

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