

TransonIQ Hacker

The Independent Ensoniq User's Newsletter

MIDI ADDITIVE SOFTWARE SYNTHESIS

By Clark Salisbury

So you've had your Mirage now for a while. You've acquired every sample you could lay your hands on. You've sampled everything in the immediate vicinity that common sense, your wife, and the laws in your state would allow you to hit, squeeze, drop or annoy. Still, you've just gotta have a new sound. Wouldn't it be great if the Mirage could be used like a synthesizer? Well now, thanks to a little clever software written for the Apple II series of computers, it can be.

MIDI Additive Software Synthesis (MASS) by Robert Pejril is a program designed to run on the Apple II, Apple II+, and Apple IIe computers (\$100 - see his ad in this month's Classifieds section). Basically, the program allows you to create waveforms on the computer utilizing additive synthesis techniques. These waveforms can then be transferred to the Mirage via MIDI for storage to disk and playback.

The program is supplied on a standard 5-1/4" floppy disk. It is not copy protected, allowing you to make a backup for archival purposes. Though the manual claims that MASOS is not required to use the program, I could not get waveforms to transfer from the Apple to the Mirage if the Mirage hadn't been booted with MASOS.

The technique used here, additive synthesis, is not new. However, additive synthesizers are rather expensive pieces of hardware to get involved with. From my point of view, then, this program is a very welcome addition to the ever growing supply of tools that one might wish to stick into their bag of Mirage tricks.

Additive synthesis, if you don't already know, is a technique whereby complex waveforms are created by adding together less complex waveforms (usually sine waves). A complex waveform can be thought of as being composed of a number of harmonics, each with its own frequency and amplitude envelope. Theoretically, one could create any sound imaginable if one could only specify enough of the proper harmonics, each at the proper amplitude, and each with the proper envelope (and some will argue that you need to specify any pitch changes that might occur for a given harmonic - something that MASS does not allow you to do). MASS does allow you to specify frequency and three stage envelope for each of twelve "oscillators", each of which produces a standard issue sine wave.

The program itself is quite easy to use. Once MASS has been booted and you've given it your password, you are presented with a main menu. This menu consists of 4 options; 1) Construct Sound; 2) Dump Waveform to Ensoniq Mirage; 3) Change Password; and 4) Quit. Options 3 and 4 being pretty self-explanatory, we'll take a look at the first two options here.

Pressing key number 1 takes you directly to the sound construction page of MASS. It is here that you do the work of specifying the different frequencies and envelopes that will become a Mirage wavesample. Once in the sound construction page, you will be presented with the following screen:

@	FREQ.	ATT	PK	D1	L1	D2	L2
1	1	1	99	5	35	99	0
2	1	1	99	5	35	99	0
3	1	1	99	5	35	99	0
.
.
.
12	1	1	99	5	35	99	0

Each number in the first column (under the ampersand) represents the number of one of the twelve oscillators available; any or all of them can be used in the creation of a sound. Reading left to right across gives you the settings for any given oscillator's frequency and amplitude envelope. Valid frequencies (found under the FREQ. heading, naturally enough) are within in the range .01 to 64, and they follow along the lines of the natural overtone series; a value of 2.00 is twice that of 1.00, and is correspondingly an octave higher in pitch. Likewise a value of 16.00 is twice that of 8.00, and likewise is an octave higher in pitch. And so on. This may sound a bit familiar to you DX-7 owners out there, but I should stress that these harmonics are added together, rather than used to modulate one another, as with the DX-7.

The value listed under ATT is attack time, logically enough. Values are non-fractional, ranging from 1 to 99, with 99 being the longest possible attack time. Next is PK, for peak, and here fractional values are allowed within the range of .1 to 99. This is the amplitude at which an oscillator first peaks when it has reached the end of the attack portion of its cycle. This value could just as easily be thought of as level 1, though, since the oscillator's amplitude can actually be

driven higher in subsequent portions of the envelope (providing that the value specified for PK is some number less than 99, which is a maximum value in any case). As a matter of fact, the ATT and PK parameters differ from D1 and D2, (decay times) and L1 and L2, (levels 1 and 2) only in the fact that they are at the beginning of the envelope. And for those of you who must know, ATT, D1, and D2 refer to the amount of time it takes to reach the specified level, not the rate at which the amplitude takes to change, as with the DX-7. I know I'm being nit-picky here, but I've become quite accustomed to using rates and levels, or times and levels to specify envelope settings; I make a faint plea here - let's try to keep this potentially confusing area somewhat standardized, at least in terms of the jargon, eh what?

At any rate, this system of using attack, peak, decay 1, level 1, decay 2, and finally level 2, gives us a fairly flexible three-stage (not six stage, as claimed in promotional materials) envelope generator for each oscillator. To make changes to the default settings, one must first select the oscillator to be worked on by cursoring (is that a word?) through the 12 available until the right one crops up, and then hitting return. The current settings associated with that oscillator appear at the bottom of the screen, and from there it is simply a matter of cursoring to the appropriate parameter, and using the up/down arrows to increment/decrement the current value. (If you happen to own an earlier Apple II or II+, don't despair. The <'> and </> keys will serve the same function, although you may want to tape the repeat key down). Unfortunately, one must scroll completely through the numbers sequentially to get from point A to point B. I wonder if it would have been too difficult to allow for values to simply be typed in, rather than having to go through numbers 2 through 98 to get from 1 to 99?

Once you've got some values roughed in, you can take a look at a nifty 3-D display of what the active oscillators are doing in terms of their envelopes. This presents itself in terms of a graph for each oscillator, all displayed at the same time. This can be a great help, and you'll probably find yourself referring to it quite often while working up a sound.

When you're satisfied with any modifications you've made, the next step is to exit the sound construction page, and head for the "Dump Waveform to Ensoniq Mirage" page, option 2 from the main menu. Before you do, though, I suggest saving your data to disk first. It's easily accomplished with a couple of keystrokes.

The "dump" page presents four parameters to allow you to determine where in memory your new sound will end up. You can select upper or lower keyboard halves, starting page (of Mirage memory), number of pages to dump (1 - 256), and number of stable pages. This last parameter allows you to reserve a certain number of pages to be looped later on. In a nutshell, if you have set the decay 2 and level 2 settings for your oscillators so that they all remain at a constant amplitude, you can determine how many pages of memory will be required for a glitch-free loop by finding the lowest common denominator among their different frequencies. I think it would have been a nice touch, though, to have included a small subroutine within this program to do these calculations for you. Oh well - can't have everything, I suppose.

Dumping a sound is initiated by pressing the "D" key, and herein lies the major problem with doing additive synthesis on the Apple II. Calculating all the different sample points for the composite output of the various oscillators involves some fairly hefty number crunching. This can take a while on the humble Apple II, a fact Mr. Pejril is not afraid to admit. When he states in the manual that you may want to take in a movie while the computer is calculating larger waveforms, he ain't kidding. I dumped a 64 page waveform composed of 6 oscillators - half the possible number of oscillators and one quarter of available Mirage memory. It took a little over 45 minutes! This is obviously not a program that yields to instant gratification. You can play the keyboard of the Mirage while the data is being dumped, though this isn't much help to you rack mounters. Also, there is no way to stop the computer from dumping data once the process has been initiated, short of simply turning it off. Also, there's nothing more frustrating than realizing, 20 minutes into a dump, that your rack mount Mirage is still plugged into your master keyboard and not the Apple, as you had thought it was. All good reasons for making a backup of your data before initiating the wavesample dump routines.

So what kind of sounds can you get? Frankly, I'm not sure. In the two days that I've had the program, I've been able to create a total of four sounds, all of which sound kind of like DX-7 patches. I liked the sounds I did get, though. And they seemed, for the most part, quite clean and noise-free. A few demo sounds are supplied on a Mirage disk along with the program, but I suspect that with some time and effort one could develop much more interesting sounds than the somewhat boring ones presented there.

My guess is that this program is going to find its staunchest supporters among those who understand something of additive synthesis already, or who have a fairly good working knowledge of what kinds of overtones make up what kinds of sounds. Since it's not really feasible to work up a number of different sounds quickly, one should really have a fairly good idea of what one wants before diving in. It is possible to dump a page or two of memory fairly quickly, though, and this should help to give the novice a quick idea of what is to be expected from combining different frequencies at different amplitudes. And since work in progress can be saved to disk, it's conceivable that one might spend some time refining sounds using this program. Don't misunderstand; I thoroughly enjoyed using the program (with only a couple of minor reservations), and learned quite a bit from it. The manual makes no pretenses at being a guide to additive synthesis, and Mr. Pejril recommends outside reading, notably "Computer Music - Synthesis, Composition, and Performance" by Charles Dodge and Thomas Jerse, Schirmer 1985. I, for one, plan to grab a copy.

All in all, I'm extremely pleased to see this kind of thing becoming available for the Mirage. Many of us who use the machine have suspected that there might be more magic in that homely gray box than we ourselves could conjure up. Additive synthesis might be just the ticket for us sample junkies. If not, Mr. Pejril claims to be working on a program to allow FM synthesis on the Mirage. I hope he keeps us posted. In the meantime, my thanks to Mr. Pejril for his efforts to add (pun intended) a little extra spice to the dedicated samplers spice rack. I sincerely hope his success will encourage others who are as technically inclined to venture forth with new Mirage applications.

SOFTWARE REVIEWS

SOUND DESIGNER Visual Editing System

Review By Frank Kelly

For those of you who may not know, in the beginning... there was the Mirage... Then there was the Hacker, a very good supplement (invaluable, in fact) to Ensoniq's own documentation. There were, however, more than just a few Mirage owners with Macintosh computers who wanted more, and so Sound Lab was born, a fantastic visual editing program that made sampling, looping, and keyboard sound assignments much easier to accomplish.

Though Sound Lab is an excellent program, it's not the only one on the market. Digidesign of Palo Alto, California has just released version 1.12 of their V.E.S. software, "Sound Designer". Written first for the Emulator and Prophet 2000, Sound Designer has many of the same features of Sound Lab, but with some added bells and whistles that has made it very popular with film audio post-production houses.

The first and most popular new feature is the ability to use samples that were originally made on the Emu, Prophet, or Mirage almost interchangeably! (Some samples require a bit of tweeking - usually playback speed adjustment). This feature can only be used if the samples were originally edited using Sound Designer. However, having the ability to use samples made on these more expensive units was the deciding factor in my choosing Sound Designer over Sound Lab.

Another feature, quite useful, is the ability to work with up to three sample files open, allowing the mixing of sounds, cut and paste editing, and sound synthesis features to be used on each. Sound Designer also has an on-board digital parametric equalizer, with notch filtering, and peak shelf equalization - a much needed feature for those who want to fatten a sample or remove aliasing without having to use the "Drawing" feature (which can sometimes be a real pain with any VES).

Most of the other features related to sampling, looping, MASOS and MIDI are virtually the same as the latest release of "Sound Lab". (Ed. - see Issue #10.) In my opinion, neither package is friendly enough for the novice user, so if you don't do some homework on the basics first, you're probably better off sending for the Mac Demo disks before you buy.

Sound Designer has very good documentation, including a short tutorial, along with Mirage's latest release MASOS disk. The software is copy protected, but allows for hard disk users. Even though the Mac-Plus has a double sided drive, and technically you "can" use just one drive, the disk swapping is so intense that you might as well figure on buying an external drive. For those of you using any other Mac, don't fret - the software is shipped in its single sided version but will recognize an external double sided

drive (an absolute must for working with the multiple open files feature).

There are a couple of features that I would like to have seen such as a "Librarian" module, but as big as this program is, I suppose they had to set priorities. Maybe in a future release we might see it, but for its price, I would have expected it to be there even if I had to load another disk to use it. Incidentally, the technical support from their staff is excellent, and they have a 24-hour BBS online for uploads and downloads of sound files, as well as helpful hints from staffers and other users.

Before you buzz down to your favorite compu-music shop and plunk down your hard-earned bucks, be aware that both "Sound Lab" and "Sound Designer" are priced about the same (\$395.) and both programs have features that the other doesn't. There are many other nifty features that Sound Designer has that you may or may not use. My application is mainly in the realm of radio spots and soundtrack work, where unusual sounds and sound effects have to be continually modified. For my purposes (and for a lot of other producers I talk to), Sound Designer is the "preferred" VES for the Mac-Mirage studio.

About the author - Frank Kelly owns and operates a multi-track recording studio, produces commercials and A-V presentations, is a 15-year broadcasting veteran, and currently is an announcer at NBC's KYUU in San Francisco.

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Digidesign's revolutionary Sound Designer™ Macintosh software is now available for the Ensoniq Mirage and Mirage Multisampler. Sound Designer is the most powerful waveform editing and digital signal processing program available for the Mirage. Compare these features to other Mirage visual editing systems:

Full Waveform Editing - Edit sounds using standard Macintosh "cut and paste" style editing, with an editing accuracy of 1/50,000th of a second! Use Sound Designer's "pencil" to draw or repair waveforms.

Multiple Windows - Sound Designer is the only system that offers multiple sound windows for displaying and editing up to three sounds at the same time.

Digital Equalization - Sound Designer includes a fully parametric, high quality digital equalization program. Used with Sound Designer's FFT frequency analysis, it is the ultimate equalizer.

