

The song now consists of four sequences; intro, chorus, verse, chorus and coda. The sequences can be used for any number of steps, and you can do repeats or transpose the sequence. The second page of the "EDIT SONG STEPS" function has the transpose amount, and also allows you to mute or solo some voices when the sequence is played in the song. To complete the song with all seven verses, go again to "EDIT SONG STEPS" and move to step 5. It will show "SEQUENCE 04" or "CODA" depending on the name you used. Scroll up the name "SEQUENCE 03" or "VERSE" and press "ENTER/YES". This will add "VERSE" just ahead of "CODA". Move back to the name again and scroll up "SEQUENCE 02" or "CHORUS", and press "ENTER/YES" again. If you press "CANCEL/NO" at this time your song will have intro, chorus, verse, chorus, verse, chorus and coda. I will let you add 5 more chorus, verse sequences to cover the full 7 verses.

You may have noticed that I recommend saving the song after each new entity has been created. For some reason I get a lot of "error 144 reboots" when using the MIDI as a clock source, so I don't ever let any of my hard work hang out there in RAM for long.

Next I play the song through, and judge the accuracy of the timing across the seams between the various sequences. My most common problems are notes that chop off too soon and a hesitation at the first beat of a sequence. The first problem is cured by entering the "EVENT EDIT TRACK" mode. First, go to the "EDIT" "SONG/SEQ" page and select the correct sequence and press the track button for the instrument the offending note is in. Now call the "EVENT EDIT TRACK" page by pressing "COMMAND" "TRACK" and "8" in quick sequence. Press "ENTER/YES" and move the cursor to the measure with the short note. If you get "NO DATA ON SOURCE TRK" that simply means you skipped the last step and are still in the song tracks. Find the note by moving the cursor to the second space and press the up button to play the notes of the measure in sequence. The notes will display and sound when you press the up button. You can silence the last note by pressing the down button. The notes display but they don't sound going backwards with the down button. Now with the short note displayed, scroll to the second page of this display and change the length of the note. The options include bars, beats and clocks. There are 48 clocks in a quarter note so in 2/2 we get 96 clocks before the clocks entry rolls over another beat. When you have made your change press "CANCEL/NO". You get to audition the result. You get the traditional "KEEP YES/NO" display. If this is the last note of a long sequence, you can press "EDIT" "SONG/SEQ" and move to the last couple measures before pressing the continue button. This saves you from having to listen to the whole sequence to hear the last note. I haven't figured any way to go back to the song mode to hear the seam before accepting the change.

For the second problem, a hesitation at the start of a sequence, I can usually cure that by "QUANTIZING" the track for that first measure only. Start by pressing "COMMAND" and double clicking on "TRACK". Press "ENTER/YES", and select the proper track button. To quantize just the first

measure set both entries to 1, otherwise set the first and last bar you wish to quantize, and set the "QUANTIZE TO" selection to the minimum note in the range. Now if your timing gets off too far, you may have a note jump the wrong direction when quantized. The solution to this problem is to keep the old data, then go to the "SHIFT TRACK BY CLOCKS" page which is one page to the left from "QUANTIZE TRACK". Try shifting the notes of the offending bar a clock or two in the correct direction, then go back and try quantization again.

Here are a couple of tricks I have used for really tight spots:

1. Complex rhythm: get all of the notes correct and in the correct measure. Use "EVENT EDIT TRACK" to delete each note in turn, and insert it on the exact clock it belongs on. When you delete a note, the next note you insert will have the same pitch velocity and length as the one you deleted. More important it will have the after-touch which you cannot get by just inserting notes into the measure. You might have to go back and touch up note lengths if you have to move things very far, or if you are looking for a legato effect.

2. Tricky chord sequence: Get the rhythm right and get the right number of keys down. Again use "EVENT EDIT TRACK" and change the pitches in the areas you can't get the chords right.

3. The fermata or hold can be a real problem. If you can make it come out to some integral number of beats, you can create a single measure sequence that is 5/4 time signature, for example. That still leaves you with a drum machine that is out of sync. I had to get out the TR505 manual and learn how to program that box again. When I was faced with that problem, I wrote a drum track and created a 5/4 measure there also. You could live with it until you get the song finished, and then forget the drums. Last, and very easy, is to write a MIDI instrument to play the drums from the EPS keyboard. Now you record a drum track to go with the song and get rid of the "drummer in a box" monotony.

Granted this all takes time, lots of time. As you work at this, however, you will find that two things happen. First you get better at manipulating the notes, and second you quickly learn to play for precision.

Bio: Gary Dinsmore took up the organ with a vengeance about 10 years ago, but finally sold it, leaving the pedalboard to people who can walk and chew gum at the same time. He's strictly an amateur musician - although he and a buddy did a couple gigs back in college and formed a little country-western group called the Selkirk Mountain Boys. They did so well that they decided their best bet was to finish college and get "real jobs." ■

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Programming The VFX: An Interview with Mark Wiens (Part 1)

by Sam S. Mims

The happy buyers of Ensoniq's new VFX synthesizer will be treated to the talents of Mark Wiens from the moment the keyboard is first played. As the president of Eye & I Productions, manufacturers of the Voice Crystal cartridges, Wiens has been creating aftermarket sounds for various keyboards and marketing them very successfully. And just recently, Ensoniq contracted the company to program about half of the VFX's "factory" patches.

Wiens studied electronics in high school and college, but grew frustrated spending so much time in courses that offered little practical knowledge. So, armed with his electronic skills and a strong entrepreneurial spirit, he went out into the world to seek his fortune. "In '76, I decided I was going to design a guitar synthesizer, which is like, 'Okay, let's try the hardest thing,'" he laughs. But that, he did. And slowly, he built up a small studio as well. Things started really falling into place when he teamed up with Paul Chasteen.

"He had worked with a management company setting up tours and shows for Dan Fogelberg, the Doobie Brothers, and a few other groups like that. He came out, saw my 4-track studio, I said I wanted to get an 8-track, and he said, 'I'll go in on it with you.'" The resulting partnership has led to a thriving business in third-party synthesizer sounds, with Wiens as the Soundmeister and Chasteen as the marketing expert. ("I don't like to count chickens," Wiens says, "but when Paul counts them, they hatch.") Eye & I is based in Milpitas, California, a small city on the outskirts of San Francisco, and that's where Wiens and I discussed the wonders of the VFX. Though he showed an intimate knowledge of the instrument, it was only a few days before that he had received the VFX's manual, as well as the final operating system with the effects processor implemented.

How did you get started in the aftermarket sound business?

The first year when the ESQ-1 came out, I kept a real hard eye on it, and that's when the aftermarket field for voices started to become a niche. So I had that in mind the whole time, but I didn't have the money to get the keyboard then. Paul had always paid cash for things, and he wanted to get credit started, so I said, "Take out a loan and I'll make the payments." We brought it over to his house, and I said, "Here it is; I want to do an aftermarket cartridge for it." He said, "I'll go in on it with you," so I spent about three months from December of '87 doing consulting to make the house payments while I worked on voices. Paul was working construction at the time to come up with \$3000 for starting costs. At one point, I lost my house, so I rented a small 20-foot trailer and had it parked on a friend's property. I'd be sitting up until 3:00 in the morning with the ESQ-1 on my lap programming sounds into headphones.

To make the actual cartridges, we didn't have enough money for tooling - the plastic injection molding was about \$6000 - so our way around it was to have, for about \$1000, the parts cast in epoxy. The fact that we're casting like this, with a translucent color, is why it's called the Voice Crystal. So we got tools, and we could do 12 a day. The tops had to be cut off, sanded down, and hand buffed on a grinding wheel, and they cost about two bucks a piece to pour them. So that was our thing.

That's an interesting history....

That's about it - we're just continuing on. I looked at the database a few days ago, and we've done \$757,000 in gross sales since we started. We've put the money right back in. We did \$40,000 our first year, and we hope to try and pass the million dollar mark this year [in total sales].

So after you started on the ESQ-1, then what keyboards did you expand to?

The second one was the SQ-80, then the D-50.

How many people are programming for you?

We've got seven right now.

So with the VFX, this will be the first time you've done "factory" sounds?

Yeah, and it will be interesting to see what happens.

How did you make the arrangement with Ensoniq to do that?

They called us up. Originally, in order to make the [ESQ-1] cartridge, I wasn't sure just how well they'd respond. So, essentially, I traced the circuitry of their PC board, and designed a new board from that. As it turns out, I was able to eliminate 52 feed-throughs from their version of the board. So I wasn't violating their copyright. *[TH - Ensoniq uses these seemingly unnecessary feed-throughs to provide test points for automated board testing. Early prototypes will have extras.]*

From their original EEPROM cartridge?

Right. And since then, their feed-throughs have gone down. Every feed-through you put through a board costs. I determined the timing of the device; they were using a single-source part, and I wanted to try to do a generic thing - that's how we were able to get the RAM version out. And we just got such a good response.

I spent basically three months on the first cartridge and, not having done that sort of thing before, I "elevated" voices that were already in the machine. It was a very mysterious area, so it was a big challenge as to how to do it. But I guess my work was not in vain - we're still getting good response. And Ensoniq just started recognizing the value of the aftermarket people, and they contacted us and a couple of other people. So they said, "Here it is, try to do something with it."

The original prototype didn't even have a front on it, so we had to reach inside and press the little micro-buttons to get the thing to work.

How was the prototype operating system?

It was better than other prototypes, but there were always some bugs. I've got several pages of feedback to show them where they might have missed something. But then again, with this final version, I think they've done it. It's a nice unit.

When you started learning to program the VFX, what did you have to learn that was very new or unconventional in order to make it work?

It turns out that they've used a lot of the basic structure from the EPS, like the envelope and filter pages. I think the ESQ-1 was and still is the easiest to program - it's the most clear - and I'm really pleased that they made the VFX along those lines. Once I got into it, I don't think there was any area that wasn't too obvious, especially once you know the EPS, because they do a lot of the double-click features. It's really pretty straightforward.

It's nice that you could just jump into it that easily.

It is really straightforward, aside from the fact that it's much

more modulator-intensive, or option-intensive, than the ESQ-1. You have many more things, but everything's pretty well maintained that's standard. The envelopes are a little different; rather than levels 1, 2, 3, 4, and times 1, 2, 3, and 4, they have initial peak, break 1, break 2, and sustain, which are your levels. You press the envelope page a second time, and you get attack, decay 1, decay 2, decay 3, and release. You press it again and you get keyboard tracking, the velocity curve, and the modes, which are NORMAL, FINISH, or REPEAT. FINISH is typical of the ESQ's CYCLE=ON in the MODE page, where it completes the full envelope. REPEAT goes up to the sustain, and then repeats the attack and decay portion, so you can use that for creating your own repeating waveforms.

So it takes three presses of the envelope button to see everything there?

To scan through it, yeah. But as far as ease of programming with minimal button presses, they really did a lot.

What's the basic architecture of a VFX sound?

The basic structure is you have six waveforms. When there are parentheses around one of the waves, that means it's muted; you press the patch selects, and you can see the different combinations [similar to the EPS]. You can deselect or select a mute with the soft buttons, and with double clicking, you've got a solo. [He plays a remarkable flute imitation.] It's realistic all the way up and down the keyboard. That's one waveform.

Typical of the EPS, you can use the patch selects to do program variations. This was one.... [He plays the flute sound now with a beautiful flutter-tongue effect.] You have pressure modulation controlling the SPEED of the LFO, which is often times one of the last things put on a synthesizer.

Another really nice feature is the mixer circuit. It's a modula-

tion-source mixer, and you can select, say, two modulation sources to put into it. One goes straight to the mixer, and one goes through a scaling section and a shaping section. In the scaling section, the scaling is from 0.1 - in other words a multiplication factor of 0.1 - to times 8. So you can scale the amplitude by that number. Then on the shaping, you have a selection of 16 different curves, from quick rise, convex, linear, concave, and then they have LATERISE. And then quantizing. Let's say you have a smooth linear rise on the modulator [controlling an oscillator]; quantizing will allow you to step through the notes. And then, of course, you can mix those two together. On the flute, as an example, using straight pressure to control the level of the vibrato seemed to be limiting - there was too small a range between slow vibrato and fast vibrato. So I used the mixer to scale it down a little bit. It allowed me to have a lot of range.

You've got waveshapes on the LFO from the standard triangle to sine, and you've got a sine-triangle, a positive sine (for things that start at zero and go up rather than go minus), and a positive triangle, sawtooth, and square.

Is the sine-triangle an addition of the two waveforms?

