

Videodisc Update '77

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Abstract

If it were proposed that you were to be told when, on what date, and at what minute you would be allowed to read a research report or a novel, you would be angered and feel that was entirely stifling of your rights and creative efforts.

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If it were proposed that you were to be told when, on what date, and at what minute—you would be allowed to read a research report or a novel, you would be angered and feel that was entirely stifling of your rights and creative efforts. However, with television, because of the traditional nature and programming of the medium, we allow just about the same thing to happen with our viewing and think very little about it. We view that apparent nature of TV and fail to create alternatives in using the medium on wide scale.

If we were to discover that our favorite art museums or photo galleries had cut up masterpieces into rectangles and mounted them so as to be interlaced with strips of advertising for shampoo, aspirin, sanitary napkins, toothpaste and junk foods, we would be doubly insensed. Again, free TV is today just that much cut up by advertising and we may complain briefly, but again, without advertising it doesn't remain free—so what are the alternatives.¹

As editors and information specialists priding creativity and resolution of communications problems and message design, you might be interested in alternatives to be used with the most accessible information medium in the American home. It is of interest to note that 96% of our homes have at least one TV set, and only 92% have bathtubs.

Fred Allen, the late humorist had several revealing comments about television as we have known it. He said "TV is called a medium because anything good on it is rare; that it is the triumph of machinery over people; it is a device that permits people who haven't anything to do to watch people who can't do anything." Dana Andrews said of TV that it is a built-in mediocrity . . . just an adjunct of the advertising business. John Mason Brown called TV "chewing gum for the eyes."

The once startling statement that youngsters in our society watch TV more hours than they are in school now rings hollow. Studies reveal that on the average, the sets in the great majority of your homes and mine, along with those of the other members of American society, are turned on for slightly more than 6 hours per day. Television has a marked influence on how our people spend their time, what they eat and wear, and it creates needs unheard of a few years ago—real or synthesized needs. Whether or not we wish to acknowledge the impact of TV, much of what our society does and thinks about is reflected on the color and silver of the TV tube.

To give this presentation a bit of perspective, it is noted that TV is almost as old as AAACE, which was founded in 1913. That was just ten years prior to the early demonstrations of Baird in England and Jenkins in the United States, with their electrical transmission of crude black-and-white silhouettes in motion. By 1929, Bell Laboratories demonstrated television transmission in color by a three-channel method. By 1930, RCA had begun operating an experimental television in New York City, using a mechanical scanning system.

Utah's Philo Taylor Farnsworth, born in rural Beaver City to the South, developed the idea for the image dissector at age 16, and patented that pioneering TV invention also in 1930.

Although we consider television disc recording a new technology, the first successful experiments in recording video signals on a phonograph record date back more than 50 years ago to that creative Scotsman, John L. Baird, who engraved video signals on a gramophone disc as well as on a cylinder. Hardly practical, Baird's recorded 30-line pictures produced a maximum detail of 15 black-and-white image elements per line—compared to our present 525-line system which is capable of providing more than 400 elements per line in color. Baird's early effort of videodisc recording, however, fell into archival status.

The Federal Communications Commission was established in 1934, and RCA Transmitted television signals from a station on top of the Empire State Building to a point some 45 miles away in 1936. The BBC began public television broadcasting in that same year. By 1941, the FCC adopted technical standards for television, a few hundred receivers were sold and regular TV broadcasting began in New York, Philadelphia, and Chicago.