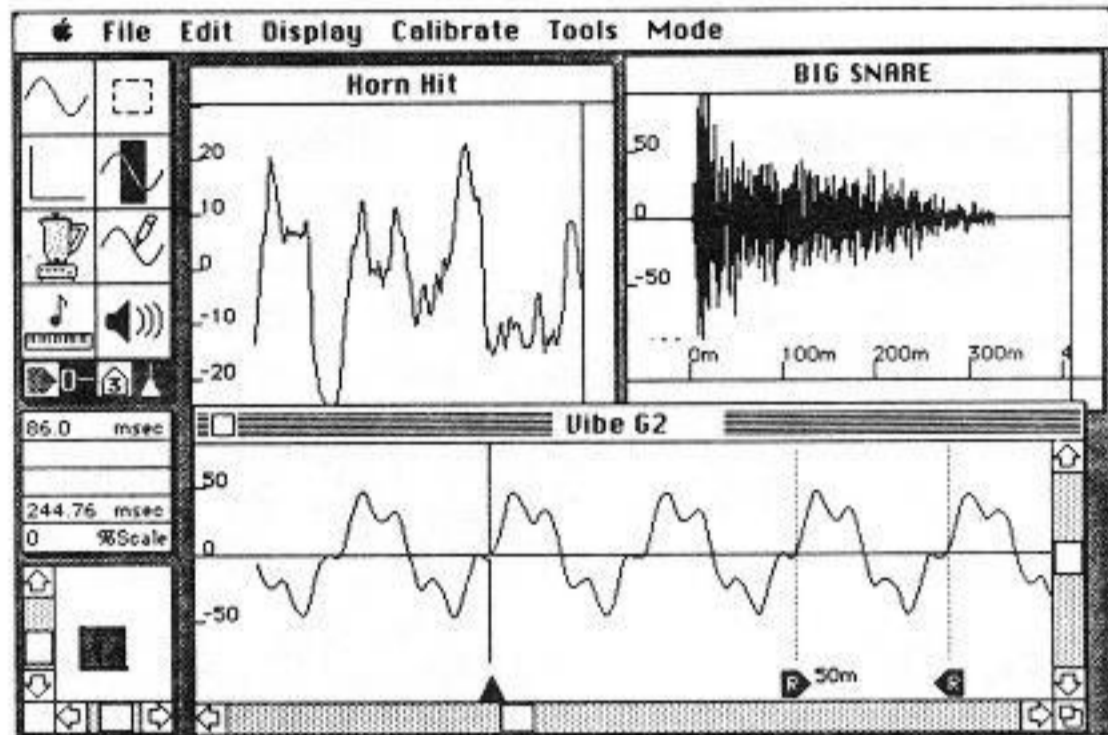
Visual Looping - Assign loops visually and fine tune the loop points using the "Loop Window". A crossfade looping program creates a good loop in difficult sounds.

Digital Mixing and Merging - Digitally mix samples in any proportion, or use the Merge function to create new, unusual sounds by "merging" sections of samples.

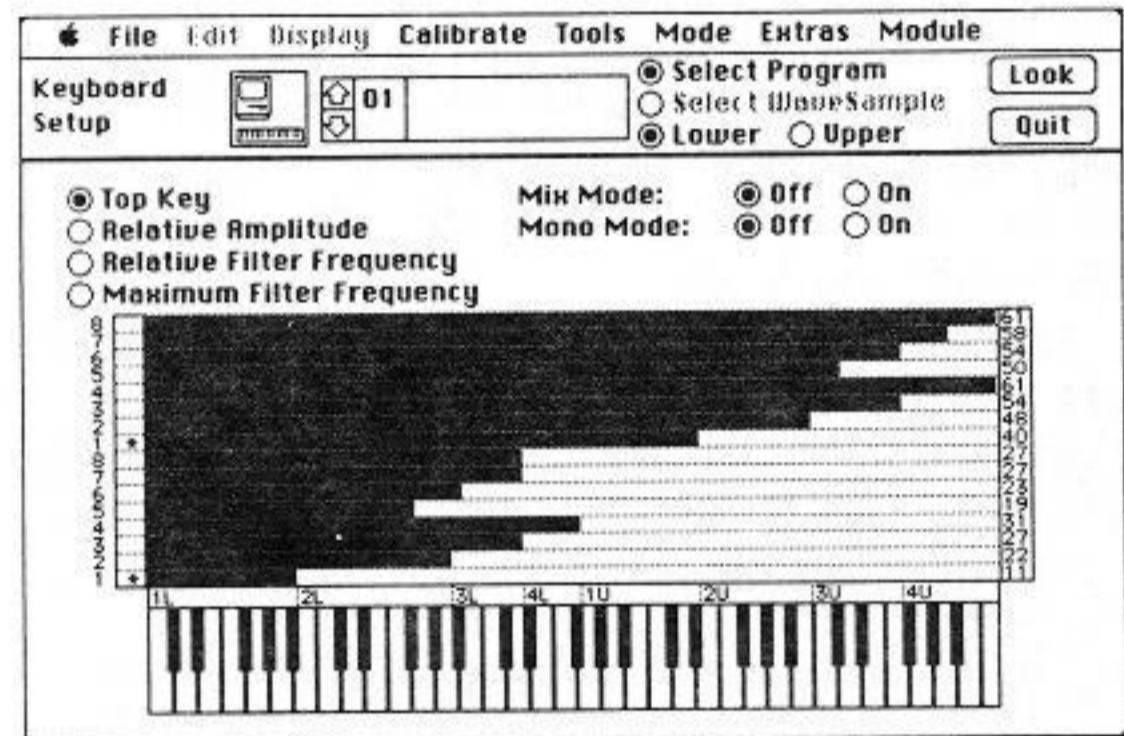
Digital Synthesis - Another Sound Designer first. Digitally synthesize sounds on the Macintosh, then transfer them to the Mirage for playback!

Mirage Programming Screens - Of course, Sound Designer includes a full complement of graphic programming screens for all Mirage functions (including a complete MASOS module). These screens alone perform virtually all of the functions found in other visual editing systems! If you have a rack mount Multisampler, Sound Designer includes an on-screen MIDI keyboard/sequencer to "play" the Mirage.

Sound Designer is the most powerful visual editing/processing software available for the Mirage. But don't take our word for it! Send us \$15, and we'll send you a pair of demo disks (Macintosh). We think you'll be quite amazed.



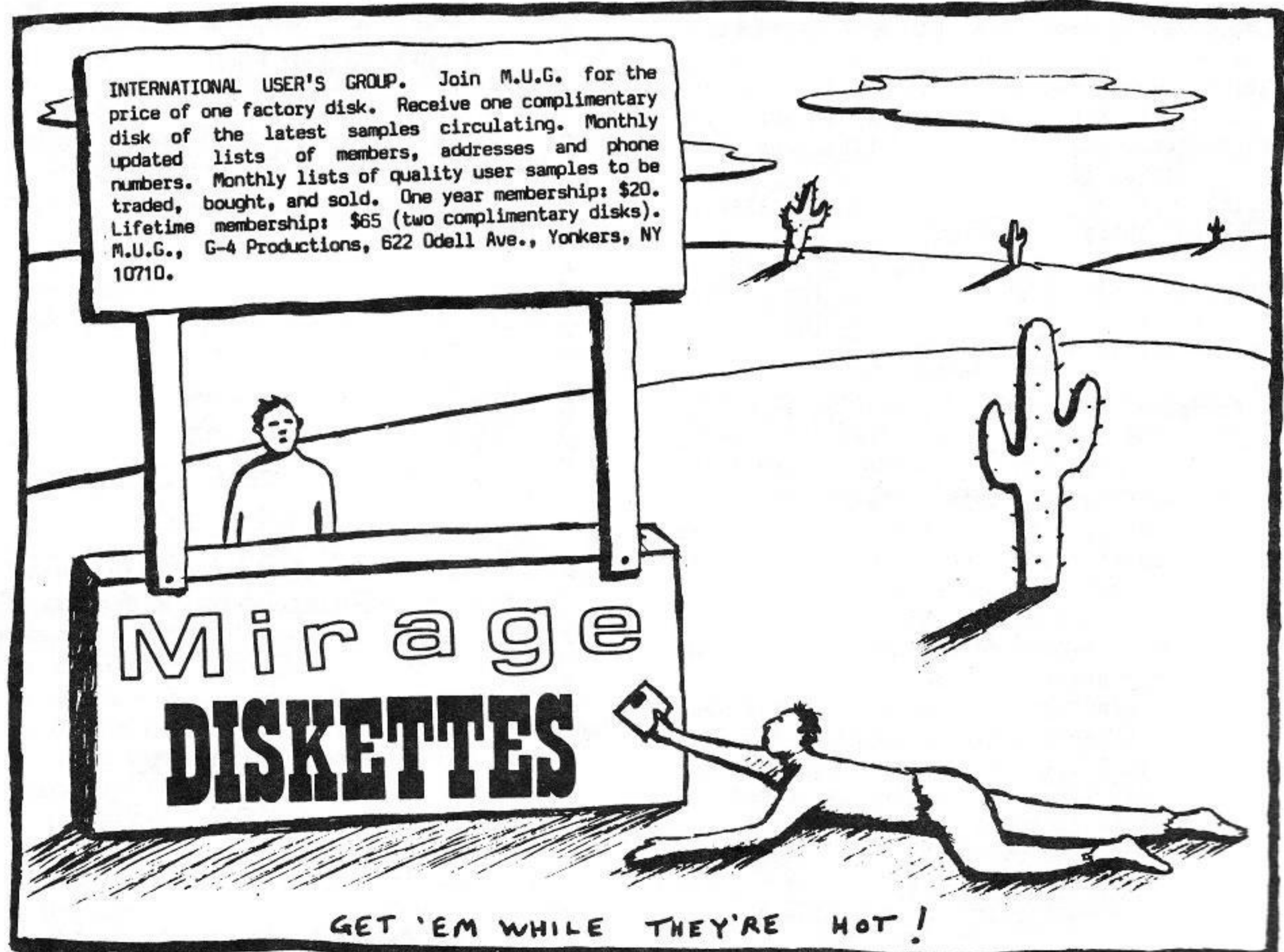
Multiple Waveform Windows



Keyboard Setup

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SOUND REVIEWS

ENSONIQ DISKS 19, 20 & 21

By Erick Hailstone

Well for everyone whose soul has cried out to play the SAXOPHONE, here's your big chance. The upper and lower program variations are the same so this is how I will present them.

SOUND DISK # 19

SAMPLE 1

Lower: Baritone Sax

L1 is just shy of 2 octaves and is multisampled. Although you can detect them, the tonal variations at the transition points add to the realism by producing a bit of randomness. Velocity controls volume. Vibrato is controlled by the mod wheel. It is set at an appropriate level but be careful - a little goes a long way. The Bari covers the first 2 octaves.

L2 is a subtle variation. The detune control (33) is used to provide chorusing which gives the impression of more instruments. The filter is closed down a bit which takes away a little of the horn's edge.

L3 is the same as L1 but has a very fast growl for the modulation. Be careful with it. It's really effective if used lightly but if you use too much you end up with a chainsaw instead of a saxophone.

L4 gives us a softer attack with a light filter sweep with higher resonance. These changes take us further away from a saxophone and sound more synthesized. There is still an organic quality due to the acoustic origin of this sound. Here's an application for this sound for those of you who have another synthesizer. Find or create a muted brass sound. Alter it so it sounds one octave below L4. Experiment with different mixes of the two sounds. I enjoyed the grit and texture this sample gave my brass preset.

Upper: Punchy Alto Sax

U1 sounds great in its middle range. It gets louder and a little brighter as you hit harder. When you get up higher and higher there is less harmonic information to help distinguish it from other instruments so it can almost pass as a violin or trumpet. The demo sequence is the Perry Mason Theme and in the upper range it ends up sounding more like brass.

SAMPLE 2

Lower & Upper: Rough Tenor Sax

L1/U1. The sequence used here is a tune made popular by Jr. Walker called "What Does it Take". Jr. Walker's sound is what this sample and style of playing is all about and if you want to learn to use it as intended I suggest you pick up some of his

records. Volume is controlled by velocity. Things seem to get a bit brighter with velocity as well. There is a distinct growl which is really what this sound is all about. Loop points and transition points are excellent. The upper end of the range is thinner in the same way as Sample 1. The lowest octave is in the Bari range. Although Bari players will growl from time to time it's not as common as tenor and can wear out its welcome quickly.

L2/U2 adds chorus and opens the filter a bit more. The grittiness seems to occur in a higher part of the spectrum. It almost sounds like a very slow filter sweep emphasizing a high resonance.

L3/U3 uses a filter sweep to create the ever-so-popular wah wah effect.

L4/U4 has a slower attack which is really nice for sectional playing. It sounds like the whole section is gliding out volume-wise.

SAMPLE 3

Lower & Upper: Velocity Tenor

The sequence used to demonstrate this sound is "Yakity Sax". Those boys and girls at Ensoniq appear to be having fun.

L1/U1 - A light touch on the keyboard will give you a pure Tenor Sax. If you use a heavier touch you get a growl and the harder you hit the more of it you get. It won't get quite as raspy as the Rough Tenor Sax. I enjoy this Sample the most because the combination of the pitch and mod wheels plus the ability to control the growl by velocity makes it the most expressive. Again, great sampling, transition points are great and loops are excellent. Same thing holds true in the higher range (a bit thin).

L2/U2 gives us the pure tenor sax without the grind. Velocity controls volume.

L3/U3 Velocity once again introduces the growl but now we also have a softer attack and a light wah.

L4/U4 starts with the pure Tenor Sax. Velocity controls volume and the mod wheel adds the growl.

I have heard various comments from people when they hear these samples. I must admit I'm surprised when they're unfavorable. I have finally concluded that the person who says "Oh that sounds like a chord organ" or "Well, that's close but not quite there" can't hear or see between the cracks. If you play one note of a sample it will probably sound like what it's supposed to but if it ceases to do so the more notes that you play, it probably means YOU don't know

what you're doing. Take the sax for instance. Have you ever heard a sax bend a note down? Not hardly. He may slide down but he can't lip a note up without you hearing it so he can't bend back down. There are so many little things going on that when I stopped to think about it I ended up calling a sax player. He told me to buy a pint of bourbon as to "coup the good attitude," then pull out the records and start listening. Look at Jan Hammer. This guy emulates a guitar player as well as it can be done. Now he didn't just pick up a synth and start doing this.

SOUND DISK 20

SAMPLE 1

Lower & Upper: Ambient Drums

Ambient drums are created by taking acoustic drums and enhancing them electronically. Devices such as digital reverbs, digital delays, and compressors are employed to create a variety of effects. I think it's safe to say that Phil Collins has popularized this sound. An example of this would be using a digital reverb to create the sound of a drum being struck in a large reflective room. Normally notes would ring into each other out of control. A compressor is employed to cut the ends of these notes off so they cannot ring into each other. The result is a huge explosive drum, quite powerful. This is the basis of these samples.

