The New York Times
nytimes.com

September 20, 2007

STATE OF THE ART

Beware the Tapeless Camcorder

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Correction Appended

When geeks sit down to tell their children about nature's great cycles, they don't talk about birth and death. They talk about the way bulky gadgets get smaller over time, expensive ones become commodities —and how recording tape always gives way to digital storage.

Usually, the death of tape is a good thing. Not many people survey their DVD collections and pine for the VCR days, or heft their iPods and mourn for the days of eight-tracks and cassettes.

But in camcorders, the demise of tape is a little more complicated.

Most consumer camcorders still record onto tape —they're the last gadget holdout —but that won't last much longer. According to the NPD Group, sales of MiniDV digital tape camcorders are plummeting, from about half the market last year to only 31 percent this year. Camcorders that record onto miniature DVDs (29 percent) or little hard drives (22 percent) are about to overtake them.

The reason, obviously, is the hassle factor. Even now, you might have cassettes that are piling up in your closet, recorded but unwatched, simply because it takes so much time and effort to find the right tape and then the part you want. If you had a DVD camcorder, you may figure, you could just grab your cruise vacation disc and pop it into your TV's DVD player.

Maybe you still hope to edit all your tapes someday into enjoyable, watchable highlight reels. After all, both Macs and Windows PCs come with software that lets you edit MiniDV footage and then burn the resulting masterpiece onto a DVD, or play it back onto a fresh tape with 100 percent of the original picture quality.

But life keeps intruding on your plans, and you're finally giving up on the fantasy that you'll really edit those piles of tapes. Meanwhile, these new tapeless camcorders end the tyranny of rewinding and fast-forwarding; you can jump directly to play back any scene. Who could resist?

Actually, there are several more reasons you might want to resist, or at least to pause.

Capacity and price are two of them. Few people realize, for example, that the miniature discs required by those DVD camcorders hold only 15 minutes of video. The discs cost around $3 each, which is steep on an hourly basis. The newer "dual layer" discs hold 27 minutes, but cost $7 apiece. MiniDV tapes, on the other hand, still cost about $3 and hold 60 or 90 minutes.

Hard-drive and memory-card camcorders have a different problem: once the drive or card is full, the camcorder is useless until you empty it onto your computer. (You can buy a spare memory card, of course, but most people can't afford to amass stacks of them.)

Picture quality is another consideration. The video signal on MiniDV tape provides terrific color, contrast and clarity. MiniDV camcorders are so good, they're occasionally used for broadcast TV shows and even movies (like "Open Water" and "28 Days Later..."). The picture quality of high-definition tape camcorders, which also record onto standard MiniDV cassettes, is even more amazing.

Most tapeless camcorders, on the other hand, store video in a variation of a format called MPEG-2. It looks positively crude next to MiniDV, with blown-out whites, muddy blacks and grain everywhere between. Not many editing programs recognize MPEG-2, either.

That situation is improving. Last year, Sony and Panasonic developed a new format, expressly for high-definition tapeless camcorders, called AVCHD. On the right camcorder, and at its highest quality setting, the AVCHD picture is gorgeous. (It's a relative of the format used by Blu-ray high-definition DVDs.)

But AVCHD presents a different kind of burden: editing it requires a monster computer.

In theory, tapeless camcorders ought to be ideal companions to editing software. When you get right down to it, they hold nothing more than a bunch of computer files. You should be able to copy them to your computer in a matter of seconds, rather than playing them from the camcorder in real time.

In practice, the story isn't quite so simple. The AVCHD format wasn't designed for editing; it was designed to cram a lot of video data into as little storage space as possible. Its footage is heavily encoded, and only a few editing programs can handle it. They include the latest versions of Sony Vegas, Ulead VideoStudio, Pinnacle Studio Plus, and (for the Mac) iMovie and Final Cut Pro.

Some of these programs, like Apple's, work by converting the balky AVCHD files into a format that they can edit —and that conversion can take a crazy amount of time; 60 minutes of AVCHD video takes more than two hours to prepare for editing.

Most Windows programs, like Pinnacle, can edit AVCHD without conversion; instead, you experience short delays each time you try to play a clip or apply a transition.

But to edit AVCHD smoothly in any of these programs, you need a serious, honking slab of computer. For iMovie '08, that means an Intel-based Mac and at least 1 gigabyte of RAM; for Pinnacle, that's at least 1.5 gigs of RAM, plus a Core 2 Duo 2.4-gigahertz chip or faster. Finally, consider the future. Suppose, for example, that you buy a hard-drive or memory-card camcorder. And suppose that, when the card or disk gets full, you dutifully copy the movies to your computer.

But then what? You can't just leave them on the PC's hard drive forever; they take up too much room, and your current hard drive won't still be around 20 years from now. Even if you keep buying new, bigger ones every few years, are you sure you want to entrust your only copy of your home movies to something as crash-prone as a hard drive?

The only cheap long-term solution is to burn the movies onto DVDs —a time-consuming hassle that you can't postpone. MiniDV cassettes, on the other hand, are self-archiving; once a tape is full, you can just stick it in a drawer.

In other words, all tapeless camcorder footage eventually winds up burned to DVD. And that presents the final concern: longevity.

Unfortunately, nobody knows how long recordable DVDs last; they haven't been around long enough. According to aging simulations by the government's National Institute of Standards and Technology, a homemade DVD can last anywhere from "a few weeks" (if left in direct sunlight) to "several tens of years" (if you buy the most expensive discs and keep them in their cases, in the dark, at a constant, cool temperature, and so on).

Of course, tapes don't last forever, either. In both cases, you have to remain vigilant. Once every 10 years, you should recopy your videos onto fresh tapes, discs or whatever the most promising storage gadget is at the time.

All of this brings up larger questions: What, exactly, is the point of home video? Why do we make it? Who is the audience?

Some people hope that their children will want to watch these movies when they're grown, or even their grandchildren. Others shoot video only as a short-term record, intended to be shared on YouTube or a DVD that gets passed around. As the popularity of cameraphone video demonstrates, sometimes the last things people care about are quality and longevity.

That's why, for some people, the problems with tapeless camcorders are irrelevant. For some purposes, convenience trumps all.

But everyone else should keep the advantages of MiniDV in mind: storage price, capacity, quality, editability and archivability. The death of tape may be an inevitable part of nature, but it would be nice if that moment didn't arrive until we had an unequivocally superior replacement.

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Correction: September 21, 2007

The State of the Art column in Business Day yesterday, about MiniDV camcorders, misstated the title of a British film that was shot using the MiniDV format. It was "28 Days Later...," not "28 Days." (The movie was released in the United States as "29 Days Later" because the director decided he did not like the happy ending of the original. He added a less optimistic ending and re-released it under the new title. The DVD of "28 Days Later..." offers both endings.)