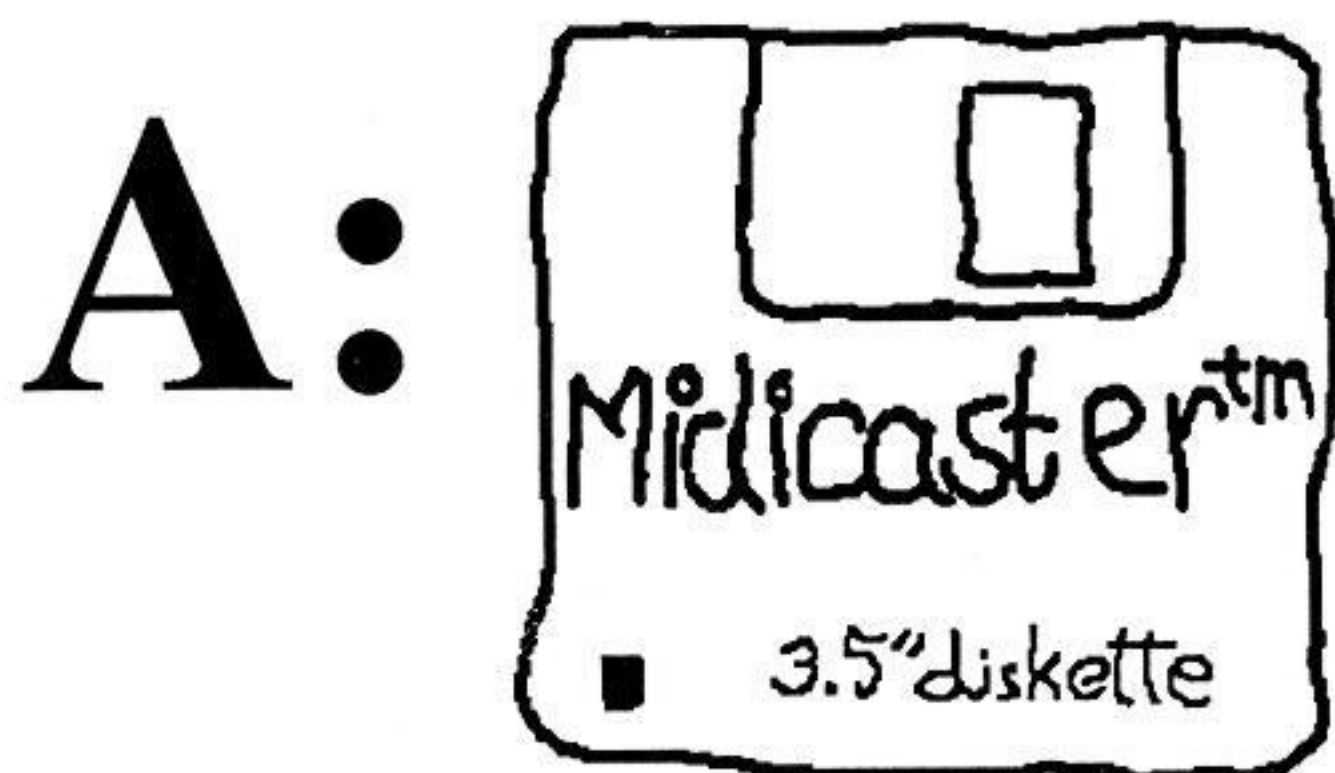
Kind of, yeah. It curves up, and has a tip on it. As far as uses for those, I've actually found some subtle areas, imitating natural instruments, where these come into play and make the sound just a touch more realistic.

The positive triangle and positive sine waves essentially start at zero, go up, and go back to zero?

Right, rather than zero crossing.

[Next month, we'll get more into the programming of the VFX, and take a closer look at the mysterious transwaves. Until then, stay tuned - same time, same channel....] ■

Q: If you own a Mirage, what's the cheapest way to get a system exclusive data librarian, a 20,000 note sequence player, a disk copier and formatter, a synthesizer, and an improved operating system?



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Layering Sounds on the ESQ-1/SQ-80

by Chris Barth

One of the best ways to find new sounds is to experiment with the LAYER function on the ESQ-1/SQ-80. Most of us are familiar with the concept of having one synthesizer (usually referred to as the controller) dictating what is played on a second synthesizer. In other words, we connect the MIDI OUT jack on the SQ to the MIDI IN jack of any second synthesizer, and whatever is played (assuming the MIDI channel assignments are set up properly) will sound on both the SQ and the second synthesizer. Assuming each synth is playing a different voice, the result is called a layered sound. Which can be great, assuming the proper voices are selected. This is how big orchestras earn their living.

The LAYER function permits a single SQ to act as two synths. Now, we all know that it can actually play up to eight different sequenced tracks, but that's something else. What we're looking at here is its ability to create new sounds by simultaneously combining two different patches in live performance. If you had two synths and wanted to combine the piano voice on one with the organ voice on another, the MIDI arrangement described above would accomplish the task. However, with the SQ, you can play the keyboard and hear two patches play in unison with your keyboard actions. The only catch is that the SQ will start stealing voices after 4 voices have been sounded, rather than after 8 voices when the LAYER mode is not activated.

The most common complaint from people who start layering voices is that there is no way to adjust the relative volumes of the voices, so one is usually louder than the other. To compensate for this you might try using the following approach:

Let's say you're a big analog fan and like that fat synth sound which shows up all over Van Halen and Rush albums. Load up the OB BRS patch, and press the SPLIT/LAYER button.

Now right away, the problem is the OB BRS patch is much louder than almost all of the other patches in the machine. Well, press the DCA4 button, and reduce the setting on ENV 4 until the volume has been reduced to your liking. The trick is to remember that since you started the process with OB BRS, the DCA settings refer to OB BRS, and not the particular patch you chose to layer over it.

With the OB BRS volume reduced, scan through the patches next to the LAYER button until you find a combination you like. The brass and string patches are usually good choices. You don't need to change their volumes; as long as you control the relative volume of the original OB BRS patch with ENV 4, there is no need to adjust the volume of the second patch.

Once you've found a combination you like, you can save it as a new patch. Now whenever you call it up, the layered patch will sound with the same relative volume mix for the two patches that you established when you first mixed the combination. When you call up OB BRS by itself, it will still be loud, but when you call it up under another name as part of layered patch, it will sound at the volume level established when you saved the layered patch.

Here are two of my favorites. Remember that super CLAV patch which appeared some time ago in the HACKER (Issue 18)? I love it, but it's a little thin, especially in the bass end. Try layering it with KLUNKS, using the procedure above. First, listen to both patches separately, and determine which is louder. No questions about it, KLUNKS is louder. Use it as the base for the layer, and after you've selected the LAYER

function, select CLAV. The layered patch will sound instantly, and it will be hard to distinguish the softer CLAV from the louder KLUNKS. To solve this, simply reduce the volume of ENV 4 on DCA 4, and you will be able to reduce the KLUNKS volume until you find a mix you like. When you do, save it as a new layered patch.

Another great mix is SYNLED layered with BIG I. Actually, what we're really looking for is a little fat analog sustain to beef up the SYNLED sound. Since BIG I is the louder sound, start the layer process by selecting BIG I, and choose SYNLED for the layer. Now, really cut back on the BIG I volume, and viola! SYNLED2, very expressive for rock band solos. You also might try this after previously editing the SYNLED patch to include a setting of 3 on the GLIDE control. Good luck, and write if you get work.



Bio: Chris Barth writes and produces his own top 40 demos in his MIDI home studio using an ESQ-1, a Kawai R-100 drum machine, various guest musicians and signal processors. Working hours are spent pension consulting for a firm whose clients include several famous jazz musicians. Chris knows the words and music to all the songs recorded by Paul Revere and the Raiders.

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Triton's Sound Disk #2

Reviewed by Michael Mortilla

For: Mirage and Soundprocess
Product: Sound Disk #2
Price: \$25
From: Triton, P O Box 160493, Cupertino, CA 95016, (408) 253-8547

"Fiddle, n. An instrument to tickle the human ear by friction of a horse's tail on the entrails of a cat."

Ambrose Bierce
The Devil's Dictionary, 1911

When Triton redefined the Mirage with Soundprocess a lot of things were changed. Reading their announcement of Sound Disk #2, and then listening to the actual product, one is left with the impression that the Tritonians are also trying to change the definitions of some traditional sounds to boot. Triton promises "cellos, violins, tympani, voices and much more..." The emphasis, and expectation, is definitely for at least some emulative orchestral sounds. Unfortunately, this is precisely where this disk is lacking. There are some appealing sounds to be found, but they're just not what is expected and, in this regard, Triton could be clearer in their description of this offering.

What you do get is one bank of sounds consisting of 48 patches divided into 32 programs (keyboard splits) and the raw materials used to build those sounds (24 samples and 48 waves). The process I go through in evaluating these disks is to scroll the programs, then the patches, and finally, the samples and waves. Patch scrolling is accomplished by selecting a program, then going to parameter (00) and setting the top key to 7F, then to parameter(01) and scrolling from 1 to 48. Scrolling waves/samples can be a little tricky: go to (54) and select the patch you are listening to, which also happens to be the value of (01). From this point on you will be changing patch parameters so remember that the envelopes from the original patch are in effect. You may want to go to (12) and set the patch default to ON, or "plain vanilla." Now, go to (60) and select osc pair 02, go to osc volumes (80) and (81) and set them to 00 (that shuts off osc pair 02), go back to (60) and select osc pair 01, go to (81) and set osc B to 00, go to (80) and set osc A to 63. There is now only one osc playing so go to (75) and select an algorithm to play either the sample or wave you want to hear. BEWARE! Each algorithm plays a specific type of wave in a specific way (one-shot, continuous, looped, re-triggered) and if you try to play the wrong type of wave you may not be hearing the sound you think is selected.

You can now go to (73) and scroll the waves individually. It only sounds complex, but it is really no harder than basic synth programming once you are in the Soundprocess mindset.

Scrolling the waves (catchy title for a song) can tell you a lot about the patches and why they sound the way they do. For example, in the "violin" patch #19, the sound is, in fact, a fiddle (see definition above). This sample provides a single, very nasal sounding bow stroke without any sustain. This is probably due to the fact that in this OS, the longest sample you can loop is 32 pages. Long, rich samples (like the kind needed to create good string sounds) are not possible. Subsequently, this "violin" is not all that useful for expressive playing (unless you don't require anything longer than a quarter-note).

Enough with the mini-tutorial, let's get to the other sounds on this floppy. Scrolling the patches, I counted "roughly" 2 guitars, 13 pianos, 4 percussions, 3 vocals, 10 organs, 2

harpsichords, 3 DX bells, 3 basses, 1 orch. hit, 2 squeeze boxes, 1 brass fall-off, and 4 quasi-string sounds. I say "roughly" because some sounds are hybrid while others are electronic and defy verbal description. Overall, the sounds are pretty good. The bell/piano sounds are especially pleasing and the steel drums are believable. Patch #36 is a lead guitar in the upper keyboard and in the lower sounds like a cello being bowed by a Star Wars light-saver. There is a solid slap bass with a bell like quality in patch #21, and one without the bells in #20. There is also a synth bass (#18) that adds repeated xylophone strike. Wheee! For added fun there is #42, which combines a synth bass with an electric piano and a "stick-on-the-side-of-the-snare-rim" sound to create a TV game show style "tic-toc." At this point, you may want to use this patch to play "The Party's Over."

Then there are the patches which require hospitalization. The chorused organ sounds are overly detuned and suffer from chronic harmonic beating, which is acute in the upper end. The "Doo Voice" didn't doo much for me; the sustain is grainy and the voice loses the believability it has in MASOS. A similar enigma runs rampant in other patches. The Rx for the DX tube bells (#16) is to amputate osc 1 (a clear case where less is more). My ear rejected the organ/piano hybrid as well as the "metal hammers" (#'s 12 and 13). It was Sir Thomas Beecham who defined the harpsichord as "Two skeletons copulating on a galvanized tin roof." The fat harpsichord sounds here (#'s 10 and 11) reinforce that description, but the skeletons are obese, and we miss the delicate timbre of the acoustic instrument.

Triton has very little competition in the Soundprocess compatible disk market and the only other vendor I know of is Bob "Lush" Spencer (see TH review Oct. '88). In all fairness to the users of Soundprocess, it should be noted that Bob gives you three full banks of sound for the same price. In creating Soundprocess, Triton comes close to meeting the competition in the "sell your Mirage and buy a cross-waves synth" market. Triton is going to have to meet the competition in the sound disk market and start giving three full banks of sound. Both vendors could provide better documentation to include both the wave/sample map and patch listings of some sort. Personally, I would not mind paying Triton's price if I was going to get the high quality orchestral sounds I was expecting. There is, after all, lots of programming that has to happen in the creation of these babies. ■

Current Ensoniq Operating Systems

INST	OS	DISK	EPROMS
EPS	2.4	X	
EPS-M	2.4	X	
MASOS	2.0	X	
MIRAGE	3.2	X	
ESQ	3.5		X
ESQ-M	1.2		X
SQ-80	1.8		X

Soundprocess "Hackerpatch"

by Bob Spencer

I hope this is an idea whose time has come (and hasn't passed). Now that the Mirage has been transformed into a D-50/SQ-80/ESQ-1-type of synthesizer that you can plug your own waveforms and samples into, it's time to get into some SERIOUS PROGRAMMING! Here's how to start:

First, (very important), BUY THE SOUNDPROCESS SYSTEM (unless you got it free with your Mirage)!