L1/U1 - Starting from the bottom we have 2 notes of bass drum. My only objection here is that there seems to be a bit of distortion - as if it were recorded too hot. I also like the effect of a dry bass drum with reverb on everything else, so I guess I'll have to boot MASOS and do some fancy juggling with my other drum samples. Next we have 3 notes of snare. These cut off quickly and sound quite electronic, kind of like a combination of snare, high hat, and hand claps. Now we have 15 notes of tom toms. These ring out about twice as much as the snare but still stay out of each other's way. 1 note of hand clap which also seems as if it has a high hat mixed in. 3 notes of closed high hats, 3 notes of open high hat. Next we have 8 notes of another type of tom toms. These are not allowed to ring out as much as the first toms. The reverb represents a smaller room. Now we have 5 notes of ride cymbals. They have a pretty decent decay. The attack is up on the bell of the cymbal. These are comparable to those you would find on a good drum machine - maybe a little muted if compared to the better drum machines. We now get 5 notes of crash cymbals. These remind me of the those in Roland drum machines - very good resonance. The rest of the keyboard (about an octave) is another drum. This one is like an electronic snare drum with a quick reverb and a resonance that reminds of a a gun shot.. Played quickly it's like a machine gun.

L2/U2 are so similar to L1/U1 that I almost couldn't find the difference which is that L2/U2 have a quicker release. This is a very effective alteration allowing you to control the ambient after-ring. If you play very staccato then there won't be any after-ring. If you hold the key down then you will

get the full ambience.

L3/U3 are quite different. Chorusing and resonant filter sweeps create a flanging effect making these sound more electronic.

L4/U4 - The filter is closed down a bit and the resonance is raised. Detuning is raised significantly. Almost sounds as if the drums have been tuned up. The end results vary according to touch. If you play staccato the note will ring out through its full length. If you hold the note down it sounds kind of squashed. This is hard to describe but the effect is similar to an open high hat closing.

SAMPLE 2

Lower: Four Electric Bass Sounds

Well, with titles like this who needs me, hah? Let's start off by saying that these bass sounds are all great. My hat's off to whoever is responsible. L1 reminds me of a Fender Jazz bass. Has excellent use of velocity. In this case, the harder you hit the more of a popped attack you get. It's a bit too bright for walking bass lines but great for funk.

L2 has a stronger funk attack when you hit hard. Compared to L1 you can hear the string flapping around as if it were hit much harder and it takes awhile for the pitch to settle in.

L3 is a rounder sound. It gets brighter if played harder and still has a nice edge to it but doesn't have that extreme funk attack.

L4 has a softer attack, is less bright and has a fuller midrange making it more mellow than the previous sounds. It would be suitable for swing bass lines and many other styles. Try this for a variation. Change Parameter 33 (detune) to 4, Parameter 50 (amplitude attack) to 6. Now if you use the pitch and mod wheels correctly you can sound like a fretless bass. Adding chorusing (detune) is effective on all these bass sounds. The only problem for me with these bass sounds is they're so good, I hate the thought of tying my Mirage up playing bass all the time and I can't afford a second one. Maybe it's time for Ensoniq to come out with their own version of the MIDI Bass.

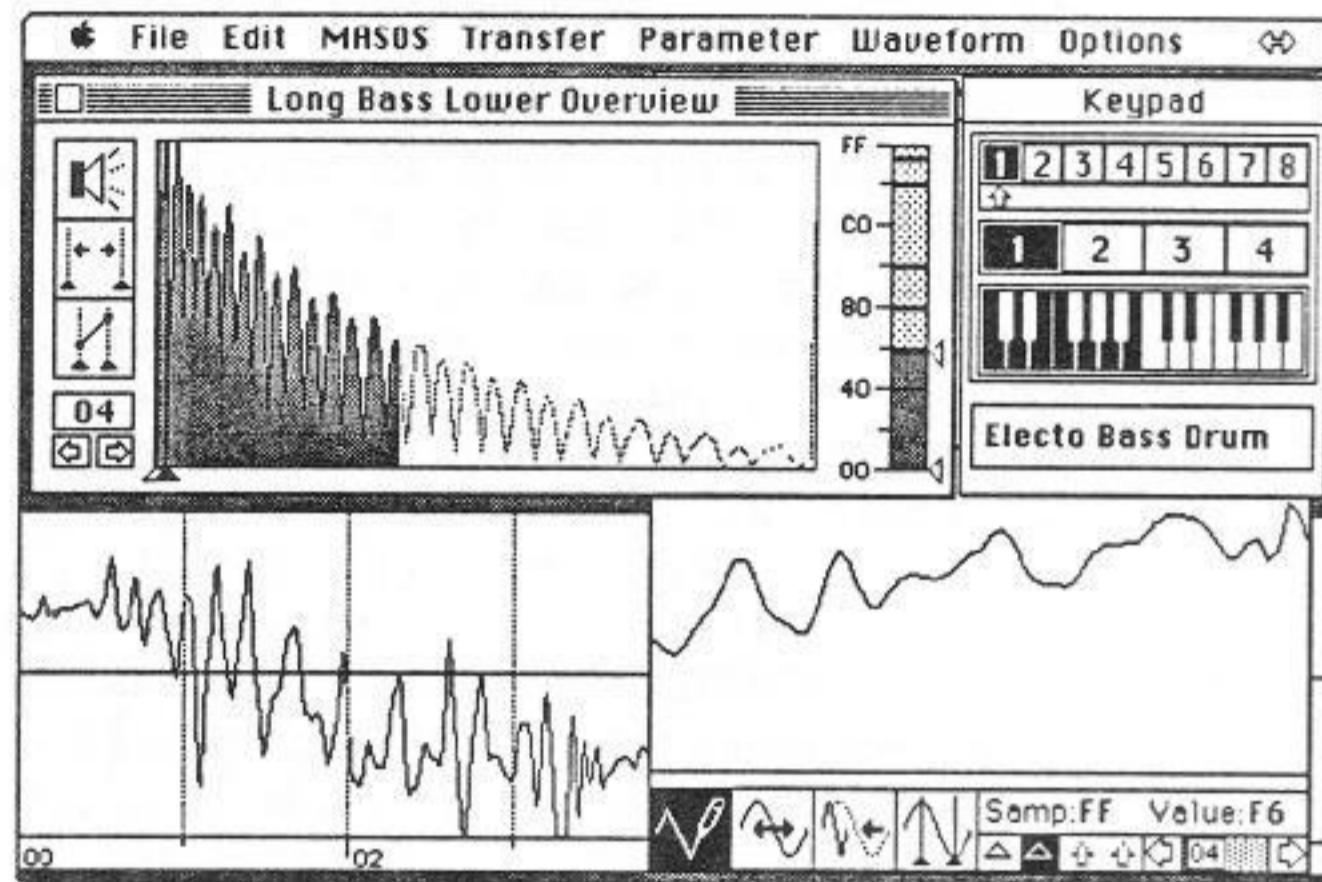
Upper 2: Breathy Alto Sax U1. Well, the reason they call it breathy is obvious. You can really hear the air moving. It gets brighter as you punch harder, sustains nicely and cuts off quick. It has a very quick release. It's a good idea when using a sample like this to play many different types of notes (loud, soft, long, short) in the different parts of its range. This will help you understand how to play these sounds.

U2 is the same sound as U1 only chorused.

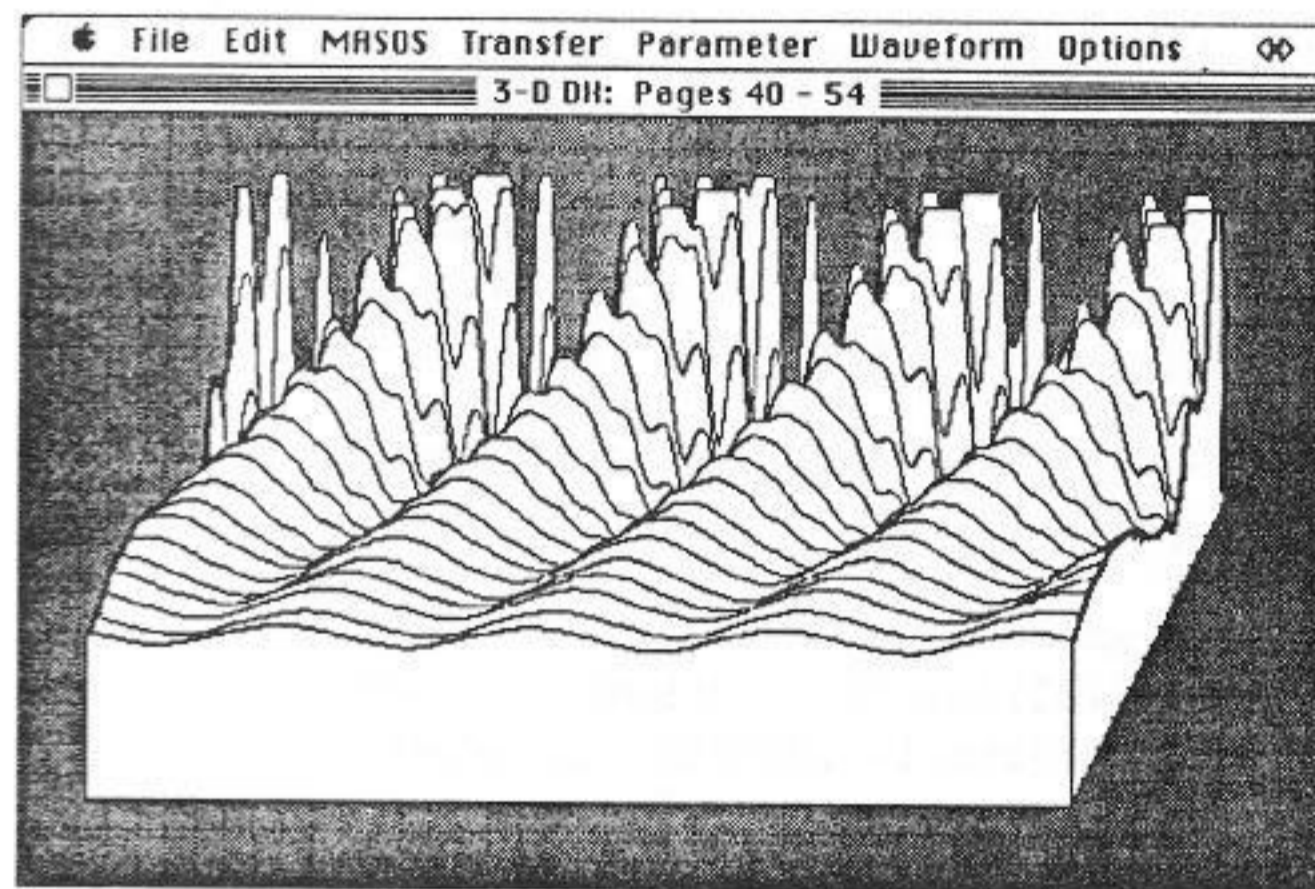
U3 has a long attack. The notes take a while to fade in. It makes it sound less like a sax but it's good for legato sectional playing. It's also a good place to start creating your own original sound.

