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Video: And Now, Dynamic Discs

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New TV technology opens a world in which touching is believing

The child's hand reaches out tentatively. Years of haranguing ("Keep your greasy fingers off the TV!") have made the screen taboo. But when the child sees that his finger causes the image to change, learns that his touch magically provokes new pictures, sequences, words and diagrams, his hand begins to jab, rub and slap the screen. Curiosity, once aroused, is satisfied by simply touching a picture of what one wants to understand. This process is re-enacted thousands of times every day at the U.S. Pavilion at Energy Expo '82 (a.k.a. the Knoxville, Tenn., World's Fair) as exuberant children and their more inhibited parents discover that TV viewing is passive no longer. The technology is called the interactive videodisc: the symbiosis of the computer and the laser-vision disc.

Clustered inside the wedge-shaped steel-and-glass pavilion are 42 TV screens connected to 42 Sony videodisc machines, which are hooked up to 23 Apple II computers. Nine video stations on the ground floor explain the meaning of 480 energy-related terms. Don't know what a Pelton wheel is? Press the word on the screen, and presto!, a swirling water turbine appears. A different set of screens shows a colorful cutaway drawing of a house. Wondering how to make your home energy-efficient? Just touch the attic, for example, and watch a demonstration of how to insulate it. According to Emmett Cunningham of the U.S. Department of Commerce, the genial director of the exhibit, "It's the best and most durable public information system I've seen in 25 years in the exposition business."

The system, says its unflappable designer, Tom Nicholson of the New York City exhibition firm of Ramirez and Woods, "personalizes" information. Determined to avoid an intimidating computer keyboard, he employed a "user-friendly," touch-sensitive screen. Pressure on the screen tells the computer to retrieve the information stored on the videodisc corresponding to the word or symbol touched. Although the computer makes the system truly responsive, what makes its applications so

exciting is the versatility of the videodisc. And you thought the disc was the Edsel of video technology.

Alas, the poor videodisc, so misunderstood, so maligned. Most people think it a single-purpose instrument, a movie machine. The misconception was fostered by the much ballyhooed introduction in 1981 of RCA's Selecta Vision, 15 years and \$200 million in the making. Not a truly innovative technology, Selecta Vision is essentially a phonograph that uses a mechanical stylus to play prerecorded movies. Its costly debut obscured the second type of videodisc: the infinitely more versatile laser-vision disc, designed for the videodisc player introduced by Magnavox in 1978. Manufactured by Pioneer, Sony and the 3M Co., the laser-vision disc makes flexible interaction possible.

More sophisticated and more expensive than the stylus disc, the laser-vision disc not only offers enormous storage capacity but provides random access and perpetual durability. A low-powered laser beam "reads" billions of microscopic pits of information imprinted on the smooth, shimmering disc. On each side are stored 54,000 images, any one of which can be called up instantly on command. The stylus and laser systems are incompatible, which leads to a great deal of consumer confusion. Moreover, unlike the video cassette recorder, the systems cannot record from television. Currently there are three videodisc machines on the market using laser vision and ten using a stylus. Despite exaggerated reports of the disc's demise, both the stylus and laser players are selling better than color television did when it first appeared 18 years ago.

The applications of the laser-type videodisc are limited only by the imagination, and applications even more innovative than the one in Knoxville have been developed. Examples:

> The "movie map," created by the Architecture Machine Group at M.I.T., is a visual record of every road, building and tree in Aspen, Colo. It enables the viewer, or "driver," to find his way from street to street by touching the left, right or center of the screen. If he wants a tour of city hall, he merely presses the image of the building as he drives by and is suddenly inside, listening to a curator talk about its history. Perceiving the potential of this kind of system, the U.S. Navy has commissioned the same designer to create a "visual toolbox" to track the operation and repair of some of the Navy's more complex hardware.

> The cardiopulmonary resuscitation disc, developed by the American Heart Association to instruct trainees in saving cardiac arrest victims, is so interactive that it practically cries "Ouch!" The disc is linked to a mannequin equipped with 14 sensors, and it tells the trainee exactly where to push, pound, pinch or pummel. Instructing the trainee how to compress the victim's chest, the videodisc might say, "Find the notch on the sternum," or perhaps, "A little more gently this time." At the course's conclusion, the system gives a complete exam, grades it, and can certify the student in cardiopulmonary resuscitation.

At the moment, interactive programs are being used or developed at Atari (the disc acts as an indefatigable salesman in the showroom); IBM; Sears, Roebuck (Looking for a gingham dress? You can find it on their videodisc catalogue); General Motors; the Smithsonian Institution; Walt Disney Productions; Xerox; and the National Gallery of Art (recording 16,000 works of art for scholarly delectation). As a teaching tool for schools, industry and museums, the interactive videodisc has an assured place.

But just as the use of the home computer depended on the marketing of interesting software, the videodisc player's consumer popularity awaits the creation of enticing disc software and increased awareness of the computer in the home. It should be understood, says M.I.T.'s video wizard Andrew Lippman, that "the videodisc is peripheral to your personal computer, not the television set." And that the admonition "Look but don't touch" applies to oil paintings, not TV screens.

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