

TRANSONIQ HACKER

The Independent News Magazine for Ensoniq Users

Sampling an Acoustic Instrument on the Ensoniq EPS

By Gary Dinsmore

Shortly after bringing home my new EPS I found that programming my own instrument voices attracted my attention, and after some very bad sounding attempts that consumed the entire memory, I finally got my copy of the EPS Advanced Applications Guide. I read a lot, bugged Clark Salisbury down at Portland Music occasionally, and tried each of the functions described. I made a couple more terrible sounding instruments and a few sound effects. I managed to prove again the old computer programmer's adage, GIGO. Specifically, you cannot take a lousy sounding tone from an instrument and create a superior sounding emulation of the instrument on the EPS.

This will be a two part series in which I'll take you step-by-step through the process of creating a fairly simple instrument. We will create an instrument in the EPS that attempts to duplicate the sound of a standard acoustic instrument like a trumpet. Each patch will be a single layer, and will contain several samples that will allow us to replicate the timbre of the instrument from its lowest to its highest registers. Layer 1 will be the natural sound of the instrument, layer 2 will be the muted sound. We will finish up the instrument by assigning key ranges to the individual wavesamples, tuning the samples to correct for any inaccuracies in the original tones, and assign the layers to individual patch buttons.

Planning Ahead Can Save Time

Before you sit down at the keyboard, there are several things you can do to improve your odds of success. First, of course, is to get the best quality sound samples you can. I agree with Barry Carson in this area. The quality of the instrument you create can be no better

than the instrument and the artist creating the samples. Even this is limited by the quality of the microphones and recording media used. I advocate using a high quality tape machine, and good quality tape. Have the musician play a dozen or more notes at each pitch, concentrating on maintaining constant pitch and timbre. Later you can audition the tones and pick the best for sampling.

You need to decide on the limits you wish to live within in terms of memory, sound quality, and degree of faithfulness to the true instrument. If you are trying to hold the memory requirements to under 200 blocks, then a standard cassette recorder will be quite adequate. If, however, you want to create the cutting clarity of a solo instrument you need a top notch cassette recorder with metal tape, or even the extra fidelity of a big reel-to-reel machine. Don't overlook the potential of one of those high-fidelity video tape machines. They place the audio on the helical scan with the video, and provide 20-20,000 Hz fidelity. You don't need a camera, just let whatever video is there go on the tape, and plug a high quality microphone in the line inputs. You should also plan on using a high sample rate of 32.9 kHz or better. That also means the total sample time available will drop below 16 seconds even for the 2x EPS. This also means you will probably use very short samples and provide envelopes to recreate the attack and decay characteristics of the instrument.

Once you have decided what you wish to create, you can determine the physical characteristics of the instrument. You can decide the keyboard range you wish to cover. That could be limited by the natural limits of the instrument and be shorter than the Ensoniq keyboard, or it

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could extend beyond the keyboard, and you would have to transpose the instrument to play the notes beyond the keyboard. Knowing this, you can decide how many samples you need to take. There is no need to take a sample for every key, but you will probably need two to four samples per octave to cover the timbre of the instrument you are trying to emulate. You may also want to create more than one patch for the instrument such as an open tone and a muted tone.

High Quality Samples Can Make the Difference:

The next step is to actually record the samples you plan to use. It's important to pay attention to the acoustics of the room you're in. If it's too active, and you want a deader sound, drape a few quilts, blankets and pillows around. Also watch out for background noise - you can't remove unwanted noise from an otherwise superior sample. I record identical stereo tracks. On playback, I route one to the amplifier and the other to the "Audio In" port of the EPS so I don't have to be in the "Sample" mode on the EPS to audition the tones on the tape.

I record a half dozen notes of each pitch I need, and then audition them before selecting the sample I will use. Be critical about the amplitude levelness of the sample, have the artist play without vibrato since you will create the vibrato from the LFO, and vibrato makes it terribly difficult to loop.

Before you commit a lot of time to create the instrument, practice on a couple of adjacent samples to see if the range of samples you have collected will provide a smooth timbre transition, and the sampling rate selected provides the desired sound quality. Actually sample the same recording at different sample rates and assign them to different octaves of the keyboard. Try, for example, 32.9 kHz and 7.4 kHz. Use G3 as root key for one and G4 for the root key for the other. Don't bother looping them for this test, but set all of the envelopes to "Full On" and compare the sounds, especially a few notes below the root key G. The quality will fall off fast for the 7.4 kHz sample. I've found samples around 14.9 and 17.4 kHz to be quite adequate. When you have selected the proper sampling rate, go ahead and delete the test instrument.

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Sampling Steps By The Numbers:

Note: Any time I refer to a key on the Ensoniq EPS front panel, I will enclose the name of the key in brackets, eg. [Edit] represents the edit key or [Edit] [Env 1] represents pressing the edit key followed by the ENV 1 or number 1 key

You are now ready to start creating the first instrument patch. Start by creating the instrument. Select [Command] [Instrument] [Enter] and select a vacant instrument button. Next create the first layer. Select [Command] [Layer] [Enter]. You can name the layer under [Edit] [Layer], although this is not at all necessary. You will want to set the OO patch to the layer you are working on, however, and turn all other layers off. Select [Edit] [Instrument] and turn off layers 2 and 3 and leave layer 1 on. It makes little difference here, but later it will be important.

Second, set up to edit the proper layer. Press [Edit] and select layer 1. Again, it is unimportant here since we only have 1 layer, but later it will be important, so it is best to get in the habit of doing it all.

Press the sample button and set the sample rate. I chose 17.4 kHz for the trumpet. Page 23 of the Musician's Manual describes the sampling steps quite well. Take time to read this section and try all of the functions. Since we are drawing our source from a tape recorder, the input level is set to "line." Play the selected recording a few times, and set the recorder

output to just light the "AMP" light the briefest flicker which will insure we use the fullest dynamic range available. When you are satisfied that all is ready, start the recording and press enter just before the selected tone plays. At the end of the tone (or 3-4 seconds) press enter again to stop the sampling. At this point you will be instructed to play the root key. This is the key that represents the pitch of the note on the recorder. If you get it wrong, don't worry - it can be adjusted on the [Edit] [Pitch] page.

The third step is to create the loop and smooth it. Go to [Edit] [Wave] and select "Loop Forward." Set the loop start to a stable segment of the recorded sample. Next set the loop end to a spot that is reasonably clear of clicks and pops. Use the loop position, loop start and loop end to find a region of constant volume and timbre and search for a quiet loop point. Start with the coarsest setting (0 - 99) at the right of the display, then work with the finer controls until you get the best match possible.

I next do two things to each sample. I normalize the gain on the [Command] [Amp] pages which gets all of the wavesamples at a fairly even beginning amplitude. I then "volume smooth" the loop, the next page over. Try different settings including expanding the region to be smoothed a couple percents beyond the loop. If this fails to smooth the loop properly, then try each of the several cross fade devices on the [Command] [Wave] pages. If this much work does not bring the loop under control, seriously consider deleting this wavesample and select another tone to sample. There is no point spending a lot of time creating envelopes and setting all of the parameters, unless you can get a quiet loop.

Once you have a good quiet loop, you can go ahead and set the start of the sample. If you intend to use the instrument's natural envelope for the attack, set the start of sample point at the start of the sample sound, otherwise set the sample start point at or near the start of loop. Set the sample end as far down as it will go using the 0-99 course setting. This is a good time to truncate the loop unless you plan to use parts of the sample in other layers. Go to [Command] [Wave] and find "Truncate Wavesample." For maximum safety, save the instrument after each new sample is added. Place a working disk in the drive and select [Command] [Instrument]. Give the instrument a name and save it.

To best conserve your time and effort, go ahead and sample each of the pitch samples that will make up this layer. Try to work logically either from top to bottom or bottom to top. (It's much easier than trying to remember that sample 3 is below sample 1 and sample 23 is just above sample 7.) Always check the Edit key to see that you are sampling into the correct layer and check the pitch of the next note to sample against some standard instrument so you will know which root key to punch when you get it sampled.

When you have all of the samples for a layer collected, it is time to save the instrument. Save your work often, and you run less risk of losing a whole afternoon's work when someone trips over the power cord.

In the next installment of this article we'll edit the wavesamples we have just collected and looped.

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."

Front Panel

RND (♪♪♪)

Ensoniq has asked us to print the following two announcements:

We would like to let your readers know that we have been in contact with PS Systems [3rd-party manufacturer of EPS memory expanders - see last month's Hypersoniq], and have arranged to get an expander from them for review. We need to caution everyone that until these products have been reviewed and approved by Ensoniq, their installation in the EPS will void the EPS warranty.

Ensoniq's policy has always been to upgrade our current products whenever possible as well as to implement suggestions from end-users into future products.

As a result, Ensoniq is proud to announce the addition of the EPS-M to their current product line. This a three-space rackmount sampler that includes all of the voice architecture and editing features of the EPS, as well as stereo outputs, eight polyphonic solo outputs, SCSI circuitry and software, and 1 Mega-word of memory on-board. The list price is \$3295.00

The EPS-M was previewed at Winter NAMM, and should be available at your local dealer by the end of February.

Well, it looks like all those letters saying, "When can we get a rack EPS?" might have had some impact. They do listen. We hope the market justifies their taking this risk (racks are always a marginal proposition for smaller companies). At first glance the price may be a little surprising to some - but this puppy's fully loaded and aimed for serious studio applications.

There's still plenty of rumors of a major post-NAMM announcement in the works - keep watching.

This is probably as good a time as any to repeat our position on new-instrument coverage for our newer readers: It's going to happen - your brand-new gear is slowly going to age and newer gear is going to gain the spotlight. (But - we're still going to cover the older gear.) In the long run, this is really to everyone's benefit. If all we tried to cover right now was the Mirage it *wouldn't* be better even for the Mirage users for the simple reason that we wouldn't be here anymore. It's the newer gear, along with the newer users, that makes it possible for us to continue covering the older gear for as long as we can. So it goes...

A little news on a couple of our writers: **Steven Fox**, who is also the driving force behind *Leaping Lizards*, is "going out to see the world." We'll miss his articles and (somewhat controversial) letters - yeah, and the ads too (\$). But we wish him Bon Voyage! Be sure to check out his going-out-of-business ad in this issue. Meanwhile, **Jim Johnson** is meeting with a fair amount of success with his music generation program, *Tunesmith* (marketed through Dr. T's). Latest rave review that we saw was in the January issue of the ST-specific magazine *ST Informer*.

Royal Screw-Up Dept.: Last month's article, "*Tips From the Headmaster*" was by Roy Elkins (not Elkin). Sorry about that, Roy. Also, somewhere along the way a line got dropped from the article. In the SQ-80/ESQ-1 section, right after setting TK=00, and just before saving to memory, you should press DCA2, underline OUTPUT, and set the value to OFF. Repeat for DCA3. Without this, the exercise will still work, but the results won't be as audible.

Transoniq Hacker is typically on a 4-week, 4-week, 5-week schedule. You should receive the next issue (#45) in approximately 5 weeks.

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ALL ENSONIQ GEAR - Ensoniq Customer Service. 9:30AM to 6:30PM EST Monday to Friday. 215-647-3930.

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

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

EPS QUESTIONS - Garth Hjelte. Advent Productions. Pacific Time (WA). Call anytime. If message, 24-hour callback. (206) 242-9220.

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

ESQ-1 QUESTIONS - Jim Johnson, (602) 821-9266. 8 a.m. to 5 p.m. Mountain Time (AZ).

ESQ-1 QUESTIONS - International, Brendon Sidebottom, (03) 689-5731 Australia. No calls between 4 a.m. and 10 a.m. Australian ES Time.

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.

MIRAGE HARDWARE & FIRMWARE - Scott D. Willingham. Pacific Time (CA). Weekdays: 6-9 p.m., Weekends: 12-9 p.m. (213) 397-4612.

MIRAGE OPERATING SYSTEM - Mark Cecys. Eastern Time (NY). Days. (716) 773-4085.

MASOS - Pete Wacker. Whenever. (602) 937-1177.

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Please let us know at least four weeks in advance to avoid missing any issues. The Post Office really will NOT reliably forward this type of mail. (Believe us, not them!) We need to know both your old and your new address. (Issues missed due to late or no change notification are your own dumb fault - we mailed them!)

BACK ISSUES

Back issues are \$2.50 each. (Overseas: \$3 each.) Issues 1-9, 11, 13-23, 27, 29, and 30 are no longer available. Subscriptions will be extended an equal number of issues for any issues ordered that are not available at the time we receive your order. ESQ-1 coverage started with Issue Number 13. SQ-80 coverage started with Number 29, (although most ESQ-1 coverage also applies to the SQ-80). EPS coverage started with Number 30. (But didn't really get going till Number 35.) Permission has been given to photocopy issues that we no longer have available - check the classifieds for people offering them. Reprints in our "Quick and Dirty Reprint Series" are available: MIRAGE OPERATIONS, for \$5, and MIRAGE SAMPLE REVIEWS for \$4. Each contains material from the first 17 issues.

HYPERSOBIQ

NEW PRODUCT RELEASES

Bob Spencer has announced the release of his newest Soundprocess disk for the Mirage - the "Addy" disk - available Feb. 25th. The price is \$25.00, the same as his other disks: "Lush," "X," "DeMity." Also available is an extensive library of EPS sounds for \$12.00 per disk. Call or write: Bob Spencer, 703 Weatherby Lane, Greensboro, NC 27406. Phone: 919-674-5725.

Gary Dinsmore has written a reference manual for the Ensoniq EPS, called "The EPS Users Guide." It covers each EPS "Load," "Command," "Edit," and "Sample" page with step-by-step instructions. It outlines the purpose of the commands or edit functions contained in each EPS page, the options available, and their range. This 75-page manual is laid out in a logical, straight-forward manner, is extensively cross referenced, and includes a comprehensive index. Available: February, 1989. Price: \$20.00 (includes shipping and SCSI/Hard Drive update section to follow). For more info: Gary Dinsmore, 32695 Daisy Lane, Warren, OR 97053. Phone: 503-397-0835, 6 pm to 10 pm PST.

Current Ensoniq Operating Systems

INST	OS	DISK	EPROMS
EPS	2.2	X	
MASOS	2.0	X	
MIRAGE	3.2	X	
ESQ	3.5		X
ESQ-M	1.2		X
SQ-80	1.8		X

Tested and Approved Hard Drives for the EPS

Manufacturer	Model
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	Direct Drive 100
	Direct Drive 140
Rodime	45plus
	60plus
	100plus
	140plus
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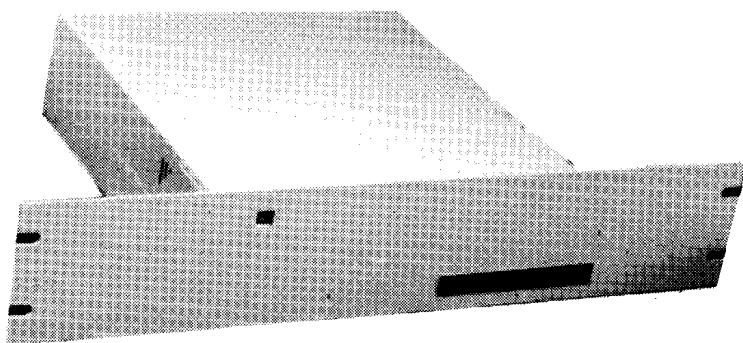
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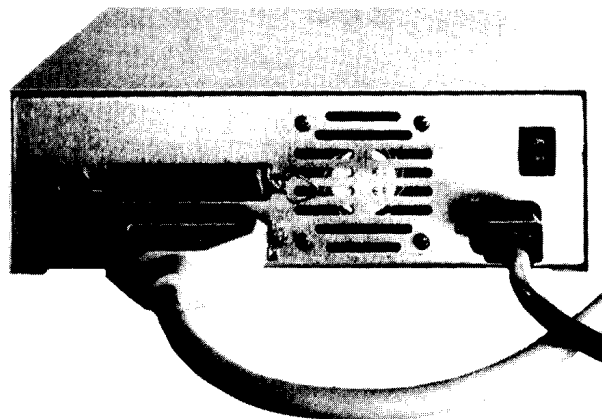
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Of Sequencers and Feelings

by Bryce Inman

Alright, I'll admit it - I'm lazy and I use my ESQ-1 sequencer with its quantizing features as a crutch. Being able to correct my rhythmic imperfections with the touch of a couple of buttons is an absolute life saver for me - especially when it comes to programming drums. Of course, nothing in life is free, and the price of quantization can be cold, mechanical sounding music.

