

New Media

Nonobvious Things About New Media: "Dead Media" and the Loss of Electronic Cultural Heritage

Leah A. Lievrouw, Associate Professor
Department of Information Studies, UCLA

Many of us are familiar with the feeling of "information overload"—the sense of being incapable of keeping up with the ever-growing volumes of information that are produced and distributed via information and communication technologies (ICTs). What many of us may not be aware of, however, is that the materials we create and share electronically are also decaying and being lost faster than previous forms of media content. Recent studies and reports, as well as an excellent documentary film by Terry Sanders (*Into the Future*, 1997), lay out the scale of the problem and the considerable



risks it poses for electronically mediated knowledge and cultural heritage.

In part, the preservation problem is due to accelerating rates of turnover and obsolescence of media technologies. "Dead media" are discontinued, abandoned, replaced by newer, incompatible systems, or are no longer supported by their manufacturers (Charles, 1999). Examples include older formats, such as magnetic wire or belt

dictation recorders, 8-track tape cartridge machines, or early video technologies (e.g., kinescopes or reel-to-reel videotape). However, new media become obsolete even faster than older technologies; most computer hardware and software systems are considered out of date in about three years. Many computer users today have "legacy" data only a few years old that is unreadable by newer systems.

Content may be lost permanently when recordings or documents are destroyed before being transferred to a newer format (for example, the videotapes of the 1964-65 NBC program *That Was the Week That Was*; Chimes, 1999). On the other hand, recordings may remain intact, but their content becomes irretrievable when obsolete playback technology finally breaks down and cannot be repaired or replaced. For example, vast archives of unanalyzed NASA space exploration data is now unrecoverable because the computers that can read the tapes are obsolete and irreplaceable (Sanders, 1997).

System incompatibility (or, in systems terminology, lack of *interoperability*) is sometimes employed as a system design strategy to "lock in" users to a particular format, but it can also create barriers to access and data loss. For example, Macintosh users can create and use PC-formatted disks, but PC users cannot create or use Macintosh-formatted disks. Similarly, differences between U.S. and foreign broadcast television standards prevent American viewers from using videotapes produced in Europe or Asia in their home VCRs.

A common remedy for obsolescence and incompatibility is translation or migration (transforming an old version of a document into one the new system can read, or changing a version created by one system into one readable by a different system). Translation programs allow computer users to work with all sorts of documents, though translators are not available for every document type, especially those created with older software. Backward compatibility is another strategy, where new systems and software are designed to read older data and files as well as new ones. Though few current systems are designed this way, one of IBM's early selling points was that customers would always be able to load and run data and programs produced on older IBM mainframes on subsequent generations of IBM machines. Backward compatibility is also a key issue in the current policy disputes about the introduction of high-definition television (HDTV).

Some users keep paper or microfilm copies of all electronic documents, though this seems to defeat the purpose of electronic systems. Some groups have tried to establish common technical standards for media hardware and software, though these seldom survive competitive industry pressures. Others have even advocated the creation of "computer museums," where old systems and software might be kept running for as long as possible to help retrieve obsolete electronic files and documents as needed.

"Dead media" are not only caused by obsolescence and incompatibility, however. Like paper, film stock, and other conventional materials, electronic recording media themselves decay. In fact, there is a growing recognition that digital media can degrade much more quickly than do relatively stable forms like print, analog audio recording (e.g., physical grooves etched onto

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plastic, wax or metal), or fine art media. Recordings made on magnetic tape or disks are notoriously “glitchy” – data loss is common after just a few playings, and the medium itself demagnetizes and the recording degrades while in storage. Laser disks and CDs lose data as the foil substrate beneath the clear plastic coating oxidizes, becoming dull and unreadable by CD players or drives. Some experts estimate that the shelf life of the average retail music CD is no more than 7 to 10 years, after which some of the data on the disk will be lost. This unhappy characteristic has produced a market for archival-quality CD pressings, in which gold or platinum foil substrates are substituted for the usual aluminum—for a price. The new and growing research specialty of digital preservation is moving to help make sure that today’s documents and other digital materials will continue to be accessible well into the future. The Commission on Preservation and Access and the Research Libraries Group issued a major report in 1996 that helped set the research agenda (*Preserving Digital Information*, 1996). In 1998, the Getty Information Institute in Los Angeles hosted an invitational conference to lay out the principal issues and priorities for research on the preservation of electronic data archives in the 21st century. The conference web site features an extensive list of research resources and a key background paper on digital preservation (Lyman & Besser, 1998).

RAND senior researcher Jeff Rothenberg has published several influential papers on issues related to digital preservation (Rothenberg, 1995; Michelson & Rothenberg, 1992). He has also written a major report for the Council on Library and Information Resources (CLIR) that starkly underlines the current preservation dilemma: “There is as yet no viable long-term strategy to ensure that digital information will be readable in the future” (Rothenberg, 1998).

The CLIR report proposes an “emulation strategy” that will permit an obsolete digital document’s original software to be run, or emulated, on any future system and preserve most of the functionality, look, and feel of the original. The emulation strategy is considered the most promising potential solution for digital document preservation. However, much more research remains to be done before preservationists will be able to usefully specify or “encapsulate” descriptive information about digital documents and the systems they run on (their “metadata”), in records that will be universally readable.

Conventional media have certainly posed preservation challenges in the past. But the proliferation of new media systems and formats is making us think again about what parts of our increasingly electronic culture are worth keeping and whether we will even be able to capture and preserve “the best that has been thought or done” before it disappears for good.

References

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Deadlines Deadlines Deadlines

Deadlines are lurking in the next millennium as we look forward to more elections and awards. See page 5 of the November 1999 *ICA Newsletter* for complete election and award details and submission information, but here is a brief rundown of deadlines on the horizon:

February 1. Nominations for ICA Fellows must be received at Austin headquarters. The nomination package must include a letter of nomination, current curriculum vitae, and a statement of service to ICA. Nominators are asked to provide three to five letters to support nominations. Questions concerning nominating materials should be directed to Executive director Bob Cox, 512-454-8299; icahdq@cc.utexas.edu.

February 25. Nominating materials for the Fisher Mentorship Award must be in hand at Austin headquarters. The award is given annually to the ICA member determined to have contributed significantly to the new generation of scholars in the field of communication.

March 3. Nominations for the 2000 ICA officers election must be submitted to Wendy Leeds-Hurwitz, 180 E. Montclair Ave., Whitefish Bay, WI 53217. Any ICA member may nominate any other ICA member for office. Nominations must include a letter of nomination and a statement about the candidate’s credentials and record of service to ICA.

Additionally, there are these dates to keep in mind:

February 1. ICA’s Division 4 nomination deadline for the W. Charles Redding Award in Organizational Communication. For details, refer to page 8 of the November 1999 *ICA Newsletter*.

March 1. Nomination deadline for editor of Human Communication Research. For details, see the November issue of the *ICA Newsletter*, page 4.