Second, familiarize yourself with the new parameters and command keys. The tutorial which comes with SP is a good start. Later, you may want to try the additive synth module in SP. Bob Moog has a good series of articles in *Keyboard* magazine. Also, I've found the ESQ and SQ-80 articles in TH to be invaluable. Check out any articles on analog synthesis, because that's basically what we'll be using.

Now, let's look at one of the patches on the System disk and start hacking!

Look at Program 31. Press "31" on the keypad. Press "Parameter", "00", then "Value". Press "Upper Sample". Viola! A synth-piano sound all the way up (almost). What's happening from E5 up? Strange sounds indeed! To change this we need to go to P54. But first, let's see what our patch number is. Press "01", and Value. It tells us the patch number is 31, the same as our program number - an important distinction. Now, press "Parameter", "54", and Value. Change it to 31 with the increment key. Press "97" and Value. Change this to 12 with the increment key. Now you have the entire keyboard range.

Let's say we want to change octaves. Press "69", value, and increment to 2. Press "71", Value, and change to 2 to change Oscillator pairs. Now press "71" again, Value, and increment to 2. Press "69", Value, and increment to 2. We have raised the pitch of the entire patch an octave.

Now that you've got the idea on getting into a patch (00, 01, and 54), changing oscillator pairs (60), and coarse tuning (69 and 71), let's pull out a patch chart and try some other tricks. You'll find these in the Soundprocess manual. Get a friend, Mom, or corporate rebel to run off several copies of these, the waveforms maps, and program charts so you can keep track of your SP patches until someone comes out with an editor/librarian for your home computer (hopefully for my humble Apple II+ relic). Remember, always make sure you use P54 to check which patch you're changing. Try this patch chart on Program 31, Patch 31 (the one we were just messing with).

SOUNDPROCESS PATCH CHART

Name: Synth Piano and Strings

Volume Envelope	Pair 1	Pair 2
[61] Attack	00	10
[62] Peak	7	15
[63] Decay	26	27
[64] Sustain	10	15
[65] Release	18	19
[66] Decay Kbd	5	00
[67] Peak vs	31	15
[68] Sustain vs	0	10

OSC A

[69] Octave	2	2
[70] Fine	1	0
[73] Waveform	3	35
[80] Volume	63	40

OSC B

[71] Octave	1	2
[72] Fine	FE	4
[74] Waveform	35	35
[81] Volume	48	40

LFO

[76] Freq	2	34
[77] Depth	3	4
[78] Switch	2	3

MISC

[75] Algorithm	2	1
[79] Kbd Switch	3	3
[82] Vol Track	31	31
[83] Trig Time	-	-
[84] Trig Cntr	-	-

FILTER

[89] Attack	0
[90] Peak	11
[91] Decay	28
[92] Sustain	10
[93] Release	24
[94] Decay Kbd	0
[95] Peak vs	16
[96] Sustain vs	5
[85] Freq	0
[86] Q	0
[87] Track	31
[88] Max Freq	99

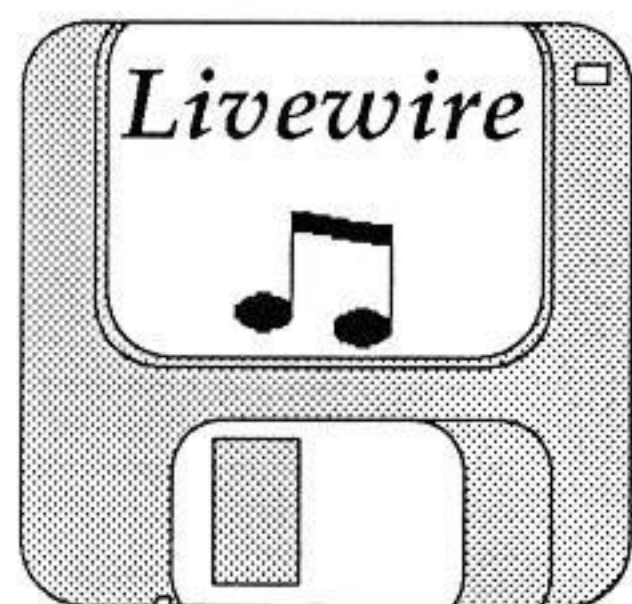
PATCH

[97] Transpose	12
[98] Volume	63

I'll be glad to run a series of articles on the SP Hackerpatch if there is any interest out there. Write to TH or me (find my ad in the Classifieds under "Samples" - cheap plug!) and let us know yea or nay. Also, I'll be glad to share your patches, trade, etc.

Bio: Bob Spencer has been a professional musician for 14 years and a husband for approximately 1 month. He bought a DX7 5 years ago, a Mirage 3 years ago, and promptly sampled all his patches and sold the DX. He also is the "Lush" with a library of Soundprocess sounds.) ■■■

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 () E9 - Electric Guitar1 () E10 - The Unusual1 [Airy swell, orch hits] () E11 - Analog Dinosaur2 [Jupiter6] () E12 - Drums3 - 8 kits
 () E13 - Orchestra Hits () E14 - Soprano & Alto Saxophones () E15 - Mandolin & Accordion () E16 - African percussion, gong, more
 () E17 - Vocals 1 [Ooh, aah, choir] () E18 - Trumpet [muted too] () E19 - Hi-End Digital Synth () E20 - Unusual 2 [wild & crazy noises]
 () E21 - Trumpet2 [wah-wah] () E22 - Harmonica () E23 - Vocals2 [mellow choir] () E24 - Strings 2 (solo & dual violins)
 () E25 - Drums3 [8 sets] () E26 - Bass 1 [Kramer, Rick, CZ] () E27 - Grand Piano1 [1000 blocks] () E28 - Roland D-50 #1
 () E29 - Roland D-50 #2 () E30 - The Unusual3 [windchimes] () E31 - Acoustic guitars () E32 - Drums4 () E35 - E. Piano/Bells
 () E36 - Bass 2 [DX & slap bass] () E37 - Roland D-50 #3 () E40 - Additive Synth1 () E41 - Misc. Brass [French Horn, Hits]
 () E42 - SynthStacks #1 [MONDO synths!] () E43 - SynthStacks #2 () E44 - Alesis HR16 Drums () E45 - Bass3 [Jazzbass, more]
 () E46 - Heavy Metal Drums () E47 - DX7II DualSounds () E50 - The Unusual4 [Phasers, Glass, Snap] () E51 - Roland D-50 #4
 () E52 - Korg M1-1 [piano, organ, more] () E53 - M1-2 [vocal/strings] () E54 - M1-3 [drum/bass] () E55 - M1-4 [combinations]
 () E56 - M1 #5 [HonkyTonk, Pizzi. strings] () E57 - Analog Dinosaurs3 [Analog Brass, B3] () E58 - Bass 4 [5-string & fuzzbass]
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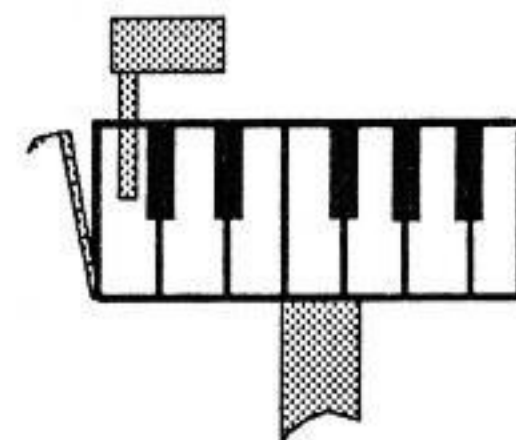
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The Eltekon Hard Disk Drive

Reviewed by Bill Lewis

For: EPS.
Product: Eltekon "Overdrive" hard disk drive series.
Price: Varies with capacity. Call for latest prices.
From: Eltekon, 37493 Schoolcraft Rd., Livonia, MI 48150. 313-462-3155.

When Apple computer chose SCSI as their hard disk interface, they helped create a massive market. Ensoniq, recognizing that a proprietary HD system for the EPS would penalize potential users, also chose SCSI. And, because the market for Apple compatible SCSI drives is by far the largest, Ensoniq elected to follow Apples guidelines.

While these guidelines suggest that in order to ensure compatibility, it's important for third parties to implement 23 SCSI commands, only four or five are absolutely essential. After becoming aware of this fact, many drive manufacturers designed their SCSI systems to use the minimum number of commands required to ensure Apple compatibility. Unfortunately, Ensoniq engineers were not privy to this information when they set out to design the EPS SCSI port which, for better or worse, follows Apple's suggested specification. As a result, not all Apple compatible SCSI drives successfully communicate with the EPS. That's why the Hacker prints an EPS HD Compatibility List almost every month; so folks in the hard disk market know which sub-systems are guaranteed to work. We all live and learn.

One company though has been doing their homework in an attempt to ensure compatibility in a market of "proprietary" standards. That firm is Eltekon, who's developed an entire line of hard disk sub-systems called the "Overdrive" series. These drives not only work with Apple computers and the EPS, but the Atari ST and Amiga computers as well as Roland, Emu, Kurzweil and Akai keyboards. Like most of the "standards" in the engineering world, design departments at electronic firms have found ways to *improve* the SCSI specification. This translates into a need for proprietary modifications, depending upon what the hard disk will be connected to. For those of us in the computer music industry whose digital equipment has a plethora of origins, Eltekon may be *the* source for assured compatibility.

Their drives come in a variety of sizes, from 20 Mbytes to 120 Mbytes in two different rack mount configurations; Overdrive EX and Overdrive EX2. The EX houses a single drive unit and the EX2 has space for two. They're shipped complete with with two foot and six foot cables and drives beyond 60 Mbytes include a library of sounds.

These things are rugged! The two rack space mounting bracket is made of steel and weighs about two pounds. The drive case screws into two rails that are spot welded onto the mounts face plate and it can be removed if so desired. (I originally thought that having a rack mount for the drive was tres' cool and quickly discovered that I often needed the drive and not my rack, so it's home is now my gig bag.) Inside the case, the drive is shock mounted on four rubber feet and the controller/power supply card and fan are cleanly placed within this functional steel shell; there no short cuts or kludges. It's also not going to win an industrial design award, but it will probably outlast the rest of your setup. On the back of the drive case are two fifty pin Centronix type connectors for daisy chaining, a power switch (which is on the front of the 2EX), a removable AC cord and a very important external SCSI ID selector. The drives are also internally terminated by a user accessible resistor pack which is an important consideration

when it comes time to daisy chain with your computer and/or another hard disk.

For most of us, there are two reasons to get a mass storage system: speed and accessibility. Having ready access to a large library of sounds makes using the EPS Bank function all the more useful. In my case, it has afforded the ability to customized instrument setups according to sequence without the need to swap disks and use multiple banks, not to mention catalog and control an ever expanding disk library. Having it all in one place make it easier to manage. But more importantly for live performance, there's speed!

Speed is a function of two items: "Access Time" and "Interleave". Access time is the amount of time it takes the drive heads to find requested information. The lower the number, the faster the drive. Interestingly, larger drives are faster because the data density is higher. Eltekon's 20 meg drive has an access time of 65ms (milliseconds or 1/1000th of a second) on the low end and their fastest drive, the 90+, is rated at 18ms. But a more important factor in determining how quickly information will be loaded is the interleave factor.

Data is written to a disk in concentric rings made up of blocks of bytes. As each block passes beneath the drive's read/write head, it's feed into the keyboard/computer. However, the disk often rotates too fast for the system to absorb each block in succession. By changing the interleave factor, the operating system tells the drive controller to read every *other* block or every *third* block of information. A 1:1 interleave reads consecutive blocks, a 2:1 interleave reads every other block and a 3:1 interleave reads every third block.

Originally, Ensoniq "hard-wired" a 1:1 interleave into the EPS ROM, but they've since realized that it didn't allow optimization of slower drives. As a result the EPS-M includes a choice for changing the interleave factor when formatting a hard disk. This ability will become an update available to owners of the EPS keyboard in the near future. In the meantime, if the HD connected to your EPS keyboard is taking too long to load and you're friendly with a local dealer who just happens to have an EPS-M on the floor, you can reformat it with the "M" using a 2:1 or 3:1 interleave and speed it up.

When I did my first format of an Overdrive 60 at a 1:1 interleave (which by the way, has an access time of 40ms), it took 23 seconds to load 1000 blocks. When I reformatted at a 2:1 interleave, load time dropped to seven seconds. A significant decrease and one that makes changing my keyboards entire memory on stage a non issue. Dead air in a live performance is death, but seven seconds is manageable. If one simply changes a sequence or song without altering the instruments, the Overdrive loads so fast it sounds like a disco mix. Yeah!

One thing I've noticed though is that changing sub-directories while the sequencer is playing makes the tempo hiccup. As long as you read from the same directory it's possible to scroll through a file list without affecting tempo. But, when you have to change to another location on the drive, it momentarily interrupts playback: a neat effect not always desirable. This is a function of the EPS and *not* the Eltekon drive.