I found a solution to this problem in the October, 1987 issue of *Electronic Musician*. An article in that issue titled "The Feel Factor: Music With Soul," written by Michael Stewart, offered a method of programming feel into sequences without giving up the benefits of quantization. I highly recommend this article to anyone involved with sequencing.

For this article I want to focus on just one of Mr. Stewart's methods. In a nutshell, the principle is this: feeling can be programmed into quantized drums "in a predictable way" by simply moving the snare drum a little bit off the beat; a snare ahead of the beat gives a "lighter" feeling while a snare after the beat gives a "heavier" feeling.

When I first read this article I was intrigued but, since the ESQ-1 has no function that allows you to easily move events on a track, I figured the application would be quite limited. However, with a little thought, I developed a method which has proven to be quite useful for injecting some feeling into my drums.

For the sake of space and time (remember - I'm lazy) I'm going to assume that you already know how to operate your sequencer. If you don't know how to perform any of the following functions, consult your Owner's Manual.

Begin by setting up a one measure sequence in 4/4 at a tempo of about 100. Select a bass drum on one of the tracks (track 8 for this project) and record the bass drum part in Figure 1. Quantize this track to eighth notes. Now select a snare drum for track 1 and, using the step edit function, program the snare to play on beat 2, clock 1 and beat 4, clock 1. Copy track 1 to track 2 and quantize TRACK 2 ONLY to quarter notes.

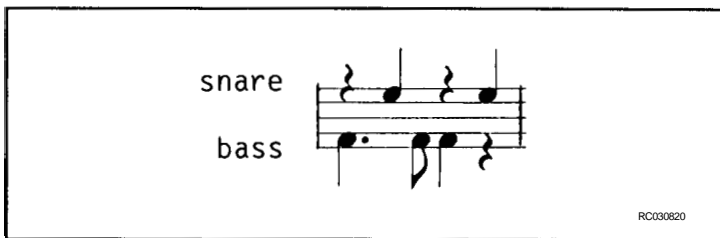


Figure 1.

Next, select the same snare drum for track 3 and, once again, using the step edit function, program the snare to play on beat 1, clock 23, and beat 3, clock 23. You may want to mute tracks 1 and 2 while doing this. At this point we have three snare drum variations: track 1 is one clock after the beat, track 2 is right on the beat and track 3 is one clock before the beat.

With the loop function on, start the sequence playing, using the mute function to listen to the three variations individually. Notice how the snare on track 1 sounds "snappy," the snare on

track 3 sounds "laid back" and the snare on track 2 sounds - uh - quantized?

To get a better idea of how this works in the real world, let's take this thing out for a test drive. Use the sequence append function to make this sequence about 16 bars long with exactly the same drum pattern in each measure. Since drums in most popular music repeat a lot, this is how planning ahead can save you a lot of work.

Mute tracks 1 and 3 so you can hear only the quantized snare. Then, on an open track, select a sustained sound, perhaps a pop organ, and record a chord pattern using simple, sustained chords.

Now, select a bass guitar sound for another track and begin experimenting. While listening to one of the three snares, play a bass line. Alternate between the three snares and notice what effect they have on how you play the bass. Try recording the bass with one snare, then listen to what you've recorded with a different snare; they probably won't feel quite right together.

At a tempo of 100, having the snare off the beat by one clock may sound to you more like a poor drummer than a drummer with feeling. Move the sequencer to a faster tempo and the difference of one clock becomes more subtle.

If your song requires a slower tempo, record your sequence at twice the required speed. For example, if you need a tempo of 100, set the sequencer to 200 and pretend that the metronome is beating eighth notes rather than quarter notes. Doing this gives you 48 clocks per quarter note rather than 24, and a snare one clock off the beat will only have half the effect. Obviously, since the fastest setting on the ESQ-1 is 250, this will only work if the required tempo is 125 or less. For that matter, if the required tempo is 62 or less, you can double it again giving you 96 clocks per quarter note. That's pretty good resolution for an on-board sequencer.

Now, if you don't mind, I'm rather tired from all this writing. If you need me, I'll be in the hot tub. ■

Bio: For eight years Bryce Inman traveled with a gospel music team called Sound Investment and taught music in Indiana (where the winters are too cold). Now he works as a free-lance music editor for Word, Inc. in Waco, TX (where the summers are too hot).

Additive Synthesis Using the ESQ-1 and the SQ-80 Or - Adventures in ADDSONIQ Synthesis

by Mike Sales

Ensoniq synths can compete with the best of analog, FM, and wave table synthesizers, but did you realize that these 8-bit wonders can also be thought of as additive synths as well? In my opinion, additive synthesis has always represented a logical approach to sound creation, and using the capabilities of the ESQ/SQ-80 makes it a breeze. Now, before you turn the page, I want to let you know that additive synthesis is not necessarily the tedious and confusing voodoo that you might think it is, but a rather well-organized method that can actually help explain the WHAT's and WHY's of sound as you create.

The premise of the additive approach is the use of building blocks. Every sound created can be broken down into a collection of harmonics, or partials (don't get confused, D-50 owners; Roland adopted the use of the word "partial" just to make your life difficult. The "partial" on the D-50 has nothing to do with what a partial really is). A partial is actually a pure tone at some pitch relative to the fundamental tone. It is the arrangement and column of these harmonics that give each sound its own characteristics. Let's see what this means.

We're going to build an electric piano sound. Yeah, yeah, I know, you've probably got 200 of these stashed away on data sheets of cassettes somewhere, but this is a different approach. Hopefully, it'll give some new insights into rehashing your old sounds and creating some new ones. As we step through each change, take time to listen to the evolution of the sound.

Start with the sound called BASIC. If you don't have this sound, you can use any simple sound, where ENV4 has all levels at 63, all times at 0. Make all OSC's SINE waves, and turn off all modulations. Turn off DCA3, put DCA1's level at 63, and DCA2's level to 30. Go the OSC2 page, and, using the data entry buttons, raise OSC2's SEMI parameter one step at a time. Listen closely to the sound; instead of having two distinct notes, you hear a single note with a changing timbre. Now, change the OCT setting to +2, and experiment with the SEMI values. When you hit a value that sounds good (7 worked for me), play with the FINE tune control. At this point you DX7 owners should be hearing some slightly familiar sounds.

Change the WAVE on OSC's 1 to SAW2 to make just it a little more interesting harmonically. SAW2 is mellow waveform with only the first three harmonics, so the sound will not change drastically, but enough to give it a bit more complexity. The beauty of using the ESQ/SQ-80 is that it lends itself very easily to hybrid synthesis methods. What we've done here is created a basic harmonic structure using additive synthesis, and enhanced it with the SQ's inherent wavetable capability.

Set OSC3's WAVE to SINE, OCT to +4, SEMI to 11, and DCA3 to 30. Toggle DCA3 on and off while playing the lower half of the keyboard. WOW! All that harmonic richness from just one sine wave!! You don't hear this effect too drastically on the upper part of the keyboard, but we'll change this later.

Turn off DCA's 2 and 3 again. Since OSC1 is the main body of our sound, we will use ENV4 to control it. Set the values as listed in the program sheet. This creates a nice electric piano foundation, with the decay slightly faster on the top part of the keyboard.

Turn on DCA2. Set the first modulator to ENV1 with a value of +44, and the second modulator to KBD2 with a value of -10. This will put more overtone at the lower part of the keyboard,

and let it die out as we play up. Set ENV1 as shown.

Finally, turn on DCA3 and set the first modulator to ENV2 at +35, and the second modulator to KBD2 at +19. This scaling is not as drastic as OSC2, but still keeps the dogs away when we play at the top end. Set ENV2 according to the patch chart.

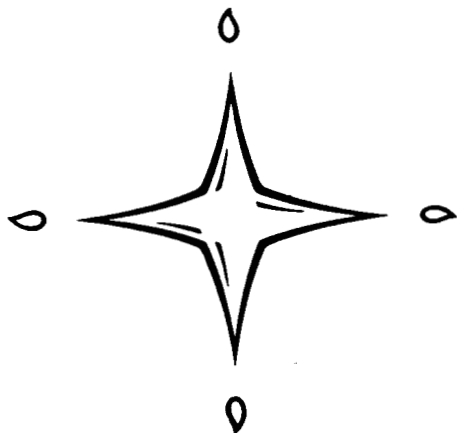
If you've been following, you've noticed we haven't even touched the filter. Well, that's the beauty of additive synthesis; we can create some fairly complex sounds without the use of a lowpass filter. This is going to come in handy if you own a sampler (many don't have analog filters), or if you plan on buying one of the new breed of synths that have sample-quality waveforms, but no filter (like the Kurzweil K-1000. Ah, to dream...). But, you say, my SQ already has a filter, so why not make use of it? Hold tight, Watson, your dream will come true.

This sound uses the filter and LFO1 to create a phase/tremolo effect. Put the values in for the FILTER and LFO1. You'll notice it adds a nice swaying effect to the previously dry sound. And, since the rest of the sound is not dependant upon the filter, you can alter it without destroying your original timbre.

The lesson behind all this is that you don't have to follow traditional analog programming practices to come up with new sounds, or, for that matter, to improve old ones. Maybe you have something you've been working on, and it just seems to be missing something. Well, if you can spare an oscillator (you've got three!), set it to a wave with a low harmonic spectrum, and tune it up to the sky! ■■■

RC030820

ESQ-1 PROG: TYNOMO										BY: MIKE SALES	
	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH			
OSC 1	0	0	0	SAW2	OFF	-	OFF	-			
OSC 2	2	7	0	SINE	OFF	-	OFF	-			
OSC 3	4	11	0	SINE	OFF	-	OFF	-			
	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH					
DCA 1	63	ON	ENV4	50	OFF	-					
DCA 2	30	ON	ENV1	44	KBD2	-10					
DCA 3	30	ON	ENV2	35	KBD2	19					
	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH				
FILTER	100	0	19	LFO1	63	LFO1	35				
	FINAL VOL	PAN	PAN MOD	DEPTH							
DCA 4	63	8	OFF	-							
	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD			
LFO 1	15	OFF	OFF	TRI	60	0	0	OFF			
LFO 2	-	-	-	-	-	-	-	-			
LFO 3	-	-	-	-	-	-	-	-			
	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK	
ENV 1	34	22	0	30X	0	0	17	13	0	0	
ENV 2	41	0	0	10X	0	0	17	0	0	0	
ENV 3	-	-	-	-	-	-	-	-	-	-	
ENV 4	63	34	0	42L	0	0	39	49	19	27	
	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC			
MODES	OFF	OFF	OFF	-	OFF	OFF	OFF	OFF			
	SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY				
	OFF	-	OFF	-	OFF	-	-				



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Twenty-six Free Tips For Mirage Users

by Sam S. Mims

It's been over four years now since the introduction of Ensoniq's Mirage sampler, and for most of the period I've used two of them extensively in live performance and studio situations. During this time, I've learned many tricks to make life with a Mirage easier, and I've learned much of what the Mirage will - and won't - do. Because I don't have an appropriate computer and software to do visual editing, I've done very little actual sampling. The Mirage is easy to sample on, but difficult to sample well on. Without lots of time to devote to learning the ropes, I (and the majority of Mirage owners) have to be content relying on available samples, and modifying from there when necessary.

Here then, is my list of tricks. None of them apply to actual sampling. Some of them are pretty obvious to some people, but may have eluded others. All of them have helped me save lots of time and aggravation, and will hopefully do the same for those out there in reader-land. RC030820

The Care and Feeding of Disks

1. I have over a hundred disks of sounds, yet for gigs, I rarely need even a fraction of these. By creating "performance disks" for specific sets of a show, lots of time and hassle is avoided on stage. Combine all the sounds needed as efficiently as possible onto as few disks as possible; sounds can be edited as well, if necessary, without having to alter the master disk. If everything for one set can be combined onto one disk, that disk never has to exit the drive until the break, and life becomes much simpler. On your set list, it's now unnecessary to list things like "Lower: Marimba 3 (disk 5)/Upper: Trumpet 1 (disk 2)." You can merely jot down "U/L 3," for instance, and there's much less chance of error.

2. Large disk libraries can get extremely unwieldy, with disks stored in numerous different boxes and such. A handy way to keep disks organized is with a three ring binder. Several companies make clear-plastic pages that hold four disks each, with a small label for each. With each disk living in a specific slot, you'll always know where to find any sound you need. You might find it handy as well to type an index and snap it in the binder, too.

3. There's no point in having disks that don't have the latest operating system (O.S.) on them. With a disk utility such as that offered by Triton, you can copy the O.S. from Ensoniq's disks onto all your other disks (without erasing the samples stored on them). While you're at it, customize the O.S. to your specific needs. If you always use your Mirage on MIDI channel 3, then change parameter 82 to 03. Make the appropriate changes as well to parameters 81 (OMNI on/off), 83 (MIDI Thru on/off), and 84 (MIDI controller and program change enable). Next, use parameter 14 to save these settings to disk. When this modified O.S. is then copied to all your disks, any disk can be used to boot up - especially handy if the power glitches in the middle of a set. Then, the Mirage will come back up configured in the correct way

3. Similar to the above tip, any disks containing sound and sequencer data for an ESQ-1 should have the MASOS O.S. copied onto them. It's one less disk to have to shuffle around for when loading into the ESQ.

Sequencing for Fun and Profit

4. Recording into the Mirage sequencer is neither the most pleasant, nor the most efficient, nor the most precise operation. Let's face it, this isn't the sequencer that will be

remembered in the history books. It still can be useful, though, and with an external (better) sequencer, you can record a perfect and painless sequence, quantize, edit, and such, and then record this data into the Mirage sequencer via MIDI. Just hit the SEQ REC button twice, and then send the data (on the same MIDI channel, of course).

5. Even though you can get a perfect sequence into the Mirage, there seems to be little way to sync it up to anything else in the known universe. The problem is that there is no audible click (or other means) to tell where the Mirage clock pulses are. The two sync methods available on the Mirage are via an external MIDI clock (turn Parameters 85 ON and 86 OFF) or via an external non-MIDI pulse clock (parameters 85 and 86 both on, with the other sequencer's clock output plugged into the Mirage's Sync jack). I've never been successful syncing the Mirage to anything, though. I've only punched in a fast (non-playable) one or two bar sequence during a live set, when the sequence wasn't long enough to get noticeably off time.

