

TRANSONIQ HACKER

The Independent News Magazine for Ensoniq Users

ESQ80 Tips Understanding Formants

By Jim Johnson

Without a doubt, one of the ESQ series' main attractions, for beginning and experienced synthesists alike, are the many waveforms available on each oscillator. While waveforms aren't the only factor that affect an instrument's sound quality, or even the most important factor, having a good variety of raw waveforms to use as building blocks greatly eases the process of designing a sound.

But of course, the addition of new and unusual features in any synthesizer not only brings new power to the instrument, but new questions as well. Anyone who has worked with a stripped down synth like the Roland Jupiter or Juno series should be familiar with the SAW, PULSE, and SQUARE waveforms, and sampled waveforms like PIANO and BASS are also easily understood, but what on earth is a FORMT wave, and how is it used? According to the ESQ owner's manual, a FORMT wave is a wave with "a sharp peak in its frequency spectrum", and has a nasal tone quality. This isn't a very appealing description, and certainly doesn't seem to be related to the "warm" or "fat" sound that so many of us crave. Actually, there are a lot of uses for the FORMT waves other than simulating a Prophet 5 with a head cold, and in this article, I'll explain some of the theory behind these waves, and then examine some of these applications.

In Ensoniq parlance, FORMT is short for formant. The word "formant", which you may have trouble locating in a dictionary, has its origins in research into the frequency characteristics of the human voice, performed at Bell Labs and other locations in the middle of the twentieth century. A formant, in this sense, is one of two or three peaks in the frequency response of the human mouth and throat. The frequencies and amplitudes of these peaks have an enormous effect on the timbre of vocal sounds, so much in fact that the human ear can distinguish all the various vowel sounds solely on the basis of the locations of these formants. (This is why we can recognize a word even when spoken by two different people whose voices may "sound" quite different.) This a frequency response plot of an "ideal" formant. The frequency of the peak is called, not surprisingly, the "formant frequency". (See Figure 1.)

Formants are also present in the sounds of all acoustic instruments. Depending on the shape of the instrument, there may be only one or two formants in an instrument's frequency spectrum, as in the brass and woodwinds, or there may be so many formants that none are separately identifiable, as in the piano and violin. As with the human voice, the characteristics of an instrument's formants play a major role in helping our ears identify that instrument, so it should come as no surprise to learn that some synthesists began making practical use of this knowledge almost as soon as the technology was available. At one point, some advanced modular synthesizers came equipped with "formant filter banks", which were actually specialized graphic or parametric equalizers, as an aid in duplicating the frequency response of vocal or string sounds. Unfortunately, since the constraints of modern synthesizer design make oscillators much simpler to produce than complex filters, this is one innovation from the analog era that isn't found on today's synths.

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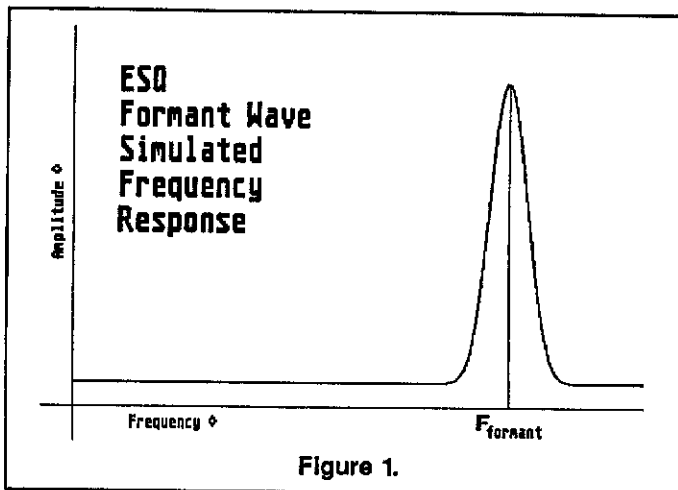


Figure 1.

Realizing the utility of formant filtering but faced with the realities of digital circuitry, the designers of our favorite synthesizer came up with a technological compromise that provides ESQ programmers with some of the benefits of true formant filtering, without the need for exotic digital filters. The five FORMT waves on the ESQ were created by using a computer program to calculate the waveform created by a burst of sine waves passed through a high Q digital bandpass filter, and then storing multiple samples of this waveform in the synth's ROM. (According to Bill Mauchley, who designed the FORMT waves for Ensoniq, there are actually only 10 samples, which are shared by all five FORMT waves.) The end result is that when a FORMT wave is selected on an oscillator, that oscillator becomes the equivalent of an oscillator connected in series with a bandpass filter. Since the waveform is slightly distorted by the ESQ's pitch shifting process, the formant frequencies for these waveforms aren't perfectly stable, but they are fairly constant. According to Bill, the FORMT waves are split at every eighth key, which indicates that their frequencies may deviate by about + or - 25% from the frequencies listed in the ESQ manual. Figure 2 shows the actual waveform you'd see if you observed one of the ESQ's FORMT waves on an oscilloscope.

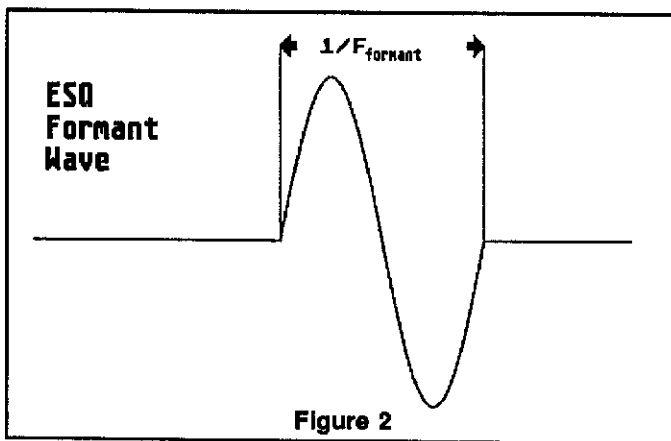


Figure 2

The following patch is a classic example of the use of formants in the creation of an instrumental sound. According to the references listed at the end of this article, the sound of the oboe is characterized by two very strong formants: one at around 1100 Hz, and one at about 3000 Hz. The lower formant is close to the 1 kHz formant frequency of the FORMT2 wave, but the highest formant frequency on the ESQ (FORMT5) is only 2.25 kHz, so the upper formant is not as well matched. Since the higher formant is less prominent, the level of DCA3 is somewhat lower than DCA1. The

velocity sensitivity of ENV3, which controls DCA3, emphasizes the higher formant on louder notes.

This patch also employs a number of other tricks that aren't related to the use of formants. OSC2 provides a raspy, reed-like waveform which gives the sound a little extra bite, especially at higher key velocities. ENV1 creates a slight upward pitch bend at the beginning of each note, which simulates the inertia of the oboe's reed when the note is first blown. According to Wendy Carlos, the oboe has a very limited dynamic range in terms of amplitude, so the velocity sensitivity on ENV4 is quite low.

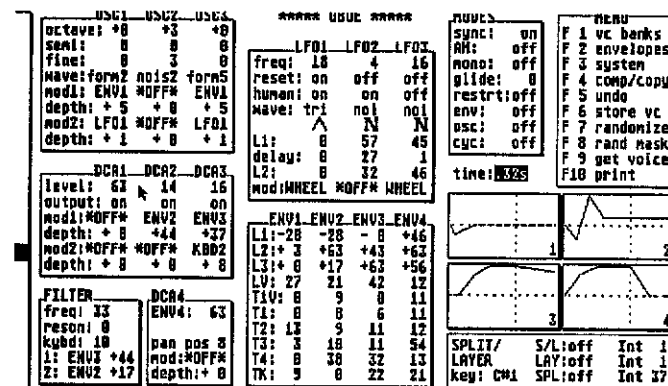


Figure 3

This patch illustrates a rather heavy handed usage of the formant waves, since the foundation for the sound is the FORMT2 wave. In most cases, you'll want to mix the FORMT wave much lower than the "primary" wave, so that it colors the sound without dominating it. The following table lists formant frequencies for a few brass and reed instruments. Try spicing up a stock SAW brass or REED clarinet with a carefully chosen FORMT wave, using this table as a guide.

Trumpet:	1200 Hz
Muted Trumpet:	2000 ~ 2500 Hz
Trombone:	475 Hz
Tuba:	300 Hz
French Horn:	500 Hz
Bassoon:	550 Hz and 1150 Hz
English Horn:	600 ~ 900 Hz and 2000 Hz

Incidentally, the literature on the subject that I have found emphatically states that there is no predominant resonance in the overtone structure of the clarinet, but I have found that one key to a good clarinet on the ESQ is to mix in just a dash of the FORMT3 wave, along with a SQUARE or SQR 2 wave for the bulk of the sound. This just goes to show that the best sounds aren't created by either a rigorous "academic" approach, or by blind stumbling, but by an enlightened combination of the two.

References:

- Carlos, Wendy, "Additive Synthesis", *Keyboard*, June 1985
- Lancaster, Don, "Imitating Acoustic Instruments with Electronic Sound", *Popular Electronics*, August 1975
- Howard Massey, Alex Noyes, and Daniel Shklair, "A Synthesist's Guide to Acoustic Instruments", Amsco Publications

RND (♪♪)

THE EPS IS SHIPPING! As of February 12th, Ensoniq has started shipping their new EPS. Production is ramping up. The first few hundred units are intended to be spread among their dealers so they all at least have something to demo. After that, (which shouldn't take long) dealers can start to fill customer orders. There are fairly long waiting lists for the EPS all over the world.

* * *

Leaping Lizards of Seattle has moved. Their new address is 1614 1/2 NE 80th, Seattle, WA 98115. Their phone number remains: 206-527-3431.

* * *

Be advised: It may mean something and it may just be the weather, but we are presently unable to get in contact with HEAVEN, the Saratoga, Calif. patch vendor.

* * *

Sam Mims sends the following news from the recent NAMM show: Ensoniq announced that they will be releasing yet another new keyboard during 1988. Despite relentless prodding, not one of several Ensoniq employees would spill the beans. They did admit, however, that even more new products were in the works. Also - the 2x memory expander for the EPS should be out in February, the 8-output expander in April, and the 4x memory expander with SCSI port in May.

* * *

We're going to start including, as a regular feature, a small chart showing the latest operating systems for all of the various Ensoniq gear. The info didn't get here in time for this issue, but look for it next month. The new OS for the ESQ-1 is now out (3.4). We do have early info on some of its enhancements:

- The ability to add or delete bars from any point in a sequence.
- On the Mix/Midi page, the program number range for each track is now 001 to 128 whether a cartridge is installed or not.
- Changes were made to the Master Page including "Straight Synth" Keyboard Status.
- There is now a quicker way to create a new song or sequence.

Each upgrade includes an 8-page booklet listing all revisions and enhancements. Contact your local Authorized ENSONIQ Repair Station for an update. To speed the upgrade process, always have your unit's serial number handy.

* * *

TRANSONIQ-NET HELP WITH QUESTIONS

ESQ-1 QUESTIONS - Tom McCaffrey. ESQUPA. (215) 750-0352, before 11 p.m. Eastern Time.

ESQ-1 QUESTIONS - Jim Johnson, (602) 821-9266. 5 to 10 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 Eastern Standard time.

SAMPLING & MOVING SAMPLES - all over the place. "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.

MIDI & SEQUENCING - Leslie Fradkin, Metropolis Music. Eastern Time (NY). Calls between 10 am and 9 pm. (212) 246-8420.

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.

CHANGE OF ADDRESS

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. each. (Overseas: \$3 each.) Issues 1-9, 11, 13-19, 21, and 22 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. 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

New from **Sound Quest**, the *Master Series* of Editor/Librarian now supports the ESQ-1, ESQ-M, and SQ-80. The *Master* is capable of performing simultaneous global editing of any combination of similar graphic envelopes or numeric parameters. Eight bank-editing functions can be performed on any size group of patches. The *Master* can also provide user-controlled patch variations as well as three other ways to mix voices. "Musician Friendly" help screens are available for each Master Editor window. Price: \$150. For more info, contact: Sound Quest, Inc., 5 Glenaden Ave. E, Toronto, ONT, M8Y 2L2, Canada. Phone: 416-234-0347.

Softworx MIDI Systems announces new formats for their popular ESQ-1 (*The Worx*) library. New formats include a Mirage disk compatible with Leaping Lizard's Iguana disk. This disk contains 43 banks of 40 sounds each for the ESQ-1. "*The Worx*" is also available now on a single SQ-80 disk. 1720 of these 1728 sounds were designed on the ESQ-1, the other 8 utilize waveforms and parameters exclusive to the SQ-80. "*The Worx*" is also available on Music Direct's and Blank's ESQ patch librarian compatible disks. Info: Softworx, 8402 Clover Hill Loop, Bayonet Point, FL 34667. Phone: 813-862-6032.

Digidesign, developers of Sound Designer (tm) and Softsynth (tm) software, have announced the June availability of *The Sound Accelerator*. *The Sound Accelerator* is a high-speed digital signal processing card that plugs into the Apple Macintosh II and SE. The card provides CD-quality playback of individual sounds directly from the computer, and makes most sound processing and synthesis functions real-time - the user can hear each adjustment as it is made. Digidesign is also updating their software programs to take full advantage of the new card. Price: \$995. Info: Digidesign, 1360 Willow Rd., Suite 101, Menlo Park, CA 94025. Phone: 415-327-8811.

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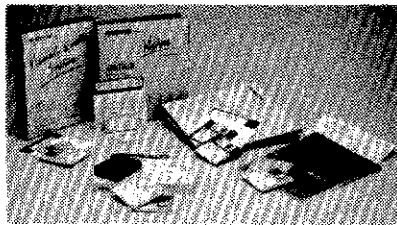
Mirage Accessories

SLD—*Mirage Sound Libraries (10 Pack)*. SLD-A, SLD-B. *Compatible with the EPS.*

SND—*Individual Mirage Sound Disks*. SND 100, 101, 102, C-1, C-2, C-3. *Compatible with the EPS.*

FMT-2—*Disk Formatting Program*. Utility program for formatting disks on the Mirage.

SQX-1—*Sequencer Expander Cartridge*. 1,024 Note Sequencer Expander for the DSK-8 or DMS-8.



CSP-1—*Commodore 64 Visual Editing System*. Sampling and Waveform Design Package for the Mirage.

ISP-1—*IBM PC Vision*. Program and Waveform Design Package for the Mirage.

ASP-1—*Apple IIe Visual Editing System*. Sampling and Waveform Design Package for the Mirage.

ASG-1—*Advanced Sampler's Guide*. Includes Mirage Advanced Sampling Operating System (MASOS) Software.

MAS-1—*MASOS Disk*. Mirage Advanced Sampling Operating System (MASOS) Software.

PRC-1—*Mirage Parameter Reference Card*.

MM-1—*Mirage Musician's Manual*.

MM-2—*Mirage-DSK Musician's Manual*.

EPS Accessories

ESD—*EPS Sound Disks*. ESD-1, ESD-2. **OEX-8**—*Output Expander*. Adds 8 solo outs to the EPS.

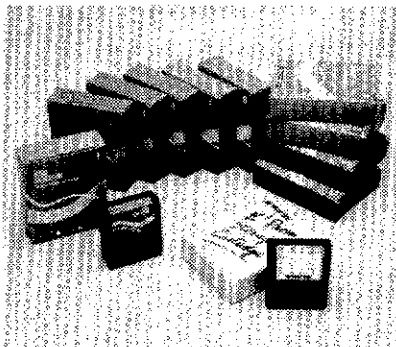
ME-1—*2x Memory Expander*. Increases EPS Memory to 896k Bytes

ME-2—*4x Memory Expander*. Increases EPS Memory to 2.1 Megabytes.

ME-3—*4x PLUS Memory Expander*. Increases EPS Memory to 2.1 Megabytes and adds a SCSI port.

MM-20—*EPS Musician's Manual*.

**All Mirage Sound Disks are compatible with the EPS.*



ESQ Accessories

VPC—*Voice-80 Program Cartridges*—*Volumes 1-10*. 80 sounds per cartridge for the ESQ-1 or ESQ-M.

Volumes 1, 2, 4, 5, 7, 8 & 10 each contain 16 Keyboard, 8 Brass Ana Lead, 8 Bass, 8 Percussive, 16 Acoustic, 16 Electronic and 8 Special Effect sounds.

Volumes 3, 6 & 9 each contain layered sounds. *Compatible with SQ-80.*

STC-8—*E²Prom Storage Cartridge*. 80 program storage cartridge for the ESQ-1, ESQ-M or SQ-80.

SQX-20—*Sequencer Expander Cartridge*. 20,000 Note Sequencer Expander Cartridge for the ESQ-1.

ILP-1—*ESQ Manager*. Sound Sequence Librarian for the IBM PC or compatible and the ESQ-1, ESQ-M or SQ-80.