Sound Lab™

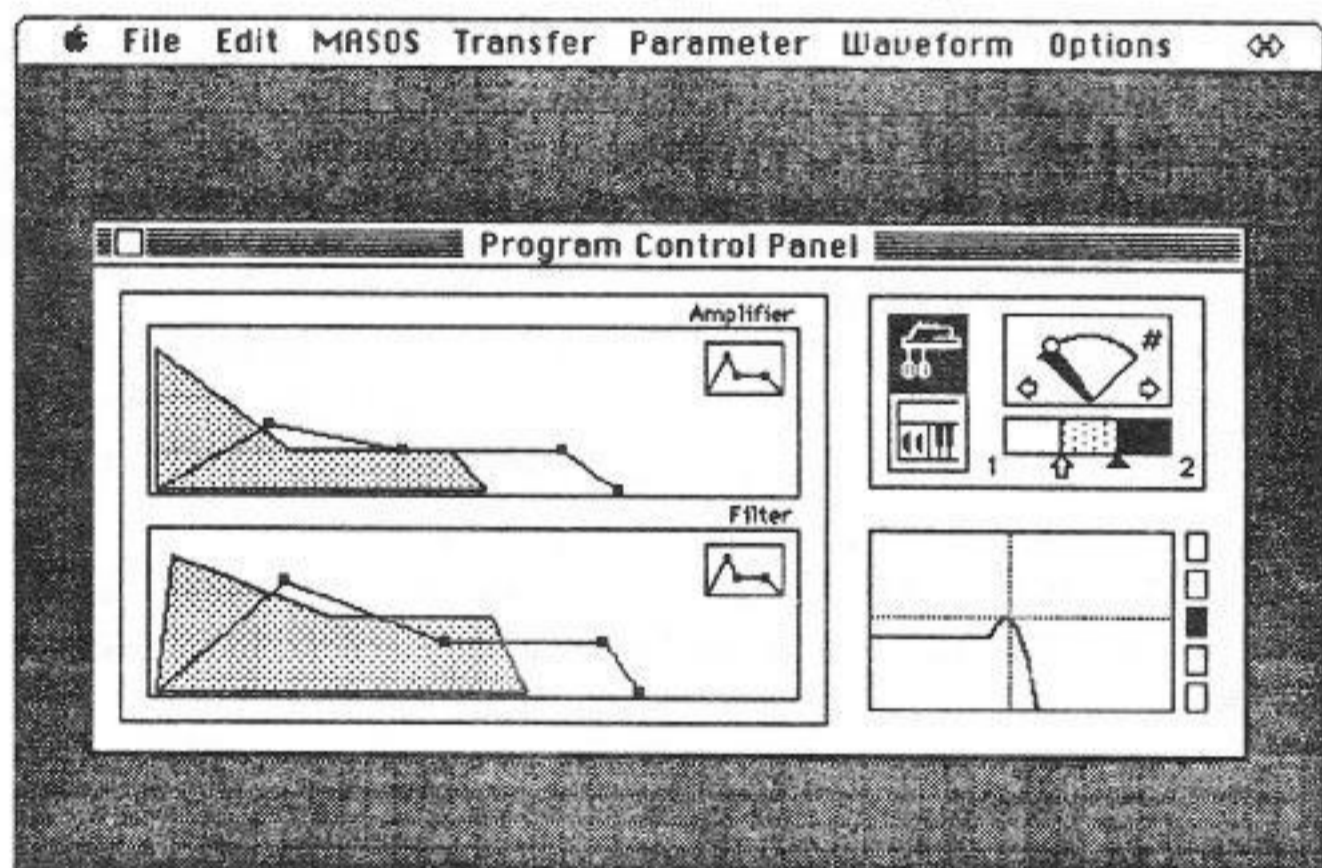
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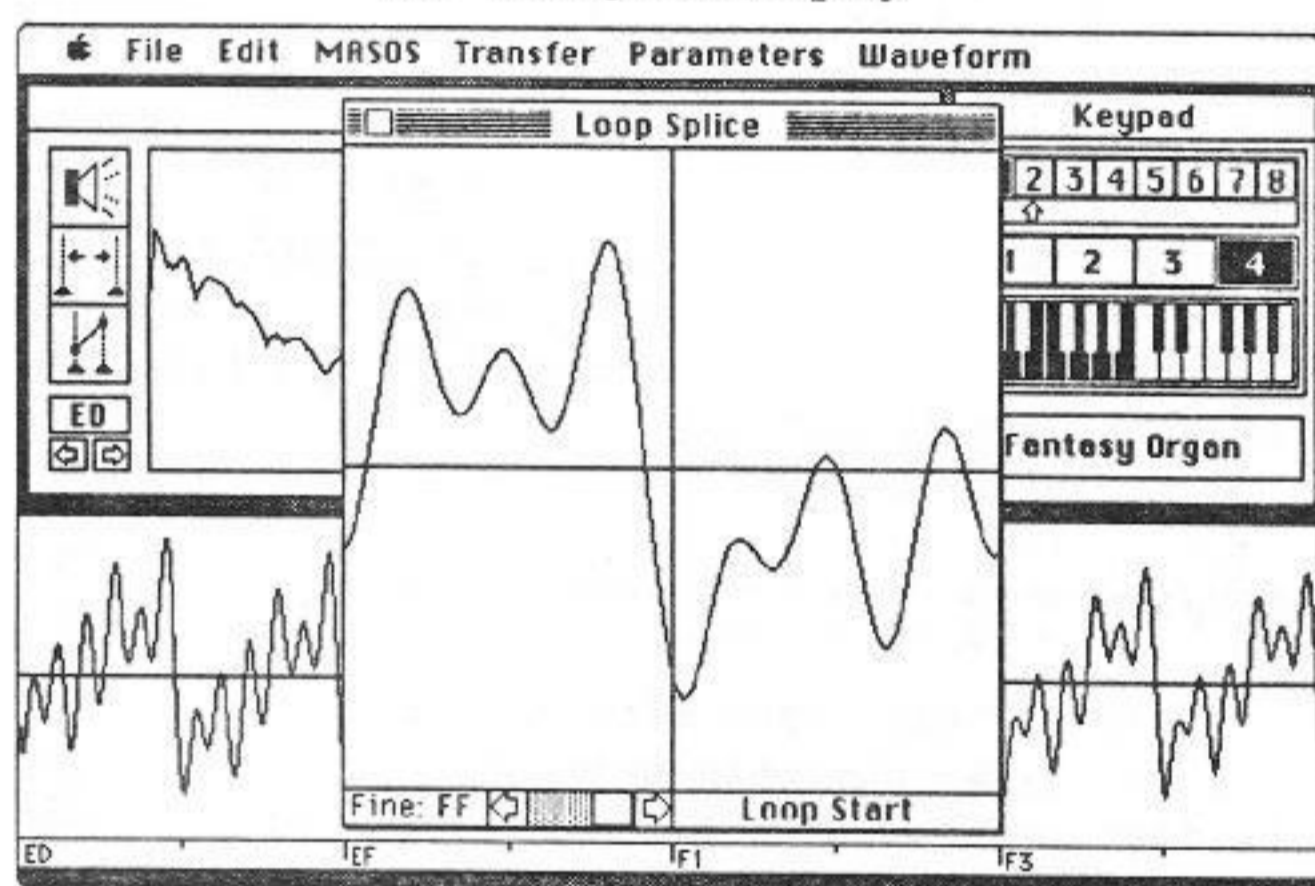
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Sound Lab is a comprehensive Visual Editing Package for the Ensoniq Mirage and Apple Macintosh. Sound Lab integrates powerful editing and processing, intuitive voicing controllers, high resolution waveform displays, and more.

Sound Lab waveform windows display samples at several resolutions simultaneously, from a total memory overview to a single page blow up. RAM based wavesample memory gives the sampler access all sixteen wavesamples immediately, unlike slower disk based programs. Intuitive mouse-driven voicing controllers eliminate cumbersome hexadecimal keyboard entry, animating voice parameter editing. A complete MASOS implementation provides fast parallel editing and processing without lengthy wavedata transfers. In addition, unique features like interpolation and compression dramatically improve sample quality.

Other features include sound file conversion, MIDI merging, 3-D waveform display, MASOS cross-fade looping, Loop Splice, and automated sampling aids.

Designed with the needs of the Mirage sampling musician in mind, Sound Lab remains the premier Mac-Mirage visual editing package. Sound Lab is the only Macintosh visual editor endorsed and distributed by ENSONIQ. For more info contact: Blank Software 1034 Natoma Street SF CA 94103 - Tel: 415 863-9224.

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U4 - Because the attack is different, the filter's giving a slight wah and we have chorusing as well. This sound is more synthesizer-like.

SAMPLE 3

Lower & Upper: Drawbar Organ II

L1/U1. This organ sound is cleaner than the first one. The original one had a bit of actual speaker distortion. This one has less harmonics (not as many drawbars pulled out). And you can hear more percussion at the beginning of a note. Moderate chorusing - simulating the Leslie organ speaker.

L2/U2 is the same sound with a very fast vibrato.

L3/U3 has very slow chorusing simulating a Leslie at its slowest setting.

L4/U4 has no chorus whatsoever. On all of the previous variations the mod wheel has been inactive. Here it can be used to introduce a quick vibrato.

SOUND DISK 21

In a recent issue of the Hacker there was an interview with Tom Metcalf in which he mentions doing several samples of session singers in New York. This is the first disk to come out of those recordings and I believe there will be more. This is Ensoniq's second vocal disk and is the sort of material you would hear in commercials.

SAMPLE 1

Lower & Upper: "AH"

L1/U1. That's right, open wide just like the Doctor says. This is an ensemble setting. It could be as many as four people on each note. The sequence used is a song entitled "You're Not Alone" by the band "10 CC". This tune shows off the most usable part of the range (E2-B4). You actually could get away with playing B1 but that is about as low as you could go and still be recognized as voice. Velocity controls volume and also will make things a bit brighter. Transitions are decent but at the top of each samples' range, things get a little funny. At the last fifth or so looping is more apparent making it harder to use. Now this is ensemble singing so in all but the highest range the looping is hard to notice at all.

L2/U2 gives a slower attack. It is a very light, ethereal feeling. It also has a longer release time so be careful. It's easier for the notes to get in each other's way with this setting.

L3/U3 has a quick drop in volume followed by a moderate sustain and a longer release time than L1/U1. Chorusing is used to exaggerate the singing ensemble.

L4/U4 is the equivalent of L2/U2 only it's gated. As soon as you release the key it dies. The volume just vanishes. This is a bizarre sound but it is good for

certain phrasing, for instance, Barber Shop.

SAMPLE 2

Lower: "Bum" & "DO".

Upper: "DO"

For anyone who's wondering, we think the sequence is either "Love and Marriage" or the theme from the "Smothers Brothers Comedy Hour". Maybe they're both the same thing. If anyone out there wrote this song let us know.

L1/U1. In the lowest range we have "Bum" which of course is a very popular syllable for singing bass parts. The loop point on this one manifests itself as a sort of jiggly vibrato which sounds a lot worse than it is. I like the area from A1-A2 best. C1-G1 is getting right on down there. Kind of hard to discern. Above A2 if you sustain a note very long you're getting into Munchkin territory. This syllable definitely sounds best played in a staccato style. At F3 we have low "DO's". The lowest one is just a bit too low. At A3 it sounds pretty good and stays that way up to about C5. I myself wouldn't use this above E5 very often. A few notes are OK but if you draw too much attention to that range the loop point sticks out.

L2/U2 gives us a much slower attack with chorusing. The filter is closed up with the net result being the ghostly ethereal background pad. It takes away some of the vocal character.

L3/U3 takes away all of the vocal character. This uses a variety of the analog features to create a sound which is more like a steel drum. This is a very nice sound and a great example for someone who is wondering how much you can change a sound on the Mirage.

L4/U4 is similar to L2/U2 only the release time is instantaneous as you let go of a key. If I try to play the keyboard normally it sounds as if I were listening to a record playing backwards.

SAMPLE 3

Lower: "OO"

Upper: "LA"

I do not recognize the sequence used here but it is quite beautiful and, as you would expect, a good example of this sample.

L1/U1. The "OO's" in the low end have a slow attack, long sustain and a long release time. (Now let's see, what can I say instead of ethereal?) This is real church-like. You know - like Gregorian chants. At G1 we have our first "LA". The top 6 notes or so are Mickey Mouse time. Up to that point they're good. Transitions are not perfect but certainly acceptable.

L2/U2. The main differences here are the "OO's" are now chorused and the mod wheel will introduce vibrato. In U1 the mod wheel is disengaged.

L3/U3 have a quick attack making the beginnings of

notes more distinct. They then sustain for a fair length and have a lengthy release time. Chorusing is also present. The range of the "OO's" is extended to C4.

L4/U4 resemble all of the other samples. The release time is instantaneous so normal phrases sound backward.

Well, with all of these new disks I'm really starting to think I need 2 Mirages. Also, it seems to me that now that the Mirage has been around for a year or so, the art of sampling is starting to show. Every new disk I get seems better than the last one. One has to wonder how far we can go with this. There are probably still a lot of new techniques to discover and apply.

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HACKERPATCH

Turtle Beach ESQ-1 Sound of the Month

This month: An imitation of a DX7 imitating a Fender Rhodes Electric Piano

You've all heard the clean, bright, digital sounding DX7 electric piano sound. The DX7 actually does a better Fender-Rhodes sound than an actual Rhodes!! This patch brings that type of super percussive, clean bell sound to the ESQ-1.

Interestingly, this patch does not use either of the electric piano waves available in the ESQ-1. I decided to create the Rhodes sound from raw fundamentals rather than one of the sampled waves. The meat of a Rhodes sound is a sinewave (OSC3). Depending on how you adjust the harmonic balance, you can add certain amount of tone an octave above the fundamental tone. I used OSC2 for the higher octave. You can fiddle with the mix to suit your taste. Note that OSC2 is slightly detuned to 'warm' simulating the metallic tine being hit by a hammer. To do this, I set up OSC3 to play at the very top of its range and added velocity mod to randomize the tone a bit for a more realistic sound. If this patch is too clangorous for you, try running OSC3 on an even octave or fifth above the fundamental and removing the VEL2 mod altogether.

Programmed by Roy Smith

Program Name : DXRHO

Envelopes -----
 L1 L2 L3 LV TLV T1 T2 T3 T4 TK
 1 +63 +45 +00 63 00 00 08 00 00 01
 2 +63 +38 +00 00 00 00 13 25 38 00
 3 +63 +30 -28 26 22 00 22 30 32 22
 4 +63 +47 +00 63 63 00 41 50 11 21

Filter -----
 Freq Res Kbd Mod1 Amt Mod2 Amt
 005 00 62 VEL 2 +43 OFF +15

Oscillators -----
 Oct Semi Fine Wave Mod1 Amt Mod2 Amt
 1 +0 00 00 SINE LFO 1 +00 OFF +00
 2 -1 00 03 SINE LFO 1 +00 OFF +00
 3 +2 01 00 SYNTH1 KBD +63 VEL 2 -1

Split/Layer -----
 S/L Prog Layer Prog Split Prog Key
 Off INT 01 Off INT 01 Upper INT 33 60

LFOs -----
 Freq Reset Human Wave L1 Delay L2 Mod
 1 20 Off On TRI 00 01 00 OFF
 2 12 Off Off TRI 63 00 20 OFF
 3 12 On Off TRI 63 00 63 WHEEL

Modes -----
 Sync AM Mono Glide VC Env Osc Cyc
 Off Off Off 00 Off Off On Off

DCAs -----
 Level Output Mod1 Amt Mod2 Amt
 1 46 On ENV 2 +49 OFF +00
 2 63 On ENV 2 +35 OFF -63
 3 20 On ENV 3 +38 KBD +18
 DCA 4 Pan PanMod Amt
 4 +58 08 LFO 3 +63

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PLAYING BETWEEN THE KEYS

REPROGRAMMING TEMPERAMENT ON THE MIRAGE

By Richard H. Lord

Most of us are used to the equal-tempered scale for our instruments, and for modern music that is the standard. There are other ways to tune the notes within an octave (temperaments) that have been used by composers of earlier times, and these temperaments produce a more harmonious relationship between intervals of the fourth and/or fifth. A more detailed discussion of temperament was presented in my article, "Playing Between the Keys", which appeared in Issue #4 of the HACKER.

If you are interested in making your Mirage play in different temperaments, there is a way to change the factory programming. You will need to alter your operating system after it is loaded from disk and this requires access to the OS memory in the Mirage. Since this memory is not accessible through the MIDI data transfer commands, you must find a way to get into it. The simplest and most direct way is to build a plug-in ROM card like the one described in my article "Venture Deep Inside the Operating System With a 'Monitor' ROM" in issue #13 of the HACKER. If you plan to reprogram the temperament of your Mirage, you either will have to build such a ROM card or have access to one. (Actually, a sneakier, easier, more clever way into the OS is also a possibility. If you don't have the Monitor ROM, watch for future articles.)

Before we change the temperament, it is useful to understand how the Mirage generates the pitch of a note in the first place. The actual pitch is programmed into the custom Q-chip as a 16-bit value which the Q-chip uses to increment a "phase angle" register. The larger this value, the larger the size of the steps the Q-chip takes as it steps through the wavetable and the more quickly it completes a cycle. (The step rate is constant.) Thus the larger the number, the higher the pitch of the note.

If the Mirage had to compute the correct value for this number every time a note was played or the pitch was bent or modulated, the response would be very poor. If the correct values for every possible note were simply stored in a table, then the instrument could not be tuned nor could you have pitch bend or vibrato. Instead, the Mirage uses a combination of tables and simple arithmetic.