Speaking of sub-directories, be prepared to encounter a level of cognitive anxiety. Having only a single line in the EPS display through which to view the drives contents does not lend itself to ease of navigation. Macro's help, but try to keep items grouped in logical categories; sequences in one area,

sounds in another with sub-directories for percussion, bass, woodwinds, brass etc. And, *write it down!* It's pretty easy to get lost in 45 or 90 Mbytes of data when you can only look at one file name at a time. I've found a useful method of keeping track is use of my word processor's outlining program; it's logically laid out just like the sub-directories in the hard disk.

The only problem I've had with the drive is that I've yet to successfully daisy chain it between the EPS and my Mac SE. The concept is to plug the EPS into the Overdrive and the Overdrive into the Mac which will in turn run Alchemy. When the Overdrive is cabled into the Mac's SCSI port, the Mac will not boot. After a few conversations with Ensoniq and Eltekon, the dilemma has yet to be resolved. However, there are still options I've yet to explore and the folks at Eltekon assure me that there's someone out there who's successfully made the connection.

In nearly four months of using an Overdrive 60, it has performed flawlessly. Of course once you plug it in and it works, it tends to stay that way. But this drive has been bounced around in my gig bag, in and out of my car, from winter cold to the warmth of the stage and studio, immediately booting and running my EPS system under the normal rigors of a traveling musician without fail. In other words, it's been dependable. There are drives out there which are somewhat less expensive than Eltekon's offerings, but not by much. And, unless they're on the approved "list", there's no guarantee it'll work. From my perspective, it's worth a few extra dollars to buy a drive from someone who knows what musicians need; a rugged, dependable system with good support at a reasonable price. Eltekon gets my vote.

Bio: Bill Lewis is the Wizard Sysop on the Compuserve MIDI Forum where you can reach him at 76701,35. He's been playing electronic instruments since 1965 when he first plugged his saxophone into an electronic pickup and a Maestro unit. ■

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Eltekon	OVD-20, 30, 40, 50, 60, 80, 90, 120
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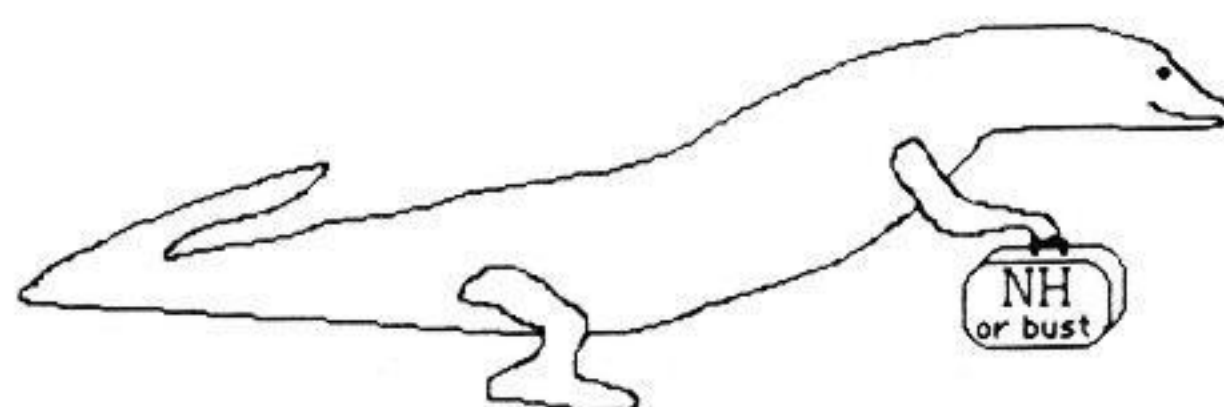
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The Taming of the Squid:

Journeys Into Professional Studio Work With the ESQ-1, SQ-80 Sequencer

by Rick Hall

I asked a friend of mine who is a producer of high-tech MIDled-to-the-hilt NYC dance tracks whether or not he experienced in his recording life the kinds of mysterious software and hardware glitches which occasionally turn a perfectly ordinary session into a brain-scrambling nightmare, echoing to the strains of "WHY...is it DOING that?"... His immediate reply: "Of course. ALWAYS. There's always something." Which is reassuring, in a perverse sort of way, because those of us who work in a musical context that is tied to computers, sequencers, drum machines, and other tools of the electronic devil have all experienced the tendency of these devices to at times have their own way with us.

The ESQ-1/SQ-80 is no exception, although Ensoniq's admirable process of providing constant software updates has steadily exterminated most of the machine's more notable bugs. But, realistically, should anyone ever put themselves in the position of depending on such an inexpensive onboard sequencer for any truly professional application? After all, as we are occasionally reminded by the Ensoniq customer service reps themselves, it's ONLY a fourteen-hundred dollar unit; let's not expect miracles...

Well... That may be, but not everybody is rich, either -- certainly not me (...yet). And the SQ sequencer is user-friendly to the extent that out of sheer convenience I do a considerable majority of my own writing using it, in conjunction with a ridiculously extravagant load of outboard gear. As a result, I find myself in professional, money-on-the-line conditions with this machine quite often, and in the process I have run across many situations which have cost me time and money to figure out. The purpose of this article is to inform Hacker readers of a few of the glitches I have encountered, along with some solutions, in the hopes of making work with the SQ sequencer as pleasant of an experience as possible, and maybe even saving you some studio time (or your reputation) in the process.

SITUATION #1: The tape sync, which worked fine the day before when we laid down the bass and drums, has today decided to run ever-so-slightly faster, thus bringing the overdubbed parts gradually out of sync with the other tracks already on tape. At first we suspect the 24-track transport, but it soon becomes obvious the fault is with the tape sync itself.

SOLUTION: This one was solved the way in which 90 percent of SQ software snafus are fixed: re-initialize the machine. We still don't know why the sync failed to sync up, but after re-initialization everything worked just fine. The real lesson here is NEVER enter a professional situation dependent on the SQ without backing up all your information and bringing along with you whatever is necessary to quickly re-access your data. I use a librarian program with my Atari ST, and as much as I hate dragging the computer around with me to the studios, I'm never in there without it. I now make it a common practice to initialize my Squid before beginning any studio session. Don't forget to re-tune your filters after initializing so that all of your patches sound the same as before when they come back up.

SITUATION #2: This happens to me and other ESQ users I know from time to time, although the customer service reps I've spoken to about it at Ensoniq claim to have never heard of it until I called. Sometimes when creating a track in a sequence, if you whack in a note just as the sequence is coming to its very last fraction of a beat, an unwanted note or computer-like "doink!" will be written into the track at that

point, which is NOT ERASED when the track is recorded over. Step-time editing will not pull it out, nor will copying the track to another track location, nor will copying the sequence itself to another location. In fact, it would seem that nothing short of re-writing the sequence itself will expunge the offending data. But what if your sequence is full of other parts that are great, un-quantized, and that you will never be able to get just right again in a million years?

SOLUTION: When the glitch occurs at the very end of a sequence as described above, one thing that often works is to append the sequence to itself (thereby placing the glitch into the middle of the sequence) and then lopping off everything that you just appended. The errant data is "absorbed" by the append and disappears from the end of the sequence. This problem occurs occasionally in syncopated drum parts where the first beat of a measure is meant to be anticipated, and often shows up as a double kick drum beat where two sequences meet. Remember, the glitch is at the end of the first sequence, so that is the sequence you need to monkey with. If you get a similar piece of errant data in the middle of a sequence and you have a later version of the software (3.4 or above) which enables you to cut and paste bars from anywhere in the sequence, try cutting out and replacing the damaged bar (after first saving the sequence to another location). Even if you have to re-write one bar, it's better than re-writing the entire sequence.

SITUATION #3: All my internal sounds look and sound fine, but what's with my cartridge? I'm getting K*BRG&X where STRING2 used to be, and it sure don't sound like strings to me... And I keep getting a message telling me that my program transfer has failed when I try to re-write to the cartridge, but I'm sure that my cartridge is O.K...

SOLUTION: Stop hauling your Squid around with the cartridge in the port. Take it out and stash it safely in your pocket. In time your instrument may mysteriously correct itself, like mine did, or you may just have to ship it back to Ensoniq to have your cartridge port serviced. These ports contain delicate connections and are not cheap to fix, so take a tip from someone who's been there and keep the cartridge separate when traveling. It also helps to occasionally clean the contacts on the cartridge -- I use an aerosol cleaner/degreaser for electronic parts, available at any electronics store.

These are just a few examples of the ways in which you can get bitten by the MIDI gremlins. Perhaps many of you reading this, and using the SQ day in day out, can contribute your own solutions to situations you have encountered. If so, I'd love to hear from you. The ESQ-1 and the SQ-80 are remarkably cooperative machines, but keep in mind that, at heart, they are computers, and therefore occasionally work in mysterious ways. A little forewarning can often be the difference between a profitable session and a missed opportunity.

Bio: Rick Hall is a well-known -- some say notorious -- denizen of the Philadelphia music scene who keeps himself busy writing, performing, producing and recording with numerous ensembles of every conceivable nature, including his own R&B group DANIELS/HALL. He frequently sluffs off his serious obligations in order to go fly hot air balloons and indulge a passion for fiddle-making. He is in love with a large white dog named Lady.

Tune Your ESQ / SQ-80!

by Bob Damiano

I've noticed something very disturbing about most of the patches that I see (and hear) that are out there for the ESQ. Most of the patches published in the HACKERPATCH as well as the Factory Patches that are shipped with the ESQ are guilty of it, too. What's wrong with them? THEY'RE OUT OF TUNE!

The problem stems from the fact that the FINE Tune Parameter isn't bipolar (can't go plus AND minus) like most of the parameters. So what happens? We select a bland (non-chorused) patch to tune our wonderful ESQs with the Master Tune Parameter. We tune it to whatever standard we are using at the time and then we select a nice fat patch to use and - By Golly - it's SHARP! And the fatter the patch, the sharper it sounds!

Don't believe it? Fire up the ESQ and put a factory 80 voice cartridge in it. Now, play a note and listen to the pitch. Select the next patch, play the note, and listen again. Repeat this for 10 or twenty patches and listen to the pitch variance. You can hear it, can't you? If not, read no further.

The fact that other people's, and factory patches are out of tune, doesn't bother me a bit because I only use my own anyway. Here is what I do to keep MY patches in tune.

The beauty of the ESQ is its 3 oscillators. They can be combined and modulated in different ways and above all, they can be TUNED separately. To add chorusing to a patch, the standard thing to do is to detune one oscillator with respect to another. Fine. But when you have only detuned them sharp, guess what, the patch is sharp. The trick is this: you should try to keep the pitches of the oscillators centered around the non-detuned pitch (the pitch of your Bland Tuning Patch). If you fine tune one oscillator UP, you've got to fine tune another one DOWN. Since you can't set the FINE to a Negative value, you've got to do something sneaky. Using the SEMI Parameter, set the pitch of one osc to one half step lower than the oscillator you want to detune with. Now raise the value of FINE up to max (31). This is lower than the other oscillator by one FINE increment. Setting the FINE to 30 makes it lower than the other oscillator by 2 FINE increments; and so on, and so on... What about the third osc? Well, if you detune that one up, then you detune your negatively detuned oscillator down another one. Just try to keep as much happening on each side of "zero." Above all, LISTEN! Compare the patch with a bland tuning patch and try to make them match.

Here is an example: Let's say you want to detune osc 2 by 4 Fine Tune increments with respect to osc 1. Instead of just setting the FINE of osc 2 to +4, set it to +2. Now, go to osc 1 and set its SEMI to +11, its OCT to 1 less than osc 2, and its FINE to +29. Now you've got the same difference in pitch between the two oscillators but their pitches are CENTERED around your "correct" pitch as set by the Master Tune Parameter. This patch is in tune!

I don't want it to sound like I pioneered this technique or anything. I didn't, and it is used on a few of the more IN-TUNE factory patches. I'm just trying to say that if you want your ESQ to play in tune from patch to patch, then you've got to use this trick yourself. If you use factory or store-bought patches, then go through them and tune 'em up!

Another way to get the chorusing effect without using the FINE at all is by modulating the oscillators. Have two oscillators tuned exactly to each other and then apply a modulation source to one of them be a positive amount (ie, +2), and by a negative amount (-1) to the other. This way, at any time, the pitches are still centered around the "standard" pitch. This can actually produce a much deeper chorusing than just statically detuning the oscillators.

I hope you will try this. Your ESQ sounds much better when it's playing in tune with the rest of your music. ■

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Opcode SQ Librarian

Reviewed by Kenn Lowy

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First of all, why do you want or need a librarian (especially one that costs \$100) for your ESQ? If you don't have any cartridges, and only use the 40 internal sounds then chances are you don't need a librarian program. But if you're constantly looking for new sounds, and you're running out of room on your cartridge(s), and you really don't want to buy another cartridge, then a librarian can solve a lot of your problems. You may ask, "How so, Kenn?" and I might be in a rush to get out the door to catch a movie, so no time to answer that question, but as luck would have it, I have the time! What a library program does is take the sounds (programs) from your ESQ and put them in your Mac (and on disk, if you want to save them). Once in the Macintosh they can be easily renamed and more importantly, they can be moved around! It will allow you to make order out of chaos (if that sort of thing appeals to you).