MM-10—*ESQ-1 Musician's Manual*.

MM-11—*ESQ-M Musician's Manual*.

SQ-80 Accessories

VSD—*SQ-80 Voice Data Disks*.

40 sounds per disk. VSD-1, VSD-2.

MM-15—*SQ-80 Musician's Manual*.

**All VPC cartridges are compatible with the SQ-80.*

Piano Accessories

MST-5—*ENSONIQ Piano Music Stand*.

MM-5—*ENSONIQ Piano Musician's Manual*.

MM-6—*ENSONIQ Piano Module Musician's Manual*.

Pedals

SW-1—*Sustain Pedal*. Sustain Pedal and Foot Switch for the DSK-8, DSK-1, EPS, ESQ-1 or SQ-80.

SW-5—*Sustain/Sostenuto Pedal*. Sustain Pedal/Foot Switch for the SDP-1 or EPS.

CVP-1—*Control Voltage Pedal*. Voice modulation or volume control for the ESQ-1, SQ-80 or EPS.

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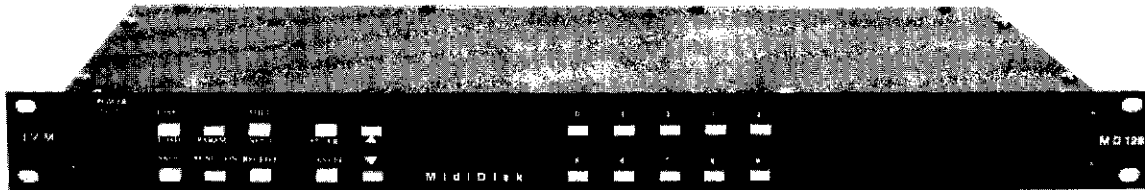
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Mirage Super-MIDI Disk

Reviewed by Walter Daniel

FOR: Mirage PRODUCT: SM-1 Super-MIDI Disk PRICE: \$39.95, \$2.50 shipping FROM: Upward Concepts, Bennett Road, Durham, NH 03824
--

The venerable Mirage is being upgraded by all those computer hackers out there. In this case, Dick Lord has produced a new Mirage operating system (OS) with an emphasis on performance features. This OS implements MIDI volume, controller mapping, overflow modes, and more. Sampling is disabled to make room for the extra commands, but this presents no problem since you should be sampling with MASOS. The samples on the disk are generic organ, brass, and sax(?) samples with short loops and no major program variations. There are some sequences on the disk, mostly baroque-type material. You should be buying this for the MIDI features anyway. Is this OS for you? Read on, and decide for yourself.

MIDI VOLUME

The Ensoniq OS 3.2 does not include MIDI control of volume. This disk implements MIDI volume by scaling the amplitude envelope of the Mirage voices. There is a drawback to this method in that lowering the volume decreases the resolution of the sample. Low MIDI volumes cause the sound to be gritty because only three or so bits (instead of the eight that are stored in memory) are all that describe the waveform. My experience was that mid- to full-volume output sounded fine. This limited amount of volume control is all that you should need, so the system used by this OS is certainly workable.

Volume control is sent as is any other MIDI controller (sustain pedal, mod wheel, etc.): a control change with a controller number and a value. The standard MIDI volume controller number is seven, but SM-1 allows different controller numbers. Parameter #76 is the controller number for MIDI volume of the lower sound, parameter #77 the number for the upper. You could, for example, assign an unused controller number to a slider on your master keyboard, then set #76 and #77 to that number. With such a setup, you could change the volume of the Mirage with the slider. There is a mode in which different controller numbers are saved with each upper or lower program. The documentation describes a parameter for "MIDI Controllers to Local," a feature that I could not figure out.

Where MIDI volume control really helps out is with MIDI guitars and wind controllers. If you're into wind controllers (and I am), you now can use the wind pressure to control volume directly. Even if you programmed your wind controller to send aftertouch information, all OS 3.2 could do with it was to control oscillator mix or LFO modulation. With SM-1, you can send the initial transient as velocity, lip pressure as LFO modulation, and wind pressure as volume. Be sure to program a wind controller to send a mid-level volume over MIDI to correspond to minimum wind pressure in order to avoid grittiness at low Mirage volumes. Although MIDI guitars send the strength of the string pluck as velocity information, some have separate MIDI volume control. It seems that it would be useful to have control of a MIDI module right on the guitar.

MORE MIDI

This OS has separate transmit and receive MIDI channels. With #30 (local) off, a keyboard Mirage (what I used in writing this review) becomes a separate sound module and MIDI keyboard controller. Parameter #73 controls transposition with a range of plus or minus two octaves in semitone steps. Remember the front panel commands sent as system exclusive messages? Once a part of the regular OS (but still in MASOS), they were banished by Ensoniq's version 3.0. Happily, SM-1 restores these commands. What this means is that all these extra parameters can now be controlled with a sequencer if that sequencer can send system exclusive commands.

MIDI EXPANSION MODES

Parameter #83 controls what appears at the MIDI Out jack of the Mirage. It can act as a simple MIDI Thru or Out, but there are four additional operating modes. One mode merges what appears at the Mirage MIDI In jack with local events (playing the Mirage keyboard, etc.) and passes the result to MIDI Out. If there is a transposition in effect, the OS will transpose both local notes AND incoming MIDI data! In fact, this "translation" is in effect for the final three modes: Overflow, Even Notes, and Odd Notes. Overflow mode passes any note beyond the eighth one to the MIDI Out. For example, if you are playing eight notes, playing a ninth one will not be sounded locally, rather sent to the MIDI Out. In Even Notes mode, the Mirage will respond to notes assigned even numbers by the MIDI protocol while passing on the odd-numbered notes to the MIDI Out. Odd Notes mode does the reverse.

What good is all this? The Merge/Transpose mode is great in that all the transpositions are set at the Mirage and translated for all units down the line. I had a DX7 driving a transposed Mirage with local off, then at the same time used the Mirage keyboard to drive a Casio CZ-101 which was on a different MIDI channel than the DX. Overflow mode is good if you have two Mirages; when playing involved parts with sustained sounds, notes won't be cut off to play the newest ones since there are now sixteen voices available. The Even and Odd Notes modes can be used to spread a part across the stereo field. I had great fun setting my Mirage to Even Notes mode with a string sample while a CZ-101 string patch played the odd notes. The not-quite-identical sounds really made the part sound as if it were played by an ensemble.

EVEN MORE MIDI

Parameter #89 now can be used to turn the footswitch into a sostenuto pedal. That's the one that lets you hold some notes with the pedal while playing others unsustained. In my experiments, I held high string chords with the pedal while pounding out staccato cello lines. The Sample Upper button advances both upper and lower program numbers by one, although there is no visual feedback from the display. Still, it's much easier than hitting the Prog button and number keys. And what performance-oriented OS would be complete without a panic button? The Sample Lower button sends an All Notes

Off MIDI command and resets all MIDI volume values to full. It turns out that the All Notes Off is actually a MIDI control change--there is a controller number reserved for the purpose.

SM-1 has some MIDI controller mapping options. The sustain and sostenuto pedal effects can be accomplished with external MIDI commands. Parameters #90 and #91 set the controller number for the Mirage to respond to such commands. If you use a keyboard that has assignable controller switches, you could set up one as the sostenuto "pedal" for the Mirage and use it as a chord hold function. The MIDI outputs of the Mirage footswitch and mod wheel can be assigned different controller numbers as well. I had my Mirage wheel controlling my CZ portamento time and turned the portamento on and off with the Mirage footswitch. Anything that responds to a MIDI control change is fair game. To check the MIDI volume on the Mirage, I did this: I programmed the mod wheel to controller #7, set the MIDI volume input controllers to #7, turned local (#30) off, then patched a MIDI cable from the Mirage MIDI Out to the Mirage MIDI In. With this setup, the mod wheel will control the volume.

DOCUMENTATION

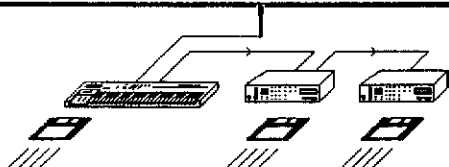
There are really only five pages of documentation that come with the disk (the cover page doesn't count). Two pages briefly describe the features of the OS. One page is a convenient list of all the new parameters and what the settings are. Implementation notes for the OS (MIDI volume, sostenuto pedal, and expansion modes) are given on one page. The final page lists MIDI controller numbers and the front panel command sysex codes. The manual may be short, but it does get the job done.

CONCLUSIONS

If you're into live performance, you can gain a lot of control by switching to the SM-1 OS. All these new parameter settings are saved if you use parameter #14 to write the configuration file to disk (I tried). If you are touring, you may not want to entrust your show to one disk, so you'd be better off getting a disk utility that lets you put the OS on working disks. In fact, you can have a different configuration for every disk. Studio types can wring much more expressiveness out of their Mirages if they delve into this OS. Wind controller players and MIDI guitarists can fully use the capabilities of a Mirage with this disk. The drawback? You have to deal with more parameters. Yes, the Mirage keypad/display is annoying, but keep in mind that you can get at these settings with sysex commands. It's a lot cheaper to spend about \$40 to get some more performance out of an older instrument than to spend the bucks to buy the latest new gizmo. There's likely to be a lot of Mirages on the used market in the near future (hopefully cheap), so a new OS like this one makes those old keyboards worth picking up or keeping. This is the great thing about software-based instruments--they can remain useful for a long, long time.

Bio: Walter Daniel is an Assistant Professor of Aerospace Engineering at the U.S. Naval Academy in Annapolis, Maryland. He can be contacted at the Compuserve ID of 75066,164. ■

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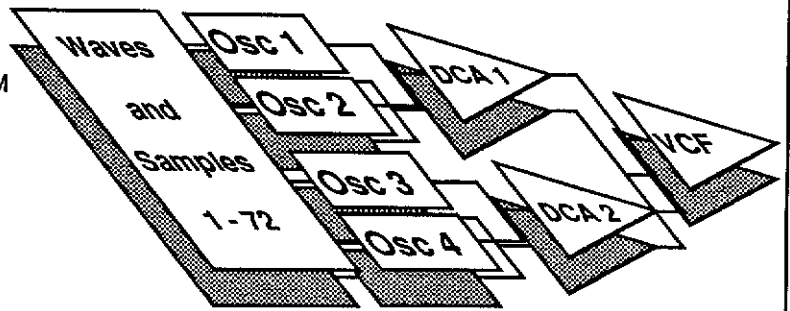
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The Ultimate Mirage Accessory

By Barry Carson

FOR: Mirage
PRODUCT: Prophet 2000
PRICE & FROM: Formerly by Sequential Circuits. Now acquired by Yamaha. Status unknown. Best to look around.

When I first became interested in the Ensoniq Mirage, I heard all kinds of dark, foreboding warnings. You know, things along the lines of, "It's a great instrument but if you want to sample anything with it, be prepared to invest in a computer, visual editing software, a variable speed tape recorder, an equalizer, a compressor and a contraption called the input sampling filter." This stuff would cost a fortune so, of course, I paid no heed to those dire words. I had made some pretty popular samples for the Prophet 2000 and I felt that I could sample just about anything into just about any machine and get hot results, so I bought a Mirage with the idea that I could make great samples without any of the stuff mentioned above. (I was going to get an input sampling filter until I found out that the new Mirage lacks the proper orifice in which to insert it.)

Then I got it home; I plugged a mic in, sampled a few notes and played them back from the keyboard. Well...maybe they were right after all. The sounds emanating from my Mirage were hardly arid, in fact they sounded pretty downright awful. Dejected, I shoved disk 100 into the drive and listened to 'Eleanor Rigby' for yet another time. Images danced in my mind of a huge string orchestra in a secret laboratory someplace in Pennsylvania playing through an equalizer and compressor and into a variable speed tape recorder. Nearby, I imagined clean cut Ensoniq engineers, their smiling faces glowing amber from a score of computer monitors, feeding streams of data into a pre-DSK Mirage with its input sampling filter securely positioned in the proper place.

Gazing around at the collection of stuff that inhabits my studio, my eye fell upon a special piece of equipment and in one of those rare but spectacular flashes of insight I realized that everything would be just fine. I understood that I could, after all, tame the digital savagery of the Ensoniq Mirage. And what piece of equipment was it, you may well ask, that became the answer to all of my Mirage sampling problems? It was another sampling instrument, my Prophet 2000, to be exact.

Two sampling instruments can be used together to create astoundingly good sounding samples without a lot of trouble and without any extra equipment. One of the most obvious uses for this system is to create perfect short loops. The Mirage's ability to play perfect short loops is one of its strongest points. Of course, the pitch of the sampled note must match up exactly with the sampling rate to make the loop usable. A variable speed tape deck is often suggested as the tool to use to change the pitch of the sound to be sampled, but using another sampling instrument has many advantages. First, the note to be sampled can be played back instantly at the touch of a key (I imagine that repeatedly rewinding and playing a two second note from a tape recorder must not be lots of fun). Second, no analog noise will be added if a sampling device is used and third, the note can be tuned with great precision using the first sampling instrument's fine tune control or even its pitch bend wheel (to get between the steps of a digital tuning system). The note is simply sampled into the first instrument and then played into the Mirage. The pitch of the note can then be adjusted to create a perfect loop. If the pitch of the Mirage's playback drops when it reaches the loop, lower the playback pitch of the first sampler and try again. If the Mirage's pitch rises when the loop is reached, tune the first sampler up a bit.

To get to the right general area quickly, play back the Mirage

and hold the key so that the loop can be heard, then tune the first sampler to the pitch of the loop. Tuning the first sampler delicately allows almost flawless short loops to be created. However, even perfect loops can sometimes be detected in sustained sounds (this seems to happen more often with higher pitched notes for some reason). If this happens it is important to hide the loop start point near some kind of activity at the attack of the note: the chuff of a pipe organ or flute, the attack of the bow on the string, etc. It is also of great importance to remember that, once you have re-tuned a sound to create that perfect loop and sampled it, that sound is now residing in the memory of the Mirage in an out-of-tune state. Before it can be musically useful, it must be returned to the proper pitch; the loop will now cheerfully stay in tune with the rest of the note at any pitch. The Prophet 2000 is handy to have around for this job because it has a built-in A 440 tuner.

An equally viable alternative is to load a Mirage factory disk into the other half of the memory and to tune your new sample to this. Use a sustaining factory sound with a short loop and remove any chorusing built into it; most short loop Mirage sounds do have at least a hint of chorusing added to all of the programs (check Parameters 33 and 34). Wait until after your new sample is in perfect tune before adding any chorus effects to it. The slightest touch of this effect makes a short loop sound more natural and alive. I like using sounds with similar timbre for tuning: the solo 'cello on disk B5 for tuning strings sounds, the trumpet on disk 101 for brass sounds, etc.

Another great use for this system is to adjust the sound to be sampled into the Mirage to the perfect note location. Sampling with the Mirage, like so many human activities, involves the use of magic numbers (although some numerologists may be troubled by the idea of FF being a magic number). One magic number we come across in sampling with the Mirage is 30. 30 is the fastest sampling time available; it is also the sampling rate with the highest frequency response. (For those of you with input sampling filters this magic number becomes 20, you lucky dogs). It is therefore good to sample at a time of 30 (Parameter 73). If, however, a short loop is to be used, a quick look at the chart on page 73 in the Advanced Sampler's Guide lets us know that the Mirage "expects" a note around the C below middle C. What if you want to sample a note from, let's say, a medieval fiddle and you can get a great G from the instrument but to get a C would involve playing a frayed gut string with inferior sound? (This is a problem I did, indeed, run into.) You want a short loop and a sampling time of 30 but the best note you can get is a G. With a second sampling instrument, I found the answer to be easy. I sampled the good sounding G into the Prophet 2000 and used its keyboard to transpose that G to a C and sampled that C into the Mirage using the Prophet's fine tune control to create the perfect loop with the Mirage sampling at its highest rate. The result of all this was a sample with high frequency response that the Mirage could transpose back to a G and beyond.

This concept can be carried further. Let's be honest about this, high notes are a pain to sample on the Mirage. I think you would all agree that the Mirage is not the best instrument in the world for sampling high notes. If the sound is bright, all kinds of aliasing noise shows up and if a short loop is used, all kinds of subharmonics show up. Using two sampling instruments, getting bright, clean high pitched samples becomes much easier and vastly more fun.