6. The Mirage sequencer outputs MIDI data as well, in case you didn't know.

7. When running the Mirage from an external sequencer, separate tracks are often used to control the top and bottom sounds. Using the mod wheel on one of these tracks, however, will effect the other track as well. In such cases, it's easy to alleviate the problem by disabling the mod wheel vibrato on one sound by tuning Parameter 32 from 00 to 01. If the mod wheel controls the oscillator mix (parameter 35 set to 00) on the ill-effected sound, you'll need to do some tweaking there as well.

8. An external sequencer can automatically load disks for you (well, it can't actually put them in...) or change upper and/or lower sounds via MIDI program changes. For this to work, Parameter 84 must be set to 2 (you must be using O.S. 3.1 or higher). This set-up may not be practical for live performance, though, when an unintended program change can silence your Mirage for a ten-second eternity - and then it comes up with an unwanted sound, requiring yet another disk load.

9. If you are using a Mirage with an external sequencer in the above manner (Parameter 84 set to 2), be wary of program changes that occur simultaneously with a note being played. For instance, if the Mirage is told to switch to upper program 3 at the same time it is told to play a note, the note gets cut off very abruptly.

The Mirage, Live in Concert

10. It's simplest to have Parameter 84 set to 3 for live performance (see tip 8), thus the Mirage ignores all program changes from other keyboards and controllers. If you are using a device such as the Voyce LX-4 (which sets all your keyboards to the right patches, and does layering, splits, etc.), you can set a MIDI-controlled effects unit to the same channel as the Mirage, thus both units share one Voyce channel. The Mirage will ignore any program changes the Voyce sends, but will still do its appropriate layering. The effects unit will ignore everything but the program changes, making for a very happy relationship between the two.

11. Parameter 30 (only on O.S. 3.1 or higher) switches the Mirage into Local ON or OFF, which can be a handy feature. In Local ON, the Mirage plays normally. Local OFF separates the keyboard from the sound-generators; in this situation, the Mirage sounds will play via the MIDI in, and the Mirage

keyboard will send data through the MIDI out, but never the two shall meet. (You can check out this situation by plugging a MIDI cable from the Mirage's MIDI out to its own MIDI in. With local on, you can now only play four notes at once, as each note is doubled by the keyboard telling the sound generators to play directly and via MIDI as well. Switching to local OFF in this configuration results in normal playing - the equivalent of having a rack-mount Mirage and MIDI controller.) Local OFF is a useful mode if the Mirage is your only keyboard, and is used to control other sound modules.

12. Local OFF is also handy if you're using a device such as the Voyce LX-9 or LX-4. The Mirage can be used as a master controller with Parameter 30 turned off. Thus it only plays where it is layered to itself by the Voyce, allowing the keyboard to be split/layered in any configuration. (Note that the early Voyce LX-4s won't do this without upgrading the ROM, an easy and inexpensive task.)

13. During a song's less demanding moments, it's a good idea to insert the disk for the following song, and punch in the load command and sound number. Then, immediately upon finishing the song (or sooner, if the Mirage is finished with its part), you can merely hit "Enter," and the next tune is just a few seconds away. This gets easier with practice. RC030820

14. Be aware that the Mirage's MIDI out jack, when used as a MIDI thru (by switching parameter 83 on), is disabled when a disk is being loaded - in other words, it quits passing along the MIDI data until the disk drive is done. So care must be taken when a disk is changed in the middle of a song if you are using the MIDI thru. As always, a MIDI thru box is a better alternative.

15. If the Mirage is used in the MIDI out mode (Parameter 83 switched off), the data stream is interrupted as well by disk loads. Be aware of this if using the Mirage as a master keyboard.

16. If you only use, for instance, piano sound3 (upper and lower 3) during a set, use Parameters 15 and 16 to copy this sound to upper and lower 1 on your performance disk. Then, one less keypunch is needed to load the disk (Load upper, Load Lower, 1, for instance, instead of LU, LL, 1, 3). Disk loading is easier and there's less room for error (disk loading mistakes are agony when the audience and the rest of the band are waiting for the next song to start...)

17. On performance disks, you can change and save Parameter 69 (relative amplitude) for specific wavesample so that a sound plays at a lower (or higher) volume, thus eliminating lots of knob twiddling to get levels set for the next song.

Free Samples

18. It's not entirely silly to sample nothing. I don't mean to not sample anything, I mean to sample silence. Such a sample is handy if you're layering your Mirage with another keyboard and need the Mirage sound on only part of the keyboard range. Just layer over the silence on the other part.

19. I've had great fun "discovering" hidden samples on many of the disks that I've gotten from others. Particularly on synthesizer samples, where only the lower "half" is used, but it is stretched over the entire keyboard, there's sometimes another sample on the upper half that never gets uncovered. (In reality, there's always a sample there, but sometimes it's just "This is a blank formatted diskette.") To dig out these hiding sounds, go to the lower sound, and set the top key (parameter 72) for all eight wavesamples to 30 or so. Then see what's up top.

20. Other hidden samples can be found in wavesamples that aren't used to create the advertised sound. In other words, all four variations of a tuba sound may be made from wavesamples 1 and 2. (Check this by looking at Parameter 27,

initial wavesample.) Try switching Parameter 27 to 3, and you might suddenly discover a sample of a screaming pygmy. Now that's entertainment!

21. Tip number 19 can be used in reverse (sort of) to save important space on a performance disk. If you have a lower DX-7 sample that covers the entire keyboard, and you need a car crash for the next song, save the car crash to the upper half of the DX slot. Then, set up lower program 4, for instance, so that the top key (parameter 72) is 30 or so, thus uncovering the car crash. Now you only have to switch to lower 4 for the next song, instead of loading another disk.

22. I'm amazed at how many samples are out of tune. Even great samples that must have taken hours to perfect are left noticeably out of tune. It's a good idea to set aside some time and go through every sound on all your disks with a tuner. Those that are off can be corrected by first finding the offending wavesample (check Parameter 27), calling up that wavesample (Parameter 26), adjusting the tuning (Parameter 68), and then saving the corrections back to the original disk. This is a bit more tedious with multisampled sounds, such as pianos, where numerous wavesamples cover only a portion of the keyboard. But, there's no point in playing out of tune, now, is there?

Odds and Ends

23. I always keep the Parameter Reference card in my Mirage's case. It doesn't take up a whole lot of room, and I always seem to need it for something. It's as good a place as any to store it, and it's always there when you need it. Those with photographic memories may disregard this.

24. You can use a Mirage to really spice up a drum machine by layering the sounds. Just load a drum set into the sampler, then go through the drum machine sounds and assign each to the corresponding key on the Mirage. If you don't want to layer the cymbals, for instance, you can assign them to an unused key, thus only the Mirage cymbals will play (from the keyboard of sequencer); to use only the drum machine cymbals, find the appropriate wavesample in the Mirage and turn the relative amplitude (Parameter 69) to 00.

25. The Mirage and drum machine can also be used together to get two different snare sounds, for example. You can use that sample of silence (tip 18) as a space to assign the drum machine sounds, say on the top half, while the Mirage drums are on the bottom half. An added bonus here is that, when sequencing, both instruments are set to the same MIDI channel, and thus can occupy only one track of the sequencer. You could also layer some of the sounds, but not all of them, in this configuration.

26. Every now and then, I'll be twiddling parameters on my ESQ-1, and suddenly the Mirage will start loading a new disk. "Dang!", I exclaim as I call up Parameter 84 to switch it to 3 - but, lo and behold, it's already set to 3! I finally figured out what in the world was going on. I had assumed that when Parameter 84 was on 3, program changes could not be made through MIDI - but this is not the case. They are recognized, but only when followed by the MIDI +1/yes button on DX-7s, or by the "Up" increment button on the ESQ-1. Whenever this combination is used, the disk starts spinning.

There are lots of tricks to make the Mirage work with you, and make life immensely more pleasurable. I don't think I've discovered them all, so write to me in care of the Hacker if you know something that I don't.

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.

Catch The Wave

by Clark Salisbury

Some people think the EPS is a digital sampler. But they're wrong. The EPS is a petrie dish for sonic bits. Sound bites, if you will. Throw a few sounds in there, let 'em germinate and cross breed, and you'll get magic back every time.

Look around you. Or better yet, listen around you. Everything makes a sound of some sort, once it's been appropriately struck, plucked, thumped, tickled, teased or otherwise excited. Anything can be made to vibrate - the whole universe is vibrating. And even though that's a note with sufficient bandwidth to foil the most stalwart of digitizers, little sparkly flecks of that sonority are floating around, all over, right there in the thin air, waiting to be turned into binary strings that can easily be bent to the will of humanity.

See, I've always liked the idea of wavetable synthesis. You know, squish a bunch of teeny acoustic sound bits into some ROM somewhere, then when you feel like making a flute sound, grab the appropriate sound bit, do a little digital sculpting, and blow. Guess I'm not the only one that likes wavetable synthesis either. The ESQ-1, the Roland D-50, and now the Korg M-1 have all taken this approach to synthesis, and each has carved for itself a place in the short history of electronic synthesis.

But you know what's even more fun? Making your own wavetables. Right on the EPS. Because everything is a sound, is a note, is music, remember? Everything vibrates - and you heard it here first.

So go sample a sound. Anything. My hot water heater vibrates, my cat vibrates. You probably have similar sound sources around your house. So sample anything - anything but a musical instrument, that is. This will be much more fun if you sample something that has no obvious musical application. That's right. Grab your mic, your EPS, and a box of corn flakes, an ironing board, an exhaust manifold, whatever. I'll hang tight 'til you get back.

Did you know about holographs? Those 3-D pictures, like the one on your charge card? Did you know that if you break a holograph into two parts, the entire image is contained in both parts? And that if you break each of those two images in two, the entire image is contained in each of the pieces? And that this process can be repeated, again and again, and no matter how small the piece of the holograph becomes, if you can see into it, you can see the entire image? That's because each particle of the holograph contains all the data required to construct the entire image. It's sort of like DNA - you can grow a plantain or a person if you have the right strand of DNA.

So what does this have to do with sampling and wavetable synthesis? Not much. Except that sampling is one way you can break off a piece of the cosmic hum, a piece that contains an image of the whole. So go sample some fish frying, or the other shoe dropping.

Then when you've got a sample, loop it. Loop it anywhere. Now reconstruct the universe from the resulting sound. There will be a short quiz at the end of this session.

If you want to create a wavetable, though, use a short loop. Real short. Try this. Set the loop start at about 50% of the way into your sample. Grab the loop end, and bring it back - as close to the loop beginning as possible. If you're listening to

the sample as you do this, you'll hear your sample play to the loop point, and then go nearly supersonic as the EPS tries to play a loop that's about 1 sample long. This sound can be heard by many animals, but is not particularly useful for music intended for human beings, so select loop end fine adjust (the large number that's not in parentheses or preceded by a decimal point), and hit the UP arrow button one time. You now have a wavetable. RC030820

Of course, it may not be a very pretty wavetable. Imposing a short loop on a sample is guaranteed to produce a pitch, but not necessarily a sound that's particularly musical. You may still need to ferret out the essential (or at least interesting) stuff contained within your sample. Hit the UP arrow button another time, and your new wavetable will go lower in pitch. Play around with the loop end real fine adjustment (the number preceded by the decimal point). Sooner or later you'll find something interesting, trust me on this. And don't forget to use the loop position adjustment. Moving the loop back and forth through your sample allows you to select different small parts of the sample; some of these may contain really interesting combinations of overtones.

If you have come along this far, you are probably beginning to find that there are can be some really beautiful waves contained in the sound of paper being crumpled, or a bunch of change being rattled. Once you've located a particularly good specimen, there's all kinds of neat things to do with it. You might want to truncate off the attack (and end) of the sound, so that you're left with only the looped portion. This sound will only use a few blocks of memory, so you'll have plenty of room to import another sound to use for an attack. Maybe a cowbell from one of the drum kits could be copied into a new layer for this purpose. Or take the factory piano sound - delete, truncate, and otherwise obliterate all but the first little bit of one of the waves, and apply a digital "fade out" (located among the COMMAND/AMP pages) to it - this'll give you a nice piano attack to splice onto the new wavetable.

Try copying your wavetable to a bunch of different layers. You can then adjust the pitch and amplitude for each layer, giving you something similar to additive synthesis, but using complex waves. And don't forget to try different envelopes. If you don't want to spend a lot of time designing envelopes, at least try a few of the preset envelopes that Ensoniq has so graciously provided with the EPS.

And if you keep to this course, sooner or later you'll strike gold. Because the universe is vibrating, every particle, every wave. And you can catch one.



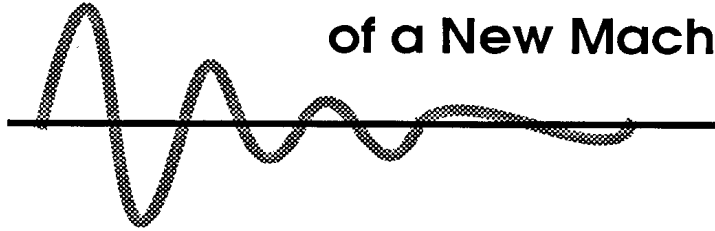
Bio: Clark Salisbury is a partner in the MIDI Connection, a Portland-based consulting firm. He has been actively involved in the composition, performance, and recording of electronic music for over 7 years and is now producing his own pop-oriented compositions. His favorite color is chrome.

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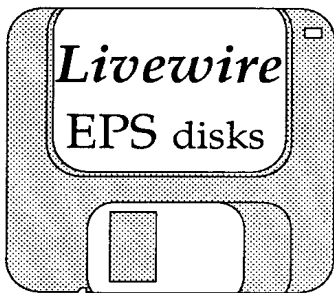
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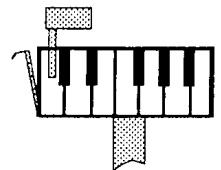
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Keel Productions EPS Sound Library

Reviewed by Kenn Lowy

For: EPS.

Product: EPS Sound Library.

Price: \$15 per single disk to \$10 per disk in quantity. \$8 trial disk, \$5 for demo tape, both for \$10. Free catalog.

From: Keel Productions, Box 467, Lakeside Halifax Co., N.S. Canada B0J 1Z0 (902) 852-2931.

Keel Sound Productions has just released a pretty impressive set of EPS disks including a "Standard Series" for use with all EPS synths, and a "Studio Series" for machines with a 2X (or higher) memory upgrade. Although many may frown at the Studio Series concept, it does allow for better sampling of complex sounds. And I can't imagine anyone going out on stage with an EPS without a memory upgrade of some sort. The samples I listened to were (for the most part) very well done. I was impressed not only with the quality of the samples, but for the first time I was able to sit down and listen to these samples and not hear ANY clicks in the loop points. Of course the architecture of the EPS makes looping a lot easier than on the Mirage. Plus the fact that they used a Macintosh, an Atari ST, and a PC compatible running a variety of software to get these sounds just right. RC030820

According to the press release I received, Kevin Elliott (the master sampler) spent about five months making this set of disks with half the time spent taking samples, and the rest of the time spent editing them. One thing is obvious, and that is that a lot of time was spent making these samples sound good. Each disk (or set) comes with a sheet explaining what's on the disk and how to use the patches and conserve memory. Anyone who has played the EPS a bit will know how to get the most out of these samples, but the enclosed sheet makes it one of those "no brainer" deals. In other words, even if you don't know anything about the EPS, you'll learn a bit from reading the documentation included with every disk. Now on to the sounds!

