Video-Based Information Systems in Academic Library Media Centers

GEORGE L. ABBOTT

JUST A LITTLE MORE than ten years ago a revolution in video-based technologies began. About that time most academic library media centers consisted primarily of sound recordings for language instruction, poetry readings, and dramatic performances. If the center served a curriculum resource function it frequently contained filmstrips, slides, kits, and other materials for teacher education programs. Some centers also provided equipment distribution, graphics services, and film libraries. The use of video in libraries was embryonic. According to a 1977 SPEC flyer: "While there is increased recognition of nonprint materials as research tools, they are likely to remain minor collections at many academic research libraries for the foreseeable future."[1] The documents contained in SPEC Kit no. 33, "The Integration of Nonprint Media," were collected from ten Association for Research Libraries (ARL) libraries and covered all aspects of nonprint media.[2] Among the video services mentioned were video recordings of classroom lectures, videotape group simulations for psychology class review, commercial videorecordings, instructional television, cable distribution on campus, and some equipment handling. Only one document mentioned videodisc.[3] In 1980, Arlene Farber Sirkin noted the reluctance with which academic libraries were approaching video services. The chief reason given was that of inadequate funding.[4] And in 1981, S.D. Neill stated: "University libraries were divided in their response to the nonprint media, some refusing to deal with them at all."[5]

George L. Abbott is Head of Media Services, E.S. Bird Library, Syracuse University, Syracuse, New York.

There were, however, some pioneering activities in which academic library media centers began to incorporate video among their services. Initially there were the videotape lectures and other "talking heads" programs. Collections of videocassettes of commercially produced films and television documentaries were starting to become available. In 1968 the Joint University Libraries (now Vanderbilt University Library) in Nashville, Tennessee began the Vanderbilt Television News Archives. This consisted of the weekday evening newscasts of the three major television networks and continues today with expanded coverage of presidential addresses, news specials, and some news documentaries.[6] In the mid-1970s video collections began to grow. The University of Tennessee at Knoxville added 334 videocassettes to its collection during 1975-76. This was almost triple the existing collection of 133 videocassettes.[7] And in 1976 R. Kent Wood began the Utah State University Videodisc Innovation Projects. Through these projects the first tests were conducted on the applications of videodisc technology for library instruction and indexing.[8]

Video-based information systems providing more powerful capabilities were still in the research and development stage. These systems encompass interactive and digital videodisc, videotex, satellite broadcasting, and expanded uses for videocassettes and cable television in an interactive mode. The first uses of these newer technologies was for programmatic information (full video with motion, such as recordings of films) but today they are increasingly being used in an interactive mode and for mass information storage and retrieval. The optical digital disc, which will be discussed later, has a storage capacity of 2 gigabytes (2 billion characters) or the equivalent of over 1 million pages of double-spaced typed text.[9]

The Role of Library Media Centers

Library media centers are ideally situated to be the focus of use for video-based information systems. Media centers contain the equipment—television monitors, videocassette and videodisc players, microcomputers, computer graphics terminals, and cable distribution systems—and the staff trained in the use of technology in education. Although the media center will most often not house and administer all of the services discussed here, the media center can serve as a valuable resource to other library units in planning and implementation. Video equipment is costly and any multipurpose uses that can be made of this equipment are to the benefit of the budget-conscious library. With the blurring of technologies, the media center is becoming the integrating

site bridging the transition for libraries to video-based information systems.

Videodisc and Optical Disc

Among the first videodisc demonstrations in the information community were those at the 1975 Association for Educational Communications and Technology Conference in Dallas, Texas and the 1976 American Society for Information Science Annual Meeting in San Francisco. Other developments about the same time were the formation in 1975 of the Video and Cable Communications Section of the Library and Information Technology Association—a division of the American Library Association—and an ASIS program session in the mid-1970s on CEEFAX, an early trial by the British Post Office in the area of videotex.