Let's say you want to sample a high trumpet note, a C two octaves above middle C. Here is what you do; first sample this high note into the first sampler - the Prophet records high notes with no problem - then play this note back from the first

instrument's keyboard but play it back three octaves lower. You can use the first sampler to slow down this high note to a low note without much high frequency content. The next step is easy; play this slowed down high note into the Mirage and sample it with a Parameter 73 setting of 30. The Mirage will happily transpose the note back up three octaves giving you a clean, clear sample that fits nicely into a one page loop. (Would it be true that if you sampled at 30 kHz and played back three times faster, it would be like sampling at 90 kHz?) I should point out the instruments like the Prophet that change the pitch of samples by speeding up and slowing down the rate at which they are played back cannot be used at the receiving end of this process since there is a limit to how high a sample can be transposed (on the Prophet it is one octave). These instruments will, however, let you slow samples down quite a bit, three octaves or so. I wouldn't want to hazard a guess about how the Mirage changes pitch but I know it lets you transpose almost forever in both directions. I should also point out that if a sampled sound is played back at higher pitch it will last a shorter time. If you use a full memory half and record two seconds of slowed down sound and transpose it up four octaves, you will have a sample lasting only half a second.

To go back to the medieval fiddle example, we can now see that not only is it possible to sample a G as a C to use a higher sampling rate, it is possible to sample that G as a C a number of octaves lower to avoid aliasing and subharmonics. Keep in mind that fine tuning of the slowed down playback will most likely be needed to find that perfect loop. Tuning a note that has been slowed down three times is a pretty strange experience but while sampling leave the loop turned on and after every try, play it back from the Mirage making sure you listen to it transposed back to the proper pitch and tune the playback to match the loop.

Almost every sampling instrument I've heard of has both an envelope generator and some kind of playback filter. These can both be useful tools in a double sampler system. The internal Mirage sampling filter seems to have a pretty gentle slope. I've found that when sampling high notes with lots of high frequency content (even after slowing them down two or three times) the sampling filter has to be set pretty low to avoid alias noise. This also can lead to duller sounding samples (those with the input sampling filter don't have this problem I'll bet). Playing back a high bright sound several octaves lower may or may not be enough to take care of this problem. If not, using the output filter of the first sampler and the input filter of the Mirage together gives you the ability to fine tune your filtering so a bright alias free note can be sampled. Some trial and error is necessary to adjust both filters properly but the result will be well worth the effort. As you listen to the sampled sound from the Mirage in the range in which you plan on using it, listen for either aliasing or a dull sounding sample. If you hear aliasing, close down the filters a little and try again. Try opening one and closing the other, experiment until the aliasing is gone. If the sound becomes too dull, keep experimenting until you find the best compromise you can.

I have found that this technique, along with sampling high notes at a much lower pitch, has worked wonders getting rid of that awful aliasing noise in my samples and it has done so without my having to sacrifice the high end of my samples.

The use of the envelope generator on a sampling instrument can create a kind of spurious compressor effect. If, by using the envelope generator, you play the sample into the Mirage with as square an envelope as possible, you can avoid some of the digital noise associated with naturally decaying sounds. The Mirage's envelope generator can then be used to recreate the shape of the sound as it first occurred. The sound of a plucked string will fade away to nothing eventually but if that sound is sampled, as the note dies away the signal to noise ratio keeps getting worse until the Mirage will be playing back a credible imitation of breakfast frying. Use the first sampler's envelope generator to get rid of those characteristic peaks and

decays if you can. The Prophet has an ADSR envelope generator that is only of limited use in this. Other samplers have more complex envelopes that seem like they would be ideal for this sort of thing; The Korg sampler has, I believe, a six stage envelope and the Rolands have an eight stage envelope. Don't use looping on the first instrument to get rid of the natural decay of a sound. It might seem like a good idea but it really isn't (more on looping later and why this isn't such a great idea). As we mentioned before, if you remove the peaks and decays from a sound and sample that sound into the Mirage, it will be necessary to use the Mirage's envelope generator to recreate the original envelope of the sound. If you have sampled a decaying sound in the Mirage you should still use the envelope generator to follow along with the natural decay of the sound to avoid that awful digital noise.

At this point, I would like to offer some tips to anyone who might want to try this technique. Consider the first sampler as a type of tape recorder; Don't try to multisample a whole set of sounds into it and then into the Mirage. Use as high a sampling rate as possible and as much memory as you need. Fill up the whole memory with one note, get it safely into the Mirage and then use up the whole memory of the first sampler again with another note. You can go back and multisample into the first instrument later. Be sure to turn off any velocity sensitivity on the first sampler.

One advantage of using two samplers is that the sound can be repeated exactly. Set the Mirage threshold (Parameter 76) as low as possible (I use a setting of 3 or 4), set the output of the first sampler to a level just below that which lights the top bar of the meter on the Mirage and leave it. With no velocity sensitivity, the note will be at a perfect level every time it is played. You should always turn off the loops in the first sampling instrument. If you sample a sound with a loop into the Mirage, the Mirage will play back that sound with the first loop and then add its own to it if you want the sound to sustain. We have all heard sounds with one loop. Can you imagine a sound with two loops? 'Nuff said!

Perhaps the biggest question remains. Why invest in an expensive musical instrument to be an accessory for your Mirage? If you are like me, the answer is simple; I really love keyboard instruments. I love to play them, I love to program them and I especially love to sample with them. On the other hand, I couldn't care less about computers. I don't have one and I don't miss having one. I've some great tape recorders but none of them have a pitch control. The equalizer built into my mixing board is by no means extensive but it has all I need and I can't imagine ever needing a compressor for the kind of music I record. If I was going to invest money in my music system I would rather buy an instrument than anything else. The sound of two sampling instruments MIDI'd together can be magnificent. Two layers of string orchestra or a vocal choir and brass section played together can create an effect far greater than the sum of the parts. It seems that many keyboard players have at least two instruments. Why not two samplers? I have come across Roland S-10s for not much over \$850; this would have to be less than the cost of the full array of extras suggested for sampling with the Mirage. It seems that some Transoniq Hacker readers already have two (or more) Mirages; they're ready to go.


I have had great luck with this technique. Sampling this way is obviously not for everyone, but for anyone with access to two sampling instruments or for anyone who wants to explore every avenue of advanced sampling, it is too good not to try.

Bio.: Barry Carson teaches English Literature for a living. He also owns and operates Minotaur Studios, a small facility that, among other things, makes samples of rare acoustic instruments for the Ensoniq Mirage. His current project involves writing an electronic 'ancient' score for a stage production of Sophocles' Antigone. In his free time, he writes comic book stories that never get published. ■■■

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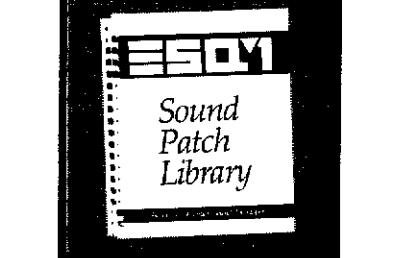
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Synfonix - Synthesis For The Mirage And The Mac

Reviewed by Mick Seeley

FOR: Mirage.
PRODUCT: Synfonix.
PRICE: \$119.95.
FROM: Synesthesia Image & Sound, 3403 Dalton, Austin, TX 78745.
512-280-4617.

It's amazing how far the music/computer connection has come in the past few years. That ubiquitous MIDI port on the back of your Mirage keeps coming in handy in more ways than we ever dreamed. Of course, most of the hackers out there already know that the Mirage is really nothing more than a computer. It's what you can do with that computer that's really interesting...

Seems like every few weeks another enterprising company with young, ingenious minds sprouts in MIDI-land. The latest, Synesthesia Image & Sound from Austin, TX, brings us a synthesis program for the Apple Macintosh computer and the Mirage. It requires MASOS 2.0 and a MIDI interface for the Mac.

In brief, what this program does is offer you high-quality synthesis on the Mac that can be transferred over MIDI to the Mirage. One can do wavetable synthesis, frequency modulation (ala the DX7), phase modulation, amp modulation, waveshaping, noise generation, ring modulation, and Karplus-Strong additive synthesis (useful for plucked string sounds). Even more important, Synfonix can retrieve samples from Mirage memory, manipulate them, and even mix them with the sound you synthesize in the Mac. You can then send the synth sound/sample back to the Mirage, or save it on a Mac disk as an 8-bit file - or a 16-bit Sound Designer file. More on that later...

I tested Synfonix out on a Mac 512 computer upgraded to Mac Plus spec's (1 Meg of memory, 2 double-sided disk drives, and the 128k ROM). I used a Sonus Macface MIDI interface and the Digital Music MX-8 router/merger so I could run both the computer and a keyboard into my Mirage rack.

After loading up the program, the first thing you see is the Synthesizer window. It consists of eight synth "modules" with graphic representations of input and output jacks on each module. To create a sound you simply use the Mac's mouse to "plug" one module into another and then out to the main output. Then you activate "synthesis" from a pull-down menu and wait for the Mac to compute the numbers into an audio waveform. This generally took from 30 to 60 seconds, depending on the harmonic complexity of the sound being synthesized.

I was immediately impressed with the power Synfonix offers with unparalleled ease of use. The programmer, James McCartney, did one heck of a job! You can choose from a wide variety of waveforms in addition to the usual sine waves for each module. In fact, you can draw your own waveform with the pencil-edit capability. The same technique is used for the envelope creation - and there's a different one for each module. The modulation capabilities in this program are nothing short of incredible.

Setting up your own initial sound can be a little daunting, even when it's this easy. Fortunately, Synfonix includes about a

dozen informative patch examples on the disk, some of which sound quite good. I should add that Synfonix has two types of files on the Mac; the "patch" files which store the parameters for each module of synth sound you've created, and Wavesample files which are either synthesized sounds or actual Mirage wavesamples.

The example patches provide an excellent way to "demo" what Synfonix does. One example is an imitation of the DX7's algorithm 10. Sure enough, once the patch is synthesized it sounds almost exactly like a DX-type of phasey buzz sound with "feedback." If you always wanted those DX sounds for your Mirage but had problems sampling the DX (that's just about ALL of us), this is one clean way to do it. Needless to say, since there's no sampling involved, there's no aliasing or grittiness to the sound.

The manual for Synfonix is the first I've seen in ages that I have absolutely no complaints with. Everything the program does is explained simply and concisely, and believe me that is no small feat. The subject of additive synthesis is very complex, and there's no amount of explaining that can make complex addition easy, so the author refers the buyer to additional (yuk) literature. Mr. McCartney gets credit here for making the actual "work" invisible to the user - all we have to do is create a waveform (and maybe an envelope) for each module and plug 'em in. The only problem is it's so easy and fun you could spend days doing it! Mr. McCartney's Synfonix should serve as a model for other MIDI software programmers of what can be done with hard work and a little common sense.

Some other nice touches: a "blend loop" function that gives you a choice of crossfade looping of the selected sound, or the elimination of subharmonics that can drive you nuts when transposed to the upper portion of the keyboard. And yes - you can use these functions on your Mirage samples transferred over via MIDI. You can even use the "interpolate" function to, for example, double the sample's length. The crossfade looping isn't quite up to the caliber of Digidesign's Sound Designer program, but this isn't supposed to be an "editor" program, so whatever editing functions you get are a bonus. There is no looping of the sounds inside the Mac itself.

Some of the other bonuses include full editing from the Mac of all the Mirage's program parameters, wavesample parameters, and general MASOS configuration. You can load in upper and lower banks or individual samples from the Mirage. All the MASOS commands (rotate, invert, reverse, ramp, etc.) are also spoken for here, and they're a lot easier to use when you can see on the screen exactly what's happening. I was surprised to find that editing parameters such as the sample start were much faster on this program than on Sound Designer or on the Mirage! You can either use the mouse to change values or type them in manually. In fact, every function of the program can be called up from the keyboard, which will find favor with mouse-haters. You can also play any note from C2 to C8 on the keyboard, which is VERY handy.

You also have a choice of playing the Mirage from the Mac's keyboard, or the current selected sound on the Mac's internal speaker. This is a faster way to audition the synth sounds, since it takes up to a minute to transfer a sample over MIDI. The sound you play from the Mac can be either of the lower or upper banks in memory, or you can play each individual module's waveform separately.

As usual, all the Mac's cut, copy and paste commands are all here. You can copy waveforms from one module to another, and ditto for the envelopes (hooray! Another time saver!). AND (god bless this programmer) EVERY command is "undo-able." If you foul up and mangle the sound you've been slaving over (What? You didn't save it to disk?), it can be rescued!

I know what you're all saying - is this guy getting paid off by Synesthesia for this review? Nope, and I do have a couple of minor things to mention that I think could use some improvement on Synfonix. Sometimes I'd turn the MIDI off from the program and couldn't update the Mirage parameters. This was my fault of course, but the program should have prompted me to turn the MIDI back on instead of plugging and unplugging cables like an idiot for 5 minutes. Oh well, I guess computers need a chuckle now and then too.

Other minor gripe: I noticed that in certain parts of the program a couple of keys wouldn't sound from the Mac keyboard. Also, there were a couple of lines of squares on the configuration screen window that didn't belong there. They didn't, however, affect the operation of the program. These were the only bugs I encountered, which is pretty amazing for version 1.0 of a program as deep and complex as this.

In the next revision of Synfonix, I'd like to see a "close window" button on the edit window. It can be closed by a pull-down menu, but it does get annoying. It's also odd how you can't change the height of the upper or lower bank window, although you can use the upper right hand button in its window to "shrink" it. A larger window for setting the harmonic levels would be nice too. Mr. McCartney might want to consider "drivers" for other samplers like the new Ensoniq EPS, the Casio FZ-1, etc., to broaden the appeal of the program. Finally, a couple of patch examples should feature the Karplus/Strong algorithm.

All in all, I heartily recommend that anyone who owns a Mac and a Mirage buy Synfonix. It has all the features of Digidesign's "Softsynth" - and then some - at a fraction of the price: the list price is only \$119.95. Besides, if you've already sprung for the Mac and a Mirage, the cost of this program is a mere drop in the bucket, and you won't regret buying it. Most important, the ability to read and write "industry standard" Sound Designer files at a such a low cost is a real plus. There's plenty of electronic bulletin boards around that have tons of samples in Sound Designer format. You can download new samples (some done on much more expensive samplers) for next to nothing with a modem, and then use Synfonix to edit them or transfer them to the Mirage.

For those of you who already have or are buying Synfonix here are some tips to make this program even easier to work with.

Tip #1: If you have a Mac II or Mac SE, it might be worth the investment to spring for an accelerator board to speed up the synthesis computation time. The Mac has to do a lot of number-crunching to get that great synth sound, and it could use some help.

Tip #2: set up "plain-vanilla" patches that duplicate the DX7 algorithms with the Synfonix synth modules. From there you only have to imitate the frequencies and envelopes to get any type of DX sound.

Tip #3: audition your new synth sounds on the Mac before sending them to the Mirage to save time.

Tip #4: When synthesizing a new sound, use a short sample length at first. This will decrease computation time. When

you're satisfied with the timbre, then make the sample as long as you like and transfer it to the Mirage.

Tip #5: Checking off the little "interpolation" button on some modules helps cut the table look-up noise on the high end of the Mirage keyboard (that nasty grunge we all know and despise)

Tip #6: DON'T try playing a lot of notes of a synth sound created with all pure sine waves on the Mirage. For some reason the Mirage hardware REALLY goes nuts when you attempt it. This is NOT a problem with the Synfonix program, but some kind of defect of the Mirage's Q-chip.

Tip #7: As with sampling, try to avoid introducing too much vibrato into the synth sound you're creating. If you do you'll have to do a lot of multi-sampling or deal with it sounding weird when you transpose it out of its range.

Happy sampling, hackers, or should I say happy synthesizing?

Bio.: Mick Seeley is a professional keyboard player from the Jersey Shore, whose credits include working with BonJovi, Billy Squier, Dan Hartman, Billy Branigan, and the forthcoming Bobby Bandiera LP. He owns a small recording studio as well as a MIDI software & synth programming/sampling company. His greatest wish is to be able to find equipment that won't be obsolete next month. ■

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A Second Look at the EPS

By Erick Hailstone

Well, I've survived another NAMM show. The level of sophistication from all manufacturers is higher and higher. The end result is that it takes an awful lot to knock your socks off anymore. My socks are probably still stuck to the ceiling of the Ensoniq booth.

Now that I've had my hands on the EPS I'm already trying to off all my other gear. You love the D-50? Great! Rent it from a friend and sample it. You love the DX-7? Sample it. About the only people who won't like the EPS are folks selling sound disks. The EPS is probably the first professional sampler that will allow the average person to make consistent, high quality samples with a minimum of time and effort. This machine seems capable of looping anything. For folks making their living providing sounds, the key to their survival will be capturing sounds that are just not available to the average user - orchestras, choirs, train wrecks, etc. Given the proliferation of source material on C.D.s and other recordings even this will be difficult.