The second World War delayed the development of commercial TV in the forties, but efforts devoted to radar and electronic technology advanced efforts in other ways as by-products of the war efforts. By 1946, with the end of the war, seven commercial TV stations were serving approximately 8,000 families in the U.S. Only two years later, in 1948, more than 50 stations were located in 29 metropolitan areas serving over 17 million families, and applications for new stations so overwhelmed the FCC that a moratorium of new applications was effected until 1952. Color television broadcasting began in the United States in 1954, with the first videotape recorder sold in the United States in 1956, and by 1957, a presidential inauguration was recorded for the very first time on videotape. The sixties saw Echo I, the first communications satellite launched and Nixon and Kennedy met via TV for the "Great Debates." Telstar I was orbited in 1962, and the assassination and funeral of President Kennedy focused world attention through four days of solid television coverage. By 1964, instant replay added a new dimension to sports telecasts.²

By 1973, the TV and science-fiction video disc, starting to take note of the rediscovered into the home TV market, and soon we will be involved with an industrial-educational videodisc system which is interactive with viewers and programmable not only in the sense of our customary use of "programming," but in the sense of "programming" used by educational psychologists and instructional media specialists.

Videodisc Update '77 seems fitting after the remarks of your association's president Cordell Hatch which reflected upon general applications of videodiscs and electronics in the general session of Wednesday and Assistant Secretary of Agriculture M. Rupert Cutler who gave the keynote charge Tuesday to your conference of using new communications technology, along with the traditional to reach new audiences, the urban and rural publics, including the minorities, low income and aging populations with more effective information. His charge to reach the people, to make the Department of Agriculture the people's Department as it was in Lincoln's day rather than only the friend of the farmer and his community, gives us pause to examine today the nature and status of the videodisc.

Nature and Status of Videodisc

The videodisc was introduced to electronics experts and industrial leaders in Los Angeles in 1972. A close-up of the equipment leads to many questions, and was followed by a barrage of literature, especially for the years of 1974 through 1976. The videodisc technology was the talk of the electronics industry, while many sceptics suggested the videodisc was a figment of "gray flannel" imagination. The most vocal critics were often those most closely associated with traditional media, while the public viewed the videodisc development with the "ho-hum" attitude of another TV gadget. In June 1, 1976, *Forbes Magazine*, and in February of 1977, *Popular Science* magazine heralded the fact that videodisc being released on the commercial market was at last here with us.

Magnavox produced, Philips North American and MCA's laser videodisc system did release geographic market sampling of the players. RCA incoming president Ed Griffiths stated in *Forbes* of February 1977 that "What has bedeviled this company for years is the feeling that we had to have something new and different all the time, going from one technical accomplishment to another, never mastering the prior one . . ." thus delaying further RCA marketing efforts. Asked specifically about videodiscs, Griffiths stated with a cautious tone that RCA will decide late in 1978 whether to fully market its video-disc system, suggesting the problems are both technical and marketing. The suggestion that the RCA Victor's famous canine being able to see himself listening to "his master's voice" was curtailed at least at this reporting.

The two major videodisc systems — the RCA stylus system and the MCA laser "reflective" system — are now compared. The RCA videodisc

has a sapphire pickup head. *Journal of Applied Communications*, Vol. 60, No. 4 (1977), p. 11. The width of a human hair. The MCA-Philips system uses a high-intensity laser light beam to pick up TV signals from microscopic pits in a sandwiched metal core imbedded in layers of plastic materials. The RCA system has a 450 rpm with a 12 inch disc which holds 30 minutes playing time on a single side with the traditional straight running video recording. The player is similar to a record player. The record is inserted and played in similar fashion to our audio turntable attachments.