Disk #X-3 - Royal French Horn (for expanded memory)

It really does, it sounds like a French horn, and is very sensitive to velocity, which makes it very useful. Unfortunately, it takes up a lot of memory (1407 blocks, so you'll need the 2X expander to even use this sound) and it uses 6 layers, so you'll only be able to play a few notes at a time. For such a complex sound (acoustic instrument sounds are like that) you'll have to give up something in return for a quality sample. The patches are variations: solo horn using only 3 layers, which tends to sound very thin after hearing the full 6 layered sample, hand-mute, also only 3 layers, and a "mellow timbre," again 3 layers, that is probably the best of the patches. Included are notes on how to conserve more memory. For example, using the last patch mentioned you can "remove layers 1 and 8 from the patch, and pan layer 4 to center." Very useful information if (or when) you need to conserve memory.

Disk #X-1 - Fender Rhodes 88

A sample of the Fender Rhodes with the "dyno-my-piano" mod (which we're all so familiar with??). Yeah, it sounds like an electric piano, which is nice if you use this type of sound, which I don't. This one also takes up loads of memory (1255 blocks) and only uses two layers. It does however, use all 88 keys (hence the name Rhodes 88), which you can use by simply transposing the entire instrument up or down. There are notes explaining how to use less and save memory, which is something I'd certainly do with this sample. Patches: stereo chorus, mellow variation (which doesn't sound mellow to me, and has a very nice chorus effect that can be enhanced using the mod wheel) and a doubled lower octave patch that sounds great for bass runs, again assuming you like electric piano

sounds for bass runs.

Disk #X-2 - Steinberger Bass Deluxe

Another memory stealing sample (1376 blocks!). A nice mellow, sort of subdued sound. Only uses 2 layers, but you'll need, or at least want, to use both for a full, stereo sound. The mod wheel adds a bit of vibrato which I found very useful. Patches: muted bass, slap bass, and a brighter overdrive patch which adds a little distortion, but not enough to get in the way of the sound.

Disk #5 - Orchestral Percussion III

Timps I - Excellent tympani sound. Moving the mod wheel adjusts the timbre of the sample. This is probably one of the best percussive samples I've heard on any Ensoniq machine. The sample only uses the bottom 1 1/2 octaves (which is where you'd find the tympani anyway). Patches: mod wheel adjusts loudness, stereo roll (sorry, but this patch seems useless to me), velocity controlled pitch scoop. The mod wheel again adjusts the timbre on the last patch. A very impressive sound!

Tubular Bells - a nice clear tubular bells sound with a long decay. Not much to write about this except it's very clear and sounds very good. Patches: mono with a nice vibrato (mod wheel controlled), panning, and hand muted bells.

Hell's Bells - somehow didn't make it onto this disk. I assume it was an oversight in the disk copy process? Too bad, the press release says it was made using TurboSynth, and I'd love to hear it. If I ever do, I'll let you know. All in all, a good disk, even without Hell's Bells.

Disk #15 - Keyboards I

B-3 "Flute/Rock" - Your basic Hammond organ sound "emphasizing low drawbars and heavy Leslie". Yup, that's it.

B-3 "Church/Rock" - similar to the above, but this one emphasizes the high drawbars (so it sounds better on the higher registers).

Disk #20 - Synth II

Xpander Brass - This is a mix of two Oberheim xpander patches. Moving the mod wheel changes the timbre. While this is a nice sound, one of the patches provided makes the sample really shine. An excellent sound for some heavy lead work in the middle to upper registers.

Moog Lead 1 - FINALLY, a good Moog sound! I'm one of those people who has never believed that a really good analog synth sound can be duplicated on a sampler. This may be as close as you can get. The basic sample/patch is best for bass work. Patch info: one patch adds some nice resonance to the lower octaves (at least that's where it's most useful), another is a stereo layer of two patches, which is very useful for good analog/Moog lead work. Some people may find this sound to be a little dated. After all, the Moog was used a lot in the 70's, but I still think it sounds great when used properly. One of the patches duplicates a sound The Cars love to use.

Moog Lead 2 - a square wave Moog sample. According to the release notes this sound is from a modular Moog system "reminiscent of ELP days". This is one disk I'll make use of (in a big way). I always thought my sampler was supposed to help me get rid of my old synths. This disk shows how it can be done.

Disk #23 - Acoustic Guitar I

Classic Martin - This is a nice acoustic guitar sound. It works - and there is poly-pressure usage. Key pressure adds vibrato, but being a guitarist I can really hear how artificial this vibrato sounds, compared to the real thing. If you can live without it (the vibrato) then it'll sound fine. The patches here work very well. One patch uses harmonics, which is great for those of us (guitarists) who would like to be able to get harmonics on every string at every fret. This is one easy way to do it. Another patch is stereo chorus, and stereo chorus with harmonics. Being a guitarist makes me a little more sensitive to hearing a guitar sample. The problem with using a guitar sample is that you can't play it like it's a keyboard. You have to play the keyboard as if it were a guitar. Obviously, the same is true for many other instruments (violin, sax, etc). But it seems most noticeable on guitar patches (to me).

Nylon Acoustic - yes it does sound different from the steel stringed acoustic. A good sounding sample. Nice patch usage (again), harmonics and a simulated 12 string (just copy the waveform, and raise it an octave) and of course stereo chorus. Once again key pressure adds vibrato. You can probably get away with using this vibrato if you slow it down a bit (where it tends to sound a little more normal).

Disk #29 - Woodwinds II

Clarinet - Not the best of the bunch. Unfortunately, I can hear the split points on this sample (where one sample ends, and the other begins) as I play descending notes on the keyboard. Poly-pressure adds a nice vibrato, but again this only sounds good at certain points on the keyboard. This may be fixed before this disk is released to the public. The patches use different layers and I found no problems with them (chorus etc).

Flute and Piccolo - nice combination, but I hear more breath on the lower octave than on the middle octaves. I guess wind instruments are pretty hard to get right.

Bass Flute - more problems on this sample. It works beautifully in a very small area (7-9 notes). The problem here is that there's a "natural vibrato" which was recorded with the sample. It sounds great, but the problem with that is that as you go farther away from the source note, the vibrato gets faster (or slower) and starts to sound unnatural. But within those few notes, it really does sound great. This is one (of 2) disks in the set of 10 that I reviewed that falls short. It's hard to recommend this disk even though the Bass Flute sounds great for those few notes. RC030820

Disk #31 - Brass I

Trumpet - Good trumpet sound. Very usable, especially for imitating ensembles. The sample has three layers in basic mode. Patches: solo trumpet, stereo (with detuning controlled by the mod wheel), and the last patch is for use with those of us with expanded memory. There are instructions as to how to copy this layer and use it with the basic patch. It adds a lot to the memory usage though (808 to 1311 blocks).

Mute Trumpet - maybe I haven't heard a muted trumpet in a while, but if this is what it really sounds like, run for your life!

Tuba - I do know what a tuba sounds like, and this is IT. While this sound may be useful to some, I have to think that anyone interested in this disk is probably interested in orchestrations. Frankly, you're going to need a bunch of EPS' to be able to duplicate a quartet, symphony or anything classical. Why not just hire a few starving musicians?

Disk #37 - Strings II

Cello - Good clear cello sound using two layers. Velocity controls dynamics, allowing for quiet solos, etc. Patches:

simulated stereo with "hall ambience" - sounds like you're in a concert hall. The only problem with this sample is that although it sounds very good with other instruments, it can sound a touch dirty if you're listening to it on headphones). But I really don't think anyone would have any problem using other instruments, with little solos here and there. You have to listen very carefully to hear the flaws.

Cello Pizzicato - the sound cuts off very abruptly when you lift your finger off the key. Doesn't sound much like a cello to me, but one of the patches use a key up layer for a nice effect. Of course, this is pretty easy to add on your own for any sound by going into the key up layer and adding the layer you want repeated when you lift your finger off the key.

Cello Harmonics - sustained bowed harmonics, in stereo. Unfortunately, there's too much noise in this sample. In fact, it sounds as if someone were blowing into the cello instead of bowing it.

And, so...

So you've read about how I feel about the quality of the samples on these disks, but you probably want to know how was it done? As I mentioned in the intro, Mr. Elliot obviously put a good amount of time into this project. He used a lot of "high tech" gear (i.e. computers, software, reverb units, etc). But that's just part of the story. In looking through the parameters on the EPS, I found that there was a lot of tweaking done. Root keys were rarely set at A2 for example. There was always a need for an adjustment (fine = +3, type of thing).

I was a little surprised that most of the loops were forward loops (I didn't find any backward loops, crossfade, synthesized). The samples I've taken on my own required a fair amount of playing to get a good loop, and often I'd have to resort to crossfade loops, synthesized loops, etc. But that's me.

I was really quite surprised and impressed with almost all of these samples. But that may be partially because I was so disappointed with the samples that came from Ensoniq. Everyone who owns an EPS raves about the machine - we all know what it's capable of doing. These samples are a good example of what can be done (with the exception of 2 of the 10 disks reviewed). I'd have liked to have heard another wave come into play with some of these sounds (using key pressure/aftertouch), especially on the synth samples. But these are minor points, and certainly things I can add on my own. Another good selling point is that these disks are "guaranteed to please. . . or your money back." I always like to see that.

I've reviewed only a handful of the disks that have been released by Keel Sound, and more are on their way every month. Here's a brief list of some other sounds currently available: koto, marimba, agogo bells, bongo drums, roto toms, rock drum kit, electronic percussion, CP-70 (Yamaha electric grand), Prophet VS strings, mandolin, Stratocaster (clean and distorted), Les Paul (clean and distorted), oboe, tuba, violin, and sound effects (owls, Coke bottle, etc).

Samples, like anything having to do with the senses, are really a very subjective thing. What sounds good to me may sound only decent to others. But I was impressed enough with these sounds to recommend them to EPS owners who don't have the time, patience, or experience to do it all on their own. Personally, I don't have any friends who play the French Horn, and I don't have access to a Moog. Consequently, many of these sounds are really out of reach for me. And besides, between working a day job, and playing my music, I don't have enough time to sample everything I want. And that, I suppose, is why companies like Keel Sound exist. ■■■

Bio: Kenn Lowy is still trying desperately to finish recording his first lp/cd. He is taking the winter off from triathlon training (sort of) and is hoping to find the perfect grand piano sample for his EPS.

The Pedal Organizer

Reviewed by Larry Church

For: All Keyboards.
Product: The Pedal Organizer.
Price: \$19.95.
From: Sound Logic, 1125 Eleventh St., Ramona, CA 92065. (619) 789-6558.

Ever think about cleaning up that mess of unorganized effect pedals you probably have? Back in my electronics shop days (*Musician's Bench*), assistance in this area was commonly requested. I'd suggest all my best "Technician Larry" ideas and dish out an estimate that blew the budget for their entire accounting period. Rarely did I get the job.

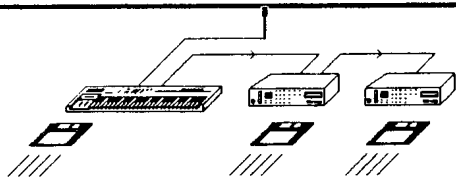
If done with any class and style this project involves lots of busy work that most anyone can (and perhaps should) do for themselves. Each set-up is likely to call for some custom configuring to meet the individual's requirements. If you have some common sense and any aptitude for do-it-yourself projects, this is a good one to take on.

The "Pedal Organizer" from *Sound Logic* solves a lot of problems encountered in the mechanical aspect of getting your pedal set-up squared away. It is an 1/8th inch aluminum panel measuring 4 inches by 15 inches with a black anodized finish. Unlike a painted aluminum surface, this stands to look pretty good even after being stomped, kicked, and otherwise abused

forever. Four rubber feet are securely attached with machine screws and nuts to the bottom side of the panel. The top side is covered from end to end with three one-inch strips of Velcro. The adhesion the Velcro to aluminum is impressively good. The kit includes plenty of mating Velcro strips to stick on your pedal housings making it convenient to attach your pedals to the board and later re-arrange them.

Pedal collections tend to vary drastically in size and quantity of devices. If you use two or three (or four small ones) one "Pedal Organizer" is adequate. If your collection is massive you might consider several - each as a module of the total set-up. In any case, the amount of time you'll save not running all over town looking for the appropriate materials makes the "Pedal Organizer" a cost-effective approach. ■ RC030820

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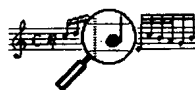
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Using A Volume Pedal With Your ESQ-1/SQ-80/EPS

By C.R. Fischer

It was a dark and stormy night. The keyboardist was disgusted at the bandleaders' latest demands. "I just bought this SQ-80 to make them shut up, and now they want me to shell out for a control pedal on top of it!!!" he thought. Would they ever be satisfied? Would he ever be able to afford decent beer again?

Cursing, he kicked at the guitarists' pedals strewn across the floor. Suddenly, a look of realization came across his face. If only he could use a volume pedal with the SQ-80...

Just in case you haven't gotten around to buying an SW-10 foot pedal yet, and you have a spare volume pedal lying around, you might be interested in learning if you could use the pedal with your ESQ-1, SQ-80, or EPS. The answer is yes, with just a little bit of work. There are a couple of ways to fool your keyboard into thinking it's seeing the SW-10.

To begin with, let's take a look at how the instrument interfaces to the pedal, as in Figure 1. When a potentiometer (or pot) is connected between points A and C, we have a voltage divider that can go from 0 to 10 volts. B is the point that connects to the pot's wiper to pick off this voltage, and it goes back to the instrument to be converted into a digital number equivalent to the pedal's position, the 2k internal resistor protects the voltage source from accidental shorts and stuff, and it limits the maximum voltage across the pot.

A typical guitar or keyboard volume pedal is shown in Figure 2A. If we yank out one jack and replace it with a stereo jack, we can tie into the pedal interface for the cost of a stereo jack (about a buck something) and a few minutes of time. The converted model is shown in Figure 2B. This allows the pedal to connect to the instrument via a 3-wire stereo guitar cord. (Do not try a regular mono cord. Nothing will get hurt, but it won't work, either.)

The other alternative is to get a stereo cord that splits into two mono connectors. Plug the stereo plug into the instrument. Then, make sure the mono plug with the connections from the common sleeve and the *ring* goes to the pedal *input* jack. The mono plug with connections from the common sleeve and the *tip* goes to the pedal *output* jack. This allows you to leave your pedal unmodified. Frankly, I didn't bother to take this route, because it required me to carry around a special cord, but it's nice to have a choice.

There you go, sports fans. For a few bucks, you too can convert your guitarist's old volume pedal into a ready-and-able pedal controller (just don't tell 'em I said so)! ■

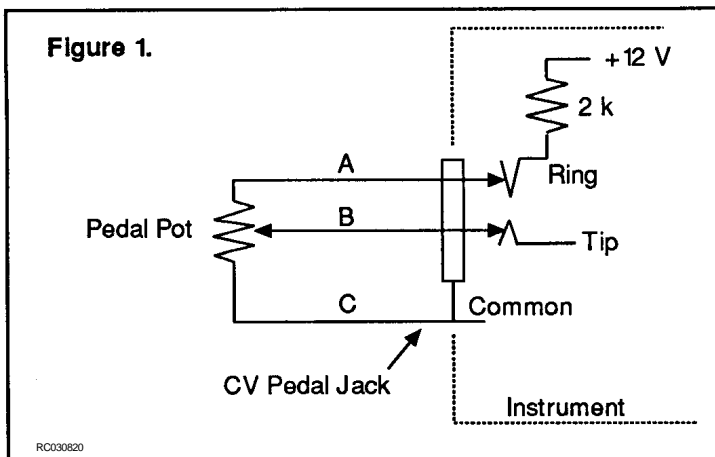


Figure 2A. Typical volume pedal *before* modification.