To accommodate tuning and pitch bending, the octave is subdivided into 256 parts instead of 12. These steps in pitch are small enough to appear continuous when the pitch is bent. The 256 pitch numbers for the highest octave that the Mirage can play are stored in the pitch conversion table. This table is permanently programmed into the ROM inside your

instrument at memory locations F94D through FB4C. To sound pitches in lower octaves, the 16-bit number from this pitch table is scaled (divided by 2) for each octave below the highest.

Let us follow the pitch derivation of a single note as illustrated in figure #1. When the "A" above middle "C" is struck on the keyboard, the keyboard produces the MIDI code for the pitch of that note. The code for this "A" is hexadecimal 45, represented as 45H in the diagram. This value is received by the operating system and divided by 12 decimal to yield an octave and a note number within that octave. For our "A" this computation gives us the 9th note in the 5th octave. Since a Mirage octave is divided into 256 parts instead of 12, a "temperament table" is used to convert the note number into an index into the 256 entry pitch table. Fortunately, this temperament table appears in the operating system RAM where we can play with it.

Once the note number has been converted by the temperament table, it is combined with the octave number to form a 16-bit word. In our example, the ninth entry in the temperament table is hex C0 and when combined with the fifth octave produces the hex number 05C0. To this number we add the master tuning and the relative tuning. Parameter 21 (Master Tune) controls the lower 8-bits of the master tuning value. The upper 8-bits are zero. The relative tuning value is assembled from parameter 67 for the most significant 8 bits (the octave) and parameter 68 for the lower 8-bits (pitch within the octave). Since normal values of master tuning and relative tuning are 0031 hex and 0380 hex, the operating system subtracts the sum of these values (03B1 hex) before adding the master and relative tuning back. In our example, the master tuning is set to 0032 hex and the relative to 0386 hex so that the net result is 0007 larger than the original value, or 05C7 hex.

Once the tuning parameters have been added, the vibrato and pitch-bend values are added in. If we bend our "A" up to "C" by adding an offset of 40 hex from the pitch bend wheel, then we will get a value of 0607 hex or "C" of the next octave. The vibrato and pitch bend values are signed numbers so that they can either add to or subtract from the present pitch. In our example, neither vibrato or bend is active so the final value of our note is 05C7 hex.

It is this number that is finally used to compute the 16-bit value that will be sent to the Q-chip. The number is split into octave and pitch. The lower 8-bits are used as an index to the 256 entry pitch conversion table (in ROM) where in our example C7 hex points to the value 7D3C hex. The upper 8-bits or

Temperament Tables for different scales

XXXX = Exact 16-bit value
XX = Nearest 8-bit pointer

	Pythagorean	Van Zwolle	Meantone	Silbermann I	Silbermann II	Rameau	Werckmeister III	Werckmeister IV	Werckmeister V	Werckmeister VI	Kirnberger II	Kirnberger III	Italian 18th Cent.	Equal Tempered
C	4911	4911	4911	4911	4911	4911	4911	4911	4911	4911	4911	4911	4911	4911
C#	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D	4E06	4E06	4C32	4CCD	4D26	4D26	4D7F	4CF9	4CF9	4DB9	4D7F	4D7F	4D69	4D69
D#	18	18	0F	12	14	14	16	13	13	17	16	16	15	15
E	5233	5233	51A5	51D4	51D4	51D4	51EB	51D4	51EB	520A	5233	51EB	51D4	5203
F	2C	2C	29	2A	2A	2A	2A	2A	2A	2B	2C	2A	2A	2B
F#	5698	57C7	577B	572F	572F	572F	56E4	56FD	56E4	56EE	572F	56E4	56E4	56E4
G	3F	44	42	41	41	41	40	40	40	40	41	40	40	40
G#	5C79	5C79	583A	58A4	5C0E	5C0E	58D9	5C0E	58D9	5C79	58D9	58D9	58D9	5C0E
A	57	57	52	54	55	55	54	55	54	57	54	54	54	55
A#	616C	62C0	61C0	61A4	61A4	61A4	61C0	616B	616B	619C	616C	616B	6188	6188
B	6A	6F	6B	6B	6B	6B	6B	6A	6A	6B	6A	6A	6B	6B
B#	6808	6808	65F0	66A2	6719	6719	6754	6719	66FB	6808	6754	6754	6754	6754
C	82	82	7B	7D	7F	7F	80	7F	7F	82	80	80	80	80
C#	6D99	6D99	6D3A	6D5A	6D5A	6D3A	6D3A	6D1B	6D99	6D63	6D99	6D3A	6D3A	6D79
D	96	96	94	95	95	94	94	94	96	95	96	94	94	95
D#	7509	7509	71EB	7F21	7376	7397	73DA	7376	7376	73AF	743F	73DA	7389	73FC
E	AE	AE	A4	A7	A9	A9	AA	A9	A9	A9	AB	AA	AA	AB
F	7B4C	7B4C	7A0D	7A77	7A77	7A77	7A77	7A30	7A77	7B4C	7A77	7A77	7A54	7AE1
F#	C1	C1	BD	BF	BF	BF	BF	BE	BF	C1	BF	BF	BE	CO
G	81E5	83AB	82C7	827B	827B	814F	8256	827B	81E5	8266	81E5	81E5	81E5	8230
G#	D5	D9	D7	D6	D6	D3	D6	D6	D5	D6	D5	D5	D5	D5
A	8AB6	8AB6	8861	8927	89C6	89EE	89C6	8976	89C6	8AB6	89C6	89C6	899E	89EE
A#	ED	ED	E6	E9	EA	EB	EA	E9	EA	ED	EA	EA	EA	EB

by R.H.Lord

Figure # 2

Pitch Computation in the MIRAGE

by R. H. Lord

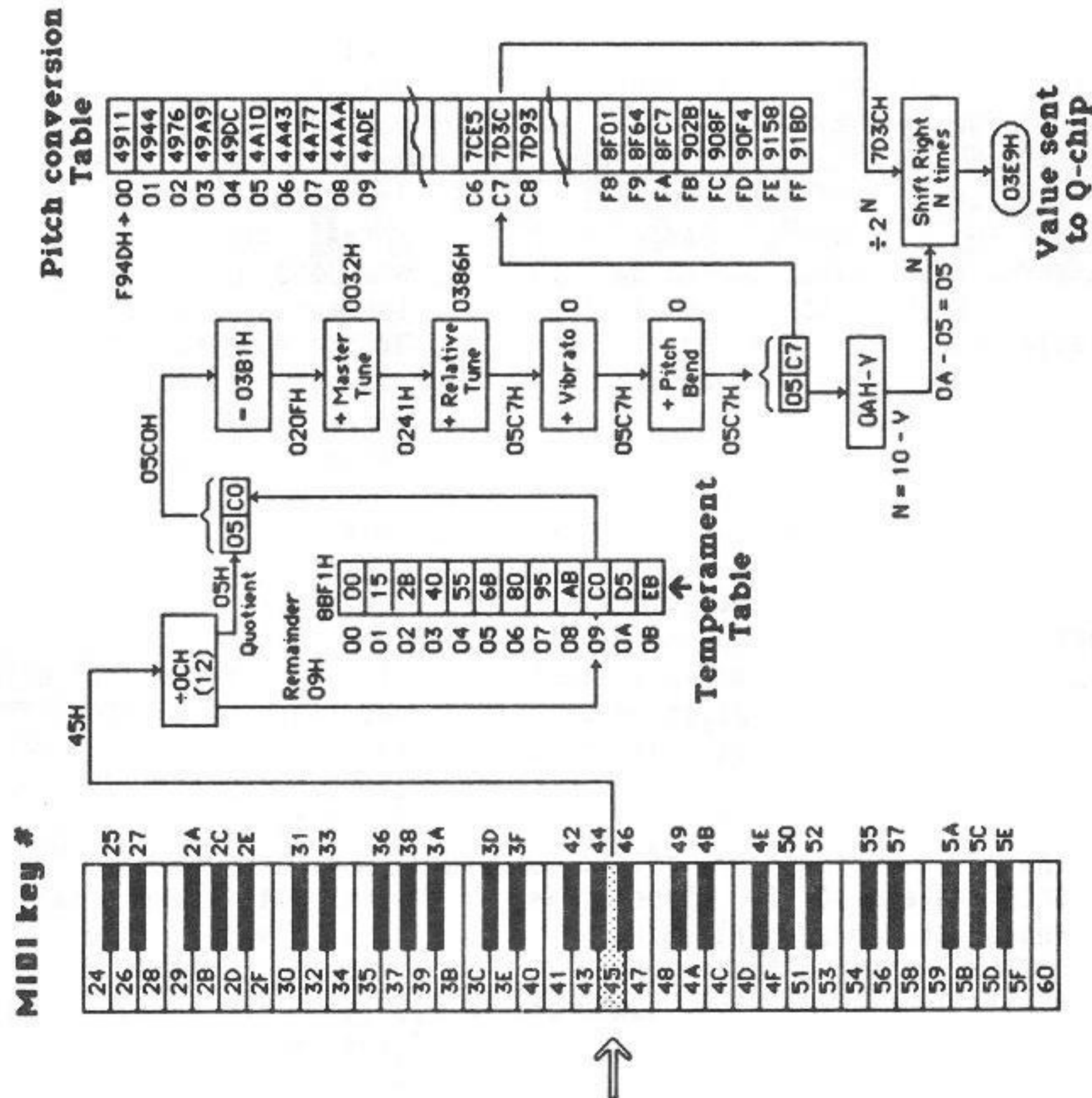


Figure # 1

octave are subtracted from 10 (the highest octave) to see how many times the 16-bit value should be scaled (divided by two). Note that a hex number can be divided by two simply by shifting all of its bits to the right once. The rightmost is discarded and a binary zero is inserted at the leftmost bit by this operation. In our example the 7D3C is shifted right five times to give 03E9 hex, the 16-bit value that finally gets sent to the Q-chip.

Obviously, the secret to changing the temperament of the Mirage lies in what is stored in the "temperament" table. For equal temperament, the steps in our table should be equal. If you examine the table in Fig. 1 carefully, you will see that the steps are not all equal. Ensoniq had to make a slight compromise to have all the advantages of a 16-bit octave/pitch word. Note that 256 is not directly divisible by 12. The result is 21.3333 and the temperament table has steps of 15H, 16H, 15H, 15H, 16H, 15H, 15H, 16H, 15H, 15H, 16H, and 15H in order to come out even. This means that eight out of the twelve notes in our octave are slightly out of temperament, although the error is less than one Hz at A440. While this error is not significant in an equal tempered scale, it will cause an audible beat in meantone and Pythagorean scales.

Figure #2 lists hexadecimal temperament tables for 14 of the most common temperaments (including the equal tempered scale programmed into the Mirage). These tables are based on a constant pitch for "C" so you will have to retune if you wish to maintain the pitch of "A". First the 16-bit pitch conversion value is listed and then under it, the 8-bit pointer to the nearest value in the pitch conversion table. To change the temperament of your keyboard you need only replace the temperament table in its operating system RAM with the list of 8-bit pointers under your desired temperament. Purists may feel that the errors introduced by the step-size of the 256 entry table are too great for pure temperaments. It is possible to tweak the pitch conversion table to get more accurate temperament, but this will cause significant implications to both pitch bending and tuning. The 16-bit values are provided for the intrepid, but a workable implementation of exact pitch cannot be covered in this article.

If you have a "monitor" card installed in your Mirage, here is a step by step procedure for changing temperament. With the monitor card disabled, boot your keyboard from a sound disk. Note the operating system version. Now flip the monitor card switch to "enable" and press "Load Upper", "Load Lower", "0", and "Start" to bring up the monitor program. If you have properly connected a 1200 baud computer terminal to the monitor card, you should see a display that says "Ensoniq Monitor ROM" and shows ">" on the next line. You are now able to examine and modify the operating system memory of the Mirage.

The temperament table appears at 8884H in versions 2.2 and 2.3, at 886DH in version 2.4, at 88C7H in version 3.1 and at 88F1H in version 3.2 of the operating system. If you started with version 3.2 then you can start modifying the temperament table by

typing M88F1. The terminal should show you "88F1 00" which is the first entry of the table. Since all tables begin with 00 you can step to the next by typing the space bar. The terminal will show "88F2 15". If you are planning to enter the meantone scale, type 0F. This will replace the 15 with 0F and then display "88F3 2B". Enter 29, 42, 52, 68, 78, 94, A4, BD, D7, and E6 to complete the table. After the last entry type the "RETURN" key to get back to the monitor.

You have now programmed the meantone temperament into the operating system. To return the Mirage to operation you must now re-start its computer inside the operating system. To do this type JF148. This will cause the Mirage to start running the operating system at F148 hex and you will be able to hear the new temperament. Since this change is not saved on disk, you must reprogram the temperament every time that you boot the operating system. Writing the changes on disk is quite another matter which I will save for another article. Meantime, have fun exploring temperament on your Mirage.

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TECHNIQUES

BEYOND THE ADVANCED SAMPLERS GUIDE - Part 1

By John Connolly

Technical Assistance: Mike Shawaluk

Greetings, Mirage owners! This article is aimed at all you folks who are interested in interfacing your Mirage to your computer. I will present a few corrections to the ASG, as well as explain some of the basics regarding how MIDI works.

When I first approached interfacing the Mirage to my computer, I looked into sending data at 4800 baud, because the Mirage supported that baud rate using Parameter 92, serial port baud-rate switch. There are two problems with this approach:

1) A special non-MIDI cable would need to be custom made, and when I switched back to MIDI I would have swap cables on the back of my computer quite frequently, and

2) 4800 Baud is less than one-sixth the speed of MIDI, and an entire sound file would take 5 minutes to send to the Mirage.

After investigating some assembly language that initializes the serial port on my Macintosh, I found out something very interesting. Many people mention that their computer does not support 31,250 baud, and use that as a reason to use 4800 baud instead. I spent hours looking at a MIDI port initialization program, but could not see where the baud rate was being set. The answer was that it was not setting the baud rate, but was using a number to divide the incoming clock to make it 31,250 baud. The fact of the matter is that the MIDI interface sets the baud rate, not the computer!

This concept is called "external clocking", whereby the serial port on the computer is set to a certain rate based on what frequency the clock is. For instance, most MIDI interfaces use either 0.5 MHz, 1.0 MHz, or 2.0 MHz. The secret of MIDI is that the baud rate is arrived at by telling the computer to divide the incoming .5 MHz, 1.0 MHz, or 2.0 MHz clock by a number, say 32. 1.0 MHz is equivalent to 1000 kHz, and if you divide 1000 by 32, voila! You get 31,250!