Videodisc and optical disc applications for libraries are expanding rapidly. The term *videodisc* is usually used to indicate analog recording of a visual image with optical disc being defined as digital recording of either image, sound, or data. Frequently in the literature, a distinction is not made and "videodisc" is used as a generic term. Although standardization is still a question with as many as eight different styles of discs,[10] it is likely that a clear direction will emerge within the next year. The various laser-style discs are the most versatile with capability to store information in analog form as full-motion video with audio, still-frame video or audio only and in digital form as data, digitized high-resolution images, or audio; or any combination of these.[11] Capacitance Electronic Discs (CED) are useful only for full-motion video and have no effective still or random access capabilities. Videodiscs can be used for programmatic information, as slide libraries, as interactive video for programmed instruction, for preservation of images, and as mass storage devices. In 1982 the Library of Congress (LC) began an Optical Disk Pilot Program. This program was divided into two major areas, the nonprint project using analog recording and currently available equipment and the print project using digital technology with custom-made equipment.[12] On 15 June 1984 LC made available for public use the first analog disc from its nonprint project. This disc and viewing equipment were installed in LC's Prints and Photographs Reading Room. The disc contains almost 40,000 photographs, posters, architectual drawings, and other pictorial items from LC's collections.[13] The print project is primarily concerned with image preservation. Exact images of printed text are digitized and stored on the disc at a resolution of 300 dots/inch. The resultant image on playback is a replication of the original type style and graphics. The storage capacity is from 10,000 to 15,000 pages of text per disc.[14] Other disc projects which record digital data have capa-

bilities of over 1 million typed pages. Another analog videodisc project is NASA's "Space Disc." This series of laser discs contains several thousand color photographs, numerous video and motion picture sequences, and computer-generated data from the space shuttle missions.[15]

The newest entry in the disc field is the CDROM (Compact Disc Read-Only Memory). The format is the same as the compact disc currently used for audio. It is 4.72 inches in diameter and can hold 600 megabytes.[16] Indications at this writing are that CDROM discs will become stand-alone databases replacing some of the current online database usage. Evidence of this is several announcements of databases on disc. International Standard Information Systems (ISIS) has signed an agreement to develop compact laser discs containing the ERIC database and a second agreement for a subset of PsycInfo, produced by the American Psychological Association. ISIS expects to sign several others in the near future.[17] Gaylord Bros., Inc. has announced the purchase of Library Systems and Services, Inc. (LSSI) and will market the LSSI MARC laser videodisc (twelve-inch variety).[18] The Library Corporation demonstrated its Bibliofile—a CDROM containing over 1 million MARC records—at the ALA Midwinter meeting in Washington, D.C., 5-10 January 1985; and at the 1984 annual ALA meeting, Carrollton Press demonstrated Marvls (MARC and REMARC Videodisc Library System). Other companies including CL Systems, Inc.; BRS; and Geac have announced and or displayed systems. By year's end the activity will no doubt double.

Several companies are developing players for these discs with the most exciting being the Pioneer CLD-900 which is capable of accepting twelve-inch laser, eight-inch laser, and the compact disc in the single player. The cost of the unit is $1200.[19] For CDROM only, the Philips (Model CMD-1) is targeted to cost about $1000. Sony, Hitachi, and others have all announced players in the same price range with prices expected to drop slightly.[20]

Possible library applications for laser discs range from the LC projects to local online catalogs to the replacement of large microform collections. As early as 1981[21] and 1982,[22] there were suggestions that discs would replace COM (Computer Output Microform). Disclosure, Inc. is developing LaserDISCLOSURE for disseminating copies of SEC filings (10Ks, 10Qs, and annual reports).[23] This and similar developments would suggest that discs are a viable alternative to conventional microfiche as well. Video and optical discs are film libraries, slide libraries, music libraries, microform libraries, data libraries, and interactive program instruction libraries—all playable with some of the

same equipment. Video- and optical discs are not everything, but they do have enormous capabilities.