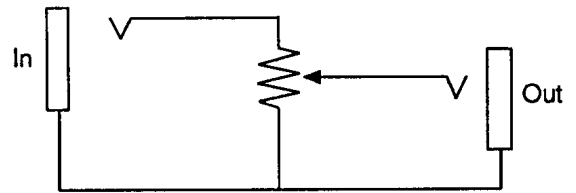
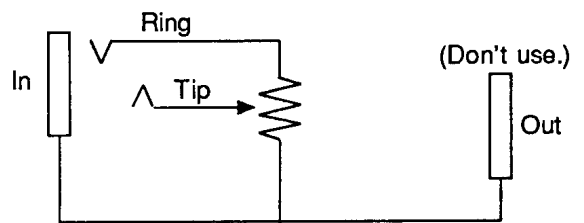


Figure 2B. Volume pedal *after* modification.



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The SQ-80/HR-16 Connection

By Dave Caruso

Here is a sequencing technique that I hope you might find useful. I've used an Alesis HR-16 drum machine for my examples, but you can get the same results with any drum machine that has equally thorough MIDI implementation.

The Plan

Now, the whole idea here is to be able to send a drum sequence back and forth between a drum machine and a sequencer made by different manufacturers. That way, even after your drums have been safely merged on to one track of your sequencer, you can still make virtually any individual drum edit you like - step editing each event for volume, placement, erasure, etc. - by temporarily sending the track to the drum machine for the changes. Once changes have been made there, they can be returned to again occupy a single track on the sequencer. More interesting applications are listed and explained at the end of the article.

Explanation of the Setup

Start by using the HR-16 only as a slaved template, by recording and merging all drum and percussion events onto one track of the SQ-80 (track eight for my examples). The main reason for not letting the HR-16 "play itself" is that it has a finite amount of memory, with no disk drive for storage. In a live situation, it's no fun waiting for Sys-Ex messages of a new pattern data to be loaded into the SQ-80 and sent to the drum machine, then waiting again while loading a new bank of sequences into the SQ-80. If you do a lot of sequencing, it's much faster to let one machine and one file do all of the work (and easier to sort through and find everything later, too). Disadvantage: this setup eats up memory faster in the SQ-80. That's memory, though, not voices. Anyway, only you can decide whether or not this is a problem for your particular sequencing work. I can fit up to three pop songs with realistic, not overly-repetitive drum parts on each file, times ten files per disk, and for my purposes that's just great.

HR-16 Setup

Since you have 100 patterns available on your HR-16, and since you're only using these patterns as templates, you're free to create 100 drum kits, each kit using sixteen sounds. You won't be limited to sixteen drum and percussion sounds per SQ-80 song, though, because you can change to a new pattern/kit with every new SQ-80 sequence.

Remember, in order to change the default voice, mix, or tune settings on the HR-16 without recording any note events you must first change the length of the pattern. Otherwise, the pattern will default to its original settings if you switch to another pattern and then return to the original one. Pick any number other than eight for your pattern length.

Next, assign each HR-16 pad to a different key on the SQ-80. You can do this by pressing "MIDI/UTIL" on the HR-16's front panel, and setting up the MIDI parameters this way:

- 1 MIDI Channel: 08 (If your drum machine has an "OMNI MODE", turn it off.)
- 2 Receive MIDI Drum Notes: ON
- 3 Transmit MIDI Drum Notes: ON
- 4 Set MIDI Note (As desired - here are my settings.)

Kick: 036 C1, Snare: 038 D1, Cls Hat: 037 C#1, Mid Hat: 046 A#1, Opn Hat: 039 D#1, Claps: 048 C2, Perc 3: 052 E2, Perc 4: 050 D2, Tom 1: 045 A1, Tom 2: 043 G1, Tom 3: 041 F1, Tom 4: 047 B1, Ride: 042 F#1, Crash: 044 G#1, Perc 1: 040 E1, Perc 2: 049 C#2.

- 5 Echo MIDI In to MIDI Out: OFF
- 6 MIDI Program Patt Select: ON
- 7 Clock Source: MIDI and Internal
- 8 MIDI Clock Out Enable: ON
- 9 Auto Start Enable: ON
- 10 Click Value: (as desired)
- 11 Click In Play Enable: OFF
- 12 Manual Voice/Tune/Mix: OFF
- 13 Pad Dynamics: Loud Response
- 14 Song Loop Enable: OFF

It is also helpful to set the tempo on the drums to equal that of the SQ-80 so that during editing on the HR-16, you are listening at the original tempo. RC030820

SQ-80 Setup

Track eight will always be used for drum events triggered on the HR-16. Set the MIDI channel number for sequencer track eight to "8", the track status to "MIDI," and the track program number to the pattern/kit number you want to play on the HR-16 using this SQ-80 sequence. Make sure no other sequencer tracks are set to MIDI channel eight.

On the "MIDI" page, set your mode to "MULTI", and your enable to "KEYS+CT+ PROGCHNG." On your "Control" page, make sure the loop in set to "OFF" when sending a sequence track from the SQ-80 to the drum machine. Also, set the countoff to "NONE" on that same page. Otherwise, when transferring data to the HR-16, it will be interpreted as an extra measure. The HR-16 will not record your sequence track's last measure in order to accommodate the count-off.

The Connection

Connect the "MIDI Out" of the HR-16 to the "MIDI In" of the SQ-80. Connect the "MIDI In" of the HR-16 to the "MIDI Out" of the SQ-80. Note that on this last connection you can put any number of units into the MIDI stream between the SQ-80's "MIDI Out" and HR-16's "MIDI In," such as keyboards, effects, etc, as long as you use "MIDI Ins" and "MIDI Thrus" appropriately. Also, be sure that all of the units are powered up, even if you aren't using them directly, or they won't pass the MIDI information down the line. These extra units should also (of course) use MIDI channels other than eight.

Sending a Sequencer Track to the Drum Machine

After all of the above settings have been made, adjust the drum machine's destination pattern length (number of beats) to equal that of the source sequence on the SQ-80. Since the SQ-80 counts by measures, multiply by the number of beats per measure for the sequence's total number of beats. Also on the drum machine, set "Quantize to Record" to the largest value which includes all of the types of notes you played. (Too small a value can cause the track to record into the HR-16

slightly off the beat, while a value of "OFF" will not allow you to erase individual drums from part of the sequence.)

All right, here we go. While holding down "Record" on the drum machine, push "Play" on the SQ-80. Your SQ-80 master should play as usual, and your slaved drums should go into record mode, clocking along with the SQ-80. Both machines should stop simultaneously at the end of the sequence. (If the drum machine stops early, you didn't leave enough length on the destination pattern. Maybe you forgot to punch "Record" while holding down the desired setting. If your SQ-80 keeps playing after the sequence is over, you forgot to turn off the loop switch on the control page. In case something goes wrong, erase what you've got on the drums and try again - but only erase individual drums! If you erase the whole pattern, you'll lose all your drum settings and pattern length.)

Checking/Correcting on the Drum Machine

Change MIDI parameter 7 Clock Source to "Internal Only" and MIDI parameter 9 Auto Start Enable to "OFF." Push "Play" on the drum machine (only the drum machine should play) and check that everything arrived on the same beat on which it was sent. Make any corrections you like. By entering step mode you can make many changes to individual events (like volumes) that you could never get to on the SQ-80. If you make a mistake, you can always erase the individual drums and send from the SQ-80 again.

Returning a Sequencer Track to the SQ-80

If you have an empty SQ-80 track and enough memory to do so, select this empty track, set its track status to "MIDI" and its MIDI channel to "8." Use this new track to return the pattern to the SQ-80 so you can make instant comparisons with the original track eight. If this isn't possible, then you must erase the original track eight at this time and reset its track status to "MIDI" and its MIDI channel to "8." On the control page, set the sync to "MIDI Clock." On the HR-16, set MIDI parameter 7 Clock Source to "MIDI and Internal." On the SQ-80 sequencer, push and hold "Record" then "Play." The display should read "Record Tmp-Ext," and the SQ-80 slave will await its command from the drum machine, now the master unit. Push "play" on the drum machine. The drum pattern will play through very quickly* as the SQ-80 records and syncs along, and the two machines should stop simultaneously. When they do, change the HR-16's MIDI sync back to "Internal Only." Select "Keep New Track" by pressing the appropriate soft button indicated by the current display. On the SQ-80 control page, set the sync to "Internal." Push "Play" on the SQ-80 to check the track (if you sent it back on a track other than eight, you should mute track eight for this purpose). If all is well, change the HR-16's current pattern length to a nice small number other than eight, the default setting, to remind yourself that this pattern is a template only - no events are recorded on it. Then erase the individual drum on that pattern. Always clean house this way on both machines to save yourself needless headaches later.

* **Note:** When returning long or particularly complicated patterns to the SQ-80, first remove the "MIDI In" jack from the drum machine. This will slow down the flow of information to the tempo set on the drums so the SQ-80 can handle it. Not removing this jack at this step can cause a "soft error" on the SQ-80, meaning you'll have to reset the status of the track you're sending to and send again.

Creative Applications

Here are some more reasons you'll find the above procedure useful:

1. Changing the number of beats in a single measure on the SQ-80. Copy the sequence to another location in the SQ-80 and delete bars until you're left with the measure in question. Send to HR-16. Change length. Return to new sequence location in SQ-80. Copy original sequence to a third location and shrink it to place desired material before or after the changed measure as needed.

2. Retrieving a single pattern from Sys-Ex storage on the SQ-80 to be placed into HR-16 memory without disturbing the other patterns. Save current HR-16 songs and patterns to a new Sys-Ex file on the SQ-80. Send Sys-Ex file containing pattern in question to HR-16. Using the procedure described in the article, send this pattern to an empty sequence/track on the SQ-80. Save current SQ-80 sequence to disk. Load the original Sys-Ex bank of HR-16 patterns from disk into the SQ-80. Send them through MIDI to HR-16. Load the pattern in question from disk into the SQ-80. Again using the method I described, record it into the desired pattern number on the drum machine. RC030820

3. An undesired reaction sometimes occurs when step editing to correct a note which refuses to sustain due to all voices being used up. You may get the note to sustain, but also cause a hesitation to be inserted into the sequence at the point of the edit. Once this occurs and you've already punched "Keep New Track," you can still return the sequence to its "unhesitating" condition. Just send the edited track to the drum machine with its quantize value set as described in the article, then send it back to the SQ-80. If this doesn't solve your sustain problem, at least it will delete the hesitation so you can find a new and better solution.

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Getting Your Hooks Into Midicaster

by Tim Martin, SoftHeadWare

A few years ago, I was thumbing through a magazine and saw an affordable, computerized keyboard instrument with a built in disk drive. I'd been waiting for this for a long time! It was the Mirage. I really wasn't as excited about sampling as I was about a "Soft Machine" that was reconfigurable and this was truly a Soft Machine!

After buying my Mirage, I wanted to find out how it worked. This led to a whole lot of long nights with IC data sheets, long distance phone calls and coffee. I had some ideas for functions not included in Ensoniq's OS and after disassembling it, mostly by hand, I wrote a program called "Midicaster" (reviewed in the May '88 Hacker) to add functions to Mirage OS 3.2.

This article describes how to write your own Midicaster Transient Commands and "hook" them into the Midicaster System. Midicaster is an extension to Ensoniq's Mirage OS 3.2 that allows specialized computer programs to be loaded in the Mirage's Sequence memory. These programs can then be executed without having to quit OS 3.2! Some advantages are pretty obvious:

- 1) No need to boot and reboot to do jobs such as disk formatting, copying etc.
- 2) New features can be added to OS 3.2 and they can be swapped in and out very easily.
- 3) OS 3.2's built in routines can be taken advantage of, avoiding "reinventing the wheel".
- 4) Wavesample memory need not be disturbed.
- 5) The Sequencer is still usable as a Sequencer!

The maximum size of the Transient code is only limited by Sequence memory (2K or 8K with the SQX-1 Expander). There is plenty of room to do some pretty powerful things, especially if you are familiar with the OS 3.2 and ROM subroutines that are at your disposal.

The defacto standard method of adding patches to OS 3.2 is to replace the "Sampling" code with your new routines. Midicaster uses this area for its own purposes, however it lets you use Sequence memory in much the same way.

An advantage that stems from using Sequence memory for our patches is that using this scheme, ANYBODY who owns a Mirage, whether they own a personal computer or not, can now take advantage of future OS patches published in the Hacker or elsewhere as long as they have the Upward Concepts OS-1 disk and a Midicaster Master disk. This presupposes that the code adheres to a few conventions that will be described here.

When is a Sequence Not a Sequence?

When Midicaster is operating in the Mirage, the <SAMPLE UPPER> key initiates a jump to the code in Sequence memory (if there is a valid Midicaster Transient loaded).

A Midicaster Transient will appear to be an empty Sequence to OS 3.2. If you press <SEQ PLAY> with a Midicaster Transient loaded, while at the normal OS 3.2 level, the Sequencer will start transmitting MIDI Clock Messages but there will be no Sequence to play.

An empty Sequence looks like this:

```
      0 1 2 3 4 5 6 7 8 9 A B C D E F
B800:01 39 39 39 B8 0A B8 0E B8 0A FF 80 80 80 xx xx
                                     ^actual start of
                                     Seq data
```

That's the way Sequence memory looks after pressing <SEQ REC> twice and then <CANCEL>. RC030820

A Midicaster Transient Sequence contains this same pattern followed by a "signature" that allows the Resident Midicaster routines to recognize it. The signature is 12 Hexadecimal "80"s in a row from B80E to B819. This "signature" is immediately followed, at B81A and B81B, by the address of the entry point for the Transient code.

Whenever an actual Sequence is recorded, no matter how short, the first information that gets put into the Sequence is the current note and then the Pitch Bend Wheel and Mod Wheel positions and the Sustain Pedal's state at the time. Suffice it to say that no matter what, there is no likelihood that a real Sequence will start with the "signature" of 12 "80"s.

Here's an example of a trivial Midicaster Transient that does nothing but return to the Resident code:

```
      0 1 2 3 4 5 6 7 8 9 A B C D E F
B800:01 39 39 39 B8 0A B8 0E B8 0A FF 80 80 80 80 80
B810:80 80 80 80 80 80 80 80 80 80 B8 1C 39 xx xx xx
```

Enter this code using Upward Concept's OS-1 "Byte Boffer" feature. You can then save it to disk using the <SEQ SAVE> command. Now boot Midicaster and use <SEQ LOAD> to load your new Transient. Press <SAMPLE UPPER> to jump to it. Remember, this Transient doesn't really DO anything but it does provide a framework for our next experiment.

The first 27 bytes of ANY Midicaster Transient will look like the example shown above. The actual "computer program" part of this Transient consists of one byte, the byte "39" at B81C. The 6809 microprocessor in the Mirage interprets this "39" byte as "RTS" or "ReTurn from Subroutine". This instruction merely returns to the OS 3.2 command interpreter loop.