Let's get more specific as to what can be done with this program. First of all, you can save programs (sounds) and sequences to disk! So you can have a backup of all your sounds and songs, which is somewhat useful (the writer is being sarcastic). If you have a rack mounted ESQ however, then the sequence part of the program won't do you a lot of good. As far as sounds go, you can save a whole bank of sounds or one sound at a time. So if you have a great sound on the cartridge and you want to plop it onto another cartridge, you just transfer that sound to the Mac and then switch cartridges and then transfer it back to the SQ where it will be more useful. This is also very useful if you're going to be working in a studio and they have an SQ and Mac in house. You can simply bring a disk packed with sounds to the session and not have to worry about what sounds the studio may have on hand. Let's face it, if you're being paid to play keyboards, and the producer asks for a specific sound, you won't want to turn to him/her and say "Well, I have it one one of these cartridges, it'll only take me a few minutes to find it." What you want to do is to say, "It's on this disk, give me a second to load it."

The librarian will let you put things in order. In fact, one of the options available is to alphabetize your sounds. You can also delete duplicates. The program will tell you if you have two sounds with the same name, and will allow you to listen to them, so you can decide if they're the same sound, or just the same name. It is also easy to copy sounds from one bank to another. You simply use the old "copy" and "paste" routine. You can have several banks loaded into the Mac at one time. I'm not sure what the limit is, but if you have a Mac Plus then you have one meg of memory to play with, and you can probably load a half dozen or so banks before you'll have to worry about memory problems.

Other options include printing out the names of your sounds. This is also handy when your library of SQ sounds starts getting large and overbearing. If you learn to name your sounds well you'll be able to look through your catalog of sounds and find the right sound quickly.

Setting up the program is very easy. You say what port you're using for the MIDI hookup (the choices are printer and modem) and what MIDI channel you're using. And then there's the ever present "key disk" copy protection deal. Opcode will allow you to install the program on your hard disk twice. After that you'll have to insert the master disk every time you boot up the

program. Now as much as I hate this system, (partially because I've had my hard disk crash a few times and software companies don't really care about that) I can understand it, a little. But my feeling on copy protection is that once you're a registered user, you should get your upgrades on non-copy protected disks! After all, they know you've paid for the program, and now you've paid for the upgrade, so why not give you the benefit of the doubt? Opcode does update their programs every year or so, which is good to know.

Finally, the cost of the program, \$99. Does that seem a bit expensive to you? If this were an editor/librarian program, I'd have no problem with shelling out \$99 for it. But it's just a library program, and that IS a lot. Then again, you have to weigh several of your options here. A new cartridge is in the neighborhood of \$40, and you don't want to have to buy a bunch of those, so maybe \$99 is reasonable. Opcode will give you a break on the ESQ-1/SQ-80 editor if you buy the librarian by charging you an additional \$120 for the librarian/editor package (normally \$200).

So there you have it, a good SQ librarian program for the Mac. Personally, although I like the librarian, it's the editing package that I need. That's the deal for now. As for me, I have to get out the door and see that movie.

Bio: Kenn Lowy is an e-bowist/guitarist/stick player who uses various synthesizers. His first album is due out in the fall on the October label. For pure relaxation he runs road races and competes in triathlons. ■

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Hackerpatch

By Sam Mims

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The Patch: SYNBLE

by Jacob Rilling, Browns Mills, NJ

With this synthesized cymbal, velocity is the key. The setting of LV=40x on ENV 4 makes it all happen as far as the spectrum of sensitivity. This is a surprisingly basic program, and will work equally well on the ESQ-1, I hope. [Sorry, Jacob; see below.]

Even though many of us have drum machines, many of us still don't, and I think this patch offers a much-needed good quality cymbal.

The Hack

This is a good imitation of a ride cymbal; it works in the top two octaves, and which key you play determines the "diameter" of the cymbal. This patch doesn't sound like a crash cymbal, though; I don't know if it was intended to or not, but I couldn't find a way to make it into one. The waveforms really make this sound, and no others besides METAL are very cymbal-like. Unfortunately, this means that ESQ owners are pretty much out of luck with this one.

I didn't find anything to really change here; Jacob has hit pretty close to the ride cymbal target. But it is curious that the MODs on the DCAs are two halves of what could have been one whole. In other words, these could have more simply been set to VEL=+62, and OFF. (On the FILTER page, both are needed, since one alone cannot be set higher than 63).

The Patch: *D-50*

by Jim Symonds, Portland, ME

Changing the waveforms on this patch can give a good variety of really "big" sounds. For my KORG M1 imitation, change OSC 1 to BASS; OSC 2's OCT to -1, and WAVE to VOICE2; set the FILTER to FREQ=80, and KEYBD=00; and finally set T4 of ENV 4 to 37. Once you've saved this, change OSC 2 to NOISE1, and DCA 2's LEVEL to 50; this creates a nice LA SYNTH texture. But don't stop there - as you can see, a little tweaking goes a long way!

The Hack

This basic patch is pretty nice, but it seems a bit harsh for a D-50 imitation. I like it best with the mod wheel full up, which raises OSC 3 an octave. Blast it through a reverb, if you're really going for D-50 vibes. I like the KORG M1 version as well, and had fun using the mod wheel to set OSC 3 up a fifth. I don't care for the LA SYNTH variation at all - it's noisy instead of breathy.

What I've found to work quite well in emulating the D-50's sound is the use of the filter resonance; crank it all the way up (Q=31), and *D-50* becomes much smoother. Try this with KORG M1 as well, but set the filter FREQUENCY here to 95 or so. I think you'll find these variations to be quite useful.

The Patch: GLSPNO

by Jarvis Watnemo, Hutchinson, MN

The glass piano requires operating system 3.4 or 3.5 for the ESQ-1 in order to set OSC 2's OCTAVE to +4. This allows a nice bell sound in the lower octaves.

The Hack

"Glass piano" is a very descriptive name for this very nice patch - it sounds like a Rhodes piano with glass tines, if you can imagine that. There's only one thing I would change on this sound - it seems to cut off too quickly on the very highest notes. This is easily remedied by setting ENV 4's TK to 48. (TK is the Keyboard Decay Scaling; the higher its value, the more it shortens T2 and T3 as you play up the keyboard.)

You can create another sound, along the lines of what I mentioned for *D-50* above, by setting the filter FREQUENCY to 127, Q to 31, and both modulators OFF. Try this with FREQ=35 also.

And by the way, if you don't have operating system 3.5, you should. It's a 30-minute job for a technician to replace the one chip, and the part is free. It cost me \$20 in labor to upgrade and, for the extra features, it's silly not to do it.

The Patch: BLUHRP

by Dan Hatt, Dartmouth, Nova Scotia

The blues harp sound is interesting in that it bends a note more the harder you hit it. The mod wheel adds the reeds, which is like opening your hands from around the harp.

The Hack

At first, this patch didn't do much for me. But after sitting with it for a while and learning how to really play it, I began to see the beauty of it. It's not natural for a keyboard player to play or to think like a blues harp player, but this is an important key in emulating that instrument. BLUHRP does a very nice job of bending the notes with ENV 1 modulating the oscillators - it sounds like a real player. But you have to play very lightly to avoid doing this on every note; as Dan mentions, this is velocity controlled, and it's very sensitive.

The mod wheel takes a little getting used to, but adds a very real dimension to the sound. Try playing "Home On the Range" or something, using the wheel almost fully on when a note is attacked, then close it down slightly as the note is sustained. (This patch seems to work better on slow lonely cowboy songs than on rip-roaring blues jams.) With the wheel fully off, the sound seems too subdued to me. You may want to tweak the filter FREQUENCY, but just do it a little bit; it starts sounding unnatural for values over 70.



Bio: Sam Mims is a studio session player in Los Angeles, and a member of the band THE NEWKS. He is a Contributing Editor for GIG magazine, and owns Syntaur Productions - a company that produces music for television, radio, and film. In addition, Syntaur markets synth patches for the ESQ-1 and SQ-80.

SQ-80 PROG: SYNBLE

BY: JACOB G. RILLING, III

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-3	7	0	METAL	OFF	-	OFF	-
OSC 2	-2	0	0	METAL	OFF	-	OFF	-
OSC 3	0	0	0	CLICK	OFF	-	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	58	ON	VEL	31	VEL	31
DCA 2	58	ON	VEL	31	VEL	31
DCA 3	63	ON	VEL	31	VEL	31

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	12	0	55	VEL	63	VEL	63

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	KBD	35

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	-	-	-	-	-	-	-	-
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	50	10	40X	0	0	25	50	42	7

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	OFF	OFF	OFF	OFF

	SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
	OFF	-	OFF	-	OFF	-	-

ESQ-1 PROG: GLSPNO

BY: JARVIS WATNEMO

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	0	0	0	E PNO2	OFF	-	OFF	-
OSC 2	4	0	3	BELL	OFF	-	OFF	-
OSC 3	0	0	5	BASS	OFF	-	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	48	ON	ENV3	47	OFF	-
DCA 2	61	ON	OFF	-	OFF	-
DCA 3	63	ON	OFF	-	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	3	2	50	ENV3	47	ENV2	13

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	KBD2	41

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	-	-	-	-	-	-	-	-
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	63	0	0	0	0	0	0	0	0	0
ENV 3	63	30	0	49	22	0	27	47	37	9
ENV 4	63	47	0	33	62	0	41	63	19	63

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	OFF	OFF	ON	OFF

	SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
	OFF	-	OFF	-	OFF	-	-

ESQ-1 PROG: *D-50*

BY: JIM SYMONDS

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	0	0	SAW	OFF	-	OFF	-
OSC 2	2	0	4	SYNTH3	LFO1	5	OFF	-
OSC 3	-1	0	4	EL PNO	LFO1	5	WHEEL	24

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	63	ON	ENV1	63	LFO1	2
DCA 2	55	ON	ENV1	63	OFF	-
DCA 3	63	ON	ENV1	63	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	127	0	63	OFF	-	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	ENV1	63

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	22	OFF	ON	TRI	2	0	20	OFF
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	63	0	0	0	0	0	4	4	36	0
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	55	-63	21	11	11	24	54	33	0

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	OFF	OFF	ON	OFF

	SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
	OFF	-	OFF	-	OFF	-	-

ESQ-1 PROG: BLUHRP

BY: DAN HATT

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	1	0	0	SINE	ENV1	5	OFF	-
OSC 2	0	0	1	REED	ENV1	4	OFF	-
OSC 3	0	0	1	OCT+5	ENV1	4	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	48	ON	VEL	15	OFF	-
DCA 2	0	ON	VEL	15	WHEEL	48
DCA 3	48	ON	VEL	15	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	65	0	15	OFF	-	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	LFO1	15

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	22	ON	OFF	TRI	63	63	63	OFF
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	5	-14	0	63	0	21	19	32	0	0
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	62	62	41	0	0	14	20	28	20	0

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	OFF	OFF	ON	OFF

	SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
	OFF	-	OFF	-	OFF	-	-

Classifieds

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MSCI - IBM VES for Mirage and MPU-401. Reviewed in Issue #38 of TH. Program: \$40.00, Demo: \$7.00. Add \$5 S/H. Send check to: Jeffrey Richter/Donna Murray, 3502 Village Bridge Apts, Lindenwold, NJ 08021. Phone: 609-346-0943.

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U.S. Mail - The Interface, Transonik Hacker, 1402 SW Upland Dr., Portland, OR 97221

Electronic mail - GENie Network: TRANSONIQ, CompuServe: 73260,3353, or PAN: TRANSONIQ.

This is probably one of the most open forums in the music industry. Letter writers are asked to please keep the vitriol to a minimum. Readers are reminded to take everything with a grain of salt.

Dear TH,

What a fine objective review of SOUND LOGIC'S Modular Voice System in the May, 1989 issue (#47). Let's see. These sounds are bad because they are from California. That's a good one. They are bad because they sound similar to come of the thousands of other patches for the ESQ-1 and SQ-80. Gee, maybe that is why they are called the "Fundamental 80." And they are bad because of the naming convention used. Each voice sheet in the manual has several suggestions for more descriptive names, if you do not like our naming convention. Sorry it bummed you so bad.

Your boy obviously has no clue as to what the Modular Voice System is all about. I realize now that the original Introduction in the manual, which was updated a few months ago, was too vague as to the intent and purpose of the system. I had no idea that the reviewer would try to get away with such a superficial analysis. He obviously lost the manual or did not bother to use it in the six months that the sounds lay around. In his arrogance, he never considered that operator error may have been at least part of the problem. A law major telling an electronic engineer with 25 years of experience that he does not know how to program. I have heard it all.

