Macintosh II: Comparison of Internal Synthesizers (10/94)

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TOPIC ---

Are the sound synthesizers in the Macintosh II the same as those used in the music industry?

DISCUSSION --

It's important to distinguish between the "synthesizers" built into the Macintosh II, and the "synthesizer" and "sampler" instruments used in the music industry.

In the music industry, the term synthesizer comes from the central components that synthesize or process the sounds they generate -- just as computers are sometimes called CPUs for the main component of a computer. The music industry digital instruments "synthesize" sound from digital information. These instruments store and manipulate digital information and are far more complex in their sound production than are the components built into the Macintosh II.

In the music industry, a sample is a type of digitizer that converts analog sound to digital information. Samplers derive their name from the discrete samples of analog sound that are converted at high frequencies (usually 44.56KHz) to digital information. This, like music synthesis, is possible on the Macintosh II with third-party solutions. When attempting to produce digitally sampled or generated sound on the Macintosh II, remember that the possible output may be limited by your third-party hardware and software.

The Macintosh II doesn't have hardware comparable to that found in music instruments. The methods of modifying and manipulating the digitized sounds of a music synthesizer are not in the synthesizer logic chips found in the Macintosh II, but in the design of the instrument components. The Macintosh may emulate these products through software and hardware, but is not designed to BE one of them.

Answers to some frequently-asked questions:

- What is the high and low sampling frequency, and can it be changed?

  The pre-recorded or computer-generated sounds may be played through the sampled sound synthesizer from 1Hz to 44KHz samples per second. The

number of samples per second can be adjusted. The effect of this
  adjusting is an increase or decrease in pitch.

- What is the maximum sampling length?

  Maximum sampling width is 8 bits. However, maximum length of sampled
  sound that can be PLAYED is restricted only by disk space. This is
  because sound buffers can be allocated and linked end to end. As sound
  buffers are played, new data can be loaded from the disk, provided that
  each buffer is at least 256 bytes long and the load routines are
  programmed efficiently.

- What method does the Wave Table Synthesizer use?

  The methods of wave synthesis listed here are for adjusting or editing
  wave forms. The wave table synthesizer merely takes a defined sound and
  plays it. What method is used for creating or modifying the wave is up
  to the software. Each of the above listed methods can be created in the
  software that delivers the final wave form to the wave table
  synthesizer.

- Do all four voices of the ASC wave-table synthesis play in stereo?

  Yes, however the note synthesizer does not have the command for stereo
  sound built into it and therefore is excluded from its use.

Two more notes:

- There is NO sampling capability of the digitizing type built into the
  Macintosh hardware: the sampled sound digitizer plays pre-digitized
  sound.

- There are no sound editing capabilities built into the Macintosh
  hardware.

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