Catching a New Wave

Again, using Upward Concept's OS-1, use <SEQ LOAD> to reload this new Transient and then enter this code. Remember, the first part of this code is the same up to B81B so you won't have to re-enter it.

```
      0 1 2 3 4 5 6 7 8 9 A B C D E F
B800:01 39 39 39 B8 0A B8 0E B8 0A FF 80 80 80 80 80
B810:80 80 80 80 80 80 80 80 80 80 B8 1C 1A 50 CC B9
B820:80 FD 8C 5A 1C AF BD 9D 4B 96 AE 81 0B 26 F7 1A
B830:50 CC F8 CD FD 8C 5A 1C AF 39 xx xx xx xx xx xx
```

Now save it to disk using the <SEQ SAVE> command, boot Midicaster and use <SEQ LOAD> to load your new Transient. Press <SAMPLE UPPER> to jump to it.

This patch changes where the LFO wavetable is located. It is normally located in ROM at F84E thru F94D but it will be located in RAM at B900 thru B9FF while this Transient is in effect. Now that the wavetable is located in RAM you can make your own LFO waveshapes! Since we haven't put anything in the new LFO wavetable there's no telling what it

will sound like, but unless it's filled with "00"s you should hear something pretty interesting when you use the Mod Wheel! To return to the old LFO shape and re-enter the OS 3.2 command interpreter, just press <CANCEL>.


The method of implementing the LFO that OS 3.2 uses makes designing the table a little less than straight-forward. The table is read from the middle to the end and then from the beginning to the middle. This means our new RAM table will actually be read starting at B980 and will be read up to B9FF, at which point it will be read from B900 to B97F. A value of 00 will cause no change in pitch. A value of Hex 7F will be maximum sharp and 80 will be maximum flat. A descending Sawtooth wave would look like this:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
B900:	FF	FE	FD	FC	FB	FA	F9	F8	F7	F6	F5	F4	F3	F2	F1	F0
B910:	EF	EE	ED	EC	EB	EA	E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
B920:	DF	DE	DD	DC	DB	DA	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
B930:	CF	CE	CD	CC	CB	CA	C9	C8	C7	C6	C5	C4	C3	C2	C1	C0
B940:	BF	BE	BD	BC	BB	BA	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
B950:	AF	AE	AD	AC	AB	AA	A9	A8	A7	A6	A5	A4	A3	A2	A1	A0
B960:	9F	9E	9D	9C	9B	9A	99	98	97	96	95	94	93	92	91	90
B970:	8F	8E	8D	8C	8B	8A	89	88	87	86	85	84	83	82	81	80
B980:	7F	7E	7D	7C	7B	7A	79	78	77	76	75	74	73	72	71	70
B990:	6F	6E	6D	6C	6B	6A	69	68	67	66	65	64	63	62	61	60
B9A0:	5F	5E	5D	5C	5B	5A	59	58	57	56	55	54	53	52	51	50
B9B0:	4F	4E	4D	4C	4B	4A	49	48	47	46	45	44	43	42	41	40
B9C0:	3F	3E	3D	3C	3B	3A	39	38	37	36	35	34	33	32	31	30
B9D0:	2F	2E	2D	2C	2B	2A	29	28	27	26	25	24	23	22	21	20
B9E0:	1F	1E	1D	1C	1B	1A	19	18	17	16	15	14	13	12	11	10
B9F0:	0F	0E	0D	0C	0B	0A	09	08	07	06	05	04	03	02	01	00

This may take a while to enter using the OS-1 "Byte Boffer," but remember, you don't have to do it all in one sitting. Anytime you feel like it, you can save your work as a Sequence and reload it later for further work.

Another interesting LFO shape is the Square wave. Just enter the value 80 at B900 thru B97F and the value 7F at B980 thru B9FF. Save it to a different Sequence file than your Sawtooth that way you can have up to 8 different LFO shapes on a disk!

If Parameter [31] (LFO Speed) is set to a value of "01", one complete cycle of the LFO can take as much as 3 or 4 seconds. Since OS 3.2 always "syncs" the LFO with the start of the note, you can describe a primitive "Pitch Envelope" for sounds of 3 to 4 seconds maximum duration. With a value of "99" for Parameter [32] (LFO Depth), a change of +/- a minor third can be achieved. This can be useful for simulating the effect of "overblowing" on a wind instrument or really laying into a pick on the guitar.

I hope this opens a whole Pandora's Box of bending and wiggling notes!  RC030820

Bio: Tim Martin is a technician at Bitterroot Music, Communications Engineer for the University of Montana in Missoula, and a Fender Bass player. He wrote MIDICASTER for the Mirage and MIDITERM, a Generic Patch Librarian/MIDI Data Recorder for the Commodore 64 which has become a Public Domain standard. "Hobbies, what's that mean?"

MAKE LIFE JUST A LITTLE EASIER...

MIDICASTER by Tim Martin

With Midicaster. Midicaster is a special operating system that turns the Mirage into a system exclusive storage device. It will store System Exclusive data from any MIDI device (including synths that require two-way communication, such as the CASIO CZ series) - synthesizer sounds, drum machine patterns, sequencer data - Midicaster handles it all. You can even design your own "Midi macro keys", allowing you to add custom functions to Midicaster. Midicaster also formats disks and copies operating systems. And Midicaster is easy to use - you'll become an expert within minutes. Most importantly, Midicaster reads and sends files directly from disk, without disturbing the Mirage's memory.

Here's what the industry is saying about MIDICASTER:

"THIS THING REALLY WORKS!" *MUSIC TECHNOLOGY*, June 1988: "This software is simple enough that you can figure it out without too much trouble. CHECK THIS ONE OUT!"

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LARRY KRALL, president of Multimedia Studios: "We were using a computer for sequencing and as a patch librarian. Every time we needed new sounds we had to kill the sequencer, and then load a specific patch librarian for each Midi synth. Now we use MIDICASTER to store sounds for all our Midi gear - the computer does it's job, and MIDICASTER does the rest!"

While you're at it, check out the reviews in *KEYBOARD*, (August 1988), and *MUSIC, COMPUTERS, & SOFTWARE*, (September 1988).

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Hackerpatch

By Sam Mims

HACKERPATCH is intended to be a place where patch vendors can show their wares and musicians can share their goodies and impress their friends. Patches designated "ESQ-1" will also work on the SQ-80. The reverse is not always true. Once something's published here, it's free for all. Please don't submit patches that you know to be minor tweaks on copyrighted commercial patches unless you have permission from the copyright owner. All submitted patches are subject to consideration for mutilation and comments by Sam Mims - our resident patch analyst. If you send in a patch, *PLEASE* include your phone number.

The Patch: PLUNK

by Tim Edwards, Durham, NC

Play a lot of Depeche Mode? Then you'll probably want this PLUNK sound. The effect is something like banging two hollow metal pipes together. I got the sound by playing around with bell-type sounds, square waves on the LFOs, and a strange DCA4 which has a double attack. The wheel controls the amount of noise in the sound.

The Hack

Tim's sound is pretty interesting, with ENV4 creating the double attack, sort of a slap-back echo effect. If you don't like this effect, and just want more ringing, try changing L3 on that page to +37, and T3 to 9. The mod wheel is the modulator for DCA1, thus it cuts out OSC1's NOISE2 waveform when rolled forward. You can go a step further and cut out OSC2's noise in the same manner by setting up DCA2 the same way: change MOD2 to WHEEL with DEPTH of -63.

The Patch: CAVERN

by Scott Lake, Union Lake, MI

This patch has a creepy, wet-cave feeling in the bottom two octaves of the keyboard. Once you get to the middle keys, the sound becomes pretty much useless. I suggest hitting one note at a time, with different amounts of velocity. (I've got my ESQ set up for HARD velocity.)

The Hack

This is a nice sound effect that is lots of fun to play with. If you prefer a longer release time, go to the ENV4 page and try setting T4 to 48 or so. The filter is the key to this sound; it is all the way closed (FREQ = 00) with the resonance at a maximum (Q = 31). The higher you play up the keyboard, the more the filter opens, and key velocity opens it up as well. You can make this into a submarine sonar patch by setting FREQ to 49, and turning MOD1 OFF.

The Patch: HI-HAT

by A.R.T. Gven, Paris, France

This patch sounds like a cymbal with T2 + T3 making a shorter decay than T4 of ENV4. If played quickly and softly it sounds like a free cymbal. Played strong, the sound is louder and knocked like a closed Hi-hat.

The Hack

This sound strikes me as being somewhat machine-like, rather than a clear cymbal, but such is the nature of the ESQ-1. That's okay, because many contemporary songs call for machine-like percussion.

I prefer turning DCA2 ON, and using the sound of OSC2. It will take some practice to get used to using this patch; it is very difficult to do fast closed-hi-hat patterns. The trick may be to program such patterns in step time in the sequencer, making sure that you sustain long enough to "close" the cymbal.

The Patch: SQ EP2

by Charles Fischer, Mescal Music

SQ EP2 is an unusual variation on the typical digital electric piano sound. Using the SQ-80's DIGIT2 FM waveforms and amplitude modulating then produces an effect more like phasing or FM detuning rather than the usual chorusing effects. To my ears, it almost sounds like an FM patch. Try turning off the AM mode or change DCO3 to a pick or thump waveform for some fun type bass sounds.

The Hack

RC030820

This is a very percussive electric piano with lots of tine sound. Turning off the AM (MODES page) makes for a much fatter and less FM-type sound.

To create a completely different type of sound, open the filter FREQUENCY up to 64; this gives a very sustained synth sound. Now try setting RESonance all the way up (to 31) to add a nice high-end "sizzle."

The alternate waveforms that Charles suggests for bass sounds will create some interesting variations, though not the fattest I've heard. Swapping in some of these waveforms does require, however, that the OCTave setting be dropped a bit for OSC3. Unfortunately, since none of SQ EP2's waveforms are available on the ESQ-1, this patch cannot be adapted to that keyboard.



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.

ESQ-1 PROG: PLUNK BY: TIM EDWARDS

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-3	0	0	NOISE2	ENV3	5	LFO3	63
OSC 2	3	0	0	NOISE1	OFF	-	LFO2	63
OSC 3	2	0	0	BELL	LFO2	63	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	54	ON	OFF	-	WHEEL	-63
DCA 2	15	ON	ENV1	53	OFF	-
DCA 3	58	ON	ENV2	43	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	127	0	63	ENV2	19	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	OFF	-

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

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	63	0	0	0	0	31	0	33	28	0
ENV 2	63	21	11	24	0	14	0	0	0	0
ENV 3	63	0	0	0	0	0	0	0	0	0
ENV 4	63	16	63	0	63	0	6	0	22	0

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

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

RC030820

ESQ-1 PROG: CAVERN BY: SCOTT LAKE

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-3	0	1	NOI1	KBD2	0	LFO1	0
OSC 2	2	0	4	NOI1	OFF	-	ENV1	0
OSC 3	1	0	0	NOI2	LFO3	63	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	0	ON	ENV2	48	KBD	-10
DCA 2	48	ON	KBD	-25	OFF	-
DCA 3	31	ON	VEL	1	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	0	31	36	VEL2	63	KBD2	63

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	LFO2	7

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	-	-	ON	TRI	0	29	63	VEL2
LFO 2	24	OFF	OFF	NOI	63	1	63	OFF
LFO 3	63	OFF	OFF	NOI	63	1	63	OFF

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	63	0	0	0	0	38	1	42	0	0
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	36	48	13	30	19	49	47	41	0

	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	-	-

ESQ-1 PROG: HI-HAT BY: A.R.T. GVEN

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	2	4	0	NOI2	OFF	-	KBD	-63
OSC 2	2	0	0	NOI1	OFF	-	KBD	63
OSC 3	0	10	0	NOI1	ENV2	-63	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	63	ON	OFF	-	OFF	-
DCA 2	63	OFF	OFF	-	OFF	-
DCA 3	26	ON	ENV1	21	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	90	13	0	ENV1	-5	LFO1	10

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	OFF	-

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	21	ON	OFF	SQR	44	0	21	LFO2
LFO 2	63	OFF	OFF	SAW	63	63	63	WHEEL
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	63	63	0	0	0	1	19	20	9	0
ENV 2	63	63	0	0	0	30	30	20	9	0
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	13	0	20	0	22	15	38	0	0

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

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

SQ-80 PROG: SQ EP2 BY: CHARLES FISCHER

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	0	0	DIGIT2	LFO1	1	OFF	-
OSC 2	-1	0	2	DIGIT2	OFF	-	OFF	-
OSC 3	2	11	4	BELL	VEL X	1	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	55	ON	OFF	-	OFF	-
DCA 2	56	ON	OFF	-	OFF	-
DCA 3	26	ON	ENV2	40	VEL	12

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	20	0	18	ENV3	63	ENV2	27

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	LFO2	47

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	6	OFF	OFF	TRI	0	0	0	WHEEL
LFO 2	12	OFF	OFF	TRI	63	0	63	OFF
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	63	0	0	63L	0	0	15	0	15	20
ENV 3	63	30	0	63L	0	0	28	48	14	16
ENV 4	63	48	0	20L	0	0	26	56	19	19

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

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

Classifieds

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SOFTWARE

Just Intonation Calculator, by Robert Rich. Macintosh Hypercard stack makes JI easy: shows scales to 48 notes/octave; calculates transpositions; reduces fractions; converts between ratios, cents, DX711, TX81Z units; internal sound. Only \$10.00. Soundscape Productions, Box 8891, Stanford, CA 94309.

Sound Designer for the Mirage. Never used. This is the original - not a copy. Make me an offer. 516-744-5513. After 5pm EST. Ask for Tony.

PASSPORT (Master Tracks) 16-track Sequencer Pro, C-64, \$75.00. VALHALA ESQ-1 Patch and Sequence Librarian, C-64, \$25.00. MUSIC DESIGN X-Lib for all DX/TX Synths, C-64, \$15.00. ELTEKON PRODUCTIONS ESQ-1 640 Voice Cassette, \$25.00. ORBITAL ACTION MUSIC, PO Box 55191, Grand Junction, CO 81505.

MSCI - IBM VES for Mirage and MPU-401. Reviewed in Issue #38 of TH. Program: \$55.00, Demo: \$10.00. Add \$5 S/H. Send check to: Jeffrey Richter/Donna Murray, 3502 Village Bridge Apts, Lindenwold, NJ 08021. Phone: 609-346-0943.

WANTED

Feedback on what a "Soundprocess" editor should look like, what computer you would want it to run on, and how much you would pay for one. Interested parties should call 813-371-8441 and leave your comments or leave a message on BBS "NEXUS" (813-378-1812). Cutoff date is Jan. 31st, 1989.

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PUBLICATIONS

"The EPS Users Guide," 75-page reference manual for Ensoniq EPS. Price includes shipping in the continental US and free SCSI drive section update in late 1989. Send \$20.00 check or MO to Gary Dinsmore, 32695 Daisey Lane, Warren, OR 97053.

OUT-OF-PRINT BACK ISSUES

M.U.G. will provide Out-of-Print issues for cost of materials and postage. M.U.G. Hotline: 914-963-1768 or write: G-4 Productions, 622 Odell Ave., Yonkers, NY 10710.

Photocopies of out-of-print past issues of the Hacker can be obtained by calling Jack Loesch, 201-264-3512 after 6 pm EST.

I would be happy to accommodate requests for copies of no longer available back issues of the Hacker. 5 cents per page plus postage. Pat Finnigan, 4817 E 17th St., Indianapolis, IN 46218. 317-357-3225.

Folks in the New York City area can get copies of unavailable back issue of the Hacker - call Jordan Scott, 212-995-0989.