Videotex

Another very powerful video-based information system is videotex. Videotex is still very much in a state of development and expansion. What is videotex exactly? The definition is not clear. Some writers consider online databases—the type found on the Source, Dow Jones, and CompuServe—to be videotex. Others are much more restrictive and include requirements for color video and/or graphics.[24] While the concept behind videotex is similar to that behind Dialog or BRS, I prefer to make some distinctions. For the purpose of this article, videotex is defined as a low-cost, easy-to-use, two-way information system using video display and computer storage. A related technology, teletext, is one-way and is usually broadcast. Its storage capacity is more limited than that of videotex.

Possibly the first use of videotex by a library agency was the Channel 2000 experiment, a Columbus, Ohio videotex trial conducted in 1980 by the OCLC Research Department. As part of this experiment the Public Library of Columbus and Franklin County made available a video catalog of library holdings. Other services available were a video encyclopedia, regional and community information, and home banking. A report on Channel 2000 states, "viewdata [videotex] services will allow public access through libraries to electronic information in much the same way as books, magazines, and other materials provide access to traditional sources of information."[25] About this same time, the National Library of Australia conducted an extensive study of videotex in a library setting concentrating on libraries as information providers.[26] Within the past three years Viewdata Corporation of America began its Viewtron service in south Florida. For this system and for Keycom Electronic Publishing's KEYFAX National Teletext Magazine, ALA is providing reviews from *Booklist* and *Openers*.[27] Libraries are being looked to as information providers for videotex systems. This is only reasonable since libraries currently are primary information providers in nonelectronic forms.

Speaking on videotex in a 1978 article, Robert Frederick Smith said:

> Like many of the other possible technological innovations for the library, these video systems do much more than displace a traditional library function; they also could fulfill some objectives of the newspaper and show why it may become progressively more difficult to separate library functions from other mass communication services in the future.[28]

A special localized form of videotex is the video kiosk now commonly found in hotel lobbies giving floor plans, meeting schedules, news announcements, and community information. This technology is ideally suited for point-of-use library instruction programs.

Other Video-Based Information Systems

In 1978 Robert Frederick Smith predicted: "By the 1990s, video transmission [using slow-scan television] of [interlibrary] loaned materials will, in fact, be the norm."[29] This technology, slow-scan television, was demonstrated at the 1983 LITA National Conference in Baltimore, Maryland; and while there is the possibility of its use in interlibrary loan activities, especially for the vast collections now held by libraries, new trends in electronic publishing may offer other options for the future. Not as flashy as the newer video technologies but more often found in academic library media centers are videotapes supporting the instructional program. Recent developments in videotape editing and videocassette players allow for greater interactive use of the medium. An important advantage of interactive videotape is the ability to easily update programs.[30] Other video-based information systems—including computer graphics, cable and satellite transmission—also have library applications. According to Smith: "Satellite communication poses a tremendous opportunity for the library in the 1980s."[31] He notes teleconferencing possibilities and direct satellite broadcasting. The topic of computer graphics in libraries was the subject of the president's program at the ALA 1983 Midwinter meeting in San Antonio, Texas. Many library media centers are already active in these areas and more are becoming active as libraries reevaluate their service goals and objectives.

Limiting Factors

One limiting factor in increased use of many video-based systems is the resolution of the output device. The standard U.S. television set is composed of 525 lines of resolution. This is not satisfactory for displaying fine details in illustrations or small print. The maximum legible information which can be displayed on the standard television is about 500 characters or one-fifth of an eight and one-half by eleven inch page.[32] Current work with HDTV (High Definition Television) uses 1125 lines, dramatically improving the resolution of the image. HDTV units are especially useful for image preservation projects like LC's Optical Disk Pilot Program. A further limiting factor to HDTV development is transmission bandwidths. HDTV cannot be broadcast using

existing channel frequencies. Cable television using coaxial cable can carry HDTV, but fiber optics can handle it better.[33] Since many video-based systems of interest to libraries will be on-site stand-alone ones, broadcast limitations are not a problem.