Most computers that have a serial port also have some form of serial chip, or UART, Universal Asynchronous Receiver Transmitter. Find out which communications chip is in your computer and order a technical reference manual from the manufacturer. You will find that the communications chip has a unique address, and using offsets from this address you can gain access to the various registers. For instance, adding the value 8 to the chip address may give you access to the write register(s). Each chip has its own set of offsets. That's why the technical manual

on the serial chip is necessary. There are usually several registers, categorized by whether they are read or write. There are usually several read and write registers, but most of the time there will be one read-data register and one write-data register. The other registers are used to set the communication parameters, like dividing the incoming clock by 32. I cannot go into all the parameters, so call me at the MacMusic BBS and leave a message if you need more specific information. Here are some basic MIDI parameters - 8 data bits, 1 start bit, 1 stop bit, no parity, no DTR, asynchronous.

If you're planning on using a high-level language to write your program, you may need to call assembly-language briefly initially to get the communication settings right. Look in your programming language manual under "interfacing with assembly language" or "machine code".

So, you've now got the right communications settings, a MIDI interface, and you're all ready to send system exclusive data! Rule #1, it is always easier to send data than to receive it. So you will want to use the right system exclusive command to send the data. With MASOS 2.0, there are four commands pertaining to sending data TO the Mirage. They are 3.1.6, 3.1.7, and 3.1.8 in Appendix C of the Advanced Samplers Guide. Certain System Exclusive Commands are hard to understand. If you look at the Wavesample and Program dump tables, you will notice that there is a *1 by some of the parameter values. The footnote in the ASG says "Parameters with this mark (*1) are displayed divided by 2". What this means is that the value actually in the Mirage is two-times the value on the display. The Mirage looks at the number and divides it by 2 before displaying it. The problem is that some are also supposed to be multiplied by four, and those are not marked in the ASG. Also, some of the parameters that need to be multiplied by two are not shown in the ASG either. Here are the corrections you need to make to your ASG:

PAGE 92: Wavesample Control Block
Parameter [70] Divided by 2
Parameter [71] Divided by 2

PAGE 93: Program Parameter Block
Parameter [34] Divided by 4
Parameter [35] Divided by 4
Parameter [36] Divided by 2
Parameter [37] Divided by 4
Parameter [45] Divided by 4
Parameter [46] Divided by 4
Parameter [47] Divided by 4
Parameter [48] Divided by 4

Parameter [49] Divided by 4

PAGE 94: Program Parameter Block (Continued)

Parameter [55] Divided by 4

Parameter [56] Divided by 4

Parameter [57] Divided by 4

Parameter [58] Divided by 4

Parameter [59] Divided by 4

The parameters in the Configuration Dump Table (Page 94) that have the "*1" after them are correct. The only thing in the table that's incorrect is Parameter [22], Pitch Bend Range. Ensoniq has been playing with the range of values which now goes from 1 to 12. Older operating systems allowed you to fine-tune the pitch bend to smaller intervals, and I think people found this to be more trouble than it was worth.

What do all those System Exclusive Commands Mean?

You really have to read Appendix C in the ASG carefully to figure out what they're saying. It's segmented into two categories: Receive Data and Transmit Data. Don't get confused - If you want to send a System Exclusive command to send data, do not look in the section marked "Transmit Data". These sections refer to whether the system exclusive command is coming through the MIDI IN port (Receive Data) or the MIDI OUT port (Transmit data). For the most part you will want to look at "Receive Data", because it is the only user controllable section, "Transmit Data" is completely controlled by the Mirage and the System Exclusive commands it generates. On Page 84 of the ASG the system exclusive commands use the word "dump". This means send from the Mirage through the MIDI OUT port to the computer. On page 85, section 3.1.5, the terminology says "Used to ask the Mirage to send waveform data from the Absolute Address specified in the message."

This sounds complicated, but it's really pretty easy. The "Absolute Address" is just a number in the range 00-FF (hex), representing the same memory in the Mirage that the wavesample parameters apply to. If you wanted to, for instance, send all 256 pages of wavedata in the Mirage, the start address would be 0 and the end address would be FF (or 256 decimal). Then look at section 3.1.6 on page 85. It says "Used to send or receive data to or from the Mirage from the pointers passed in the message". This sounds way too complicated - the "pointers" are merely the start and end addresses of the wavesample parameters, in the range 00-FF (hex). I use this command to send data TO the Mirage.

Notice that the start and end addresses and all wavedata and parameter information needs to be sent in the form of "Nybbles". This is because the Mirage would confuse system exclusive commands with wavedata. System exclusive commands are recognized by the most significant bit set to "1". Some wavedata also would have this bit set, so data is reassembled into smaller chunks so that the most significant bit can always be "0". To do this, I create two new variables in my program called "LSB" and "MSB". If the variable that contains the wavedata is called "byte", then to get the nybbles do

this: `LSB:=byte and $0F, MSB:=byte>>4`. If you "And" any byte with 0F (hex), you will get the least significant 4 bits in the new variable "LSB". To get the most significant byte, you can use a "bit shift" function. To do this just bit-shift the variable byte right by 4 bits, and you will have the most significant byte in the new variable "MSB".

Now, the checksum. Again, the ASG on page 86 is somewhat unclear. "Checksum: formed as a modulo 128 add of all the data nybbles plus the nybbles of the start and end addresses". An easier way to arrive at this number is to just accumulate the total into a variable, and then clear the most significant bit.

Now, on to section 3.1.8 on page 86. This command transfers wavedata into the wavesample selected by Parameter 26. I did not understand the terminology "page count" at first. Page count is simply the number of 256-byte pages you are sending to the Mirage. This is a handy command, because you can create your own wavedata files using graphics programs, and if you scale the Y-Axis values in the file to be between 0 and 256, you can send ANY file to the Mirage into the currently selected wavesample. If you need some wavedata files to experiment with, call me at the MacMusic BBS (503) 646-2095, and leave a message to the SYSOP, I'll see that you get a few files to work with.

Other Hints And Tricks

These are various "special tricks" that people have tried that work for them. They are provided only as means for speculation and are not guaranteed.

One such trick is that after you finish sending data to the Mirage, change the program from 1 to 2 then back to 1. This apparently resets something in the Mirage.

Another is that after sending an entire Sound File (Program AND wavedata) you need to reset all loop switches by turning the ones that are on off then back on again.

Yet another trick is that if any of the velocity ADPSR (Parameters 45-49, and 55-59) are 31, to change that value to 32 before sending to the Mirage.

When using the Wavesample Dump Absolute (Page 85, 3.1.6), you need to specify one address PAST the end address. Example, to get page 1, you would use 00 as the start address and 100 as the end, not FF. This was found when receiving data from the Mirage to the computer, but has not been shown to be true when sending data to the Mirage.

If you have any tricks of your own that you'd like to share, please post a message in the Ensoniq message section of MacMusic (503) 646-2095 so that others can benefit from it.

About the author - John Connolly is the president of Beaverton Digital Systems and SYSOP of MIRAGE-NET (MacMusic) - the BBS for Mirage owners.

CLASSIFIEDS

USER GROUPS

CHICAGO AREA USER GROUP. Membership list is about 20 and growing. Sound trading. Cheapest prices on blank diskettes available. Collaboration with other Mirage users when creating new sounds. (Help with looping, etc.) Meetings held at a recording studio. Mirage area rep to join us when in the area. No dues or membership cost. Interested in using Digidesign's additive waveform approach. John Adams, (312) 834-3779.

BIG MAMA RECORDING STUDIO is interested in contacting other Mirage owners in East Tenn. and Western N.C. area to start user group, exchange sounds and info. Norbert Stovall, (615) 577-5597, Knoxville.

I am interested in starting or joining a user group for the Ensoniq ESQ-1. If there is anyone out there interested in trading patches, sequences and tips, contact me. Bob Wham, 1-214-454-6792, 4900 Joe Ramsey Blvd., #1303, Greenville, TX 75401.

THE International User's Group. Don't have to sample. Just enjoy the software. Join M.U.G. for the price of one factory disk. Receive one complimentary disk of samples. Monthly lists of quality user samples. One year membership: \$20. Lifetime: \$65. (2 free disks.) Checks or M.O. payable: G-4 Productions - M.U.G., 622 Odell Ave., Yonkers, NY 10710.

Now forming the Mirage Users Group of Orange County. Interested parties may contact Aaron Hallas (714) 821-6196.

LET'S SWAP SOUNDS. I am interested in forming a users group to meet monthly in the Chicago area. (312) 432-7246.

British Mirage owners should all contact the United Kingdom Mirage User Group. You are bound to hear something to your advantage. Phone Matthew on 089275516 or write to: 2, Walnut Tree Cottages, The Green, Frant, N. Tunbridge Wells, East Sussex TN3 9DE.

Seattle area user's group. Call Loren at (206) 241-7825.

SAMPLES

Mind roasting samples for the Mirage sampled in a state of the art 24-track recording studio using ENHARMONIK VDS SYSTEM visual display/editor and synthesis module. Disk 1: "Mostly Percussion" 8 snare drums - gated, rimshot, hits, etc. Latin percussion - congas, timbales, tambourines, cowbells, cabasa. Unusual -2x4, garage door, wooden crates, and more! Disk 2: "Mostly Voices" neat voices! Breathly, percussive, phrased, etc. Whistles and burps, too! Disk 3: "Mostly SFX" sound effects. Nuclear bomb, guns, race cars, dogs,

ducks, and a car wreck. Disk 4: "No Samples" These sounds are not sampled! They are created in software using digital synthesis algorithms in the VDS SYSTEM. Karplus Strong plucked strings, FM sounds, analog sounds, pulse waves, and much more! \$10.00 per disk (California residents please add 6% sales tax.) Send check or money order to ENHARMONIK PRODUCTIONS, PO BOX 22243, Sacramento, CA 95822. (916) 383-1410.

I.A.M. PRODUCTIONS gives you two hot new sound disks. These disks have been created to give the Mirage user maximum sound usage. DISK 1 "Exploration in Percussion and Drums" is a collection of 20 percussive and drum sounds. This diskette explores new electronic drum sounds while giving an odd twist to present day drum realism. Sounds included are 3t Bass, Fat Snare, Snap Click, and the Extremely Fat Bassdrum. DISK 2 "Effects and Drums" stretches any user's imagination to the limit. This diskette contains 17 odd effect and drum sounds. These sounds range from the beat of a ping pong ball to the bark of our dog Rover. Other sounds included are a glass tap, uprise, and wind thump. This disk is a must for every collection. Each diskette is available at \$17.95 + \$2.95 shipping and handling. Mail personal check or money order to I.A.M. PRODUCTIONS, 412 NORTH 11TH ST., NEWARK, NJ 07107.

We have ALL kinds of Mirage samples: Minimoog, bells, fat analog and DX7 synths, numerous drums, humorous, you-name-it. Professionally recorded and sampled in recording studios, computer-edited to save memory and disk-load time. From \$17.95. Send \$1 for listing. Livewire, Dept. TH, 79 Shrewsbury, Oceanport, NJ 07757.

Anyone interested in trading Mirage sounds or information, please call or write Jack Loesch, 162 Maple Place, Keyport, NJ 07735. (201) 264-3512.

I will swap sounds with anybody anywhere in the world. Send me a list, tape, or disks of what you wish to swap. I will send you some excellent quality original sounds immediately. Write to: 2, Walnut Tree Cottages, The Green, Frant, N. Tunbridge Wells, East Sussex, TN3 9DE. Great Britain.

WOW!! Novelty disks - The Three Stooges, Warner cartoons, Johnny Weismueller "Tarzans," Johnny Carson Show, etc. Fully guaranteed at \$15.95 per disk. For list and prices, send S.A.S.E. to: Talance Recording, 906 E. Elmwood Ave., Burbank, CA 91501.

MIRAGE OWNERS. New from OASIS - A virtual sound effects library at your fingertips. 10 new disks, 24 effects per disk, \$19.95 each. Send \$1 for catalog or \$5 for catalog plus demo cassette (refundable with first purchase). To: OASIS SOUND LIBRARY, PO BOX 1006, FULLERTON, CA 92632.

SERVICES

WHY PROGRAM WHEN YOU COULD BE PLAYING?? Alternate sound patches for DX7/TX7, CASIO, KORG DW8000, ROLAND JX8P/10, JUPITER6, MIRAGE and all JUNO's from only \$15.95. Demo's available. Livewire Audio, Dept TH, 79 Shrewsbury Ave., Oceanport, NJ 07757. (201) 870-3115.

EQUIPMENT

Garfield Nano Doc - Complete 24-48-96 tape write/read sync, & multi clock synchronizer. Brand New. \$150.00 firm. (818) 843-0328.

For sale or trade: alpha Syntauri+Versatracs with complete software, systems hardware, 5-octave keyboard. Runs on Apple II (not included). \$1800 firm or trade for ESQ-1 with complete accessories. Call Keith (609) 884-3729.

Mirage Keyboard, mint condition. Visual Editing System. Advanced Sampler's Guide. Triton disk copier, standard factory disks, all guide books and assorted papers, and all back issues of the Hacker. The whole Kit 'n Kaboodle \$1500. Phone Mark Wright at (619) 445-5074, or write 1222 Willowside Terrace, Alpine, CA 92001.

Ensoniq Mirage keyboard, original version with S/N update kit, MASOS and Advanced Sampler's Guide, Triton disk formatter, Pro-Tec carrying case, 12 factory and 4 assorted disks. Used only in home studio. \$1500 or trade for ESQ-1. Ed, (213) 329-4888. Los Angeles area.

Ensoniq Mirage keyboard. Excellent condition. \$1395 or trade for Mirage Rack Mount. Roland MSQ-700 sequencer - \$395. Mirage flight case - trade for DX7 flight case. Call Bryan in Miami (305) 551-7589.

For sale - Mirage (revised version). Perfect condition. 6 months old. Includes 9 factory disks, 10 blanks, MASOS, more. \$1400 or trade for Ensoniq ESQ-1. Joe (215) 698-8424. Philadelphia area.