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In summary, the ESQ1 program is a well-written and useful program. - ELECTRONIC MUSICIAN -

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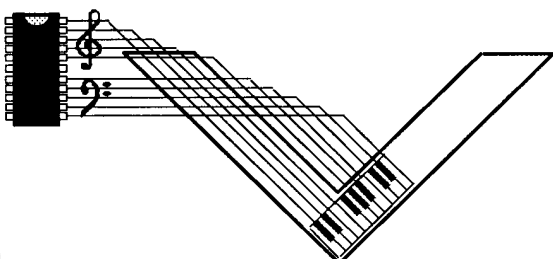
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The Interface

Letters for The Interface may be sent to any of the following addresses:

U.S. Mail - The Interface, Transoniq 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 Hacker,

I have owned a **Mirage** for about 4 years and have been very pleased! Recently (within the last year) I joined a semi-professional band performing both indoor and outdoor gigs. To my horror my Mirage freezes up when the temperature gets below 60 degrees F. It refuses to send via MIDI and the on-board keyboard shuts down. What is wrong?

If this is some bug the company knows about, I should not have to pay to get it fixed.

Can you please help me?

P.S. My Mirage was used along with my ESQ-1 and DX-7 on the latest Rossington Band Recordings. They sound wonderful and I encourage all to get this album entitled "Love Your Man" on MCA (1988).

Sincerely,
Mark Ray
Muscle Shoals, AL

[Ensoniq's response - We have never heard of this problem before, although the disk drive (as with all disk drives) is only rated to work reliably above 40 degrees F.

It's possible that the filters are too cool to tune properly. Try letting the system run for about 15 minutes to warm up, then switch it off and on again to reboot.]

[TH - It should work at 60F. It doesn't sound like a bug - it sounds like a marginal component. In that case, if you're out of warranty, then you're out of luck. You'll probably either have to work around it, learn to live with it, find a techie friend to fix it, or pay to get it repaired.]

Dear Transoniq Hacker,

I've had my **ESQ-1** for almost a year but still experience the thrill of a new keyboard every time I sit down to play it. The engineers at Ensoniq have done a splendid job at creative engineering, not to mention engineering for creativity. But enough - I'll contain my praise and get to the heart of this letter.

First, there is a glitch in my system (System 3.2) that should be shared with others that have yet to shell out the \$50 or so to upgrade to 3.5 where I understand the error has been corrected. When using a CV pedal to control the volume of a program (pedal volume on master page) the sequencer will forget the volume of individual tracks when in the play mode, resetting all of the tracks to the default 63. You can mix the tracks down while the sequence is playing, but as soon as it starts over from a loop or song sequence, all the tracks reset to 63.

Secondly, I have a technical question. I will visit my **ESQ** several times a day for anywhere from 60 seconds to an hour or so (you never know when inspiration may strike). I was wondering what Ensoniq would say was the best power up/power down strategy to

follow given that schedule. Is it better to leave the instrument on all day (and on all night?) or to turn it off and on repeatedly in a day's time. What will prolong the life of the instrument? What will prolong the life of the internal battery?

Again, my compliments to Ensoniq for a really superior product, and to you for a thoroughly enjoyable magazine.

D.D. Van Wagoner
Kittery, ME

[Ensoniq's response - Generally, leaving electronic equipment on is preferable to switching it on and off continually. The stress of power on/off transients is greater than that of continuous operation. This assumes that the equipment has adequate ventilation since prolonged exposure to heat will also age components faster.

Always turn off any equipment if it is to be left unattended for extended periods of time to prevent damage from unforeseen events (lightning, power failures, etc.).

When the power is on, the battery is switched out of circuit. The battery load when the unit is off is so low that the shelf life of the battery is the limiting factor (approximately 5 to 7 years).

For information about the resetting track mix, see Trey Yancy's letter in this issue.]

Dear beloved T.H.

I currently own an **SQ-80** and I'm sure I speak for many when I say I don't see enough purely SQ-80 dedicated material of any kind.

It seems that reviewers, programmers, and the like downgrade the SQ-80's abilities to that of the ESQ-1 because of the broader coverage opportunities. I'd like to see more strictly SQ-80 stuff!!!!

You could even separate them from the contents listing. I hate to see ESQ-1 'Slash' SQ-80 like they're the same machine. EPS plays Mirage but nobody groups them!

Jack Rilling,
Brown Mills, NJ

[TH - The Table of Contents is (supposedly) designed to help find articles of interest. We really don't intend it to be some sort of "indication of merit" or something. As new instruments are introduced we may have to come up with a whole different scheme - it's getting kinda crowded as it is. Maybe "Samplers" and "Synths" would be better.

The article mix is mostly a function of what writers decide to send in. Maybe your letter will help trigger something. (We've heard this comment several times lately - come on writers!)]

Dear Hacker,

I have a question to ask of Clark Salisbury through TH if I may. Regarding Issue 27, Sept 1987 front cover has "ESQ Tips" by Clark. I have tried to get the nice breathy "chiff" sound you have shown and have followed the instructions over and over again, but I seem to get a strange digital sound and no "chiff".

I thought it may have been a problem with my ESQ but I have tried the same thing on a friends ESQ. Same thing. Could you please help as I would love to use that great "chiff" sound.

Once again keep up the good work, TH.

John Ludbrook
Borodia Victoria, Australia RC030820

[Clark's response - (The hard part is setting the way-back machine to September, 1987.) Actually, I left a line out of the original article. At the end of the fifth paragraph, right after you set one of the MODs on the DCA page to ENV3, you should also set the corresponding DEPTH to +63.]

Hi Hacker:

So within a year of dedication to the **EPS** and receiving queries through Transoniq-Net, I've finally garnered enough concerns to write home about. Hopefully, by the time you read this, all these will have been addressed. Here we go -

1) Ensoniq points out that all functions inside the EPS are available through MIDI. Well, that's not completely true. Just like with the ESQ-1, Ensoniq implemented button codes for the EPS front panel so you could remotely control it. For some reason I can't figure out, they omitted codes for the three sequencer transport buttons (Record, Stop-Continue, Play). Ironically, these are the only button codes I use. Maybe I'm the only one who misses them, but it seems easy enough to implement. I was told that it wasn't necessary because the EPS responds to standard MIDI codes (START, STOP-CONTINUE, RECORD). But the loophole in that is that the EPS only responds to these when SYNC=MIDI CLOCK! In other words, you need a START and clock that follows. I have two devices (an Axxess Mapper and an AMR MIDI Director) that can send START and button codes, and I find it preferable to use these rather than ANOTHER footswitch. So could I see either codes for the EPS seq buttons, or have the EPS respond to START when SYNC = INTERNAL (the former being preferred)?

2) Regarding the Output Expander, it is warned that you should not disconnect it from the EPS when the EPS is on, the result perhaps being damage to it or the EPS. Unfortunately, the jacks and the plugs are very prone to jiggle off accidentally. How about locking ends for these? And also, it would be neat to see the RANDOM PAN function applicable to the OE. Perhaps a choice of two (or more) outputs to be randomized?

3) Any reason imposing a limit of 38 files? I know it's plenty, and it's dependant on the format structure, but I've hit the limit a few times. Any possibility of increasing that?

4) Maybe I need a more accurate ear, but I don't hear much difference in the 12-voice compared to the 20-voice mode. Any feedback?

5) Amending Michael Schmidt's letter concerning semi-stereoizing samples (TH, Dec '88), it should be pointed out that when you invert a copied wavesample, it no longer exists as a copy and assumes its own data. In other words, you automatically increase your INSTRUMENT size. This is a good reminder - anytime you play with data (NORMALIZE GAIN, CROSSFADE LOOP, FADE IN-OUT, etc.), this happens. The warning in COPIED WAVESAMPLE-OK?. If you select yes, you thus create a "new" wave.

6) While I'm at it, I've always wondered - why does my **Mirage** display constantly blink, even when it's not doing anything? If it's a power supply problem, why not just adjust the supply?

7) One of the things I've found from all my calls from Transoniq-Net is that we all have pretty much the same public domain samples. Hopefully, "40 Voice VS", "Brett's Bach", and "Mix Brasseur" sound familiar. I would be most happy to send you a list of all the PD stuff I have access to, and would be willing to send any to you at cost to me (\$1.50 per disk + \$1.50 p/h). I don't know if this is completely ethical or not, but it would not profit me. I think it would force the third-party sample companies to put out a superior product, and would greatly enhance the appeal of the EPS.

8) I sent my band's tape to the Homespun Hacker Tapes. I think this is a great idea. Hopefully I'll get good reviews.

9) Don't hesitate to call me through Transoniq-Net with questions concerning the EPS (or even the ESQ-1 or the Mirage). I'll see to it that your comment and/or question will be followed through.

10) Ok, now I've got to editorialize. Regarding Tom Jordan's letter (TH, Dec '88), and Page Hite's article on compatibility, I get pretty steamed. It seems to me that if manufacturers adhere to the MIDI spec (or just advertise more accurately about their products), these problems should be solved. If products are built that can't handle complex MIDI data, I feel it's an obligation to the company to filter that out. As it is, I feel the companies just hope it sells to people that won't push the thing, and then say too bad to the few people that have a problem. I have an extreme problem with a PM-16 pad-to-MIDI converter. My system is set up where I have to pass sys-ex data thru the PM-16 to the ESQ-1 (button codes) during performance. All of a sudden, it locks up and my drummer is beating on soundless pads (terribly embarrassing). This is bogus. Roland won't update the OS in the unit (which would fix the problem) because they're too busy developing and making one million other products. That's why Ensoniq is such an ideal company - one that updates their products, and really cares to take the time to deal personally to EVERY one of their customers (even me). I'm proud to own Ensoniq gear!

So that's it. I guess I'll keep staying up nights in bed (eating Transoniq Crackers) thinking about getting my mother an AWP for her to play. What? My Mom, a HACKER? Oh, no!

Garth Hjelte
Advent Productions
Seattle, WA RC030820

[Ensoniq's response - 1) The sequencer buttons are treated differently from the other buttons in the EPS software, making it somewhat more difficult to get at them via MIDI. The fact that these functions could be accessed with START, STOP, etc. messages was the main reason they were left out of the original scheme.

Your point is a valid one; being able to press the sequencer buttons via MIDI would be desirable in your particular setup. There is not enough free space left in the EPS operating system to be able to implement the function at this time. We will however, seriously consider it when the next EPS OS revision is undertaken.

2) Unfortunately, the connector we use is not available with locks. However, the friction fit is actually quite strong. We haven't heard of any incidents for the connector falling off or the EPS being damaged in the field.

3) Since any file can also be a subdirectory which can contain 38 more files (any of which can also be a subdirectory, etc.), there really is no practical limit.

4) 12-voice mode produces an output sample rate of 50 kHz vs. 30 kHz for 20 voice mode.

Unless a sound has been sampled at 50 kHz you probably won't notice much of a difference (except for a reduction of aliasing when transposing up sounds with strong high frequency content).

5) Any operation which modifies the actual sample data (as opposed to simply modulating a sound) will create new samples.

6) The display in the MIRAGE is scanned dynamically in software. Depending on how busy the microprocessor is, the time to scan the display varies, producing a flickering effect.

10) Unfortunately, it will always be possible to overload MIDI systems as the MIDI baud rate is quite high compared to most serial data transfer systems. In data communications, the solution is to use RAM buffers and high-speed DMA channels, however few keyboard players would be willing to spend this much extra for the few times it would be necessary.

"Filtering" the data is not a solution since the receiving device must still respond to the incoming data, interpret it, then "filter it out" (i.e. ignore it). This will still take up a major portion of the processor's time.]

Dear You Guys,

I fell in love with the **Mirage** during my five-year stint in East Africa and am blown away by the advances in synthesis, etc, made during the past few years. Sure leaves my old, beloved ARP gear miles behind!

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I'm now whacking merrily away with a **SQ-80** but have developed one distinct crack in my whack -- the C.V. pedal in volume mode automatically re-programs any sequenced tracks carrying volume change data to 63, regardless of where the pedal is assigned. The only solution I've found (albeit a poor one) is to abandon other volume effects and to re-assign the pedal to Mod.

This echoes the letter from our man in Australia with the ESQ in the July '88 issue and another in the March '88 issue.

Have the factory boys still not heard of this bug?

Yours in creative twiddling,
Trey Yancy
Austin, Texas

[TH - And the letter from Van Wagoner in this issue! (See above.)]

[Ensoniq's response - In the most recent OS versions of the ESQ-1 (3.5) and the SQ-80 (1.8), on tracks recorded with PEDAL=VOL, the initial MIX setting is saved with other track information.

Whenever the track (or sequence) is played from the beginning (i.e. pressing PLAY not continue), the track will be reset to the same initial value that was saved when you first entered RECORD mode. When the track or sequence loops, the initial value will not be reset.

On the ESQ-1/SQ-80, volume changes are

not recorded; pedal information is recorded and interpreted as volume.]

Dear TH:

1) I'd like to shed a little light on Tom Jordan's letter in Issue #42. I also have an **EPS** and a **TX81Z**, and I know exactly what he's talking about.

A little research has brought me to the conclusion that a single message from the EPS to the TX81Z causes the problem. The EPS sends a control change message for controller #70 whenever you select a MIDI instrument (unless you turn the Control Change off under EDIT MIDI, which kills all kinds of good things, even the sustain pedal!). This single message seems to be responsible for silencing the TX81Z. The MIDI implementation chart for the TX81Z doesn't list controller #70 message? It's not exactly a standard controller. Even better would be the ability to define for each instrument the full set of commands sent out at the time the instrument button is pressed (OK, so maybe I'm dreaming...)

2) I'd like to second the request for a "copy disk" command - even if I had to do some disk swapping it would be faster than what we have to do now. My dealer would probably like it, too (less time hogging his EPS copying new samples and OS versions from Ensoniq). RC030820

3) Another request I'll second: sell an unpopulated 4X + SCSI board. I refuse to buy a 2X expander knowing (hoping?) that there

will eventually by a 4X one, but I'm getting pretty tired of waiting (I can't even use some of the best samples Ensoniq gives to my dealer - I want my B3!)

4) Is there any way to check which OS version is currently loaded? Is it "safe" to copy the OS to a disk that has an old version even if there are samples, banks, etc. already on the disk?

5) Can the EPS be re-booted without powering down (all those surges take a toll after a while)?

By the way, I'd like to encourage all your readers and writers with modems to consider joining BIX (the Byte Information Exchange). There's a music conference with topics for MIDI, hardware and software, and other areas of interest. Also, many vendors of computer software and hardware have support conferences there. It would be great if Ensoniq had one (it would only cost them their time!) [Note: The only thing I stand to gain from this plug is more telecommunicating friends.]

Thanks for great info and an open forum,
Mark Lavelle
San Francisco, CA

[TH - Regarding #1, by now you've probably seen Dick Lord's article in last month's issue - he goes into this problem in some detail.]

[Ensoniq's response - 1) Controller #70 is actually the Patch Select buttons, a controller which we created for the EPS. It is unlikely that the TX-81Z (or any other non-Ensoniq

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instrument) pays any attention to it.

The problem with the TX-81Z has to do with their interpretation of Controller #4 (FOOT PEDAL) interpreted as VOLUME. Much has been written on this subject, including an article by Dick Lord in the January '89 issue of the Transoniq Hacker.

2) A COPY DISK command will be included in a future OS release for the EPS.

3) We can't sell unpopulated boards or kits; our operation is only set up to sell finished products with full warranties.

4) Press COMMAND/ENV 1, then scroll to "Software Information", then press ENTER.

5) No. There is no way for the multiple processors in the EPS to tell each other to reset other than a power-on reset.

You can, however, load a new set of system parameters (say, from a different OS disk) without rebooting using the LOAD GLOBAL PARAMETERS command on the COMMAND/SYSTEM page.]