The Philips and MCA videodisc system uses 1800 rpm and the laser system with a 12 inch disc. Both systems have leads which simply attach to the television antenna posts on standard color TV receivers. The set is turned to an unused broadcast channel. The turntable videodisc attachment is turned on and adjusted and the color picture appears with better resolution than the 16mm films or frozen frames appear with clear enough register and fidelity to display the printed page for comfortable reading. A single disc holds 54,000 frames of information, or put another way it has enough storage to hold all volumes of the encyclopedia britannica on a single disc. with additional storage remaining. In the June 1, 1976 *Forbes* magazine, comparisons were made of the two major videodisc systems.⁴ Player price is approximately \$500 for the respective systems. The disc price is around \$10.00, depending on the recorded content. The advantage over videotape is that the materials price is only 50 cents, or about 5 percent of the total unit costs, while videotape has a materials cost of 95% of the unit price. The playing time is very close for both systems but since the MCA system is presently using only one side with thirty minutes straight running time, MCA shows 30 minutes compared to RCA's 60 minutes. Market entry for MCA is 1977, RCA entry is delayed and only being decided by 1978. MCA uses a laser reflective beam, compared to RCA's mechanical system electron beam. The MCA Disc uses light reflected off the disc from the transparent protective covering, compared with RCA's vinyl copolymer coated with metal, dielectric and lubricant. Both systems use a twelve inch disc as a standard, but the MCA disc is approximately half the thickness of the RCA at .04 inch thickness. The MCA rotation speed is 1800 rpm compared to 450 rpm of the RCA system. The life of the pick-up element is approximately 10,000 hours for MCA compared to 500 hours for RCA. The disc life of MCA is virtually unlimited since there is no mechanical contact with the disc and no wear of the message carrier. RCA claims in excess of "500" plays, but realistically seems to hold about the same life of effective plays as a 16mm film, estimated at slightly more than half the 500 plays identified.

One of the centers of interest concerns the materials available for the system. MCA has more programs available, but is engaged as you are probably aware in a tightly contested copyright case with Walt Disney Studios against the Sony Corporation's Beta-Max videotape system, a case which will likely not be decided prior to 1979. Both systems hold a significant

ant number of programs available for the home market with MCA having more than 11,000 titles. The fate of the videodisc development will be shown in the 1977 regional marketing tests of MCA. However, if as the Sony Corporation introduction of the Beta-Max system indicates, videodisc will be a major medium in the American Home, and will soon follow in educational settings.

One may view and enjoy sports with the freedom of "freeze frames," fast forward or reverse, slow motion, or direct "random" access capabilities. Entertainment programmed for viewing, just as freely as we may access books, is now a reality! Documentary programs of national events will be sold at low cost.

At this time MCA has the materials inventory and the premiere players are rolling off the assembly lines of Magnavox in Tennessee, while RCA technicians have assembled initial units in the new Indianapolis plant. With this videodisc update of 1977, MCA-Philips has overtaken RCA in the race to the commercial market, and seems to have a definite edge in the market at the moment.

The dramatic entry of RCA into the Color Television market in earlier years has been tempered by a new president who says that "there will be no more pioneering advances unless they are coupled with a corresponding showing on the bottom line" making reference that being first doesn't mean first in profits and RCA, a first-class company which has been only holding its own in recent years, is no longer opting for winning a race but winning profits if the market proves viable by competitors.

"Although the market in 1977 is only being tested, indeed videodisc is here." Its potential seems great for the purposes of AAACE as discussed these past few days, and hopefully may become as common in our homes as TV sets or at least bathtubs. The freedom it brings to the editors or information specialists is curtailed by what happens in the commercial market in 1977 and 1978, and thereafter only by your creativity.

The shiny rainbow glimmering MCA videodisc is with us now, a reality of today, from which we may read a book, play a song with a more than forty-hour storage disc capacity for audio only, or see a film at our leisure.

Summary

In summary, television, as introduced and historically reviewed suggests that videodisc technology is not a new idea, but a greatly refined process which was experimented with by Baird as early as 1936. The brief overview of the historical developments of television show videodisc as "added upon" the electronic technical achievements of more than fifty years. Videodisc holds great potential, as suggested by one authority as a new medium.⁵

- There is widespread agreement on the projection of the base cost of an hour's information on the videodisc at about one cent per minute—not 40 cents or \$4.
- The videodisc player itself could be only one-third the retail price of similarly functioning players in the film and tape technologies.
- From a single paper-thin roll-it-up-and-send-it-through the mail videodisc you could selectively call up any one of the more than 1,000,000 single picture frames stored on one side and display it indefinitely at the press of a button.
- You could mix stills and motion randomly, manually, and on a pre-programmed basis.
- You could go forward and backward at will, jumping from the first to the last part of a program in several seconds.
- Audio fidelity would be better than that currently provided by good quality LP audiodisc or tape, and there could be four channels available.
- In certain of the approaches being discussed, there is no mechanical contact made with the disc itself. This means that all of these advantages would never degrade through use: the disc would never wear out.