I would venture to say that this guy does not use a CV Pedal or "aftertouch", rarely touches the Mod Wheel, and obviously does not read the manual. I guess he's seen them all. One would think he would have at least had something bad to say about the manual.

Yes, there are thousands of patches for the ESQ/SQ-80. We have them. Probably most people have them. But are we not ready for something a little more advanced? I mean, what happens when you push on the CV Pedal? Nothing. What happens when you advance the Mod Wheel? More vibrato or chorus? How exciting. Pressure! The ESQ and SQ80 respond to pressure. The SQ-80 already has a polyphonic pressure-sensitive keyboard. Even with the CV Pedal and "after-touch" there are only three knobs (variable controllers) that are programmable on these units. Why not use them?

All voices in the Modular Voice System are designed to give the performer control of how much vibrato, tremolo, chorusing, panning, volume, etc. that they want the sound to have. As is stated in the 64-page manual, "the voices are relatively sterile when the modulators are at zero and towards the radical when modulators are full on." These sounds are designed for people who want real-time control over their voices.

The first 80 voices in the set are called the Fundamental 80. We tried to cover all of the classic and basic sounds that the ESQ-1 does best. Sure there is the ocean and sea gulls. It is a classic background sound that goes with many songs. But can you control the loudness of the sea gulls (mod wheel)? Or the crashing of the waves (CV Pedal)?

All voices are deliberately designed without using layering or splits. We leave that up to the performer. Many of the voices have preset voices in the layer/split page, but we let the performer decide if they should be on. Besides, when you start moving voices around you lose the layers because they are location dependent. Also, most of us use two or more synthesizers and do our layering between synthesizers, not patches. Even eight voices is sometimes not enough.

The "03.ORG" (third organ) voice requires a system with good bass characteristics. You can raise the three oscillators an octave, but you will not be able to hit the low notes that a true theater organ can produce. As for the piano and orchestra instrument voices, we brought in a concert pianist to help with those. But that's all subjective.

Maybe Barf is a purist and does not believe in stereo, Mod Wheels, CV Pedals, "Poly-Key" Pressure and all those other adventures in the real-time world. That's fine, but please do not try to evaluate our voices. Leave that to someone who can walk and chew gum at the same time. And, Jane, I am very surprised that you were not suspicious of this review. Especially since our other products and the article I wrote received such praise. Why would I write bad software? No, I think I like the sounds just the way they are. And so far, ALL of my customers do too. Thank you.

Best wishes,
Mik Adams
Sound Logic
Ramona, CA

[TH - Well, "suspicious" certainly isn't the right word, but when we get a review that seems, shall we say, "unusually strong" one way or the other, we do (at least) double-check it. As you know Mik, we purchased an additional set of your sounds for just this purpose. We ran them past another (very respected) contributor - without telling him why, or pre-biasing him in any way. His opinion agreed with Chris Barth's evaluation. We went with the review. (But none of us could find where Chris said anything about these voices being bad because they were from California...)]

To Ensoniq:

I attended a Roland clinic recently and got to see their W-30 (workstation). One of W-30's features is its ability to access samples via Roland's CD-ROM player/SCSI format. The ability to access all these wonderful samples via CD-ROM seems like a major breakthrough in sampler technology.

How about it, Ensoniq? Any future plans to incorporate this CD technology with the EPS? As I'm sure you are aware, many EPS owners choose not to do a lot of their own sampling. Wouldn't this be a great format? How about it guys, an honest answer please? Not like the EPS-M SURPRISE!

My impression of the W-30 is that Roland bought an EPS, dissected it and tried to copy

its features as best they could. How about turning the tables on Roland? Use their own CD-ROM player to play samples into the EPS via SCSI.

P.S. I still haven't opened up my EPS because I sure wouldn't want to void my warranty. I enjoyed that 250 mile drive to my nearest service center just to have an aftertouch key pad glued back on. Please sell us parts on an individual basis.

James Rosand
Port Angeles, WA

[Ensoniq's response - We have no plans to produce an optical disk drive. However, the SCSI port allows the EPS to interface with many devices and CD ROM is entirely possible. Perhaps one of the companies producing such devices will support the EPS in the future.

It would not be possible to "play" the Roland disk since the data formats and voicing architecture of the EPS and the W-30 are not directly compatible. A conversion program would be needed which would then require saving the converted sound to another disk since the Roland disk is a Read Only disk.

Ensoniq requires that all repairs be done at an Ensoniq Authorized Service Facility, and most repairs are done on a module-swap basis. We designed our policy to be one program for all; the program affords every customer equitable treatment and this policy is consistent with our overall corporate philosophy.

Our policy ensures improved performance and extended life of our products, and they are designed to exclude the possibility of a non-authorized and/or technically untrained person exposing himself to personal injury or damaging his unit.]

[TH - It's also a sad fact that, in today's climate, companies have to be very careful (many might say "too careful") to avoid leaving themselves open to all sorts of complaints and liability hassles.]

Dear Haq;

Does any tech minded ESQ user know how to perform a "hard reset"? It became necessary after a recent computer snafu and cost \$18 at a local service. Since errors will always happen, I'd sure like to beat the cost of this operation. I fully understand the warranty violation, but since my ESQ is first generation, it has become time to be a bit more familiar with its inner workings. Anyone, please help?

Joe Rose
N. Attleboro, MA

[Ensoniq's response - See the letter from James Rostand.]

[TH - Readers?]

Dear TH,

I was told the CPU on a Mirage is a Motorola

68000 - just like an Atari ST or Amiga. I take it that the 68000 provides all the grunt for I/O, memory management, etc. Which brings me back to the question: why is it so slow? The CPU can yank two keyboard halves (128+ K * 8bits) off the disk in very few seconds. This implies it has a least control of some sort of DMA path to the memory of the machine.

It seems inconceivable that there should be a separation of the memory (into OS and data parts) such that only DMA style access is possible. I suggest this because the CPU would also be responsible for things like firing up envelope generators, tuning lookup (maybe) and to do this it has to have access to the data. Thus it must have some direct access to the data area. The CPU is quite powerful - why does it take so long to perform computationally trivial tasks on <64K pieces of data?

Many thanks,
Scott Fisher
Nedlands, WA

[Ensoniq's response - The EPS uses a 10 MHz, 16-bit, 68000 processor. The Mirage uses a 1 MHz, 8-bit, 6809 processor which, while very fast for an 8-bit processor, is no match for the 68000.]

Dear TH,

A long, long time ago (last October), I ordered a data cassette of sounds from Heaven. When I received it about two months later, I had trouble loading it to my ESQ-1. So I sent it back to Heaven, asking

for a replacement. And so far, I haven't heard anything from them. I wrote to them twice already, but my postcards were returned, saying that Heaven's P.O. box was closed. And I was wondering if you knew what was going on. Did they close down or move away? Any information about them would be appreciated. Meanwhile, I would like to have Heaven's sounds (I did pay for them already). It would be nice if someone who lives in L.A., CA area who has the sounds would let me copy them. I do have a receipt saying that I have paid already. Well, thank you TH for letting me share my problem, and keep up the good work.

P.S. I would share all the ESQ-1 sounds I have (although I don't have a huge collection) with anyone who can help me out.

Paul Jeong
(213) 474-5082

[TH - You must have missed the last few month's Interfaces - You're certainly not the first to be having a problem with Heaven. As far as we know, the situation as it stands today is that NOBODY is able to get in contact with them. Poof! Maybe some reader will be able to help you recover what you already paid for. (We assume those other sounds you're sharing are public domain...)]

Yo!

In TH #46, a reader asked for help with a "Public Domain Program" for the Commodore 64 called "MIDITERM 4.0." He further stated that he's desperate to use it and is willing to pay \$\$ to anybody that can help him out.

I wrote "MIDITERM" in 1985-86 as a personal tool. After seeing a number of commercial "Patch Librarians", I decided I'd spruce up my little program and write some documentation for it. I released it as "MIDITERM 3.9" on 1/1/87. It included copyright notices in both the machine code sections and the BASIC loader program. It came with enough documentation to get a MIDI literate user going. In the documentation, I included my current address and phone number along with a plea for FUNDING.

Shortly I began to get 2 or 3 phone calls a week from persons who SWORE they'd send \$\$ if I'd just help them to get MIDITERM to work with their "XYZ-123." I'd help them out over the phone and then LO AND BEHOLD.... no money. Needless to say, after a while I had to refuse to answer questions over the phone.

MIDITERM has NEVER been "Public Domain Software" or "Freeware." I don't have the resources to track down every place that has been SELLING it for profit illegally. To add insult to injury, someone "modified" the program by simply boogering the BASIC loader to check for a Sequential Circuits card (3.9 only works with the Passport compatibles) and calling it "MIDITERM 4.0." I guess they figured it was tantamount to "re-writing" my code since they also removed my copyright notice and name from the machine code. OUCH!!! THAT HURTS!!!

Anyone registering the program with me over the past 2 years, by paying a measly \$20 has received a comprehensive 25 page manual, numerous support programs and the benefit of being able to get answers to their questions from the AUTHOR. Hey, I'll even write the dang templates if they can't figure it out! Try getting help like that from the PIRATES! \$5 per disk may not seem like much money but disks only cost about 35 cents a piece in bulk, the PIRATES don't have any development time to consider and a PO Box is certainly cheaper than a phone!

If you've been using MIDITERM, why not at least contact ME?

I'm still:
Tim Martin
2054 Saulter Lane
Missoula, MT 59801
(406) 542 0280

[TH - Well, now he knows!]

Dear TH:

As a new EPS owner and TH reader, I was immediately struck by the wealth of user suggestions for enhancements to the EPS operating system.

Ensoniq's "broken record" response is, it seems, "Yer outta luck, Bub, there's no room in the O.S. to add any new features."

Well, maybe. In studying Dick Lord's "Inside the EPS" piece (TH #39), I noted that there is no apparent allocation of addresses 010000H through 1FFFFFFH, which immediately follow the current 64KB of O.S. RAM in the memory map. Thus it would appear that there is potentially a full 2 megabytes of contiguous addresses available for an expanded O.S.!

So I sez to myself, "Self, you're a computer engineer. Why would these guys at Ensoniq,

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who are nothing if not smart, design such a powerful engine as the EPS, and then hamstringing it with a puny 64KB of operating system space?"

The obvious answer is: they wouldn't! So without further ado, I'd like to go on record with the following prediction: As soon as RAM prices settle down, and the good folks at Ensoniq catch up with higher-priority tasks (like, say, fixing bugs in the current O.S.), somebody there will "discover" that it's possible to add internal memory to the machine after all. Opening the door to a vast cornucopia of O.S. enhancements (perhaps even including optional "All Notes Off" handling!).

You may as well save paper and ink by not printing Ensoniq's official response to this speculation, as I already know what it is: "There are no plans at this time to increase the O.S. RAM." Right?

But when it happens, remember where you heard it first.

On another matter, what's a "macro file"? This is evidently one of those new features that there isn't any room for, since I can't find it documented anywhere. Anybody care to enlighten me?

P.S. A resounding YES to Pete Iverson's suggestion (Interface, Issue #40) that the EPS be able to receive MIDI with "SEND KEYS TO MIDI" on. I also like the idea of the MIDI send channel defaulting to the instrument number.

P.P.S. How about a review of the Keel Productions sounds?

(MUSONIX is a new company dedicated to producing MIDI diagnostic and signal processing products.)

Rob Lewis,
President, MUSONIX
Van Nuys, California

[Ensoniq's response - As you predicted, there is no plan to add additional OS RAM to the EPS. In fact, the internal decoding logic for additional memory doesn't exist, so such an enhancement couldn't be included without a redesign and a new PC board.]

In addition to the 64K bytes of RAM, there are 64 bytes of ROM in the system. 128K bytes for operating system code is actually quite a lot. By comparison, the typical OS in a PC is only around 64 bytes.

The MACRO function is used with the SCSI interface and mass storage devices. It allows you to quickly locate and load files in a heirarchical file system.]

[TH - Keel's first set of EPS disks was reviewed in TH #44. Bill Lewis and Kenn Lowy will be reviewing additional EPS Keel samples in future issues.]

Dear Hacker:

I have a quick question concerning some memory conservation techniques for the EPS. You see, I have yet to purchase the 2x expander--Uncle Sam's refund check was supposed to be for that purpose, but the car payment came around and... Anyway, is there a way to load up the Power Drums sound disk (1006 blocks), or any other drum sample disk for that matter, and copy to another disk just

the kick drum and snare drum for instance, thus potentially saving mega amounts of memory? Does the Copy Instrument command have something to do with it? Would you please let me, and the other poor unfortunate non-2x expander owners know if there is a way to do this?

As soon as I acquire the means to do so, I'm going straight to Metronome Music here in town and pick up the 2x, but I imagine that even with the expander, there will come a time where this memory saver, if there is one, will come in handy. Thank you, TH, for giving me the opportunity to write this letter, and thank you Ensoniq for giving me the reason to.