SOFTWARE

ADDITIVE SOFTWARE SYNTHESIS for Apple II, II+, IIe, compatibles... Pure digital for maximum dynamic range and minimum noise. Twelve discrete oscillators/envelope generators for complex timbres. This synth-on-a-disk makes looping effortless. Check or money order only. \$30 for Apple Demo Disk and Mirage Sound Disk. \$100 for Program Disk and full documentation. Requires Apple II or compatible (48k or more), Passport compatible MIDI card, and Ensoniq Mirage Keyboard or Rackmount. (No MASOS required, but recommended.) Dealer Inquiries Welcome! Ronald Pejril, The Graduate College, Box 319, Princeton, NJ 08544. S & H included.

COMMODORE 64 SOFTWARE - Disk based patch librarians for the C-64 and Passport/Sequential interfaces. DX/TX LIBRARIAN: works with DX-1, 5, 7, 9, 21, 27, 100, and TX-7, 216, and 816. Print names and voice

parameters. Single voice audition without erasing memory. 64+ voices included on disk. \$35.00. OB-XP LIBRARIAN for the Oberheim X-Pander or Matrix 12. \$35.00. DX/XP LIBRARIAN: The Oberheim/Yamaha combo - Works with all of the above! VDS SYSTEM: Visual display and editing for the Ensoniq Mirage. Hi-resolution graph of Mirage sampled waveforms. Editing. Software synthesis and analysis. Additive synthesis and FM synthesis. Display ALL Mirage parameters. \$100.00. Send check or money order to: ENHARMONIK PRODUCTIONS, PO Box 22243, Sacramento, CA 95822. (916) 383-1410. (California residents please add 6% sales tax.)

Discount computer software and hardware. We are dealers for DIGIDESIGN, SONUS, SYNTECH, ENHARMONIK, DR. T, HYBRID ARTS, MARK OF THE UNICORN, TRITON, and many more MIDI companies. LOW prices on RAM cartridges, MIDI mergers, computer interfaces, and CASIO SYNTHS. We stock sequencing and visual editing software for MIRAGE and other synths. Special package deals on ATARI ST computers. Call for pricing on our complete line of MIDI products for Apple, Atari, Commodore and IBM/compatible computers. Livewire Audio, Dept. TH, 79 Shrewsbury, Oceanport, NJ 07757. (201) 870-3115.

MIRAGE VISUAL EDITING SYSTEM software for Apple II. Includes Apple disk & Mirage disk. \$150. Call Marcus, (805) 987-9932.

WE'VE GOT THE LATEST music software for the 520ST, C64/128, Macintosh, IIe, and IBM. We sell software by Dr. T, Sonus, Southworth, Unicorn, Syntech, Music Service, and others. Also professional patches for the DX100/21/27, CZ series and Poly 800. Call or write for free information. LEISTER PRODUCTIONS, 806 S. Market St., Mechanicsburg, PA 17055. 717-697-1378.

Macintosh Software for the Mirage! At last, inexpensive software for your Mirage! MirageLib is a multi-function patch librarian and is available now for \$49. Also, SDFileConverter converts 16-bit Sound Designer (TM) files to 8-bit Sound Lab (TM) Wavedata files and sells for \$29. Send your check or Money Order to: Beaverton Digital Systems, PO Box 1626, Beaverton, OR 97075.

EMPLOYMENT

Rapidly growing keyboard company looking for representation in Canada. Excellent income, preference given early replies. Send resume to K. S., 110 963 Canada Inc., 5460 Royalmount, Suite 207, Town of Mount Royal, Quebec, Canada H4P 1H7.

PATCHES

ESQ-1 owners: 40 new sounds for your synthesizer, on cassette with data sheets, \$25. Also available, an ESQ-1 Patch Generation Program for the Commodore 64 with Sequential or Passport interface, \$20. Jamos Music, 1970 N Hartford #17, Chandler, AZ 85224.

MISC

Ensoniq Sound Disk Parameter Listings: Turtle Beach Softworks announces it is selling a complete set of ASG style printouts of all sounds on all Ensoniq factory sound disks from #1 to #18. The set costs \$24.95. Send to Turtle Beach, POB 5074, York, PA 17405. Custom listing service available too.

Aynone using the VDS or the MVES waveform editors for the C-64 please call (206) 241-7825 (Loren) or (206) 329-7281 (Anthony). Loren 3727 S 150th Number C, Seattle, WA 98168. We'd like to hear a hands-on approach review.

FREE CLASSIFIEDS!

Well, - within limits. We're offering free classified advertising (up to 50 words) to all readers for exchanging or selling your sampled sounds on Mirage-readable disks. Additional words, or ads for other products or services, are 15 cents per word. (Unless renewed, freebie ads are removed after 4 issues.)



The October issue of KEYBOARD has a fairly good article on the ethics of sampling various sources. Worth checking out.

* * *

Speaking of the competition, reader and part-time famous person Don Slepian has sold a terrific article to ELECTRONIC MUSCIAN about converting the Mirage to stereo (or eight channel) output. The mod also cuts the noise way down. The article is due to appear in the January issue. They have exclusive rights (sheesh!) so we can't print the same article here - but we do plan on doing an overview/evaluation in the near future.

* * *

The "Official Rumor" on the Canadian group that was working on memory expansion for the Mirage is that they are back in business. More news later.

* * *

Since our usual reviewer, Erick Hallstone, is getting into selling patches for the ESQ-1, neither he nor we think it's exactly cool for him to be doing patch reviews. We're looking for someone who can handle this. If you've got any ideas, please drop us a line.

* * *

We're actually putting together a reprint series!

The first two will be MIRAGE OPERATIONS and MIRAGE SAMPLE REVIEWS and should be available in about a month. These will be followed by SOFTWARE REVIEWS, QUESTIONS & ANSWERS, and HARDWARE HACKING. More will probably follow. In line with this, we're getting out of the photocopying business - back issues #1 through #8 are no longer available.

* * *

TRANSONIQ-NET

The following people or organizations have agreed to help with questions:

ESQ-1 QUESTIONS - Jim Johnson, (602) 821-9266. 5 to 10 p.m. Mountain Time (AZ).

MOVING SAMPLES - all over the place. Jack Loesch, (201) 264-3512. Eastern time (N.J.). Call after 6:00 P.M.

MIDI USERS - Eric Baragar, Canadian MIDI Users Group, (613) 962-0549. Business hours, Eastern time (Toronto, ONT).

MIRAGE COMPUTER BULLETIN BOARD - Provided by John Connolly of Portland, Oregon for information exchange and file transfer. Phone (voice): 503-641-6260. Phone (BBS/computer): 503-646-2095. Free messages. Yearly membership for upload/download: \$25.

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

MIDI & SEQUENCING - Leslie Fradkin or Elizabeth Rose, MIDI-MAX Studios. Eastern time (NY). Calls between 10am and 9pm. (212) 628-5551.

MIDI & SEQUENCING - Markus McDowell. Any cl' time. (805) 987-9932 (Calif.)

MIRAGE HARDWARE & FIRMWARE - Scott D. Willingham. Eastern time (NY). Days. (716) 477-8089.

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

MASOS - Pete Wacker. Mountain time (AZ). 3 pm to 9 pm. (602) 937-1177.

SOFTWARE - Paul Braun. (805) 583-5315.

If YOU'RE interested in being listed on the Net, please give us a call. (503) 245-4763.

CHANGE OF ADDRESS

Please let us know at least four weeks in advance to avoid missing any issues. The Post Office will not reliably forward this type of mail. 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!)

THE INTERFACE

Transoniq,

Can the sequencer control slave keyboards but leave the Ensoniq free to play anything else? Can MIDI or a version of DOS be capable of doing this? Why do the sounds when transferred from lower to upper [using MASOS] sound different. [I am also speaking of what seems to be a timbre change.]

Thomas O'Shea II
Austin, TX

[Ensoniq's response - The sequencer always plays the internal voices and out MIDI. Even with local off, there is no way to stop the sequencer from playing the internal voices. Also, the sequencer transmits on the same channel as the local keyboard, so any MIDI device played from the keyboard will be played by the sequencer as well.]

[Ed. - When moving sounds around, you also have to make sure to change the parameter settings to match.]

Hello-

Is there a way for the Mirage to expand the function of Parameter 30 (local on/off)? I would like to use the Mirage as a master keyboard for my Juno 106 and Yamaha DX-100, yet at the same time, hear a part being played from the sequencer on the Mirage. As an example, an MIDI Channel 1, the Mirage would be playing an acoustic piano part. My Juno would play strings on MIDI Channel 2 (again, played from a sequencer). My Yamaha would be adding a Rhodes part on MIDI Channel 3. Unless I am doing something wrong, the Mirage will not play the piano part when I use the local parameter, even though I am not actively using the internal sound generating circuits. Could the operating system allow use of 2 MIDI Channels at once - one to transmit to another synth (to use the Mirage as a master keyboard), and one other MIDI Channel to receive (from a sequencer) on the Mirage? Is such a modification possible, and would it allow the Mirage to playback a pre-sequenced track while simultaneously sending MIDI data on another channel to another synth, without voicing the new part on the Mirage?

Thanks for any info you can give me on this-
Don Goldberg
Hamden, CT

[Ensoniq's response - The Mirage does not support separate MIDI channels for transmit and receive. The Mirage sequencer does not control the Mirage over MIDI - it is strictly an internal function. It will always play the Mirage internal sound generators. You could turn local off, set the keyboard to transmit on a certain channel and receive in omni mode. This would allow you to play a specific

instrument on a single MIDI channel from the Mirage keyboard without using the Mirage voices, but would allow the Mirage voices to be played by an external device on another MIDI channel (since it would be receiving in omni mode).]

Dear Hacker:

I just received my first subscription issue of T.H. I find it very helpful in learning about the Mirage.

I am a physician with hobbies of music and computers. My current setup is a DX-7 master keyboard, MIDI'd to a Mirage rack-mount, CZ-101, and Roland JX-3P. I control this with either a Roland MSQ-700 sequencer or an Apple IIe with Master Tracks Pro & Passport Interface. I also use DX-Pro and MVES.

Although I am new to all of this (being born and raised on a Hammond B3) I feel that I am progressing fairly well regarding my knowledge of programming the DX-7 and CZ101. However, I find the written matter in the MVES and Advanced Sampling Guide quite difficult to digest and understand in some sections and phases of programming the Mirage. I have the greatest difficulty trying to visualize the relationship of "the sample" to pages, and the concept of the way to go about selecting areas to loop.

Questions:

1. Is there any "aftermarket" book written about the Mirage, such as are available for the DX-7, CZ101, etc. These always seem to be much more easy to understand than the material from the manufacturer.

2. Can you use MVES to save Mirage sound and parameter data on 5 1/4 floppies in addition to the 3 1/2 sound disks?

3. Defending the position of using Casio "A - B" Switch Boxes to use MVES with the Mirage rack and a master controller. I have found that alternating the programming between the Apple and the Mirage (directly) is a quick way to avoid constantly flipping the switches so sound can be played and heard. You just have to keep track of what you've changed on the Mirage directly and plug in the numbers in MVES so you can save all configuration parameters.

4. Do you have back issues of your newsletter that explain clearly:

A. The manipulation of sample parameters and parameter concepts.

B. Where can I find a clear explanation of the relationship of "pages" of a sample to the sample - and how to select appropriate pages of a sample to

work with? To loop? How about some application examples of the sampling techniques (step by step).

C. I'd really like to see a clear explanation of MASOS, Apple MVES and the manipulation of sampling parameters. This is what is really most important - I'd like to see written material on this in plain, understandable English!

Thanks,
Dr. Melvyn Bishow
Livingston, NJ

[Ed. - Issue #6 goes into MASOS and MVES. (More on MASOS in #12, #13, & #14.) Issue #4 covers parameters, and Issue #5 goes into pages, loops, and an application example. No aftermarket book out yet. We are definitely planning on putting together a reprint series containing past articles on various aspects.]

[Ensoniq - Regarding #2, no, you can't use MVES to save the sounds on 5 1/4 floppies. Unfortunately sampling is much more difficult in practice than programming a synthesizer. We are still learning new things about it. In defense of the ASG, a number of manufacturers of sampling devices are recommending OUR ASG as reference for THEIR equipment.]

Dear Sirs:

I study these letters to the editor in hope of finding an answer to a question. I have a rack-mounted Mirage which I play with an Alpha Syntauri keyboard. The Syntauri is, of course, installed in an Apple IIe. The Mirage is plugged into a Passport interface. The Mirage performs wonderfully except, of course, its keyboard parameters are not operational.

Isn't there some kind of software, sequencer or perhaps sequencer and sound/librarian, that would permit me to record multiple sequences with multiple Mirage sounds, play them back and edit the tracks?

Thank you,
Keith Hammond, M.D.,
Cape May, NJ

[Ensoniq's response - Any MIDI sequencer software will provide multiple, editable tracks. The Mirage can only play whatever sounds are loaded into it and only over the keyboard range intended. We do not support separate MIDI channels for each wavesample, there is only one MIDI channel for the entire keyboard. That shouldn't stop you from recording multiple tracks assigned to the same channel, though.]

Dear TH,

Great magazine, but don't let it go to your head. \$20 should buy a lot of paper.

I have a 520 ST, TX-7 and, last but not least, a rack

Mirage. Question: isn't it possible to write a program for the ST that would accept incoming patch data from the TX-7, attach the appropriate commands, send it out to the Mirage instructing it to save the info on its disk? Then, at a later time, be able to instruct the Mirage to send that data to the TX-7 (without the aid of the ST). It would be a great feature! Can it be done? How?

Thanks for your help.
Pete Iverson
Boise, Idaho

[Ensoniq's response - No, not as described. It could be done if you didn't mind keeping the 520ST in the loop. The Mirage is designed to transfer any data over MIDI as long as it complies with our System Exclusive data transfer protocol. The 520ST could load the data from the TX-7 using the TX-7 system exclusives, then transfer that data to the Mirage using the Mirage system exclusives. You could then instruct the Mirage to save the data to disk as if it were a sound (this is how we save ESQ-1 patches and sequences to disk). Unfortunately, the TX-7 can't understand the Mirage system exclusives, so it needs to go back through the 520ST (or some other computer) acting as translator.]

[Ed. - the paper's the easy part.]

TH,

My main technological concern at this stage, is determining what computer to buy: the Atari ST, the Apple IIe or the Macintosh?

Ideally, it would seem that Ensoniq should develop a complete software package for the Atari ST since it is less expensive than the Macintosh. Does Ensoniq plan to do so?