O.K. Let's see how tactfully I can stick my neck out. Given that Ensoniq can deliver this product with no serious bugs (with their track record I have a reasonable level of confidence) the EPS seems to finally answer the question of what sampler to buy between \$2,000 - \$4,000. I was working in a retail music store when the Mirage first came out, and in the year and a half that followed, Korg, Roland, Emu, and Akai all introduced samplers in that \$2,000 - \$4,000 price range. Most of the customers I worked with were spinning around in quasi-overload. Which one do I buy? What are the differences? Which one's the easiest? How can I use this on my gig? How can I afford it? Will more people love me? What's the circumference of the Earth? The Magic number seems to be \$2,000. The EPS is it! With new technical breakthroughs hitting the market day after day no one wants to get burned for much more than that. If you buy all the available options for the EPS it will cost about \$2,500. This will give you an add-on box with 8 separate audio outputs, 1 megabyte of sample memory, a SCSI port, and enough memory left over for 80,000 notes of sequencing.

At present time, Ensoniq has no plans for producing a rack version of the EPS. I'd like to start a campaign right now to urge them in that direction. If I could do it today, I'd buy 3 EPS's in rack formats and dump just about every piece of gear I have. In addition, the EPS operating system is disk based. In the same way that we are seeing new operating systems for the Mirage, developers are chomping at the bit to start on the EPS. The chip used in the EPS is very powerful so the possibilities are major exciting.

The EPS has an on-board sequencer similar to those found in the ESQ and SQ-80. Here are the similarities and the differences. The sequencer's memory is shared with sampling memory. If you used all of the available memory of a stock EPS (256k) you'd have 80,000 notes of sequencing and no memory left for samples. There are two memory upgrades available. The 2x Expander yields 512k of shared memory. The 4x Expander yields 1024k of sampling memory and 256k of sequencing memory. That's four times the stock sampling memory and 80,000 notes of sequencing at the same time. With the 4x Expander you can add a SCSI (Small Computer System Interface) port which allows you to communicate at very high speeds with a computer or hard disk. For \$600 you can buy a hard disk that will save 20 megabytes of information. Any hard disk that works with a Macintosh can be formatted to

work with the EPS. This means LOTS of SAMPLES and VERY fast LOADING. Many of the software developers are planning on supporting the SCSI port for computer software. This means that the transfer of data from editing programs would be much faster than MIDI.

The display of the EPS is smaller than on the ESQ-1 and SQ-80. The top section has indicator lights which tell you which Mode of operation you are currently in, which Page you are working on and Sequencer Status. The bottom half of the display is a 22-character display which shows the names of samples and specific information on the immediate tasks. Instead of having buttons above and below the display there are 8 buttons along the bottom of the display. Each button has a yellow and red LED. They indicate when a sound is in memory, whether a sound is currently selected, if a sound is stacked with another sound, and are used for selecting sequencer tracks. Aside from the different display, the sequencer is quite similar to SQ-80/ESQ-1.

The sequencer can have up to 80 sequences. The sequencer has 8 tracks that correspond to the 8 instruments that are in memory at the time. When you save sequences/songs to disk you are not saving the samples at the same time. There is a special feature that allows you to organize samples and sequences/songs into BANKS. You must first save the SONG +ALL SEQs to disk - then the sounds SAVE INSTRUMENT. Now, you may create and name a BANK; SAVE BANK. When you LOAD a BANK it remembers the names of the SONG/SEQ and the INSTRUMENTS that were in the EPS when you originally created the BANK and goes to the disk drive and loads them for you. When editing a track, the "EDIT" page offers some new features. Along the bottom the status of each track will be displayed:

```
[P]=Play:will play normally
[S]=Solo:will solo the track muting all others
[M]=Mute:the track will be silent
[*]=No data
```

The SONG MODE of the EPS has the most significant differences. To start with, you may only have a single song loaded at a time. Songs are constructed in a similar manner to the SQ-80/ESQ-1. First you record sequences. The COMMAND "EDIT SONG STEPS" is where you assemble the song. Each step of the song determines which sequence will play and how many times that sequence will repeat. You may also transpose any track, any combination of tracks or all 8 tracks up or down one octave from this page. The advantage of this method (as opposed to the SQ-80/ESQ-1) is that if drums are part of the sequence you can leave them unaltered while the other tracks are transposed to another key. You may also "PLAY" or "MUTE" tracks from this page. The advantage of this feature is a savings of time and memory. An example of this would be a song section such as an introduction where you start with drums only. The next repetition adds bass. The next repetition adds piano. Each following repetition adds another instrument (a total of 8). To do this with an SQ-80/ESQ-1 you would have 8 individual sequences that played as concurrent song steps. With the features of the EPS you would create a single sequence (with all 8 instruments). The first song/step in which that sequence played you would mute all but the drum track. The next song/step you would mute all but the drum and bass tracks. Each additional song/step you would mute one less track, the final song/step having all 8 tracks.

Perhaps the most significant difference is the addition of SONG TRACKS. Once you have constructed a song you may now create song tracks. There can be as many as 8. The significant difference between song tracks and sequence tracks is that the song track runs the entire length of the composition (song). Let us say Instrument Number One is a piano. If you create Song Track #1 it will have the sound of a piano. Sequence tracks and song tracks share the same instruments - meaning if piano is loaded into Instrument #1 any sequence tracks #1 will have the piano sound. Any Song Track #1 will also use the piano sound. Any controller information you record into a song track will effect a corresponding sequence track. In the example above, anytime I use the sustain pedal while recording the song track it will also affect the sequence tracks using the piano sound. For this reason it is a good idea to plan ahead. If you want to have a completely independent song track, make sure to leave an unused track in all of the sequences that you will use to construct the song with. You may also mute or solo any song track.

These are the significant differences between the EPS sequencer and the SQ-80/ESQ-1 sequencer. Soon I hope to have my hands on my own EPS and that is when the FUN will begin!

Bio: Erick Hailstone is a partner in The MIDI Connection - a Portland based consulting company. He studied composition at Berklee College of Music in Boston. ■

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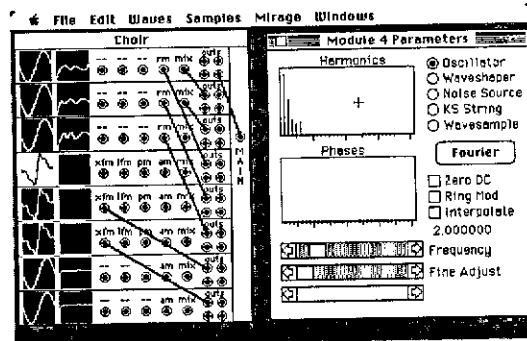
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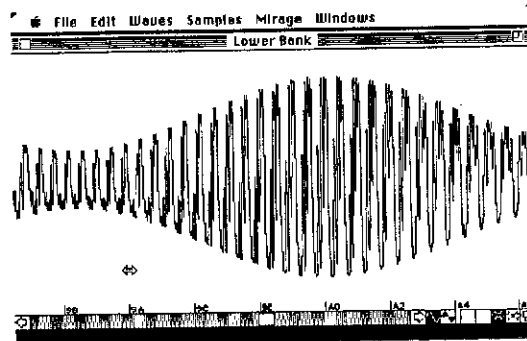
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Synth Programming Standards And Why You Need Them

By Michael Carnes

In programming synthesizers, as in programming computers, the adoption of programming standards can save time and reduce errors. The term "programming standards" refers essentially to organized and logical work habits. While some musicians may feel that their creativity is somehow compromised by this concept, it is actually quite liberating. The following example should demonstrate the reasons:

Assume that you would like to modify the ESQ-1 patch "EX1". You like it pretty much the way it is, but you'd like to customize it a little. You go in and change the waveform in OSC3 from a BELL to a SAWTOOTH. Nothing happens. DCA3 is ON and being modulated by ENV3, so something should be coming out. You look around and finally discover that ENV3 never goes anywhere - all envelope levels are 0 or negative. Time wasted? Maybe a minute, maybe ten. Maybe you gave up. If DCA3 had been turned OFF and its modulation inputs set to *OFF*, it would have been immediately obvious that OSC3 contributed no sound to the patch.

but nothing happens, except a little change in brightness. Remembering your previous experience with the envelope, you quickly check the envelope levels. They're all positive and non-zero. You go back to DCA1 and increase the modulation factor to 63. Still no difference. Finally, you notice that amplitude modulation is turned on, meaning that no modulators have any effect on DCA1 or DCA2. Again, you've wasted time. If the modulation inputs to DCA1 had been turned *OFF*, you might have been making music by now. Instead, you've been pushing buttons, jumping from page to page, trying to figure out what's wrong. Think about how long this could take without a program sheet.

ESQ-1 PROG EX1		BY: MICHAEL CARNES								
OSC 1	1	7	1	SINE	LFO2	4	LFO1	26		
OSC 2	1	0	0	SINE	ENV2	-14	LFO3	2		
OSC 3	-1	0	0	BELL	LFO1	1	ENV1	1		
LEVEL OUTPUT MOD#1 DEPTH MOD#2 DEPTH										
DCA 1	58	ON	ENV1	40	OFF	16				
DCA 2	58	ON	ENV2	-48	ENV1	16				
DCA 3	0	ON	ENV3	48	OFF	63				
FREQ Q KEYBD MOD#1 DEPTH MOD#2 DEPTH										
FILTER	71	14	49	ENV1	2	ENV4	-35			
FINAL VOL PAN PAN MOD DEPTH										
DCA 4	63	8	ENV2	-63						
FREQ RESET HUMAN WAV L1 DELAY L2 MOD										
LFO 1	14	OFF	ON	TRI	0	16	0	OFF		
LFO 2	15	ON	OFF	NOI	19	63	0	OFF		
LFO 3	22	ON	ON	TRI	4	35	5	OFF		
L1 L2 L3 LV T1V T1 T2 T3 T4 TK										
ENV 1	63	-6	20	0	0	0	27	20	0	9
ENV 2	-11	0	0	0	0	0	0	0	0	0
ENV 3	0	0	0	0	9	0	14	6	10	9
ENV 4	63	30	27	16	2	2	8	14	19	0
SYNC AM MONO GLIDE VC ENV OSC CYC										
MODES	OFF	ON	OFF	0	ON	ON	ON	OFF		
SPLIT/LAYER S/L PRG LAYER LAYER PRG SPLIT SPLIT PRG SPLIT KEY										
	OFF	PIANO	OFF	EPSDB4	OFF	MARIM	40			

ESQ-1 PROG EX2		BY: MICHAEL CARNES								
OSC 1	1	7	1	SINE	LFO2	4	OFF	0		
OSC 2	1	0	0	SINE	ENV2	-14	LFO3	2		
OSC 3	-	-	-	-	-	-	-	-		
LEVEL OUTPUT MOD#1 DEPTH MOD#2 DEPTH										
DCA 1	0	OFF	OFF	0	OFF	0				
DCA 2	0	OFF	OFF	0	OFF	0				
DCA 3	0	OFF	OFF	0	OFF	0				
FREQ Q KEYBD MOD#1 DEPTH MOD#2 DEPTH										
FILTER	71	14	49	ENV1	2	ENV4	-35			
FINAL VOL PAN PAN MOD DEPTH										
DCA 4	63	8	ENV2	-63						
FREQ RESET HUMAN WAV L1 DELAY L2 MOD										
LFO 1	-	OFF	OFF	-	0	-	0	OFF		
LFO 2	15	ON	OFF	NOI	19	63	0	OFF		
LFO 3	22	ON	ON	TRI	4	35	5	OFF		
L1 L2 L3 LV T1V T1 T2 T3 T4 TK										
ENV 1	63	-6	20	0	0	0	27	20	0	9
ENV 2	-11	0	0	0	0	0	0	0	0	0
ENV 3	0	0	0	0	-	-	-	-	-	-
ENV 4	63	30	27	16	2	2	8	14	19	0
SYNC AM MONO GLIDE VC ENV OSC CYC										
MODES	OFF	ON	OFF	0	ON	ON	ON	OFF		
SPLIT/LAYER S/L PRG LAYER LAYER PRG SPLIT SPLIT PRG SPLIT KEY										
	OFF	-	OFF	-	OFF	-	-	-		

Let's continue. You have decided that you'd like some more vibrato on OSC1, so you look for the source, with the idea of increasing the modulation factor. OSC1 is being modulated by LFO1, so you increase the modulation factor from 26 to 30. Nothing happens, so you increase it to 35. Still nothing, so you crank it all the way up to 63. Absolutely no difference in vibrato. After a lot of looking, you finally look at LFO1 and discover that its level is always 0, with no modulation inputs. Time wasted? If that modulation input for OSC1 had been set to *OFF*, instead of to LFO1, you'd have known that the oscillator was not really being modulated at that input.

Finally, you decide that you'd like to change the amplitude envelope, so you look at DCA1. It's turned ON and is modulated by ENV1. You lengthen the attack time on ENV1,

Good work habits could have eliminated this waste of time. If the original programmer (not you, of course) had taken a last look at the patch, all of those non-functional references could have been weeded out and the logic of the patch clarified. The time to do it was the time the patch was built, when it was fresh in the mind -- not six months later. If the patch had looked like "EX2", the voice would have been much easier to understand and modify. As a matter of fact, "EX2" is exactly the same patch as "EX1", but which version would you rather read? "EX2" is clear, with *OFF* or 0 in the places where the values don't matter. The program sheet has "don't cares" (dashes, blanks, etc.) for parameters in unused areas. Especially notice that all three DCAs appear to be turned off. This is an immediate tipoff to the fact that the patch uses amplitude modulation (you probably wouldn't have looked at the MODES page otherwise). The logic of the patch is much clearer. Remember that a well-written patch not only makes a sound - it also provides a guide to the way the synthesizer does it. By cleaning up the patch, you will not only make the logic clearer, but you might find that free modulation input you were looking for or maybe an extra LFO.

A last pass to check for reasonable numbers is also a good idea. All of the inputs have maximum or minimum values that they will accept. A DCA has a maximum gain at 58 or so. The DCA is then driven by an envelope whose maximum value is 63. When you sum those inputs, you get 121, which is out of range. In actuality, the envelope will only add another 5 to the amplitude (the difference between 58 and 63). The rest is lost in the bit bucket. While it is true that you won't blow up your synth with out-of-range values, it's also true that you may be spending a lot of time doing things that don't really make any difference in the sound.

The driving concern behind good coding practice is laziness. The person who has to modify your patch in six months may just be you. A little more thought up front may save a lot of aggravation later on. You'll spend less time running in circles, you'll have a deeper understanding of your equipment, and you'll have more time to make music.

Bio.: Michael Carnes is a composer/engineer whose "Concertino" for trumpet, chamber orchestra, Mirage and ESQ-1 was recently premiered in Boston. ■

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Quick and Dirty Separate Outputs For The ESQ-1

by C. R. Fischer

Back in the April '87 issue, David Bell wrote asking about the feasibility of separate voice outputs for each of the ESQ-1s eight voices, certain aspects of the modification are impossible without modifying the operating system of the ESQ. When you're in the studio, it's a real drag having to use a single timbre at a time, just so each sound can have the desired signal processing (not to mention, expensive as well).

A very simple way of reducing the number of passes is to use two sounds at a single time, and pan each sound to one of the ESQ's stereo outputs. This allows you to speed up the process by a good deal without cutting up your instrument. As an example, let's say we have to lay down a tune using bass, synthesized drums, electric piano and strings just using the ESQ. Since neither the bass or drum patches use panning as part of the patch edit each so one comes exclusively from the right channel and the other comes from the left.

Unfortunately, the ESQ's edit buffer can only hold a single patch at a time. This means that we simply cannot edit one patch to go to one channel, and then do the second patch. Instead, we must edit the first patch, save it to memory, and then go on from there. But since we are only talking about

one or two parameters (i.e., setting PAN and making sure that the MOD depth is 0), this only takes a minute more.

With the editing done, each sound will come from a separate jack. Now we are free to add effects and processing as we like, combining the signals at a mixer. If the sounds need panning, this can be done at the mixer as well.

Unfortunately, sounds that use dynamic panning as an effect won't work with this technique. However, keeping this plan in mind before you venture into the studio can save you time and money with very little effort.

Bio: Charles R. Fischer is a professional keyboardist, synthesizer programmer, writer, and electronic designer. He runs Mescal Music, an electronic music consulting and design firm, and has written articles for magazines like Electronic Musician and Modern Electronics. He has also gigged everything from C/W to Rap. ■

Soundprocess Review

By Walter Daniel

FOR: Mirage.
PRODUCT: Soundprocess.
PRICE: \$245.
FROM: Triton, Box 395, Grand Island, NY 14072.

Since its operating system (OS) is loaded from disk, the Mirage can be booted with any sort of valid program. There have been a number of new OS products out recently, from ones that add MIDI performance features to ones that include alternate tunings to one that turns a Mirage into a system exclusive librarian. What is Soundprocess? It is an OS that turns a Mirage into an ESQ-like synthesizer that can also play samples. The structure of the voice is different than that for the Mirage. There are multitimbral and keyboard split capabilities; the MIDI implementation is for the most part extensive. What's more, all the parameters for these new features can be controlled via system exclusive commands.