P.S. Have you ever devoted any serious articles or issues concerning some of the memory saving techniques for the EPS? If so, could you please name the issue(s)? Thank you.

Sincerely,
R. Hannon
Mansfield, OH

[TH - Memory saving techniques were covered in "Surviving the Memory Shortage" by Clark Salisbury in Issue #38. (We only have a couple of these left.)]

[Ensoniq's response - Normally, this is easily accomplished using the COPY WAVE-SAMPLE command to select individual sounds in an instrument. The Power Drums uses all of the memory of an unexpanded EPS. To get enough memory to make copies, you will need to delete some layers. (See page 27 of the manual for copying individual wavesamples.)]

Fellow Space Chums:

I need help, both technical and, quite possibly, the mental kind as well! As soon as I got O.S. 2.35 for the EPS I have been experiencing some extreme difficulties.

My problem is as follows: I use the EPS as my main keyboard. I record all my sequences on Texture for the IBM AT. I often will include controller #70 [Patch Changes to get more noise from the machine. Recently, the 2.35 Operating System, has caused (I suspect) my Patches on the EPS to randomly change and get stuck!! I cannot get back to the Patch I was using!! I have to reboot! I have tried Everything. I even tried bribing the local Ensoniq sales-person, no dice!!

The patch does not affect what I play on the keyboard, just what is played via MIDI. Is this a hardware problem, or just a software problem? Has anyone else had this problem? This never occurred before I got OS 2.35. Help me! I'm melting!!

If anyone has an answer, call me, right me, fax me, or modem me, I don't care, just help relieve my insanity!

John Epperson
25802 Santo Dr.
Mission Viejo, CA 92691
(714) 583-0733

[Ensoniq's response - We have since contacted John. This problem has been corrected and will be included in the next version of the operating system. By the time you read this, OS version 2.4 will have

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already been mailed to your local dealer (see Random Notes).]

Dear Hacker,

Well it's time to renew my subscription and unlike so many other periodicals I receive, there's no doubt in my mind when I write this check. Every issue helps me understand that wonderful and mysterious black box, the EPS. No offense, Ensoniq, but like most of us users, I think we've learned more from Hacker articles than from the (Anorexic) Advanced Applications Guide.

As someone whose musical skills (an average guitarist, a sorry piano player) are hardly "stellar," my EPS is a means of unleashing musical ideas that would otherwise remain locked in my head. I'm also fascinated by the ability to manipulate sound in the digital sampling domain. The instrument is marvelously capable and I love it dearly. (If I went broke it would be a toss up as to selling the car or the EPS to raise cash!) I must say, though, that peering into that little screen and pressing all those little buttons sometimes gets tedious especially after using something as simple and intuitive as Farrallon's SoundEdit software for the Mac. (I'm still recovering from over spending "disposable income." Soon I hope to get my hands on a computer based sample editor like Blank Software's "ALCHEMY" (all it takes is money, right?).

Petty gripes aside, I spend most of my spare time experimenting with the EPS. One other minor point, since I hate waiting around for computers to do their thing. I realize that the time it takes to process a sample is related to the size and complexity of the wavetable or portion being processed, but there have been times when the "DATA PROCESSING" message has flashed for over 15 minutes. It could have gone on longer but I suspect that the wait would have been in vain. A) Is this unusual? B) Shouldn't the machine flash me an error message if there's a problem? C) Is there a "soft boot" or reset procedure so I don't have to power off and on?

Keep up the great work!
Marty Rogers
Laurel, MD

[Ensoniq's response - We view the Hacker as a wonderful information resource for Ensoniq equipment. We can't begin to supply all of the information and experience that the Hacker brings to you.

We also recommend computer-based editors for anyone interested in serious data manipulation. The additional power and display capabilities of a PC can't be beat.

A. This is not normal. In older operating systems, there was a bug that could cause this. Be sure to use the most up-to-date version of the OS.

B. If the software has crashed and gotten lost, there is no way to display an error message.

C. No. Once the software has crashed, there is no way to get it to respond.]

Dear Mr. Peter Gulch (Issue #46, p. 30),

In response to your ever-increasing abundance of question marks, I do have a few answers, concerning the sequencer demons. The demon appears to reside in software and

was exorcised by the Ensoniq programmers in a later edition. I first ran across it when I was writing MIDI software for my Apple's Passport card. The symptoms were the same as you describe them: changes to the digital display and a total mess of the bar count. This measure-counting problem made editing of the track an impossibility; when I wished to delete or add measures, it would use the values of the screwed-up display, with unfortunate results. This seems to be the only time that the keyboard pays attention to the displayed values; it will play the sequence correctly, as you noted

You are lucky that you found the "benign" bug; a similar (the same?) bug screwed up one of my sequences entirely, deleting a few bars and inserting a long period of rests interspersed with ominous growling noises or random voices which were not assigned to tracks. When I managed to obtain two copies of the same sequence, one correct and the other not, I compared the MIDI data and tracked the error down to a single bit which the ESQ-1 changed when loading the data from the computer. The byte concerned apparently affects the structure of the sequence, and not the notes, which is why it has a nasty habit of sticking around when you erase the sequence or move it to another spot.

There is, unfortunately, only one complete solution, which is to get the software upgrade; i.e., Ensoniq's response to your letter was only partially correct. Updating the OS will prevent future problems, but will not eradicate past errors. If you want your bad sequences repaired, you can send them to me and I may be able to track down the bit in error (my address is P.O. Box 56, Smithfield, VA 23430). I was successful in restoring one of my faulty sequences that way (this, by the way, is not an open invitation to all people with sequence errors. The vast majority are well-nigh impossible to track down and kill). Thus I give a warning to all those people (well, the handful) who still have version 1.7--don't use any MIDI software for sequence loading and saving, or you will find yourself plagued with promulgating bugs.

Sincerely,
Tim Edwards
Durham, NC

[Ensoniq's response - We highly recommend that anyone with ESQ-1 version 1.7 software who is doing sequencing should get their OS upgraded. It is also true that bad sequence data will always confuse the ESQ-1 if loaded back in, regardless of whether the ESQ-1 has been reinitialized or not.]

Dear Hacker

I have a few general questions and thoughts for the great creators of the EPS:

1. What determines what file will pop up on the display upon booting a disk?

2. Is the EPS-M a functional equivalent to an equally-equipped EPS (not including keyboard functions, of course)? Does it have the same microtonality functions? In addition to the output-expander functions, does it also have the normal stereo outputs?

3. Suppose I were to connect two EPS(-M)s to an Ensoniq-approved hard disk via a common SCSI bus. Can the two EPSs read the hard disk with a common directory

structure or would I have to create separate partitions for each?

4. I had been wanting to get the SCSI interface for my EPS until I heard about the difficulties with file fragmentation. Have you ever considered simply implementing 1.5-Meg floppies instead? If fragmentation can make file-accesses almost as slow as a floppy, in the long-run, it might be the best price-performance trade-off. The solution, you've suggested, is to do your development on floppies and save the final copies on hard disk. That's an unfortunate solution because I do the most saving and loading during development.


5. I just recently bought the 4X expander. Nice. I think it's worth noting that if I read it right, if you call the 2X expander that, then the 4X expander is really a 5X expander. With the 2X, you add 1X to the total amount of memory thereby ending up at 2X, but with

the 4X, you add 4X giving you 5X what you started with. Do I read this right?

One thing is kind of disappointing about the 4X expander, which I didn't grasp when I bought it; I was aware that the original memory present in the EPS itself becomes dedicated sequencer memory. What I was unaware of was that the fact that the 4X memory that you add becomes dedicated sample memory. Yes folks, if you upgrade from a 2X to a 4X, you can actually lose sequencer space! This is because the memory sharing scheme goes away.

I can now see why this is the case; apparently, the 4X expander contains only 13-bit wide memory - wide enough for a sample, but nothing else.

A question: What will the OS do if it sees both a 2X expander and a 4X expander?



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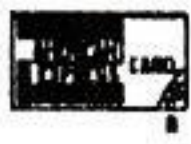
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Ignore power-supply concerns, and physical packaging constraints and stuff like that - that's my problem. What does the OS do when it comes up? I'm hypothesizing that the 4X memory appears in a different memory address decode from the built-in/2X memory, and that the 2X- and built-in-memory appear in the same address range. I suspect that it's the old heap/stack memory allocation scheme, where the sequencer memory grows up from bottom of memory and sample-space grows down from the top of memory. Should they ever meet in the middle, you're out of memory. If the 4X expander is present, the OS places the allocation pointer at the top of 4X memory, if not, it places it at the top of the 2X/built-in memory block. It then places the bottom of the sequencer space at the first available address in the 2X/built-in memory address block. This would seem to explain all of the allowable memory configurations. If this is the case, it would also mean that if both memory expansions were present, then I could have my sequencer space back if both were present. How good is my hypothesis?

6. I really like the EPS' sequencer, but there are two enhancements that I would just love to see. First and foremost, COMMAND:TRACK:SCALE VELOCITY - something kind of like Dr.T's has would be immensely helpful. Secondly, COMMAND:TRACK:SCALE-DURATION - something I can use to adjust the staccato/legatness of a range of measures.

I hope that you can answer my questions and implement my suggestions. Thanks for the world's coolest keyboard!

Gary Morrison
Dallas, Texas

[Ensoniq's response - 1. As of OS 2.40: a) If you boot from floppy, the EPS will select File #1 or b) If you boot from a SCSI disk, the EPS will attempt to display File #5 in the root directory which is usually a Macro file.

2. Essentially the EPS-M is identical with one exception. A fully-expanded EPS keyboard would have 1 megaword of sample memory and 256K words of sequence memory. The EPS-M has 1 megaword of memory shared between samples and sequences. It has the same microtonality functions as the EPS and the normal stereo outputs in addition to the output expander functions.

3. They can read the same disk as long as they don't try to access it at the same time.

4. The disk controller in the EPS cannot handle 1.5 Meg floppies and we are not convinced of their reliability in musical instrument applications. If file fragmentation becomes a problem with a hard drive, the files can always be saved to floppy, the hard drive reformatted, and the files saved back again. This is would not be an option if floppies were the only storage medium.

5. Yes. However, only 4X of the memory can be used for sample storage while the remaining 1X can only be used by the sequencer. It was less confusing to refer to the expanders as 2X and 4X.

The 2X memory is also 13-bit wide; sequences are stored in 13-bit format. Although "technically" you lose some sequence storage when using a 4X, it is important to note that the overall combination of sounds and sequences is much higher with a 4X expander than a 2X in practical applications.

Unless you don't intend to load any sounds, the net result will be more available sequence memory with a 4X expander installed.

The 4X expander maps into the same address as the 2X - but it was a good try!

Dear T.H.

I have an ESQ1 and a Mirage rackmount that I use in my lounge act. Recently, the disk drive on my Atari 520 died, and that started me thinking about my Mirage disk drive. I would like to obtain a back-up just in case, to safeguard my gig. I make about 15 accesses per night. Can Ensoniq give me any information about the drive's lifespan? Can The Hacker recommend a third party (read cheaper) source for this drive? Thanks, and keep up the good work.

P.S. Could you please publish a list of program change numbers and the resultant behavior of the Mirage under O.S. 3.2? I've never seen a list of that information before, even in the Hacker. Thanks.

Yours truly,
Peter Sturges
1255 Nuuanu Ave. E807
Honolulu, Hi. 96817

[Ensoniq's response - There is no way to know how long the drive will last without knowing the operating environment (temperature, humidity, physical shock, etc.). However, the MTBF from the drive manufacturer is typically 30,000 power-on hours.

If anyone is interested in the program change documentation for the Mirage, contact Ensoniq Customer Service and request the Mirage Operating System Version 3.2 Sheet.]

Dear Hacker:

I'd like to thank the Hacker and Mike Sales for the wonderful review in the April issue; the response has been great! It's very positive to see your work praised in print, especially when the review is published in a magazine dedicated to Ensoniq products.

But I'm going to comment on a couple of Mike's statements. Mike said that some of the sounds were sometimes a bit hard to categorize, and used "MONSTR" as an example. If I might try to define this sound, I'd describe it as "a DX-7 bass combined with a D-50 type of breathy flute; the crossmix is controlled from the aftertouch." Since getting all of this down into the 6 characters provided is a bit tough, I decided that since it would be the kind of voice that Herbie Hancock would love, I'd just call it MONSTR anyway.

And the custom patch editing service isn't nearly as masochistic as it sounds! The idea behind it is that it seems that every patch collection ever put together has a few sounds that would be totally awesome except for something that doesn't meet your tastes. In this case, just write down the desired edits for 3 or 4 sounds and mail it off with a SASE. 90% of the requests are very simple, and probably from a non-programmer who wants a slight change in the filter frequency, LFO rate, etc., and these minor tweaks make these so-so patches come alive. The more experienced programmer can take care of this stuff by him/herself, and doesn't need to wait for my help. Once in a while, someone does ask for a B-3 to be changed into a choir or other major surgery. Since this is way beyond our intentions, we will simply refuse

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these types of requests, or offer them for a fee, or use it as an idea for the next collection.