The Future

Perhaps the most difficult task is choosing the right technology. In the early 1970s electronic video recording (EVR) was introduced and was adopted by several libraries as an exciting new technology. Within five years EVR had all but vanished and is probably no longer in use anywhere. More recently RCA ceased production of the CED videodisc player. With the CED players no longer being manufactured it is likely that within five years CED will also be a dinosaur. Where is quad sound? How about Polavision? A 1981 *New York Times* article discusses some of these failures.[34] Why does this happen? How does the media specialist avoid costly errors? With the rapid changes and developments in technology it is not possible to make the right choice every time. If a technology works and serves users for up to a five-year period, it is an acceptable choice. To help make this choice, a conceptual understanding of the technological capabilities of a technology is desirable. More important is a detailed understanding of the requirements of use. According to Joseph Becker: "What the librarian needs is an intellectual framework within which to evaluate the emerging technology in order to place new developments and trends in context."[35] Becker further states: "Technology provides opportunities; to be of use to a library, it must be incorporated into a systems solution for the problems of the library as a whole."[36] New technologies will always be created. Whether they succeed in a given library will depend on their doing a better job than existing technologies—i.e., more economically or with additional applications areas. Using careful planning, an academic library media center must be prepared to integrate those services which meet the needs of its users in the growing complexity of the information and video age.

References

1. Association for Research Libraries. Systems and Procedures Exchange Center. "Introduction." In *The Integration of Nonprint Media* (SPEC Kit no. 33), p. 2. Washington, D.C.: ARL, SPEC, 1977.

2. Ibid.

3. Chapin, Richard E. "A Proposal for the Expansion of Nonprint Facilities in the Library—Michigan State University 1975." In *The Integration of Nonprint Media*(SPEC Kit no. 33), pp. 49-50.

4. Sirkin, Arlene Farber. "Academic Libraries Struggle to Provide Video Services." In *Video Involvement for Libraries,* edited by Susan Spaeth Cherry, pp. 37-41. Chicago: ALA, 1980.

5. Neill, S.D. "Libraries in the Year 2010." *The Futurist* 15(Oct. 1981):48.

6. Schreibman, Fay C. "Easy-to-Access Television News Archives Brings History to Life." In *Video Involvement for Libraries,* pp. 41-43.

7. "Annual Report. Non-Print Dept., Undergraduate Library. Fiscal Year 1975-76—University of Tennessee at Knoxville." In *The Integration of Nonprint Media* (SPEC Kit no. 33), pp. 16-18.

8. Wood, R. Kent, et al. "Videodisc/Microcomputer Research Opens New Horizons for Libraries." *American Libraries* 12(April 1981):208-09.

9. Jacobus, William W., Jr. "Optical Disk Mass Storage: Promise for the 80's." *Information Display* 1(March 1985):15.

10. Several styles are described in: Paulson, Bob. "Laser Optical, Capacitance and Magnetic Video Disc Formats." *International Television* 1(Aug. 1983):48, 50, 52.

11. Jacobus, "Optical Disk Mass Storage," p. 15.

12. Price, Joseph. "The Optical Disk Pilot Program at the Library of Congress." *Videodisc and Optical Disk* 4(Nov.-Dec. 1984):426.

13. Library of Congress. "Fact Sheet" (pamphlet). Washington, D.C.: LC, 20 June 1984.

14. Price, "The Optical Disk Pilot Program," p. 429.

15. Nixon,William. "NASA Takes Discs to School." *E-ITV* 16(Jan. 1984):41-42.

16. Jacobus, "Optical Disk Mass Storage," p. 14.

17. "Laser Disc Database Service to be Shown at ALA." *Advanced Technology Libraries* 14(March 1985):2.

18. "Gaylord Buys LSSI and Its MINIMARC." *Library Hotline* 14(15 April 1985):2.

19. "The Laser's Edge." *Playboy* 32(May 1985):213.