Videodisc technology use through 1986 has been projected by a Delphi research report on the U.S. Navy Personnel Research and Development Center in San Diego.⁶ That preliminary research effort to investigate the diffusion of videodisc technology in diverse environments over a 10-year period was undertaken to determine disc availability for future Navy training requirements. It was concluded that, by 1986, the use of audiovisual formats will have increased and the use of videodisc technology will have reached sufficient levels to warrant immediate instructional systems development procedures of videodisc technology.

In Mass Communications, the Navy study findings summarized suggested that videodisc periodicals will merge motion, still, print, and non-print media; local broadcast stations will not be eliminated; videodiscs will assume an "economically self-regenerating" position by 1986. Videodisc systems will incorporate random access to 10^{15} - 10^{17} bit memories, disc changers, CW and solid-state lasers, flat electronic display, and large-screen display.

The physically limited will have more access to education and information; continuing professional education will be presented on disc; off-campus secondary education will be seen. The diffusion of videodisc systems into environments other than instruction can be expected to reach sufficient magnitude to warrant immediate investigation of using videodisc technology for increasing instructional productivity and reducing instructional costs. Research and development should be conducted and reducing

instructional costs. Research would be updated. It should be conducted to determine how videodisc technology can be applied to storage of personnel file information, technical reference information, and video disc automated hard-copy transfer that can be updated periodically.

The question I leave with you is how videodisc technology may be used to respond to the charge of Secretary Cutler when he opened your AAACE meetings with the suggestion that the new technology be utilized with the traditional technology to improve the effectiveness of your efforts to reach the urban and rural populations, the low income and aging populations, with new technical information on nutrition and on the improvement of life and our environments. The potential is great, but there will be those who see the improvement of the traditional methods as a first priority and hold tightly to the status quo. Your response as editors and information specialists will be limited, as suggested earlier, only by your creativity and application of videodisc technology to become another effective tool in your arsenal of information services and techniques.

Notes

- ¹ Lenndert, Drukker, "TV: The Little Box Is About To Grow Up," *Popular Photography*, June, 1976, pp. 109-110.
- ² Briefed from Chuck Anderson, *Video Power: Grass Roots Television* (New York, Praeger Publishers, 1975) pp. 179-192.
- ³ Jefferson Grigsby, "RCA: Off The Roller Coaster Onto The Escalator?" *Forbes*, February 15, 1977, p. 28.
- ⁴ "The New Television," *Forbes*, June 1, 1976, pp. 24-29.
- ⁵ R. Kent Wood and Kent G. Stephens, "An Educator's Guide To Videodisc Technology," *Phi Delta Kappan*, February, 1977, pp. 466-467, summarizing Ken Winslow's "A Videodisc In Your Future," *Educational and Instructional Television*, May, 1975, pp. 21-22.
- ⁶ Rodney R. Daynes, *Videodisc Technology Use Through 1986: A Delphi Study* (San Diego: Navy Personnel Research and Development Center, December, 1976) pp. iii, vii-ix. National Technical Information Service Document Number AD-A034 857.

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A Teaching Experience and How It Came to Pass

Arland R. Meade

A trend seems abroad in the land: for more AAACE members to take up formal teaching—teaching academic credit courses in their respective land grant universities.

There is, in fact, discussion of a possible technical section within AAACE to delve into such teaching, and to exchange information or acquire new information in programs at regional or national AAACE conferences.