Thanks again, Mike, Jane, Eric, and all of the readers who purchased our products. The rest of you SQ-80 owners should go back and read page 17 of the April Hacker, and see what you've been missing.

Best Wishes,
Charles R Fischer / Mescal Music
PO Box 5372
Hercules, CA 94547

Dear Hacker,

I am composing a song in the EPS in which the speed of the LFO is crucial to the sequence tempo. The problem is that the LFO speed fluctuates even without any applied LFO mod. Why is this? The only cause/effect relationship I can discern is that the LFO speed is slower when the sequencer is running (and even slower when more notes and/or tracks are added) and faster when the sequencer is stopped and the sound is played "live." Additionally, LFO rate increases during the release stage of the amp envelope. So far, I can only deduce that LFO speed is directly affected by other processing tasks in the EPS, ie., more tasks = slower speed. less = faster. Can someone please explain and hopefully provide a solution the the problem?

Furthermore, why hasn't anyone designed an instrument or software modification in which LFO speed can be synchronized to sequencer clock pulse and/or MIDI clock? Why can't LFO RATE (not just depth) be modulated by ENV, VEL, LFO, etc? Why not have a mapping page in which any single parameter can be modulated - perhaps a more intricate mod

control of wavesample loop-start, loop-end, loop-pos, sample start, and sample end (instead of the current limited mod on "sample start/loop/both")?

And one last question: How do you save changes to a bank after loading the original bank and making arrangement alterations? It's like shuffling a deck of cards...instruments load in crazy new configurations.

Oops...and one MORE last question...is Ensoniq planning any kind of manual on EPS synthesis? I've discovered several tricks of my own, such as creating noise by commanding a synthesized loop on a created wave-sample. But it would be nice to know what else was intended by the EPS design team.

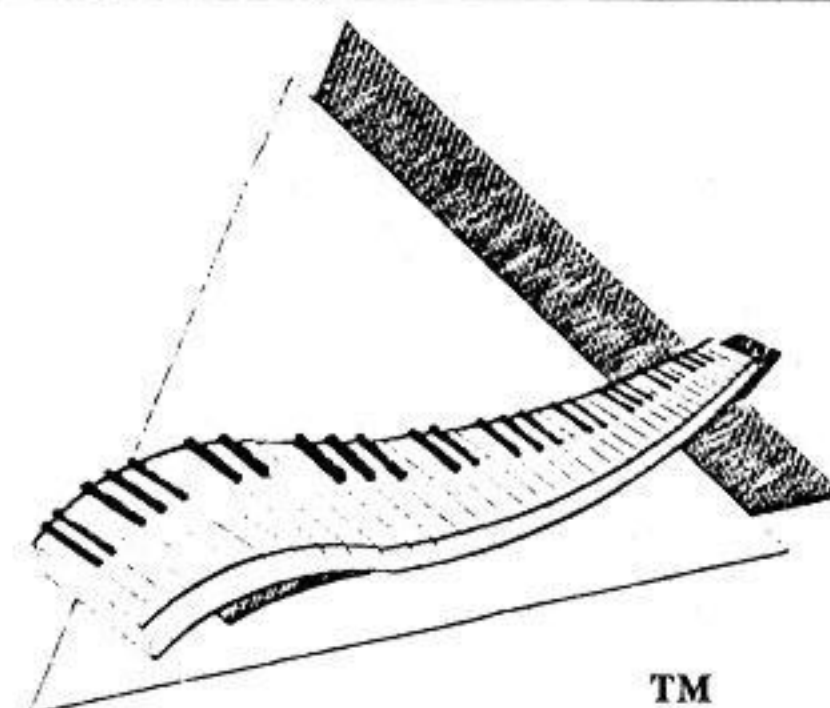
Sincerely,
Brad Clement
Albuquerque, NM

[Ensoniq's response - You are correct, the CPU in the EPS is very busy. The more it has to do, the slower the response to some lower priority functions. In critical applications, you could try reducing the number of voices to 16 or 12 to gain back some processor time.]

The suggested capabilities would be nice but are not possible for the reason given above. There simply isn't CPU time to calculate and update that many modulators and that complex a modulation scheme.

In order to save changes to a bank, you must resave each instrument and sequence, then resave the bank.

There is no plan for a synthesis manual. We hope publications like the Hacker will attract articles from people who are doing unique things with our products.]



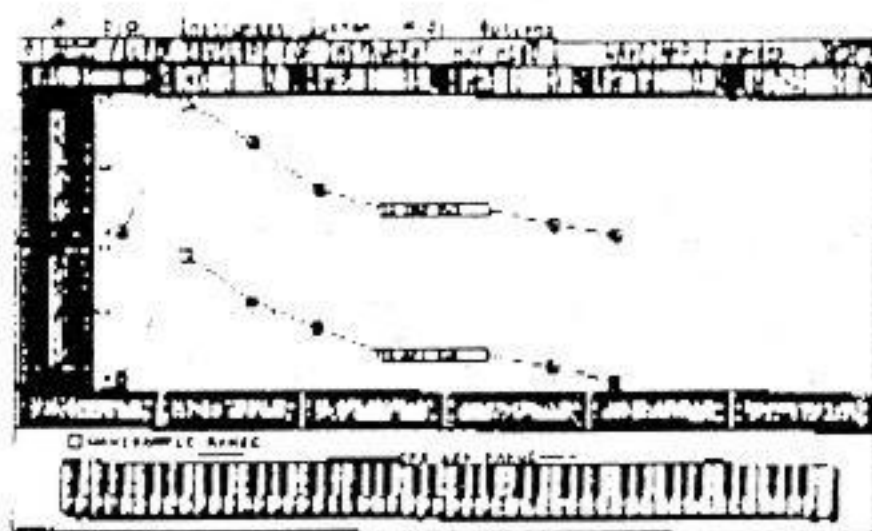
The EPSTM Users Guide

Reviewed in April 1989 issue of Hacker. This manual was evaluated as being "...impressively thorough". This 75 page manual has a six page index and menu diagrams for the edit and command modes. It is written to be a reference manual and companion for Ensoniq's own manuals.

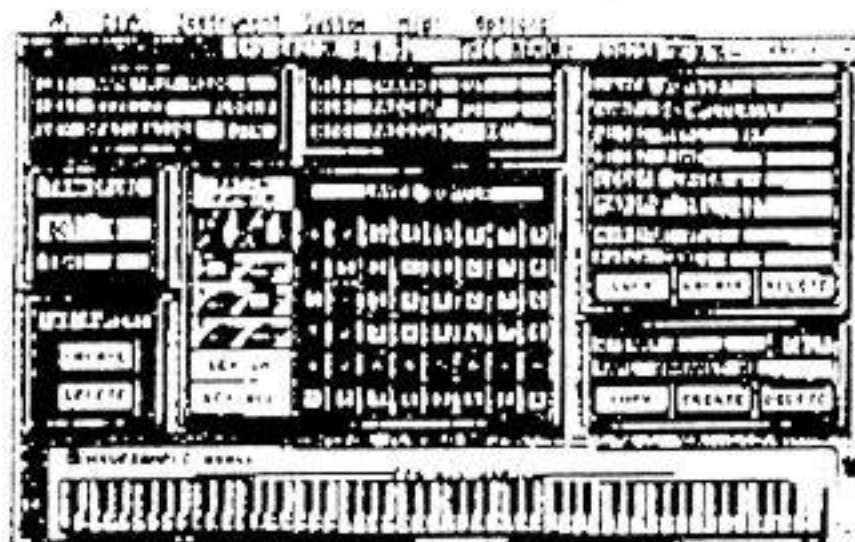
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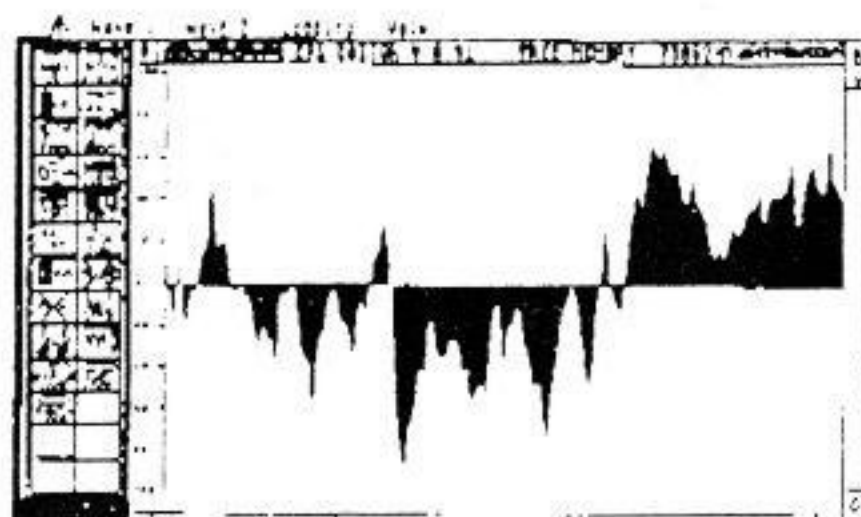
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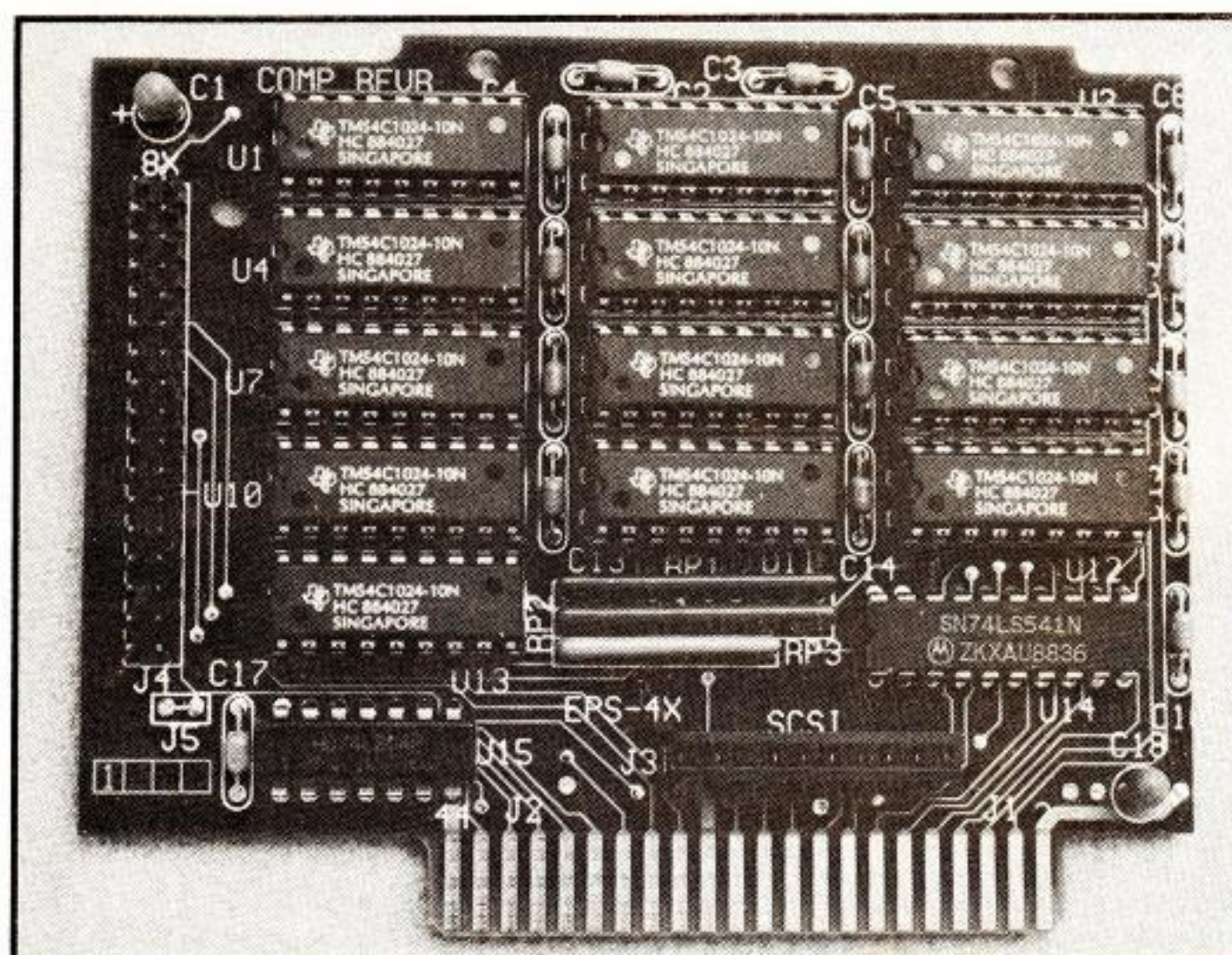
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