OPERATIONS

To use Soundprocess, one must boot the Mirage with one of the two system disks that comes with the package. I believe that the disks are copy-protected, but I'm not sure. As far as I know, the OS will work with DSKs (I used my early Plietocene-epoch Mirage in writing this review). There are 32 "programs" (keyboard setups) made of 48 "patches" (sounds) held in memory at one time as a bank. Three banks can be saved on one Soundprocess-formatted disk (formatting is done within Soundprocess). Up to six patches can be spread across the keyboard in a program using the familiar "top key" concept. Programs can be selected from the numeric keypad, by using the up/down keys, or by a MIDI program change command. In addition to the up/down keys, parameter values can be altered by using the Sample and Load keys on the keypad. These four keys will set parameter to highest, lowest, or middle values as well as to the values before editing was begun. I found these four keys to really speed my editing.

MIDI IMPLEMENTATION

When using this OS, the Mirage transmits and receives the following MIDI messages: note on (with velocity), note off (with velocity), mod wheel, pitch wheel, sustain pedal, and program change. The instrument does NOT respond to aftertouch, something I really would have liked since I often use a Yamaha DX7 as a master keyboard. An all-notes-off "panic" button that turns off local notes as well as sending the same MIDI command is on the front panel. A "multi" mode turns the instrument into a polytimbral keyboard - a different program can be assigned to each of the sixteen MIDI channels. I think this feature is limited in usefulness because the Mirage does not have assignable outputs (Mirages are essentially mono instruments). Remember, the DSK stereo effect is accomplished by hardwiring each of the eight voices to a spot in the stereo field, not by assigning voices. An "overflow" mode is included to handle any notes more than the eight a single Mirage can play.

PATCH ARCHITECTURE

What really makes Soundprocess unique is its unique patch setup. Each voice has two oscillator pairs that share a voltage-controlled filter. Within a pair, each oscillator is individually tuned and can be given different volumes. The two oscillators are mixed, then passed through a digital amplifier with envelope. The two pairs (four oscillators total) are mixed at the filter which has its own envelope. Although the numbers have been moved around, many of the parameters are familiar: APDSR envelope settings, peak and sustain velocity sensitivity, coarse and fine tuning, max filter frequency, and so on. The new parameters have to do with the oscillators. Editing is done by selecting a patch while in Program mode, selecting which of the two oscillator pairs with which to work, then going into Parameter mode to do the actual editing. I sometimes had trouble keeping track of which patch or oscillator pair I was editing. It's a bit tough with the zillions of parameters, but that's the price of added capability. Fortunately, there is a nice full-page chart of the patch architecture (including parameter names and numbers) plus a complete parameter list (including value limits) in an appendix.

The real strength of the Soundprocess patch architecture lies in its oscillators. Each oscillator can be assigned to play a wave or a wavesample. Waves are one-, two-, or four-page waveforms such as analog sawtooth and square waves. You get 56 pages worth, so that's a lot of variety! Waves can be loaded from a Mirage disk, received via a system exclusive message, or calculated by Soundprocess with the user specifying the amplitudes of the first ten harmonics. Wavesamples are just like those are used in the regular Mirage OS. There are eight samples of 16 pages length and eight of 32 pages. The 16-page samples are long enough for drum sounds; the 32-page samples are long enough for rich samples with movement such as strings (if looped properly). Soundprocess can read waves from Mirage disks or receive them via MIDI. Each oscillator can play a wave or wavesample in Continuous mode in which the oscillator goes from the end back to the beginning. Wavesamples can also be played in Loop mode (only the section specified by the loop parameters is repeated), in One-shot mode (the sample is played once), or in Retrigger mode (the sample is repeated at specified intervals of time). There are eleven algorithms that mix the four modes for applications. For example, I set up a "hit" patch by setting one pair to play a drum sample in one-shot mode with a mystery sample in loop mode while the other pair played two different waves in continuous mode.

SYSTEM EXCLUSIVE

If the bad news is that there are lots of extra parameters to adjust, the good news is that all can be adjusted with MIDI system exclusive messages. Therefore, some enterprising person can develop a patch librarian for use with Soundprocess. Such a computer program would need to do more than just keep track of parameters, though. Here are the items that can be read or written with sysex messages: parameters, waves, wavesamples, the keyboard tuning table, the envelope time and slope table, default patch parameters,

and the LFO table. Computer display would be nice for keeping track of numerous parameters at one time. I have all sorts of waves created with BASIC programs (analog waves, additive waves, etc.) that I'm going to work into my Soundprocess banks. I've also written programs to create dynamic waveforms (Karplus-Strong synthesis, digital effects such as flanging) that I can modify in order to squeeze them into the Soundprocess 32-page wavesample format. I'm not sure as to how the keyboard tuning table works, but I think it sets coarse (octave) and fine (where within the octave) tuning for each valid MIDI note number. The way I interpret the manual is that there are 256 steps per octave, about 4.7 cents resolution. If you're into alternate tunings and just intonation (and I am), this is good news. The resolution is not as good as I would prefer, but then I might be misunderstanding the manual. I'm writing for more information!

DOCUMENTATION

Soundprocess comes with a spiral-bound, 8.5 by 11 manual that is about 50 pages long. It is well-written and concise. All features are documented, but I would have preferred more examples, perhaps a tutorial that walks the reader through the creation of a specific patch. The diagrams and charts are clear and helpful. To me, the manual looks as if it were done with a Macintosh and printed with a laser printer. There are a few typos and misspelled words, nothing that hurts legibility. One thing I found missing was a list of what the waves and wavesamples on the system disk were. That would have saved me a lot of time trying to figure out, "OK, this is a snare drum, this is a brass splat," and so on.

BUT HOW DOES IT SOUND?

There is a default bank of programs that is loaded into memory when Soundprocess is booted. There are some nice programs, too: a drum set (bass, snare, electronic toms, acoustic toms, hi-hat), pianos, organs, and a soft voice sound done with one-page waves that is my favorite. There are programs that demonstrate the keyboard splits and retrigger mode sounds. In general, I liked the sound of Soundprocess. The concept of mixing synthesized sounds with sampled ones appeals to me, so I certainly found this OS useful. There is a great deal of data in memory at one time with all the waves and programs, so this seems to be a good performance OS as well.

CONCLUSIONS

I'm fascinated with the possibilities of this product. It sounds good, it is well-documented, and there are all those sysex messages to explore. If you have an old Mirage lying about, Soundprocess is a good way to get some new sounds out of the old machine at a much lower price than buying the latest new instrument. I think that there will be lots of used Mirages out there in the near future as most go after the newer products, so those Mirages might be pretty cheap. At \$245, Soundprocess seems a bit steep to me, but you can use it on all the Mirages in your studio or setup. If you want to explore some new sounds with your old equipment, check out Soundprocess. ■

ESQape: Editor & Librarian for the ESQ-1 and IBM PC from Dr. T's Music Software

Review by James Willing

FOR ESQ-1 PRODUCT: ESQape Version 2.21 PRICE: \$79.00 AUTHOR: Jon Gold FROM: Dr. T's Music Software, 220 Boylston Street, Chestnut Hill, MA. 02167. (617) 244-6954

This time around we are going to take a look at ESQape, an editor/librarian for the ESQ-1 and IBM PC from Dr. T.

Required hardware (as stated in the manual) to operate the program is an IBM PC or compatible with a minimum 256k of memory, MPU-401 or compatible MIDI interface, and a Color Graphics or Hercules Monochrome display adapter (or equivalent). The program however makes no use of graphics so any standard PC compatible display card should work. The program is supplied on a single copy-protected diskette. No provision is provided for installation onto a hard disk although your hard disk can be used for data storage.

The first thing that might strike you upon opening the package, is the manual. To say that the documentation is sparse might initially be considered a compliment. The manual is 11 pages

long, of which 6 are actually in reference to the program. The rest are some notes and hints on program operation. The author states in the introduction "This manual presumes you know about your ESQ and your PC for the most part. If you don't... READ YOUR MANUALS!". Nice of them to warn us in advance.

The program is organized in a series of small menus selected from a main "menu page". Since most of the pages look very similar, the main page displays a time-of-day clock in the upper right corner of the screen. The manual mentions this as being a good way to tell where you are. Menu pages are selected by use of the function keys on the PC keyboard. Additionally, there are 3 selections available here which are not shown on the screen. 'S' and 'B' allow you to change respectively the notes appended to the sequence and bank data. The notes are simply one line of text that you can use for a description or other (presumably) useful information. 'Q' ends the program and exits back to DOS.

The first page is the "Bank" sub-menu. Here you can transfer banks of sounds to and from the ESQ, and load and save the

banks on the PC's disk. On this screen like most of the others a list of the currently loaded patches and their number within the bank are displayed.

The second page is the "Sequence" sub-menu. Here you can transfer sequence data to and from the ESQ, either singly or in banks. Also save sequence banks to the PC's disk. You can transfer single sequences to and from the ESQ, but single sequences can not be transferred to the PC's disk. The system will indicate whether you have loaded a single sequence or a whole bank by displaying an 'S' or 'W' in the 'Sequence Notes' area on the screen. A nice feature on this page is the ability to start/stop the ESQ's sequencer by pressing the space bar on the PC's keyboard. The manual does note that you should make sure to stop the sequencer before attempting any transfer of data to or from the ESQ. Failure to do this will cause the program to 'hang' since the ESQ will tend to ignore MIDI transfer requests while the sequencer is running.

The third page is the "Patch" sub-menu. On this page you work with single patches for editing and transfer to and from the ESQ, to and from the PC's disk, from the PC's memory, and to the "Virtual" bank. We'll take a closer look at the virtual bank a bit later. When you transfer a bank from the ESQ or load it from the PC's disk, the complete bank is duplicated in the PC's memory. To work on a patch you must select it (or "grab" it as the program refers to it) from the bank. Once a patch has been 'grabbed', you can access the patch parameters from a series of edit sub-pages.

The first of the edit sub-pages is the Oscillator page. The parameters for all 3 oscillators are displayed in a table format and the patch name is displayed above the table. The parameter names are listed down the left side of the table. To alter a parameter, you move the cursor to the parameter entry with the cursor keys on the PC keyboard then use the '+' and '-' keys to change the value. It might seem to be more convenient to be able to directly enter the value from the keyboard, but the current arrangement does allow easy operation from keyboards with combined cursor/numeric pads. Listed to the right of the table are the names and reference numbers of the modifiers and waveforms. Each of the edit sub-pages also allow you to transfer the updated patch back to the ESQ so you can hear the changes that you have made. Note however that you would need a keyboard on your ESQ to take immediate advantage of this since the sequencer can not be started from the edit sub-pages.

The second edit sub-page is the LFO page. Like the oscillator page the LFO parameters are displayed in a table format. Editing is done in the same manner on all of the edit pages, and the listing of modifiers and waveforms is listed to the right of the table.

The third edit sub-page is the Envelope page. Parameters for all 4 oscillators are displayed in the same table format as the previous pages.

The fourth edit sub-page is the Filter/DCA4 page. Parameters displayed in the table format with available modifiers listed to the right.

The last edit sub-page is the Modes/Split/Layer page. (same format & functions as the rest)

The fourth page is the "Virtual Bank" sub-menu. On this page you maintain a separate patch bank in the PC's memory that can be modified without disturbing the bank that you originally loaded. This function is quite handy for building your "dream" bank without endless button pushing on the ESQ. Available functions here are copy current bank to virtual bank, send virtual bank to ESQ, and clear the virtual bank. One apparent shortcoming on this page is that you can not save the virtual

bank to the PC's disk directly. You must first send the virtual bank to the ESQ and then transfer it back to the work area. A rather amusing note in the manual warns against sending "empty" patches to the ESQ as they "will sure enough sound empty on the ESQ".

The fifth page is the "Disk Utilities" sub-menu. This page allows access to general PC disk functions (delete file, check disk space, change drive, change directory).

I notice a deficiency in the documentation of this package that I have also noticed in a number of others. There is no mention made of the ESQ-M (rack version) or the differences in operation between the ESQ-M and ESQ-1 units. This may lead to some confusion among users that are not intimately familiar with the operation of their computer or synthesizer. Admittedly, the testing and documentation of things like this is an added expense to the software writers and publishers, but one that would be vastly appreciated by a large number of users. The admonition in the introduction of the manual to 'know your equipment' is all well and good, but not everyone who may want to use a computer will have a degree in computer science.

Summary: ESQape is a fairly well done package, although the inability to install it on a hard disk presents what I would call a major limitation. Also, I find the complete lack of graphics somewhat curious. Visual feedback through graphics when dealing with envelope and filter settings has proven quite useful in most packages. The program does perform well and did not exhibit any obvious problems during its use.

Editorial comment: Both of the packages that I have reviewed from Dr. T are distributed on copy-protected disks. At this point I'm going to offer an opinion. I've been in the small computer industry for over 12 years now, and I am quite sympathetic to the desires of program authors to protect their works. However I become much less sympathetic (and patient) when the methods employed start to interfere with the usefulness of the program.

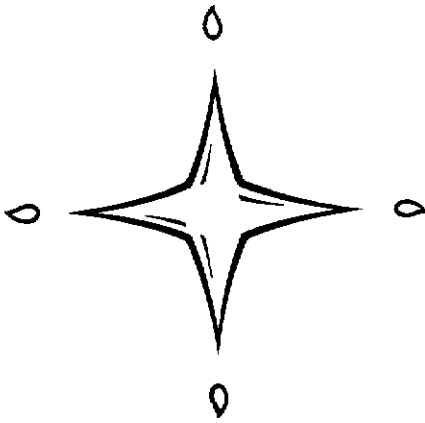
Case in point. The review of "Waveform" (Issue #32) was delayed due to the fact that the review disks refused to operate. Upon contacting Dr. T, I was informed that they were aware of a problem with a batch of disks, which caused the copy-protection scheme to determine that even the original disks were illegitimate copies. They did replace the disks but this did cause almost a week delay in starting the review.

Issue: The copy-protection scheme used on these packages does not allow the software to be installed on a hard disk. I find this to be a rather curious omission.

In general, while admitting that I will probably never see the day when copy-protection will be completely gone and forgotten, I will make this statement:

"DO IT RIGHT OR DON'T DO IT AT ALL!"

Bio: James Willing is a long time computer technician, software author, and (rank) amateur electronic musician. He has recently reconsidered his ambition to become the next Thomas Dolby or Howard Jones, but wears headphones when playing anywhere near other people. ■■■



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KM Aptos, CA

"...while I think of it, let me mention that if jazz is your thing, Nick Longo of Cesium Sound has a patch, VIBES2 that is just as phenomenal in recreating a real world sound."

Review of Voice Crystal 2, TRANSONIQ HACKER

"CHILE" [in Volume 11] served as an inspiration for a new Latin riff the moment we started playing it."

my sound, incorrectly attributed to Q-Spectrum,
KEYBOARD

"Longo's strong suit seems to be the atmospheric voices--[Vol. 9, 10]--of which I liked every one I heard, especially the one named GOLD. Many of the other quality sounds would be of great use to the Techno-pop synthesist--check out [Vols. 5 and 6] with titles such as OSMIUM and NOID4.

Review, TRANSONIQ HACKER

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CLASSIFIEDS

USER GROUPS

I am looking for a user's group in the Baltimore/Washington metropolplex. I am interested in trading patch and sequence material. Please contact me at: D. Berry, MESQUA, P.O. Box 1510, WMC, Westminster, MD, 21157 or on Compuserve: 70721,2574.

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EQUIPMENT

FOR SALE: Ensoniq ESQ-M \$550. Roland MT-32 synth module \$500. Set of Roland Octapads \$400. All equipment mint. Bob Levittan, 50 Clifftwood Dr., Halesite, NY 11743. 516-673-7598 (evenings).

AN IMPORTANT NOTICE FOR ALL ENSONIQ USERS: If you don't have a Yamaha FS-4 footswitch and our FSK adapter kit, you'll never know what you're missing - a sustain pedal that feels and works great! See the story in the Jan. '88 TH. Assembled and tested kits are only \$12.50 each (CA residents add 6.4% tax). Mescal Music, PO Box 5372, Hercules, CA 94547.

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SOFTWARE

Used **SOUNDPROCESSOR** disks and manual for sale: \$150. Buzz Kimball 603-746-3828, RFD 1, Box 91, Contoocook, NH 03229.

An **IBM-PC** librarian for the ESQ-1 is now available. **ESQLIB** loads and saves SONGS, SEQUENCES, BANKS, and PATCHES. Includes a quick and versatile SET loader making **ESQLIB** suitable for use in live performance environments. \$69.00 check or money order. S.N. Musser, 619 N Park St., Allentown, PA 18102. 215-432-3292

CX-5M/ESQ-1 Patch/Sequence librarian. * For the Yamaha CX-5M Computer (w/ disk drive) and the Ensoniq ESQ-1. * Saves patches (singly or in 40-program banks) and sequences (singly or all) by name. * Gives you instant access to 120 additional patches at the touch of a button. * Displays all parameters of one patch simultaneously on the CX-5M screen. * Lets you easily edit custom 40-program banks by swapping patches on the screen. * Instant display of any sequence's size, length, tempo, and meter. * Runs on both SFG-01 and SFG-05 versions of the CX-5M. * Send check of US\$ 30, payable to: Eirik Lie, Elgesetergt.17, N-7030 Trondheim, Norway.