Dear Hacker,

I'd like to tell you about something pretty amazing.

Some months ago I read a classified ad in TH by someone named Tim Edwards, offering an ESQ-1 patch librarian program for the Apple IIe. The price: 20 bucks. I was very interested, since I have an Apple IIe and an ESQ-M, and very little MIDI software seems to be available these days for my computer. so I wrote Tim, asking him for more information about his program.

I also asked him about what I admitted was a "half-baked idea," namely the concept of using the Apple's own cassette data port to load ESQ patches from cassettes, and then transferring the data over MIDI from the Apple to my ESQ-M. (As you know, the ESQ-M lacks a tape input.)

Tim answered my inquiry not just with a letter, but with a diskette containing (in addition to his patch librarian program) a cassette data loader program that he had evidently written from scratch to fulfill my need. And I hadn't even sent him a check yet.

That's what I call service!

Speaking of service, does Ensoniq have some sort of policy against answering letters? I have written them several times and never received a response. Right now I'm experiencing some anomalies with the ESQ-M I'd like to find out about. For instance, some patch data (particularly the split/layer data) seems to get changed during internal-to-cart or cart-to-internal transfers.

Sincerely yours,
Robert E. Mintz
Anchorage, AK

[Ensoniq's response - We have no record of ever receiving your letter, however be aware that when you copy programs from internal to cartridge (or vice-versa), the SPLIT/LAYER page parameters are still pointing to the original locations. The programs must be

edited and resaved to ensure that they will behave correctly (see page 79 of the ESQ-M Musicians Manual for complete details).

We do try to get in touch everyone who is trying to reach us. There are limited resources dedicated to letters at this time, so the response time for some letters may be longer than others. With any service or time-sensitive situation, a phone call to Customer Service would guarantee immediate attention rather than having to allow for the mail-in and response time of a letter. (Robert has since been contacted by us directly.)] RC030820

Trendsoniq Setters,

The trend is toward flexibility. Flexibility comes from more waveforms. Therefore, answering excuses for not adding them to ESQ1, thusly:

1. Third party vendor problems with waveforms - see No. 3.

2. More memory needed - add some on auxiliary board.

3. OS revisions for each wave set - write 'em and sell 'em.

An auxiliary board with auxiliary waveforms and auxiliary OS's doesn't seem so far fetched. Haven't I already seen something like extra waveforms and/or OS revisions in the third party world? And don't forget the memory upgrade (couldn't we all use one of those?). Seems like this could all run in parallel and be switchable to accommodate the original configuration.

Anyway, ride the new wave. Remove all excuses from mass storage. Do it.

P.S. How about some info on communications software and file formats which would enhance the ability to communicate via wave (or should I say, particle?). In the AT environment, please.

The trend is aimed
Tewn Smith
Somewhere over the rainbow

[Ensoniq's response - Everything you suggest is possible. However, Ensoniq simply isn't in a position to offer such things. As we've stated before, we don't have the resources to reengineer old products and design new products at the same time. (See Jim Grote's letter in the Dec. '88 issue.)

No product should ever be bought under the assumption that "someday" it will do what you want. If a product doesn't satisfy you as is, you may never be satisfied with it.]

[TH - Although a lot of hacker types do tend to buy with their eyes on the "expandability" and "hackability" of a product. Potential certainly shouldn't be ignored - you just can't count on it.]

Dear Hacker:

Over the last year or so, I've seen several letters from readers who wanted to see an article on building an antialiasing filter for their Mirage or EPS. Anybody who would like to put together such a beast should check out

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my article, "Experimenting With Brickwall Filters," in the January '89 *Electronic Musician*. It describes the design and construction of a simple, inexpensive, and powerful (a cutoff slope of - 78 dB/oct. @ 20 kHz) lowpass filter that can be adapted for antialiasing applications. Lowering the cutoff frequency (as described in the article) would turn the basic circuit into a useful accessory for the Mirage or EPS.

Sincerely,
Charles R. Fischer
Mescal Music
Hercules, CA

[Ensoniq's response - Actually, the EPS already has a fully programmable "brick wall" filter built in with a cutoff frequency variable from 6.25 kHz to 20 kHz (-50 dB/octave @ 20 kHz with default settings).]

Dear TH,

I hate to sound like another fan letter, but... Thanks for the GREAT newsletter. Keep the information and tips coming, especially the Hackerpatch.

1) HELP!! I purchased an **SQ-80**, a Fostex 450 mixing board, and a Tascam 238 8-channel multitracker in July, 1988 and use them in my home to record older popular songs (Eagles, Chicago, Barbara Streisand, etc.) and then have my wife sing with them. I design multiple songs (i.e.- piano-bass-drums in Song 1, strings-brass-bells in Song 2), to get around the 8 note limitation, and then use the Tape Sync, recorded onto Track 8 of the Tascam, to keep it all together. My problem comes when I have both the Tape In and the Tape Out jacks plugged in. A soft, high pitched hum appears and is recorded onto the other tracks. As a result I have to record the Tape Sync signal by itself, rewind the tape, then record the music. Even with the Tape Out unplugged the hum is still there, softer but noticeable. Any ideas?

2) In your September, 1988 issue you recommended the *SQ-80 Programming Guide* by Clark Salisbury and I have spent the past few months trying to track the book down. For fellow SQ-80 users, the book is available from Mix Bookshelf Co., phone: 1 (800) 233-9604, for \$29.95. The salesperson said they were the sole distributor for Alexander Publishing and had several more SQ-80 and ESQ-1 books available. Do you have any more recommendations for a beginner like me? I have my most trouble trying to design or modify the sounds (patches) to get just what I'm looking for.

3) How do I find out which OS my SQ-80 has in it? The start up message just states DO NOT TOUCH KEYBOARD. No number or versions.

4) Please send my compliments along to Ensoniq for their great synth. This is the first electronic music I have ever fiddled with and I love it. Ensoniq - keep up the good work.

5) TH - How about a separate letter section for Mirage and EPS users? I find all the sampler articles distracting to me when I read the newsletter cover to cover looking for ESQ-1 and SQ-80 information. Again TH - please keep the information and SQ-80 articles coming. I'm having a blast!!

Sincerely,
Dennis Dickerscheid
Vanceburg, KY

[TH - Maybe the only real answer we have for that is "Arrrrgh - more work!" Don't you find the other letters a just little bit interesting?? (Please.) And what about all the ones that mention several instruments, or Ensoniq in general, or general MIDI hassles, or, or, whatever? (Hmmm, actually, maybe we could try "**bolding**" the instrument names...)]

Regarding #3 - see Chris Rose's letter below.]

[Ensoniq's response - 1) The tape sync is a digital function. On older SQ-80's, connecting the audio outputs and tape jacks to the same ground can induce digital noise in the system.

The proper procedure is to record the Tape Sync signal by itself, rewind the tape, then record the music.

3) While the SQ-80 is on, hold down the RECORD button and press the MASTER button.]

Dear Hackers:

I have been experiencing high levels of stress in slaving an Alesis HR-16 drum machine to my **SQ-80**, and wondered if anyone has had similar experiences. As you may know, drum patterns on the HR-16 can be selected remotely via MIDI program change information. Program change commands are obeyed only when the HR-16 is not playing a pattern. This function is very useful when sending chained patterns (a song) from the SQ-80, as a track can be used on the SQ-80 sequencer to send the program change and play the corresponding pattern stored in the HR-16. Very useful when arranging songs!

But, alas! When I play a song using the SQ-80 as master, the HR-16 sometimes reappears a selected pattern an extra time, even though the next SQ-80 pattern is playing and the program change number has been sent and received. (The HR-16 will display a Playing ##: Next Pattern ## message, indicating the current SQ-80 program change has been received, but that the last drum pattern is repeating an extra time.) The problem occurs more at faster tempos, and errors seem to occur randomly. I've tried everything. At best, an entire song will play perfectly, and then the next time - \$*#^&! I know there are other ways to use the two machines together, but the program change-to-pattern selection mode is optimum for my situation.

Any ideas or solutions? Ensoniq? Anyone? Could there be an incompatibility between the timing and command execution of these two machines?

Regards,
John Baker
Poway, CA

[Ensoniq's response - Essentially, you have answered your own question. The HR-16 will only obey program change commands when it is not playing a pattern (i.e. stopped). Therefore, the HR-16 doesn't have a chance to respond to the program change sent by the SQ-80 until after it has started replaying

the current pattern.

There is only a small "window of opportunity" between patterns for the HR-16 to recognize and respond to a program change. There's no way to guarantee that the program change will get through during that "window." The faster the tempo, the less chance of success.

An alternative would be to create a song on the HR-16 using the same patterns you would have used to respond to the program changes.] RC030820

Dear Hacker,

I'm one of the many who has sold my ESQ-1 and purchased an **SQ-80**, and I have a few questions:

1) The manual says don't eject the disk while the drive is operating (the disk drive light is on). Is it safe to eject the disk when the light goes out, even though the drive still seems to be running? There is a whirring sound that continues for a few seconds after the light goes out. So, as a precaution, I've been waiting the extra time before ejecting.

2) Since I'm not transporting the SQ-80 anywhere, is it safe to leave a disk in the drive when turning the power off and on? (I've accidentally done this a few times.)

3) I've stumbled across the current Operating System by holding the Record button and pressing the Master button. The display reads: SOFTWARE VERSION 1.80-201 What is the meaning of this 201 number?

4) About half of the time in use, the whole top row of 40 characters on the display have a slight flickering to them (all pages). I checked to see that I was properly grounded. This hasn't affected the performance of the SQ-80 in any way, so I've been ignoring it. Is this a cause for concern? Is it due to fluctuating household current?

Thanks,
Chris Rose
Chico, CA

[Ensoniq's response - 1) The motor takes a few seconds to spin down. As long as the light is out, the disk is not being selected so there is no danger of corrupting the data on the disk. However, it can never hurt to wait.

2) It appears to be safe but is not recommended. We can't guarantee that the data on the disk won't be corrupted during power on/off transients.

3) This is the revision level of the software for the Poly-Key keyboard.

4) This is not a problem. The display is scanned in software and the display tube is powered by the 60 Hz AC line. Due to variation in response time of the display processor, a beat frequency between the scan rate and AC line is sometimes noticeable.]

Dear Hacker:

I've been cleaning up my sound system lately, and I've started to notice a problem with my **ESQ-1**. The instrument puts out a 60 cycle

hum that is fairly low level, but is noticeable now that I've cleaned things up. (It's not so loud that I can't use it on stage, which I had been doing in the past, but it would be awful for recording, which I plan to do in the future.) I've spoken to other ESQ owners, and they don't have the problem. I've searched for grounding problems and tried it in other sound systems, yet the hum remains. My ESQ-1 is a very early model (serial number 10035), and I'm wondering if later models had circuit differences that take care of this, or if it is common to all ESQ's, or if others have had the problem and know how to deal with it. Any suggestions?

Jim Johnson
Chandler, AZ

[Ensoniq's response - It sounds like a ground loop problem. Try connecting only the ESQ-1 to your sound system and lifting the grounds just to check it. If the hum remains, you may have a power supply problem in which case it will need to be corrected through an Ensoniq Authorized Service Facility.]

Dearest Hackophites,

Being an ESQ-1 junky, I have become addicted to this thing to the point of no return. Speaking of return, I'm not getting anything when I send MIDI in to my ESQ (version 3.5). It all began when I used the Casio DH-100 Sax to drive the ESQ-1. Everything seemed okay, but then I started getting system errors on power up. Then I got no MIDI in on the ESQ-1. Being a sax man for 25 years I went into technoshock as my interface went to outerspace. As it is now, I have no MIDI in. I have called Ensoniq to no avail. I HAVE reinitialized. Ensoniq wants me to put in a new board, but I want to know the cause first.

Brett Clark
Erie, PA

[Ensoniq's response - Try MIDI in from another instrument with the ESQ-1 set to OMNI mode and KEY EVENTS ONLY on the MIDI page. If you still get no MIDI response, it is almost certain that you have a mainboard problem; the solution, being a module replacement. There are numerous stages in the MIDI chain; any of which may have failed.]

Gentlemen:

Thank you for an excellent and useful publication.

I have several cartridges for my ESQ-1. Here's a tip for a quick way to find a particular patch among the group of cartridges. Using a patch librarian, I generate a display of the 40 patches in the A bank from a given cartridge. I produce a printout of this display and with a reducing photocopier reduce it to approximately 1/4th the original size. I attach this to one side of the cartridge with transparent tape and the B list to the back of the cartridge.

In addition, I have a loose leaf binder which I keep near the ESQ with photocopies of the full-sized displays, showing:

1. Patches listed by cartridge;
2. Patches listed alphabetically;

3. Patches listed by related sound groups.

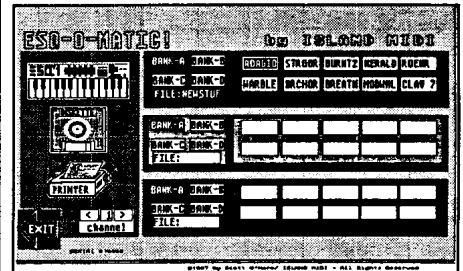
Are there any other TH subscribers in Chubbuck or Pocatello, Idaho?

Yours truly,
Richard Moore
812 Garden Drive
Chubbuck, ID 83202

[TH - Richard, we'd sure be obliged to have you boogie on over here and produce just such set of patch listings for us. (Sounds like one of those great ideas that requires that you be a long-range thinker before you work up the gumption to take action.) There're other readers in your area (though not what we'd call "a lot"). We've taken the liberty of including your address so they can contact you.]

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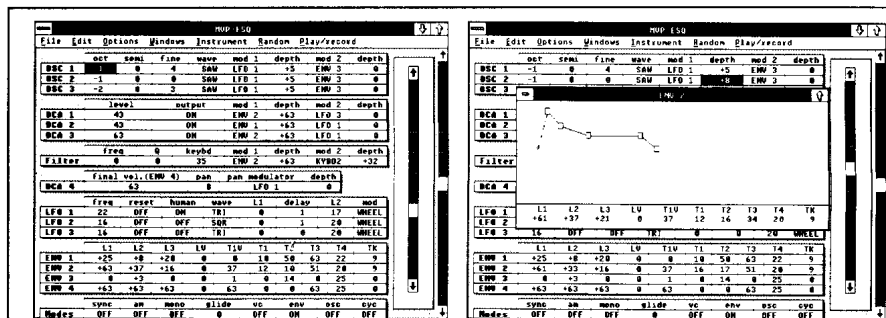
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RC030820

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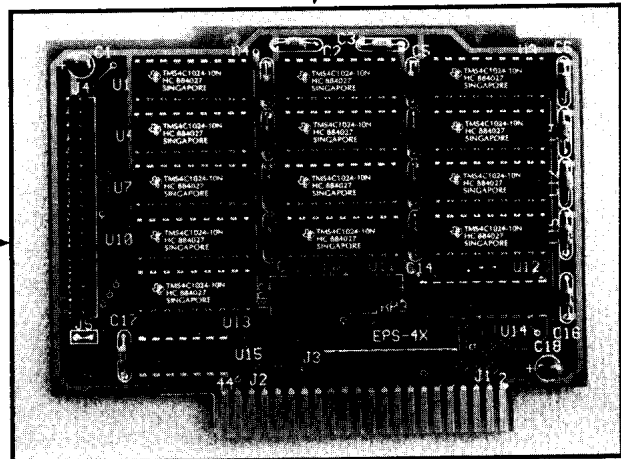
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