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Portable Recorders Leap Forward in Convenience and Sound

By [IVER PETERSON](#)

WHEN Alan Lomax and his father, John, began making their famous field recordings of Southern folk singers in the 1930's, they had to build their 350-pound recording machine into the back of their Ford. It etched the songs of cowboys and former slaves onto aluminum disks, and used two 75-pound batteries for power.

By today's standards, the sound quality was poor.

The amateurs who follow in the Lomaxes' path - the tourists who carry a sound recorder instead of a video camera, the garage bands cutting their first demos, the radio reporters and concert bootleggers - have it easier. From wire recorders through the variants of tape to the leap into digital systems, portable recorders have become smaller and cheaper and sound much better.

In recent months portable sound recording has taken the next big step, away from moving parts entirely and into the emerging technology of solid-state memory storage. Instead of the familiar cassette or digital tape or the MiniDisc, the new machines store sounds on the same flash memory cards, about the size of a quarter, that are used in millions of digital cameras.

Logic would say that flash memory should spell the end of the two current choices for digital recorders, the awkward DAT (for digital audio tape) and [Sony's](#) durable MiniDisc. There are also several hard-drive systems and some that combine hard drives with flash memory, but they are expensive for amateurs.

Flash memory has no moving parts, so there is no danger of the microphone's picking up machine noise. And most important, the feature that for many will offset the disadvantages of flash memory is the ease of transferring a recording to a computer for mixing, e-mailing or burning to a CD, since the computer recognizes the flash card as an external drive and allows the user to cut and paste files directly onto the hard drive.

Marantz has been producing a large flash recorder for two years, purchased mainly for courts and institutions like the Maryland State Senate, which uses it to record committee hearings and floor sessions. But this spring several companies have brought smaller flash recorders on the market, including the Marantz PMD 660 (about \$500), clearly aimed at the professional, and the Edirol R-1 (about \$440), whose built-in music effects will appeal to amateur musicians. Both units have serviceable built-in stereo microphones.

For all their convenience - the big buttons and liquid-crystal displays with readouts - the flash recorders have disadvantages, including high power consumption and the cost of the cards. A 512-megabyte compact flash memory card for \$45 will record only about 45 minutes of uncompressed sound in stereo, compared with an hour and a half for a one-gigabyte Hi-MD MiniDisc selling for about \$7.

Of course, most flash memory users will reuse their flash cards, just as they do in their cameras. But the technology of flash memory means the new recorders are battery hogs, a disadvantage to true portability. The Edirol R-1 could not quite get through two hours of recording choir rehearsal on its two AA batteries when I tried it, and the Marantz, with four double A's, could manage just four hours of recording and playback before the batteries gave out. (My ancient Sony MiniDisc recorder, by contrast, can record for more than three hours on a single AA battery and still have juice to play back through earphones.)

These defects may delay the widespread adaptation of flash recorders by users not within reach of a wall outlet. National Public Radio, whose worldwide deployment of reporters puts a premium on convenience and flexibility, is experimenting with replacing the Sony MiniDisc units it now gives its staff with flash memory recorders, but the network is not yet sold.

"We want to get away from moving parts, desperately," said Joseph L. Mills, an electrical engineer at NPR who is helping to develop the network's next recording platform. "DAT should never have been born and the MiniDisc has its limits, but we're not ready to commit to flash memory yet."

Karl Gustafson, a product and market development specialist with D & M Professional Americas, makers of the Marantz units, acknowledged the problem.

"Once you start cleaning out files and searching back and forth and making constant access to the memory, that will eat up the battery," Mr. Gustafson said. "But if you're out in the field and you're gathering sounds like bird songs or thunder and lightning, you're going to have better results from the battery."

Users who won't be recording long sessions or are close to a wall socket find the flash recorders have great advantages, said Peggy Morales, a Dallas music teacher and technical adviser to Texas school music programs for the retailer Brook Mays Music Group.

Giving students a CD recording of their performances, made easy with the use of flash memory, can help keep children and their parents committed to music education, Ms. Morales said. And the flash recorders' push-button ease of use means a teacher can rest the unit on a podium and do without an assistant to operate a recorder during a performance.

"That's what this technology is bringing us - we're trying to keep these kids in music" as other activities compete for their attention, she said. "Giving them these recordings has proven to be a real motivator to keep them on track."