Sound Designer (tm) Visual Editing Software for the Mac. \$149.00. Ensoniq VES for the Apple IIe. \$99.00. Contact: David Rogers, Chagrin Falls, OH. (216) 543-1931.

Selling: Dr. T's ESQ'APADE for Atari ST - \$78. Brian, (518) 851-2621 after 6 pm EST.

PATCHES

SOUNDSET 1 - 40 superb patches for the ESQ-1 or SQ-80. Accompanying 22-page booklet lists sound data and reveals programming techniques - by the Hacker's Sam Mims. \$17.95. Mirage disk or cassette. Syntaur Productions, 11116 Aqua Vista #2, North Hollywood, CA 91602.

840 NEW ESQ-1/SQ-80 SUPER SOUNDS. Each patch carefully programmed to the full capabilities of ESQ-1. Only \$19.95/280 patches or \$49.95/840 patches. (Cassette or Mirage disk.) Putting it simply, we feel everyone should own our creative sounds. 5000 DX711 FD/DX7/TX patches. EXCELLENT SOUNDS. NO DUPLICATES. MOST FORMATS. \$29.95. **1028 NEW TX812/FB01/DX 100 2127.** Professional patches. High quality. No fillers. \$19.95/352 patches, or \$49.95/1028 patches. \$2.00 P/H. **MUSIC WORLD, 617 PANORAMA DRIVE, GRAND JUNCTION, CO 81503.**

I love my SQ-80 - wanna trade programs? Sequences? (Via disk.) Even ESQ-1 stuff (tape or disk). Mirage sounds (I can't find original disks #2, #18, #23). Whatever! (I have some Sci-Fi sounds, etc.) L. Benny Sanders, 40 Falstaff Ave., #812, Toronto, ONT Canada M6L-2E1.

ESQ-1 Owners: VOICE CRYSTAL X, Blank 80-voice RAM cartridge, CRYSTAL CLEAR, for only \$50.00. VOICE CRYSTAL 1, 80-voice E2PROM is DEEP BLUE and filled with 80 voices featuring BANK A; natural instruments: Steinway, tack piano, Rhodes, clav, Taj Mahal flute, trumpet, french horn, bassoon, upright bass, Tomita whistle, fiddle, strings, percussion and... BANK B; electronic instruments: FM piano, FM organ, digital pianos, bell pianos, Moog patches, chorus bass, slap bass, adjustable gated drums/claps. VOICE CRYSTAL 2 is MAGNIFICENT RED featuring BANK A; organs, harmonica, woodwinds, horn section, classical guitar, sitar, bagpipes, steel drum, belltree, cowbell, congas, and... BANK B; studio grand, fusion, fat OBX, electric guitars w/chorus, polymoog, mellow, voice sync, glass bells, bass Moog, techo drumsat. VOICE CRYSTAL 3 is here and it's... MELLOW YELLOW featuring all new synth, symphonic and new age sounds... only \$63.00 per cartridge. All Voice Crystals are made of transparent high-impact resistant polycarbonate and are FULLY PROGRAMMABLE. DATA CASSETTES available for \$16.00 per bank of 40 voices. Specify Crystal and Bank. Mail check or money order to: EYE AND I PRODUCTIONS, INC., 2151 Old Oakland Rd., #224, San Jose, CA 95131. For COD orders and more info, call (408) 943-0139. We pay shipping for COD orders over \$45.00. We've often found ways to improve our voices and want to share them with our customers, so we also feature VOICE CRYSTAL UPGRADES published in this classified section. Watch for them!

PATCH UPGRADES

VOICE CRYSTAL UPGRADE #6-B2-2.3
MODEL: VC2
PATCH: ELGTR1
LOCATION: BANK B2
OSC 1: MOD#1=ENV1, DEPTH=00; MOD#2=LFO1, DEPTH=+05
OSC 2: MOD#2=LFO1, DEPTH=05
OSC 3: MOD#1=LFO1, DEPTH=+05
DCA 3: LEVEL=63, MOD#2=ENV3, DEPTH=+63
DCA 4: MOD=LFO3, DEPTH=63
LFO 1: FREQ=25, L1=00
LFO 3: FREQ=02, WAVE=NOI, MOD=ENV1
ENV 1: L1=+63, L2=63, L3=63, T2=10, T4=04
NOTE: Adds some BITE with plck attack & fret fingering action plus wheel whammy bar & vibrato control.

SEQUENCES

ESQ-1 Percussion Grooves! **FACT:** Rhythmic interludes "Spice" up your Musical Act. **INTRODUCTORY OFFER:** Sounds + Sequences \$10. Try it... You'll like it!. Specify format. The Sound Percussionist, PO Box 720635, Orlando, FL 32872. Refundable demo: \$4.

For the ESQ-1 with expanded memory: Classical music sequences from piano and organ scores. Patches to go with the sequences using SOS software and Commodore 64. Send for a free list. Four volumes now available at \$14.95 each. Also supplied on data cassette. Audio cassettes of the same material, \$6.00. Don Pribble, 6810 Highway 55, Minneapolis, MN 55427.

INSTRUCTION

MIRAGE VIDEO INSTRUCTIONAL TAPES. MIRAGE TECHNIQUES VOL. 1. Basic operational functions, parameter functions, basic sampling, multi-sampling, basic MASOS functions, moving wavesamples, making performance disks, tips and tricks... BONUS!!! Also hear demonstrations of M.U.G. sounds from the M.U.G. library. (Approx 60 min.) \$29.95 + \$3.00 shipping and handling. M.U.G. members: \$19.95. **MIRAGE TECHNIQUES VOL. II - Visual editing systems, advanced multi-sampling, looping, MASOS functions, etc...** (available soon). NY State residents add 8.25% tax. Specify Beta or VHS. G-4 Productions, Dept. MV, 622 Odell Ave., Yonkers, NY 10710.

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OUT-OF-PRINT BACK ISSUES

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, 4606 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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Now how much would you pay?

Would you buy a disk drive that could quickly and easily store all of your sounds and sequences in one central location? Even if your synths, sequencers, and drum machines are all made by different manufacturers? What would you say if we told you that you could have such a device for only \$39.95? Well, if you own a Mirage, Mirage rack, or Mirage DSK, you can! The MIDICASTER is a new product for the Ensoniq Mirage that can turn your Mirage into a powerful MIDI storage device capable of saving programs, sequences and drum machine data directly to normal Mirage disks. MIDICASTER works with most popular electronic instruments that support system exclusive data transfer, and is exceptionally quick



and easy to use, making it ideal for live performance applications. And since MIDICASTER works from within the normal Mirage operating environment, there's no need to boot and re-boot operating systems before and after data transfer! Imagine having all of your sequence data on the same disk as your Mirage sounds, and being able to simply load up and go - only MIDICASTER makes it possible. ESQ-1 owners, take note! No longer will you have to boot up your MASOS disk to save or load ESQ-1 data! MIDICASTER will save you valuable time in performance settings, no matter what your data transfer needs are. NO OTHER PRODUCT CAN MAKE THIS CLAIM!

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You want ESQ-1 sounds, we got ESQ-1 sounds! Four big banks jam packed with the finest sounds available - (just ask Ensoniq - our sounds have been showing up on the factory cartridges with uncanny frequency). Our regular price is \$39.95 for a bank of sounds, but if you act soon, you can receive volume 5, a fun-packed sampler containing 10 sounds from each of our 4 standard volumes - 40 sounds in all! Now how much would you pay? Would you believe this amazing collection of 40 of the MIDI CONNECTION'S finest sounds can be yours for only \$10.95? We're not kidding around here - we really mean it!

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YES OH YES OH GOODNESS YES! I've got to have my very own:
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 ESQ-1 SOUNDS, VOL 5. Enclosed is my check or money order for \$10.95. (Please send them on Mirage disk Cassette tape)
I'd be happy to allow 4-6 weeks for delivery. My name is:

My address is (please be specific):



7280 S.W. 104th, Beaverton, Oregon 97005

Hackerpatch

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 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 in Erick Hailstone's "Hacking Part" and comments by Sam Mims - our resident patch analyst. If you send in a patch, **PLEASE** include your phone number.

The Hacking Part...

For the next several issues I'm going to be converting Hackerpatch sounds from the ESQ-1 over to the SQ-80. I will use either stock internal sounds from the ESQ-1 or sounds that are submitted to the Hacker. Those of you who have ESQ's and aren't planning on picking up an SQ-80, fear not. We will continue hacking on ESQ-1 sounds. Much of the SQ-80 info will be applicable as well.

PROGRAM: STRING by Tim Edwards

I like the bowing effect of this patch. This sound is rather gritty because of the use of pulse waves with each OSC.

This helps to accentuate the bowing effect. You can thicken the sound by changing OSC1's and OSC2's WAVE from PULSE to SAW. This will fatten things up quite a bit. There will be a little loss of definition which can be compensated for by setting the FILTER FREQ to 25.

ENV4's parameters are set to create a a slow attack and a release which is similar to a large auditorium with a lot of natural reverb. Long (legato) phrases work well but if you play too many notes, too quickly, they will run into each other. You can shorten the attack and release characteristics, which will allow you to play faster phrases. The trade-off will be the loss of quasi-reverb effect. To do this, select ENV4. Change T1 to 20. Change T4 to 30. With this quicker attack the effect that ENV1 has on all three OSC's may seem a bit too much. To compensate for this select each of the three OSC's and change MOD2 to ENV1, depth +4.

If you would like the overall pitch of this sound to be an octave higher, select each of the OSC's and change the OCT parameter to 1. This seems to be a more usable range, however, the vibrato effect is a bit radical on the very highest notes. There are several ways of bringing this under control. One thing that you can do is put vibrato under the control of the MOD wheel (or the CV pedal). To do this select LFO1 and change MOD to WHEEL. You can now turn the vibrato on and off and control its intensity with the MOD Wheel. You can be much more sensitive in your playing by applying vibrato where you want it. The simplest change you can make is to reduce the amount of vibrato. To do this select

OSC2 and change MOD1 to LFO1, depth to 1. Last, but not least, select LFO1 and change the MOD to ENV3. The parameters of ENV3 are set in such a way to produce a very pleasing vibrato. Using all of these ideas you can come up with many variations of the STRING patch.

SQ-80 TIPS: All of the above ESQ-1 settings will work on the SQ-80 as well as the following ideas. The most obvious thing to do as we scroll through the available WAVEFORMS is to use the BOWING and STRING Waves. Start off by changing all of the OSC waveforms to STRING. Just by making this one change, the lower range will sound great. The vibrato will be a little thick in the high notes. Select OSC2 and change MOD1 to LFO1 = 1 or 0. Between the detuning created with the FINE tuning parameters and the natural characteristics of the STRING waveform there is plenty of pitch modulation.

To brighten this sound select FILTER and change FREQ to 25. Some changes will need to be made to use the BOWING waveform. First select OSC1 and change WAVE to BOWING. The BOWING waveform has its own immediate attack characteristics. To take advantage of them we need to change the attack time of ENV4 by changing T1 to 0 making the immediate attack of the BOWING waveform apparent. Select DCA2 and DCA3. Change their MOD2 parameters to ENV2 = 63. Change the LEVEL setting of both DCA's to 0. We can now alter ENV2 to blend the BOWING and STRING waveforms so we first hear the bowing attack and then the main body of the string sound.

Select ENV2 and change T1 to 12. Change T4 to = 42R. This will create a reverb type effect.

Last, but not least, select the MIDI page and change the PRESS parameter to KEY. Select LFO1 and change MOD to PRESS. This allows us to use aftertouch to control vibrato. If you desire a more intense vibrato, experiment with different amounts of MOD1 on OSC's 2 and 3.

Well that's it for now. Keep those cards and letters coming. I always look forward to your thoughts and suggestions for Hackerpatches.

Erick Hailstone
The MIDI Connection

The Patching Part...

PROGRAM: PHONE

by Sam Mims, Syntaur Productions

Two BELL oscillators are the heart of this telephone ringing sound, while a SINE wave adds to the sustain after the ringing has stopped. The ringing is done by LFO1 going at full speed on the DCAs (it would have been nice just a touch faster), and LFO1 is modulated by ENV1 so that the bell sustains without ringing as the sound dies away. The ring seems most realistic around C5.

[Sam Mims - I couldn't have said it better myself!]

PROGRAM: STRING

by Tim Edwards

This string has a nice bowed attack - you don't need an SQ-80 to get a bowing wavel I used the wheel for DCA modulation, to get that tremelo sound of rapidly bowing a violin. You may want to change the DCA mods to make the effect more (or less) subtle.

The string attack is made by modulating the oscillators with ENV1. ENV1 starts at -26 and rapidly climbs to zero; the oscillators modulate with a positive value so that the pitch rises quickly also. Another good effect is to modulate one oscillator with a positive value and one with a negative value, to make more of a rasping sound.

[Sam Mims - This is a very good string patch, though it's a little bit funny if played staccato. To get a slightly warmer sound, try turning RES (Q) on the FILTER page to zero.]

PROGRAM: CHILE

by Nick Longo, Cesium Sound

I use three envelopes to shape the attack of this sound. All three oscillators are frequency modulated by ENV1 and ENV3. OSC1 gives an added punch to the attack by adding a mallet-like click. (CHILE was recently mentioned in a Keyboard review, mistakenly attributed to Q-Spectrum.)

[Sam Mims - This is a very nice pseudo-marimba sound, with OSC1 providing the mallet attack. The sound of this was a bit squeaky for me, so I changed the waveform of OSC1 to NOISE1, or to NOISE3 for a more subtle mallet hit, almost "chiffy" sounding. I also lowered the level somewhat by changing the ENV2 amount to +56 on the DCA1 page. Nick used envelopes to modulate all three oscillators for some slight detuning; this could have been done more simply, but it works, and the sound is good.]

PROGRAM: BKWDB3

by Doug Fietsch

No comment.

[Sam Mims - Doug calls this sound "Backward B3" because it sounds like an organ fading in, then abruptly cutting off when the keys are released. He programmed a nice complex vibrato effect as the notes are sustained. To make the sound fade out smoothly, similar to the fade in, try setting T4 to 45 or so on the ENV1, ENV3, and ENV4 pages.]

ESQ-1 PROG: PHONE BY: SAM MIMS, SYNTAUR PRODUCTIONS

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	1	5	0	BELL	OFF	0	OFF	0
OSC 2	0	0	20	BELL	OFF	0	OFF	0
OSC 3	1	11	0	SINE	OFF	0	OFF	0

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	44	ON	LFO1	-63	OFF	-
DCA 2	34	ON	LFO1	-63	OFF	-
DCA 3	53	ON	LFO1	-15	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	92	4	60	LFO1	63	OFF	0

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	41	15	OFF	-

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	63	ON	OFF	SAW	0	0	0	ENV1
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	63	63	63	0	0	0	0	0	5	0
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	63	63	0	0	3	39	49	34	0

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

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

ESQ-1 PROG: STRING BY: TIM EDWARDS

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	0	0	PULSE	OFF	0	ENV1	9
OSC 2	-1	0	2	PULSE	LFO1	2	ENV1	5
OSC 3	-1	0	5	PULSE	LFO1	1	ENV1	10

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	63	ON	LFO3	-18	OFF	-
DCA 2	63	ON	LFO3	-15	OFF	-
DCA 3	60	ON	LFO3	-11	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	18	3	37	ENV3	25	OFF	0

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	KBD2	30

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	24	ON	ON	TRI	0	5	25	KBD2
LFO 2	-	-	-	-	-	-	-	-
LFO 3	43	ON	ON	SAW	0	15	0	WHEEL

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-26	2	0	15	0	8	11	3	3	22
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	44	19	18	0	0	12	17	44	0	13
ENV 4	63	61	43	15	26	33	29	63	35	9

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

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

ESQ-1 PROG: CHILE BY: NICK LONGO, CESIUM SOUND

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	2	6	1	PULSE2	ENV3	-63	OFF	-
OSC 2	-2	3	0	SINE	ENV1	44	OFF	-
OSC 3	-1	1	1	SINE	ENV3	-63	ENV1	23

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	0	ON	ENV2	63	OFF	-
DCA 2	41	ON	ENV2	63	OFF	-
DCA 3	0	ON	ENV1	63	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	50	1	30	ENV3	63	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	ENV4	8	OFF	63

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

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	63	63	63	0	0	2	63	63	12	0
ENV 2	63	7	0	0	40	0	11	63	0	0
ENV 3	63	0	0	30	0	2	0	0	10	50
ENV 4	63	2	0	8	0	0	31	0	12	0

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

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

ESQ-1 PROG: BKWDB3 BY: DOUG FIETSCH

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	0	0	ORGAN	LFO1	1	OFF	-
OSC 2	-1	0	2	ORGAN	LFO1	1	OFF	-
OSC 3	-1	0	2	ORGAN	OFF	-	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	63	ON	ENV1	63	LFO2	-35
DCA 2	63	ON	ENV1	44	LFO2	-35
DCA 3	63	ON	ENV1	63	LFO2	-35

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	17	0	0	ENV3	46	KBD	19

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	50	8	LFO3	63

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	22	OFF	OFF	TRI	30	0	0	WHEEL
LFO 2	16	OFF	OFF	TRI	0	0	0	WHEEL
LFO 3	16	OFF	OFF	TRI	35	1	36	WHEEL

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	63	23	0	0	0	0	50	0	0	18
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	63	17	0	0	0	34	63	0	0	0
ENV 4	63	51	0	0	0	0	63	0	23	0

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

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

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 TH:

I read Duane L. King's "The Performance Mirage" in the December issue with interest. In the opening paragraph, Duane talks about how to hold the pitch bend wheel in place with duct tape for instant transpositions. For those who would prefer to keep their wheels free of sticky remnants after a gig, there's a simple modification that does the same thing.