20. Porter, Martin. "Compact Discs Pack in Data." *High Technology* 5(Jan. 1985):64+.

21. Gill, Philip J. "Video Disk Poses Major Threat to Micrographics." *Information Systems News,* 20 April 1981, p. 38.

22. Badler, Mitchell M. "Micrographics and the Videodisc Challenge." *Information and Records Management* 16(Feb. 1982):40.

23. "New Technology." *College & Research Libraries News* 45(Sept. 1984):437-38.

24. Arlen, Gary H. "The Becoming of Videotex." In *Videotex '84, p. 1.* New York: Online Publications, Inc., 1984.

25. OCLC. "Channel 2000 Fact Sheet." Dublin, Ohio: OCLC, n.d. (pamphlet).

26. "Videotex and Libraries" (Reports by Insearch, Ltd. and the National Library of Australia). Canberra: National Library of Australia, 1981 (pamphlet).

27. "KEYFAX Uses ALA Reviews." *American Libraries* 14(April 1983):242; and "ALA Contributes to Viewdata Home Information Experiment." *American Libraries* 13(Oct. 1982):594.

28. Smith, Robert Frederick. "A Funny Thing is Happening to the Library on its Way to the Future." *The Futurist* 12(April 1978):90.

29. Ibid.,.p. 89.

30. Gayeski, Diane, and Williams, David. "It is Updatable and Affordable." *International Television* 1(Aug. 1983):54-55.

31. Smith, "A Funny Thing is Happening to the Library," p. 90.

32. Schwerin, Julie. "The Reality of Information Storage, Retrieval, and Display Using Videodiscs." *Videodisc and Optical Disk* 4(March-April 1984):113.

33. Lu, Cary. "High Definition TV Comes at High Cost." *High Technology* 3(July 1983):45-48.

34. Pollack, Andrew. "The Perils of Consumer Electronics." *The New York Times,* 22 March 1981, sect. F, p. 4.

35. Becker, Joseph. "How to Integrate and Manage New Technology in the Library." *Special Libraries* 74(Jan. 1983):4.
36. Ibid.

Additional References

Allen, Robert J. "The Promise and Performance of Optical Discs." *Today's Office* 19(April 1985):37-41.

Bahr, Alice Harrison. *Video in Libraries, A Status Report, 1979-80,* 2d ed. White Plains, N.Y.: Knowledge Industry Publications, Inc., 1980.

Cannon, T. "Customer Oriented Technological Futures for Library Systems." *The Electronic Library* 3(Jan. 1985):52-55.

Currier, Richard L. "Interactive Videodisc Learning Systems." *High Technology* 3(Nov. 1983):51-59.

Doyle, Michael J. "The Video Disc System: A Technical Report by the SMPTE Study Group on Video Disc Recording." *SMPTE Journal* 91(Feb. 1982):180-85.

Gale, John C. "Use of Optical Disks for Information Storage and Retrieval." *Information Technology and Libraries* 3(Dec. 1984):379-82.

Hensel, Martin, and Nelson, Robert. "CDROM: Dramatic Key to Information Dissemination and Use." *The Electronic Library* 2(Oct. 1984):257-59.

Johnston, Jerome, ed. *Evaluating the New Information Technologies.* San Francisco, Calif.: Jossey-Bass, 1984.

Laser Bases: Laserdisc and CD-ROM Databases for Local and Inhouse Use (Library Hi Tech Special Studies Series). Ann Arbor, Mich.: Pierian Press, forthcoming, Oct. 1985.

Riddick, John. "Videodisc Technology: Developments 1980-1982." *Library Hi Tech* 1(Summer 1983):93-96.

Sessions, Judith A., and Cocke, Lucy S. "Finding Libraries in the Video Maze." *American Libraries* 12(May 1981):260-61.

Sonnemann, Sabine S. "The Videodisc as a Library Tool." *Special Libraries* 74(Jan. 1983):7-13.

Surprenant, Tom. "Future Libraries." *Wilson Library Bulletin* 59(Oct. 1984):120-21.

"What's New in Video" (issue theme). *Instructional Innovator* 26(Feb. 1981):8-32.