Thanking you in advance for your help,
Daniel Major
Quebec, Canada

[Ensoniq's response - We have no plans for further software developments. It is all in the hands of outside developers. We have heard that some developers are working with the ST but we don't know anything specific. The ONLY rule in buying a computer is "Get the one that does what you want." There are people who feel we should develop software for the Amiga, BBC Micro, NEC PC, etc., etc. Unfortunately, we don't have the resources to do this - but we strongly encourage and support any outside developers who wish to do so.]

Dear T.H.,

I'm having a problem with program changes via MIDI. I'm using Passport "Master Tracks" with a C-64 and a Passport interface. If the upper program 4 (preset 48) is the starting program of a track, the lower starting program may or may not begin with the assigned preset. It messes up about one time out of

four.... with no regularity. I'm using OS 3.0 or 3.1 (although 3.1 seems to hang notes that the 3.0 never does). I've never had this problem with any of my other MIDI synths. Is there a bug in the Mirage OS or the Passport program? No problems if I don't use upper preset 4.

My suggestion for the "wish list" - that both program numbers be displayed simultaneously when controlled by a sequencer. You never know if the number displayed is upper or lower.

I particularly benefited from your "Masos for the Masses" series. How about you guys publishing the parameters for the factory disks? Keep up the good work!

Regards,
Don Boomer
Visalia, CA

[Ensoniq's response - Use OS 3.2 - the latest version of the OS.]

[Ed. - Turtle Beach has started selling parameter sheets for the Ensoniq disks. See their ad in our classifieds. (Many of the editor programs will also do parameter printouts.)]

Dear Mr. Hacker,

I am the proud owner of the ESQ-1 and would like to know if the waveforms can be changed on this instrument. I have hacked on the question for about 8 hours and have not succeeded.

Thank you,
Joseph Novak
Hopelawn, NJ

[Ensoniq's response - The only way to change waveforms is to replace the waveform EPROMs - which are normally soldered in place. Generating new waveforms is a very complicated procedure as the waveforms must be multisampled and digitally processed for the proper results. A waveform map must then be created in the operating system EPROMs.]

Dear Transoniques,

Thank you for a well-put-together newsletter. I'm just starting to sample and hence diving into my Hackers to wring out any helpful information, as I find sampling sometimes frustrating as well as challenging and exciting. I've been sampling drum sounds from a Pearl 'Brain' and getting a lot of unwanted noise that doesn't seem to be part of the sound. I have been using the filter. Can fluorescent lights cause noise in sampling? Any suggestions?

Thanks,
Steve Robertson
Santa Cruz, CA

[Ensoniq's response - Although it's possible that you're getting interference, it's not very likely. Try sampling with the lights out to be sure. It is possible your ISF is defective. Try it on another unit. Remember you must work within the limits of an 8-bit system. Keep the input level as hot as possible (short of clipping) and adjust the output filters to track the sound to eliminate quantizing noise. Make sure the cutoff frequency of the ISF is set appropriately for the sample rate you are using to avoid aliasing.]

Dear Hacker:

First off, thank you very much for your invaluable newsletter.

My problem concerns the use of the Mirage with the Roland MSQ-100 sequencer. It seems that whenever I overdub, notes are cut off or even completely skipped. This occurs whether I am overdubbing in real time over step time or real time over real time, and it doesn't depend on whether I overdub on the same MIDI channel or a different one. I checked the positions of the switches on the back of the Roland unit and experimented with them to no avail. I realize that the Mirage cannot play back more than eight voices at one time, and I am using the latest Mirage software (OS 3.2). I called up the Roland people, and they informed me that they have been having some type of software incompatibility problems with some of the Ensoniq software, but they could not help me further than this. In all other instances, both the Mirage and the MSQ-100 have performed flawlessly. I have since sold my MSQ-100 unit, so the solution to this problem will probably be of use to others out there trying to use these two units.

Again, thank you very much for your excellent newsletter.

Sincerely,
Edwin S. Monuki
Gardena, CA

[Ensoniq's response - Check that both MIDI In and MIDI Out are not connected at the same time. Roland sequencers echo their incoming data to the output, causing the Mirage to play two voices for every note you hit. If the Mirage is in omni mode, the MIDI channel doesn't matter. We have successfully used the Mirage with many sequencers (including the MSQ-700) with no problems.]

Dear Hacker,

I have an IBM PC with a hard disk and the Roland MIDI interface. I would like to have my Mirage library on the hard disk as I do for my DX-7. I do not have a graphics card and can't afford "Vision". Is anyone planning on developing a straight library that I can access through MIDI?

David Beach

[Ensoniq's response - All of the information necessary to write a program to transfer Mirage sounds over MIDI for storage purposes is available to developers in the Advanced Samplers Guide. Remember that a Mirage sound is several orders of magnitude more data than a DX-7 sound. Loading and saving Mirage sounds over MIDI is a very slow process.]

Dear Hacker,

Transoniq Hacker is a great idea! I only wish I would have subscribed earlier!

I am a club disk jockey who sees potential in the Mirage for use in night club sound booths. I have purchased Passport's Master Tracks and interface for the Apple IIe. I intend to keep investing in my sound equipment for use in conjunction with turntables and mixers.

My problem is that I don't feel I am making quality progress on the Mirage. Can you suggest locations in Western New York where I can get some help, like lessons or informative demonstrations?

Also, please make some suggestions on extra effects that may help me turn on the dance floor to Mirage Mania!...(that is, if you have time).

Thanks,

Michael S. Wendt
Lockport, NY

[Ed., - It is a slow process. Your best bet is to watch our classifieds for user groups and the like. (You should probably be prepared to do a little traveling, though.) We'll keep publishing any tricks that come our way.]

[Ensoniq's response - We often run clinics in conjunction with our dealers. Try contacting local dealers to see if they are scheduled.]

Gentlemen, Gentlemen,

I believe Ensoniq has overlooked the real market breaker in sampling keyboards. Now that we have the keyboard that samples anything we want, where is the keyboard to store and play as many samples as we want? It seems that a keyboard specially designed to load, store and read sample patches at a one or two button pass, would create an excellent performance keyboard. I would purchase one yesterday. A Canadian firm hinted at developing a version of this, but, alas, gone with the snow! I am writing such a request to Ensoniq and I encourage others to, too. I'll bet if Ensoniq doesn't do it, the Japanese will and then more of our operating systems will be written in Japanese!

Brent Piranio
The Colony, TX

[Ed. - Such a dream machine would be on everyone's list. Unfortunately, the present cost of memory to hold all the data required would put its price in a whole different order of magnitude. But, even now, standards are starting to jell for high-capacity data storage via CD-ROMs. I would guess that in one to two years you may see such a machine.]

[Ensoniq's response - I can't add much to that! The cost of memory and the inherent load time delays are the major stumbling blocks at this time. The Canadian company - Virtual Engineering - is back in business. Look for more info from them shortly.]

Hi,

I've just purchased an ESQ-1. It's great! I'm sure the hot topic will be mass storage for the sequencer. Some of us are not into sampling (what?!!) but will want disk-based storage. Is there a SYS EX software system for the C-64? Or perhaps something even cheaper? Also, I can't seem to figure out how to load single voice programs. Have I missed something?

I consider this newsletter to be mandatory for any Ensoniq owner.

Thanks,
Peter Sturges
Vancouver, BC

[Ensoniq's response - By the time you read this, a patch/sequence librarian will be available from your dealer for the C-64 and IBM-PC.

Many people are buying Mirage Rackmounts as an ESQ-1 storage system and to get access to our library of sampled sounds. The C-64 disk drive (and most other low-end computer systems with disk drives) are notoriously slow.]

To whom it may concern,

I really want to add the Ensoniq ESQ-1 to my current studio setup. The only thing lacking in the machine, that I really need, is for sequences to be scored on a C-64 and a compatible printer. I think that Ensoniq did a superb job on the ESQ-1 and I wondered if this could be a possible addition for future software updates. Additionally, I've seen a number of ESQ's in the shop for some type of internal memory problems, and I've been told that this problem could be corrected through a software change/update.

I just wanted to let you know what would make me buy the ESQ-1. I know the product has been a success and they can barely keep up with demand, and rightfully so - the ESQ-1 is an awesome synth.

P.S. If this is not possible, please send me any ideas on how I could score the ESQ's sequences, apart from purchasing another sequencer and software scoring program. Thanks.

Mark Ostrye
Del Rio, TX 78840

[Ensoniq's response - We really don't have the time or resources to develop a music scoring program. We are not a "software" company and what software we do sell is provided mainly as a service to our keyboard customers. There are a few scoring programs that exist that could accept data from the ESQ-1 either by playing ESQ sequences into the computer or through a custom SYSEX MIDI driver which would have to be written. We really can't get too involved, but the SYSEX format is published in the user manual (& will probably be useful to third party developers).]

Dear Sir,

I am very disturbed and upset with the "Hacker". I have had big problems with my "Mirage" since I acquired it and sent a letter (along with my subscription renewal check) about these problems a good 4 months ago. Ensoniq called me after one or two months because they were disturbed by the letter - they said they were working on responses to letters you sent them that would go into the August issue. It never got into that issue and now I'm really surprised that it's not in the September issue. The letter discusses major problems and draw backs with the Mirage and should have been printed.

How do they get you to not print certain letters? I am quite disappointed in your policies -- you should be more on the side of the owners and not manipulated by Ensoniq as it appears you are.

Sincerely,
Bob Natalini
Middleburg, NY

[Ed. - Actually, your letter was published (finally) in Issue #16 (October). Ensoniq did their part and supplied us with their response much earlier. Unfortunately, the last couple of months we've been falling behind in printing all of the letters. This was one of the reasons we went to 24 pages last issue. Ensoniq doesn't even try to control our letters. They aren't like that and neither are we. We publish just about every letter we get (although this may have to change if the volume of mail keeps up - please keep 'em short). Your letter wasn't really any different than any of the other "This doesn't work - why not?" letters we get.]

[Ensoniq's response - We try to answer all questions as directly as possible. If a person is looking for a quick answer, they should contact Ensoniq Service directly, not via indirect means (Pan network is also a good medium). Unfortunately, we do not have access to all of the equipment ever made, nor the time to try out every possible combination of equipment, so we simply can't answer every question we receive.]

Dear Sir,

I represent a group of ESQ-1 owners in the Chicago area. We are in need of some information regarding the ESQ-1 that Ensoniq's Technical Support Group

seems unable to supply. Specifically, we need to know the actual Filter Cutoff and Resonance Frequencies obtained by setting the FREQ and RES parameters on the FILT (Low Pass Filter) page. (See pg. 47 of the ESQ-1 Owner's Manual V 1.1). This information is important to us because it will allow us to use published data on instrument voices in setting up our ESQ-1 voice programs. Any help you can provide in this area would be appreciated. A table of values, as supplied for the envelope times (pg. 59 of the Owner's Manual), or an equation to derive these values would be most useful.

We would also like to make a few suggestions for future releases of the ESQ-1 software.

1. A more even distribution of values for the envelope times. They are very close, and in some cases repeated, at the low end and are spaced much wider for values near 63.

2. A way to enter a user-defined waveform, created either by hand, possibly through menu pages and additive or FM synthesis, or down-loaded from the Mirage samples.

3. A sine wave for the LFOs.

We hope you will take the time to answer. Maybe these suggestions will help you make a great synth even better.

Mike Blackwell
Villa Park, IL

[Ensoniq's response - The filter cutoff and resonance frequencies are not known. The settings are relative (since modulation can be scaled). You could pass a sine wave through the filter and adjust the frequencies with respect to each other to determine the actual cutoff. However, the Q settings are completely arbitrary - the manufacturer of the filters does not even specify this information. Regarding suggestion #1: we can't really change anything at this point - there's already thousands of people creating sounds for the ESQ-1. Regarding #2: There's insufficient addressing space for user defined waveforms. The process to generate them also requires extensive digital processing to avoid aliasing. Regarding #3: The LFO wavforms are generated algorithmically - there is not enough CPU time to calculate a sinewave.]

Dear TH,

What do you do when they cash your check and 4 months go by, and they still haven't sent you your samples? In this case, it was Sound Cells. There must be something you can do against this type of problem!

Frustrated
Wausau, WI

[Ed. - Well, you can do what you just did. HEY! SOUND CELLS!??]

[Ensoniq's response - The US Post Office FTC has a division specifically for mail order fraud.]

Transoniq Hacker

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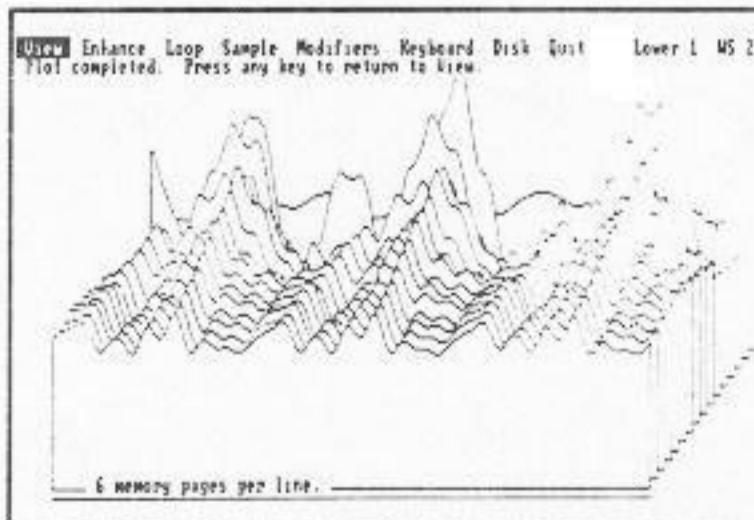
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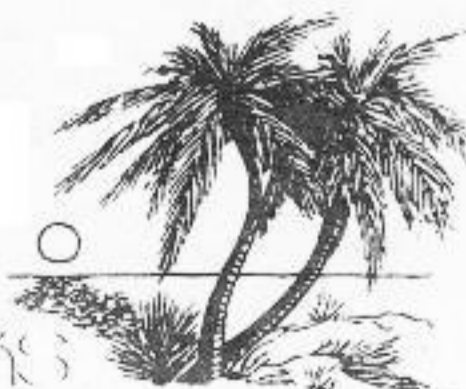


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