One could install a pair of SPST switches in line with the wires connecting the pitch bend pot to the positive and negative reference voltages (one switch in each line). If the switch connected to the positive voltage is opened, the wheel input will be pulled flat; if the positive switch is closed and the negative switch opened, the pitch will be bent sharp. Opening both switches will disable the wheel, and closing both allows normal operation. By using a multiple rotary switch you could do the same thing with a single switch, although these are harder to find.

Since I don't have a Mirage, I can't verify this myself, but it should work. Mounting a couple of switches has got to be easier than dealing with a roll of tape while carrying on a show!

Charles R. Fischer
Mescal Music
P.O. Box 5372
Hercules, CA 94547

[TH - Thanks for the idea. Seems straight-forward enough - but see Ensoniq's comments below. Don't forget the usual stuff about voiding warranties, unplugging your unit, not getting chips from drilling operations in your circuit, etc.]

[Ensoniq's comments - The wheels used in our products do not travel the full voltage range. Disconnecting one of the voltages to the wheel assembly will cause the wheel output voltage to max out at a much higher voltage than normal, possibly causing damage to the input circuitry. It is important to note that performing such a modification will void the Ensoniq warranty.]

Dear TH,

Regarding the "New Sampling Trick" in your last issue of the Hacker, well, I have yet another idea to aid in getting the killer sample. I fit a seriously long bomb blast sample onto the Mirage by playing

a 33 rpm at 45 rpm. It didn't quite work, but there was hope! I recalled a story my friend told me about his speed adjust dial on his record player. He could get an extra 15% speed increase (or decrease) on his player just by messing around with the dial. So in a moment of despair I took the record and a blank tape to his house and recorded the bomb blast using the highest speed possible at different volume levels. I took the tape home, and viola! I had instant access to World War III just by touching a key! I hope this helps in your pursuit of the "killer" sample!

Also, if anyone out there is interested in trading engine, train, plane or any other "unique" samples, send me a list of your samples and I'll send a list of mine to you!

Scott St. John
25802 Santo Dr.
Mission Viejo CA, 92691

To the Hacker,

I am dissatisfied with some of the sampled ESQ1 sounds: RHODES, PNOPAD, BLPNO3. The sounds distort on the lowest notes of the keyboard, especially the lowest C. My frequency equalizer, which has a lowest band center frequency of 60 Hz, will not correct this problem.

Ensoniq says to look at the oscillator pitch page (P43) of the ESQ1 manual and to tweak the oscillators by semitones and fine steps. Well, I tried it and it doesn't work because "all" of the notes on the entire keyboard change in pitch. Does anyone have a solution?

Robert Planner
Kettering, OH

[TH - Anyone have a suggestion?]

Dear Hacker,

I purchased an Ensoniq ESQ 2.3 this past summer in the States and brought it to Luxembourg with me. I can't say just how hard the trip was on it but I was able to get the ESQ through customs as used equipment from the condition of the case. The problems I had at first were partially solved by reinitializing, but some quirks still exist and I would like to know if what is happening is the usual or is there something that could be fixed.

1) On most the keyboard (piano)

programs, especially on our favorite Voice Crystal Steinway, the black keys play louder than the white - giving a very uneven overall sound.

2) The low end of the keyboard sound booms, and a lot of the high notes hardly play.

3) The track mix levels change back to 63 randomly in a playback when preset to lower values.

4) My ESQ came with a tape cassette that was never explained. I tried to load it and never could get it accepted.

Some things that I have found helpful:

1) The dealer where I bought my ESQ said it wouldn't accommodate headphones, but my low impedance CD headphones work fine when connected directly into the audio output using a Y adapter.

2) The book says you can only transpose 12 steps, but I find that I can do this over and over again if needed, as you might use in recording a tenor sax part and then transposing it to sound at actual pitch.

3) Find a common dominator when quantizing various rhythms, such as 1/16T for quantizing 1/8 and 1/8T notes.

Keep up the great work with the Hacker.

Don Carlton
Grand Duchy
Luxembourg

[Ensoniq's response - Question 1: We have never experienced the phenomenon of the black keys playing louder than the white.

Question 2: If you are running the ESQ-1 in mono (using the left/mono output jack), make sure that nothing is plugged into the right audio out jack. This would cause problems with sounds which use the keyboard to modulate Pan.

Question 3: If you are playing a song or stringing sequences together by selecting them as they play, any changes you make "on the fly" will be lost. In order to ensure that your changes are saved, first make sure the sequencer is stopped, then select the same sequence and answer "YES" to the "SAVE CHANGES?" prompt.

Question 4: The tape contains back-up copies of ESQ-1 factory patches and demo sequences. The first leader tone

on the tape is for program data; the second leader tone is for sequence data.]

Dear Ms. Talisman

I would like to start by thanking you and the publishing staff at the TRANSONIQ HACKER for printing my questions and comments in Issue #26 (August 1987) of your newsletter.

A few things disturb me about the Ensoniq responses to my questions and comments. Concerning Question #2, my question was:

"Is there a current detailed factory service manual available for purchase from the Ensoniq Corporation? If so, what is the cost and where may I purchase the item?"

Ensoniq's Response was: "Our service policy is on a module exchange program; our repair stations do not handle board-level repairs. As a result, our service manuals cover only the diagnosis and replacement of entire modules (main board, disk drive, wheel assembly, etc.) and are available only to Authorized Ensoniq Repair stations. This policy benefits our customers as it is ultimately designed to maintain a consistent quality of repair service as it speeds up the repair process."

My rebuttal statement: Does this really maintain a constant quality of repair service? I contend that the only thing it will do is line the pockets of money for the so-called Authorized Repair Stations and the Ensoniq Corp.

Is Ensoniq really "up front" in the advertising of this product? The answer is "NO!" There is no mention of the service policy in any advertising I have ever seen about any Ensoniq Product. This is unfair to the consumer, to say the least. This means that I have to take my unit into a so-called "Authorized Repair Facility," which in essence is no more than what I deem as "PARTS CHANGERS" at \$40+ per hour. What happens to a defective disk drive under the "exchange policy???" Does Ensoniq repair my exchanged faulty disk drive, and do they sell it for a new one and/or rebuilt unit?

If customers knew of Ensoniq's repair policy BEFORE making a purchase, I think it would and could sway purchasing decisions, and would definitely be a fair gesture on the part of Ensoniq where the prospective consumer is concerned.

It seems as though computers, computer hacking, digital electronics, etc. go together for many of us "techy" types.

Believe it or not, there are quite a few of us out here who are intelligent Mirage and ESQ-1 owners. We are very capable of being able to repair and modify high-tech electronic equipment. (If you don't believe me, just ask the Craig Andertons or Don Slepian.)

Personally, my digital electronics training and education via the Marine Corp., specifically on guidance missile systems, and the fact that I hold the highest class FCC and Amateur Radio License obtainable, should in fact qualify me for the ownership and understanding of an Ensoniq factory service manual of any Ensoniq product. Even those who haven't the knowledge, equipment or time to spend with the modification or repair of Ensoniq products should not be left at the mercy of the "parts changers," the Ensoniq Authorized Factory Service facilities.

We Mirage and ESQ-1 owners are at the mercy of the Ensoniq Corp. We should have the right to repair the unit with all the support from Ensoniq (i.e. parts, technical manuals, etc.) as possible. Please note this...ESPECIALLY FOR OUT-OF-WARRANTY OWNERS!!!

User groups that I have been involved with in Amateur Radio provide the use of things like replacement boards and modules, pc board extenders, etc. The reason for this is in order to keep "down time" with our radio equipment to a minimum. Needless to say, this is not possible under Ensoniq's current "exchange policy," nor could an individual user stock his/her own parts/modules for replacement or repair, because of the unfair "exchange policy," as mandated by Ensoniq Corp.

I recently purchased a Tascam model #388 professional analog multi-track recorder/reproducer, manufactured by the Teac Corp. A very detailed technical service manual was included with the unit. And, I might add, at no extra charge. Which is one reason why I purchased the particular unit in the first place.

If I should experience fault with the disk drive on the Mirage, the Mirage at that point turns into a boat anchor. The unit is completely down, then you run to your "authorized" (ha-ha) repair facility, and get down on your knees and beg. Here in Chicago, at one of the largest musical instrument repair shops in the U.S., it's an extra \$20.00, just for them to diagnose (not even fix) the problem for you within a 24-hour period if requested. Otherwise, it's first come/first serve policy. That's great! Now I have a boat anchor that digitally samples NOTHING; a studio date forthcoming, and a trip to my local rental store, to be able to get back into business. I have five Mirage "rack mount" versions to use, although I

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was relying on the Mirage with the keyboard (the one I was using as the controller) which just happens to be the one with the faulty disk drive, that will not even load the operating system software.

We are not dealing with "toy" musical instruments. We are dealing with very "high-tech" computer-type peripherals.

Anytime a computer peripheral is capable of manually changing or manipulating things such as operating systems, preset voices and/or programs, creation or modification of same, etc...this is not junk.

What I am getting at is simply this...there are some of us whose lives depend on this professional type of equipment. We do not have the time to wait for authorized repair. I am talking about in cases where sometimes it takes weeks for the return of an instrument. **IT'S NOT FAIR TO US PROFESSIONALS!!!**

My opinions and convictions are very strong on this matter of consumer technical support and service/exchange policies. They are as strong as the opinions and convictions of computer programmers not wanting their programs copied illegally. There is a distinct element of "fairness" involved with both subjects. The consumer has rights, too. How often has an expensive piece of software for a computer faulted with no backup copy readily available? And, when you are counting on the software as with the hardware (Ensoniq hardware products - i.e. Mirage and/or ESQ-1) to stay up and running, inevitably for the sole reason to keep one in business, I believe it is totally UNFAIR to the consumer to be dictated by the a manufacturer (i.e. Ensoniq Corp.) on service and exchange policies. The manufacturer has a total monopoly on parts and service. As we all know hardware doesn't run without software and vice versa.

Which brings me to my final "non-rebuttal" statement with regard to the HACKER'S response in a comment I made in the same letter:

My statement in summary was to the fact of I thought that the Hacker was inserting too much ESQ-1 type articles in the publication...well, dear editor and contributors...I hope you're sitting down...because in order to cost-justify the purchase of this amazing periodical; yes, I admit I did it...I went out and purchased an ESQ-1 with NO REGRETS WHATSOEVER!! I wish I would have known about it when it was in the conception stages. I would have bought up a ton of corporate stock!!! What a winner, to say the least!!!

Now I find myself going back through

past issues for ESQ-1 articles and patches. Finally, I can reap the harvest of the page count!!! Just think--now I can really be critical of another Ensoniq product!! It's great!!

Seriously, why is there no MIDI THRU jack and headphone jack on the ESQ-1? I don't want to hear about "it would have cost more to manufacture the product". I expect you will tell me the ESQ-1 was primarily designed to be a keyboard controller, in the case of the no MIDI THRU jack. I have and use a more powerful piece of sequencing software than is offered on the ESQ-1. I run it on an external computer. And, in addition have the Mirage and other type MIDI equipment. Thank God I have a "play thru" feature in the computer sequencing software and also an 8 channel MIDI THRU BOX or I would be in BIG trouble.

Also, for those of us who do run external computer sequencing software it would have been nice to have an "ALL NOTES OFF" feature on the ESQ-1. (See, I am getting critical already!!)

In closing, with regard to us ESQ-1 owners (tsk, tsk - I never thought I would be saying that); thank you HACKER for bringing to our attention the "re-initialization" note in the RND column in one of the past issues. I wonder how many people have brought their ESQ-1's into one of the infamous authorized service centers, where the unit in question sits there for God knows how long; and then some Ensoniq authorized factory service "module/parts changer" presses a few buttons, probably charges the minimum \$40.00, and then makes it seem like it was a "big technical problem solved only by expertise and technical achievement in the art and science of electronics."

Just one example of why service and exchange policies need to be changed, factory service manuals should be offered, parts/modules should be made available to "out-of-warranty" owners, and better technical support in these areas is needed from Ensoniq.

P.S. At a recent showing of the new EPS and the SQ-80; I had asked the factory rep how Ensoniq used the Sony F1 PCM to sample the factory samples, which he could not answer. The Sony F1 PCM (which Ensoniq claims to use on their factory sampled sounds) doesn't have a pitch control or the facilities to change the octave of a recorded sound to increase the dynamic range of a sampled sound or such techniques as used with analog audio tape recorders. How do they do it??? Also, after re-initialization of the ESQ-1 we are supposed to re-tune the filters. What are we looking for when the numbers come up on the LCD display? Below



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the first soft button I usually get the number 148...the other numbers that come up are different - is this OK?? Thank you!!

Sincerely,
Jay M. Meyers
Chicago, IL

[TH - Well, while we strongly agree with your desire for Ensoniq to make more technical information available, we have to strongly disagree with your characterization of this being unfair and some sort of corporate plot, and that users have some sort of "right" to Ensoniq's proprietary information.

Ensoniq owes much of their success to third-party developers. And their gear sure seems to attract the more technical types. Plus, they have enough "technological barriers" (custom chips and the like) to not have to worry about clones. They're also very helpful and open in these very pages. This lack of service manuals and schematics just doesn't seem to fit in at all. Personally, it drives us nuts whenever we get gear with no schematics and hardly any technical info.

However, while we (and others) may disagree with their decision - it's still THEIR decision. They don't owe it to anyone to provide this info. It may be wise to do so - but it's no obligation. Nor are they obligated to list in their ads all the things you DON'T get when you buy equipment from them. Different companies handle this in different ways. It's really not an easy, clear-cut decision on how to handle support. One thing is fairly consistent though, no matter to what degree you provide info, no matter what level of module or component replacement you support, after-purchase support is NOT a revenue generator. This is not a scheme to "line pockets." After-purchase support is an expensive proposition for everyone involved. Since it doesn't directly generate cash, its only use (from a corporate self-interest point-of-view) is that its existence (in whatever manifestation) helps sales. They have to look at the expenses and trade-offs and try to optimize the total package they sell with their total mix of resources. If anything, your purchase of the ESQ-1 shows that they may be right! Here you are, well aware and a vocal opponent of their policy, and you STILL decide, all things considered, that it's a good deal to go out and buy an ESQ-1. What they really need to know is how many out there decided NOT to buy because of this.

Oh, and regarding Ensoniq's use of the Sony F1 PCM; they use Sound Lab to interpolate the sample (change effective sample rate) after the sound is in memory.]

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[Ensoniq's comments - We would like to respond to your comments by simply stating what we believe to be the benefits of Ensoniq's service policy:

1. We designed our policy to be one program for all; the program affords every customer equitable treatment and this is policy is consistent with our overall corporate philosophy.

2. This policy ensures improved performance and extended life of our products.

3. These policies are designed to exclude the possibility of a non-authorized and/or technically untrained person exposing himself to personal injury or damaging his unit.]

Dear Hacks,

I am a recent arrival to the MIDI world with the purchase of a Yamaha WX-7 wind controller that I've got MIDI'ed to a Mirage Rack unit.

I've read your reprint series on Mirage operations and I've got a few questions regarding breath control in general and P[78] and [79] in particular.

Firstly, the documentation supplied with the WX-7 says that since the controller is velocity sensitive, once you attack a pitch, that's it for volume, until you release it. In other words, without a volume pedal or other outboard device, you cannot increase or decrease the volume outside the envelope parameters. As a wind player, the ability to get louder of softer with your air-speed is pretty basic, so I'm feeling this is a big limitation for MIDI breath-control.

Am I missing something here? Could you explain MIDI breath control in general and also as it applies to Mirage OS 3.2? When I implement b.c. on P[78] and [79], nothing discernible happens or I get some really robotic vibrato from the LFO.

I got the WX-7 set to MIDI volume data but not After Touch information which it's capable of sending as well.

I love the Hacker and appreciate all the great info you put in it. More bang for the buck than any other techno-rag I subscribe to.

Thanks a bunch,
Pete Profilet
Dallas, Texas

[Clarks' comments - First things first. Make sure that you're using Operating System 3.2 - the latest OS for the Mirage. Earlier versions won't support some controllers - aftertouch and breath

control.

Aftertouch and breath control are simply controllers - they don't do much of anything until you make some decisions about what it is you want them to control (and then implement them). Either can be set up to control a couple of different things in the Mirage. LFO is one, but as you already discovered, this may not be the most useful effect for a wind player.

The other is to control oscillator mixing. At first blush, this might not seem all that useful either, but think about it. Being able to vary the mix between two samples can get you some pretty interesting effects.

To get going, set the value of Parameter 79 (Mix Mode Source) to either "2" (for breath control) or "8" (for aftertouch). Now the Mirage will accept the selected input as a controller. You might try this with the electric guitar sample from Sound Disk #6 - it's already set up to use a controller to mix between the straight guitar sample and the feedback sample.

Space doesn't permit a complete description of all the possibilities for Mix Mode - most of which have already been addressed in the Hacker anyway (see #19 and #26). A couple of suggestions though: if you want to control brilliance use a dark sample along with a bright sample. If you're after volume, use a quiet (or even silent) sample along with a loud one. You get the idea. One way or another, you can probably figure out a way to "blow it."

Dear Transoniq Hacker,

If you're interested, I have about a dozen home-made patches that I'd like to give away, and also assembly language subroutines for the Apple II and a Passport Designs Interface. I don't know how many people have this combination of Apple/Passport/Ensoniq, but if you think there might be an interest, I'll print up the subroutines.

Thank you very much. I think you have a very good magazine. Somebody had to do it! Keep up the good work.

Sincerely,
Tim Edwards
Box 7101
Durham, NC 27708

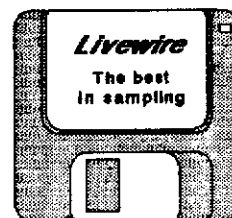
[TH - Thanks! Interested readers should contact Tim directly.]

Dear Hacker,

As a proud owner of the much sleeker and sexier looking ESQ-1 (pre-January 1987), I would like to know what updates

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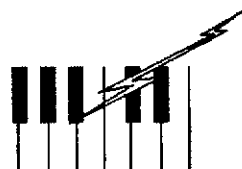
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have been made to its software. It would also be helpful if you could tell me how to obtain these updates.

Now for the dream part. Wouldn't it be nice if a future update included the waveforms that the SQ-80 has. I admit the SQ-80 is a major step from the ESQ, but I hate the feel of the keyboard. Ensoniq should be commended, however, for the addition of Poly Key, a generous 20,000 note sequencer, and a disk drive.

Finally, I'm having a little trouble learning to program and I'd like to see your thoughts about Bo Tomlyn's new video on ESQ programming. It would really help me a lot before I plunk down my \$69.95 for it.

Also, it'd be great to see reviews on the Prism products. I particularly am interested in the keyboard lessons, but am excited by their (or was it Maartists? I'm not sure) 100,000 note sequencer expander.

P.S. Will you be printing a compilation of the best articles for the ESQ-1 like you did for the Mirage?

Thanks and long live the Hacker!
Kevin Hanaoka

[TH - By now you've probably seen our

review on the Bo video (Issue #32). We can't find anyone (including Maartists) that claims to have a 100,000 note sequence expander. Also, we blush to admit it, but we've never heard of Prism. Send us their phone number or address and we'll get in contact with them.

Regarding the reprint series: Actually, it was never intended to be a "Best Of" type of thing. We just wanted a means of providing readers with info that was contained in the no-longer-available issues. One of the problems that arose was that, even though these were "Quick & Dirty" reprints, they still took more time than we have to give. Our current solution is to just relinquish our copyright to all out-of-print issues. There are now people listed in the classified ads that are willing to sell copies of those issues.]

[Ensoniq's response - The current ESQ-1 software version is 3.4. You may contact your nearest Authorized Ensoniq Service Center for an upgrade.]

Dear TH,

I recently acquired my brother Joe's ESQ-1, and he has a new SQ-80. We're both happy, since I have disk storage on my Atari ST (with Hybrid Arts' GenPatch).

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Since I am a software hacker, I'd like to write a program to read and write SQ-80-compatible diskettes on the Atari, so that we could share data more easily.

QUESTION: Does anyone know (or is Ensoniq willing to release, pretty please) the details of SQ-80's disk and file format? I would expect to distribute the program as copyrighted "freeware" unless Ensoniq feels this would step on the toes of commercial software developers.

Let me add that having access to Joe's back issues of TH has been a real boon; the last serious programming I did was back when patches were made with patch cords, and a synthesizer filled a small room!

Ken Sallenger
 Columbia, SC

[Ensoniq's response - The information you are seeking is not available in a format suitable for public consumption. We do not currently have the resources to present this material in such a format. This information, however, may be available from third party sources and/or some of the Transoniq Hacker readers.]

Dear Hacker

I'm worried. Being a saxophonist, I just bought a Yamaha WX7 MIDI wind instrument to get the most out of the nice fat brass patches on my ESQ-1. The WX7 worked well on the patches, but after I removed it from the MIDI IN jack, my ESQ's keyboard could no longer control its on-board patches (I still could trigger sequences and TX81Z patches from the keyboard). Since this happened twice, I had to reinitialize and reload my ESQ-1 twice. Is there a way to avoid this sudden separation of the keyboard controller on the ESQ and its patches after using the WX7?

Thanks for your fantastic newsletter and comprehensive hackers' forum.

Sincerely,
 Brian D. Knutson
 Overland Park, KS

[Ensoniq's response - It sounds like the WX7 has sent a MIDI volume of zero to the straight synth section of the ESQ-1. Correcting this should not require re-initialization of the unit; simply turn the unit off and on again.]

Dear TH:

I own an ESQ-1, Mirage, and a Korg DDD-5 drummer, which of course I link together thru MIDI. I use the Mirage mainly for storing sequence and sound

data from my ESQ-1 and as a slave unit.

Question #1...Does Ensoniq plan to continue making the ESQ-1 and Mirage?

Question #2...If I hook my ESQ-1 to an EPS, will the EPS store ESQ-1 sound and sequence data?

Question #3...As a slave unit, can I assign 3 or 4 tracks on my ESQ-1 to the EPS on different MIDI channels and it play the assigned tracks as independent different instruments with a full range of each.

I am happy with my Mirage, but I would like to be able to do the above with more authentic sounding instruments, and from what I have read, if the EPS will do what I am asking, it would be a perfect match for the ESQ-1!

Thanks for your help! I look forward to each issue!

Sincerely,
Kevin Muse
Vinita, OK

[Ensoniq's response - Question 1: The Mirage DSK and the ESQ-1 both remain vital and successful members of our product line. Ensoniq has no plans to discontinue these two keyboards.]

Question 2: The EPS will store ESQ-1 sound and sequencer data to the the EPS disk drive using the System Exclusive recorder function. Bear in mind, however, that the formats of the ESQ-1 and EPS sequencers are different. While the EPS will store the data, it will not be able to play ESQ-1 sequences through its sequencer.

Question 3: Yes. The EPS can receive independently on up to 8 MIDI channels simultaneously.]

Dear TH,

Since my trusty Mirage-in-a-box is starting to age I'm thinking of checking out the new EPS. The Poly Pressure is something I've been looking for - although I could do without a lot of the extras like the sequencer. Two questions (really for Ensoniq):

1) Does the Microtonal feature retune all 128 MIDI notes or only the 61 available on the keyboard?

2) How open is Ensoniq going to be about the operating system. I assume the microtonal feature is available via MIDI - I assume there is enough RAM now not to have to cut corners like that. I have a programming system for

creating scales for synthesizers. It currently creates scales for DX7/EI and TX81Z via MIDI and makes a list suitable for punching into the Upward Concepts tuning system. I'd be happy to do an occasional microtonal article for TH, since few understand what can be done with it. For example, you can make MIDI "create" a timbre via additive synthesis and control the timbre with a sequencer and not a series of system exclusives. Using this method I can get the DX7 to talk (or rather, mumble). The 20-voice capacity of the EPS is also attractive.

Since I use Amiga rather heavily, I am familiar with 68000 assembly language and think it might be interesting to have a version of FORTH running on the EPS as a front end to the music and MIDI hardware, instead of the usual operating system. Just a thought...

Old MIRAGE hack,
J H H Lowengard
CompuServe [76625,2425]

[TH - Actually, we plan on publishing several articles on microtonal tuning in upcoming issues. Please let us know what you have in mind.]

[Ensoniq's response - Question 1: The Microtonal tuning feature (like the EPS

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itself) responds to the 88 notes of the grand piano keyboard (MIDI keys 21-108)

Question 2: It will be possible to edit the pitch table or any other EPS function via MIDI.]

Transoniq Hacker:

I am very pleased to be part of the Hacker family as it is an effective medium for users to contact each other in applications and modifications to our Ensoniq instruments.

My applications for sequencing are very simple and the internal Mirage sequencer with the external memory expander works very well for me with live performance since I don't need to bring my computer setup on stage. However, the present operating system implementation of this sequencer is too rigid and I wish to modify it. I would like to have the sequencer "output" disconnected from the Mirage voices and have it control other MIDI instruments. In this way my other MIDI instruments can play preprogrammed sequences stored on disk and the Mirage voices triggered by the keyboard or MIDI.

Specifically, I would like to inhibit the sequencer from directly controlling the Mirage voices with an on/off parameter, and send the sequencer data on to the MIDI bus with the channel programmable with another parameter.

This would be a very useful feature for Mirage users in a live performance with other MIDI keyboards. If there are any users familiar enough with the sequencer part of OS 3.2 and how this might be easily implemented please contact me. Or if Ensoniq could help, this would also be greatly appreciated.

Thanks for supporting the Mirage - probably one of the most important factors in purchasing an Ensoniq instrument. Keep up the good work.

Stephen Prouse
Route 7
West Cornwall, CT 06796
(203) 4901-2159

[TH - Maybe Steven Fox (of Leaping Lizards) will smile upon you. He does a lot of this sort of thing. (Well Steve, now that we've put you on the spot...??)]

[Ensoniq's response - We have no current plans to implement your suggestions on the Mirage. Perhaps this is yet another great opportunity for an industrious hacker.]

Dear Hacker,

As an owner of an ESQ-1 and a subscriber to your magazine, I must say I

am very pleased with both. However, there are a few things happening now and then that show that Ensoniq hasn't sorted out all the bugs yet. (I have software version 2.0.)

The first thing happened when I tried to erase one of the demo sequences (SEQ-06) to make room for my own stuff. The sequence was erased all right, but strange things had happened to the ESQ memory. All the sequences were suddenly filled with weird music, sounding like Penderecki played back at half speed on a tape recorder. Well, I like Penderecki, but I certainly wouldn't like this thing to happen to my own sequences every time I erased something. For a while, I didn't dare to erase anything, but I found out it only happened when I erased SEQ-06, and only when the demo song was resident. Happened on other ESQs, too. Anyone else experience this?

Another thing that has happened is that the volume of the "straight synth" section suddenly became much lower than the sequencer, even when the sequencer played the same program as the synth. At last I found no way out of this except reinitializing the whole memory.

Which brings up another problem with the ESQ: Tape loading and saving. Tired of waiting for hours for all the sequences to load, I designed an editor for the ESQ-1 and my Yamaha CX-5M computer. This allows me to save/load ESQ patches to disk, singly or in 40-program banks. I can have all the parameters of one program displayed simultaneously on the CX-5M screen, or I can have instant access to and additional 120 patches displayed on screen at the touch of a button. And save sequences to disk. The CX-5 memory, however, is only big enough for about 2/3 of the sequencer memory if you use the expander cartridge.

If ESQ/CX owners are interested, I would be happy to send them the editor for \$30. I am also working on a program to turn the CX-5M into a MIDI processor which can make split keyboards, transpose, change MIDI channels, etc. Please drop me a line if anyone is interested.

With regards,
Eirik Lie
Elgesetergt. 17
N-7030 Trondheim
Norway

[Ensoniq's response - It is not unusual to experience the creation of strange messages during the software development process. Additionally, there are two possibilities that come to mind: 1) Sequence 6 could contain corrupted data 2) Your sequencer

expander cartridge could be loose or defective.]

Dear Transoniq Hacker,

Is there a computer program which can be used with a MAC SE that will score the music one plays on an ESQ?

I'd like to have a program which will notate just the notes as recorded in a sequence (or song) on an ESQ. I require just basic notation for material that's already been quantized, so it would be perfectly clear and easy for the computer to understand. I'd actually prefer to add dynamics and phrasing to the written music myself, later.

Thank you very much,
Loretta Gerhardt
Monona, Wisconsin

[TH - Graphic Notes of Santa Cruz, CA (408) 476-0147 has a program called Music Publisher which will do what you want and a whole lot more. Another, probably less expensive, way to go would be to use two programs such as the Opcode sequencer and something like Deluxe Music Construction program.]

Dear TH,

I'm writing to tell you how much I'm enjoying Jordan Scott's Synthbank Vol. 1 for the Mirage. I was able to use most of the sounds right away, but the fun really started when I began editing for myself. For this reason, I must compliment Jordan on his support material. It not only allowed me to find some truly interesting digital synth type patches, but really helped me to better know my way around the Mirage. In addition to this, the material is brief and clear.

Finally, thank you for advertising this product in the Hacker and thank you, Jordan, for saving me the added expense of a digital wave synth! Looking forward to Vol. III

A very satisfied customer and subscriber,
Rick Brosco

[TH - They pay their money, and we run their ads.]

Dear Transoniq Hacker,

First of all, I've received TH 30 and I'm very surprised of the revolutionary change/upgrade of TH since Number 13 (especially about ESQ information).

Six months ago I bought my ESQ and after many, many hours of music making, experimentation and learning I remain convinced of my choice; the

ESQ combination synth/sequencer is unique and practical - excellent price/quality.

One question: Why is not possible to merge two sequences?

I would like to buy an Atari ST to combine with my ESQ. I would like to print out my ESQ compositions and improvisations. What do you recommend?

Have you had experience with the MIDICASTER from Midi Connection for saving (via Mirage) my ESQ sounds and sequences?

Sincerely,
Paul Timmermans
Betekom, Belgium

[TH - Actually, we're looking to do the same thing with our ST. We haven't found anything yet that does the job in a straight-forward manner (and has a Postscript printer driver). A review of the MIDICASTER is in the works.]

[Ensoniq's response - There simply is not enough room left in the 64K of ESQ-1 OS code to implement a sequence merging function (not to mention the many other worthwhile and valid feature suggestions we get from

users). We appreciate any and all input from our customers, however, as this input plays an important role in the design and development of new products.]

Dear Transoniq Hacker,

First I must say that your publication is so greatly appreciated. However, I needed it about a week or two before purchasing Valhala Voice 320 and ESQ1 C64 patch librarian. First, the voice 320: if there are 20 keepers, the rest are most definitely tweakers. In addition, much space is wasted on slight variations of already poorly programmed sounds. And Valhala had the nerve to put this trash on sale for \$99 over the holiday. Additionally, I called Valhala and the person that spoke with me said, quote: That's strange, because Ensoniq liked these sounds at their last music convention.

Is this true? He also said he was surprised to hear that I was about 5 out of 500 purchasers that disliked the product, then seemed to get annoyed and hung up on me. I guess he thought I wouldn't inform my fellow Hackers. Anyway, this is my opinion and if there is anyone out there that would like to purchase both items, send \$99 check or money order and I'll rush them to you

and you can see for yourself.

Also, on my patch and sequence Librarian: loading only works one way and that's from ESQ to librarian and not back - and this is with 3.2 software and System Exclusive on. Is this why Ensoniq has not put out a librarian yet?

C. Alleyne
153 E 40th St.
Brooklyn, NY 11203

[TH - All we can really do is publish reviews and letters. This whole area of patches is really a subjective can of worms. Some people will sincerely love what others will sincerely hate. The best anyone can do is to try to find a place where they can try-before-buy, or find a friend or reviewer whose taste is at least consistent enough that you can use it as a reference point. If some company consistently misses the mark with most people, eventually, they drop from the scene. (Actually, Valhala seems to be meeting with a lot of success.)

Regarding the librarian - we haven't had any experience with the particular one you have, but ours (running on an Atari ST), and others reviewed in past issues work fine in both directions. There may actually be something in need of service in your system.]

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