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# News

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\*\*\*\*\*Technology improves patient  
education-- "As the Disc Spins"

DALLAS--Imagine: you're lying in a hospital bed, trying to adjust to the fact that you've just been diagnosed as diabetic. The doctor introduces himself and starts to tell you about diabetes, what you can expect and what you'll have to do for yourself. You'll have to get used to a whole new life style and you may have to give yourself injections of insulin for the rest of your life. The doctor will show you how.

But this is all new and strange to you, and the doctor is going too fast. Instead of asking him to slow down and go back over a couple of points, you simply press a button. The doctor pauses and begins to explain again, this time slower and in a different way. The doctor is not really there. You have been talking with the television set.

Rick Kent is an M.D., but he does not practice medicine. Lately, all his practicing has been at the keyboard. Not piano or harpsichord, but computer. Kent, a researcher at The University of Texas Health Science Center at Dallas, is one of the pioneers of "interactive video," the marrying of television pictures with a computer in order to create an entire new form of communication. And while he sits there, fingers racing to keep up with thoughts, Kent is designing a system for people--patients in this case--to actually talk with their televisions and have the tube talk back.

Patient education of this sort may not seem new; videotape has long been used to help educate with sound and pictures. But this is not videotape. It is videodisc and it is new. A thin, round piece of plastic resembling a phonograph record spins at 1,800 revolutions per minute and has the ability to hold two separate tracks of sound and up to 54,000 individual frames of information--or 30 minutes of program material per side. And it's not just sound and pictures. The videodisc provides true interaction between the viewer and the program on the screen.

It may seem like a science-fiction fantasy--something from the pen of Arthur C. Clarke or Isaac Asimov--but it's science-fact and it's in use now, thanks in part to Rick Kent and colleagues.

There have been three dramatic transitions in visual technology, according to Kent. The first was the invention of photography in the mid-1800s. Suddenly, images could be captured for all time on pieces of paper and metal. The next transition, giving photographs apparent life by making them move, occurred around the turn of the century. One Thomas Edison had a little to do with it. "Movies," someone coined, and it stuck.

Kent says one would be tempted to place sound, color, television and even videotape next on the list of important transitions, but these are really nothing more than embellishments--"bells and whistles"--added to the existing visual medium. Instead, it is interactive video that must be considered next because of its vast potential to involve the viewer in the program.

Kent, age 29, came to Southwestern Medical School in the fall of '79 as a graduate student in Biomedical Communications. (His two-year hiatus after medical school was a "residency" as flight attendant with Pan American Airlines.) In '79 no one was throwing the term "videodisc" around. There may have been some prototype machines somewhere, but certainly not at Southwestern. Within a few months after his arrival, however, Kent was beginning to experiment.

He had joined the instructional design track in Biomedical Communications--not because he wanted to be an instructor--but because he wanted to pursue a former college love, broadcast television and film. He wasn't sure how just yet, but a medical degree, a minor in mechanical engineering, lots of writing and editing experience...and maybe even the stint with Pan American would tie together. The videodisc began to spin.

(over)



Kent's first project with the videodisc was to shoot each of more than 5,500 medical slides on videotape for transfer later to videodisc. The transfer, done in Los Angeles at a special plant, forms a permanent record of the material. As designed by Kent, the disc contained the ability to sort for particular photos in particular groups. Remember that a disc, although the size of a record album, can hold up to 54,000 individual frames. The cataloging of a few thousand slides was child's play. (The disc is in use by the Department of Ophthalmology and is the department's best method thus far for accessing its slides.)

But Kent's work didn't start to get teeth until he overheard a conversation one day. Dr. Robert North, chief of Internal Medicine at Presbyterian Hospital, wanted a videotape series on diabetes produced by the health science center. North recognized the need for more patient-oriented information on diabetes. Kent knew the need, too, and videodisc would satisfy the need twice over.

North had originally planned the series for videotape, but when Kent suggested videodisc and explained its advantage over passive videotape, it appeared the project could take on a new dimension. As a doctor himself, Kent would lend the needed medical expertise in working as a liaison between the diabetes experts and the medical television team. And because of his background in TV and film, he would be able to work well with director Jim McBride. North and Kent reached an agreement, and Kent was given the green light.

As Kent explains it, planning a videodisc is more complicated than a simple videotape production. Naturally, all the footage is shot on videotape or film to begin with, but all the shots must be planned very carefully. If the disc is to ultimately provide a variety of situations available to the viewer--depending on what is desired and which buttons are pressed--the material must be considered and shot. Again, depending on the viewer, much of the information encoded on the disc may never be seen, but it has to be there just in case.

Kent was, and still is, working with Steve Bush, a programmer/analyst in the Department of Medical Computer Science. Together they are designing the next phase of this new form of communication. Presently, the discs are controlled by a small computer built right into the player unit. But Bush is spending long hours at his own keyboard, writing complex programs that will combine the disc with more powerful computers. The result will be a learning and information system far more sophisticated than anything currently available. Talking to the television in your own voice and having it talk back, touching the screen for a desired response, even writing on the screen with special pens are all projects Steve Bush and Rick Kent are experimenting with.

But the technology of this whole system, videodisc, television and computer, while seemingly dramatic and futuristic, is itself not the important aspect, says Kent. It is the idea of interactive video that will remain, long after videodiscs have been superseded by more advanced forms of information storage.

For now it's the disc. It has fewer moving parts than a videotape player; it requires almost no maintenance; it costs much less to own; the discs are far cheaper, they take up less space and last virtually forever...and the viewer of the material can actually be a part of the program instead of simply watching it. Kent is quick to add that patient education is only one application of an almost infinite number of possible applications. Only the imagination restricts what can be done with the system.

And as for the diabetes patients at Presbyterian? They are elated about the videodisc series: "I'm leaving here today with a whole new outlook on diabetes. I'm less fearful," and "I found that after 12 years as a diabetic I didn't know anything. Certainly all new diabetics should see the program," and "Great!...it makes you use your head," and "I found the interaction with the physician on the screen excellent."

Half completed now, by December the series will consist of six programs on the basics of diabetes. After that, another series of three or four programs is scheduled for production by Kent, North and McBride.

Kent's work proceeds at a steady pace without much regard for time or energy spent. Now a research assistant professor in Medical Computer Science, he has plans for the videodisc he only hints at and smiles about. But he's anything but private about his work. At the end of an article he wrote commenting on the current preoccupation with the technology alone rather than the medium it creates, Kent suggests, "Technical improvements will come and go; today's innovation is tomorrow's dinosaur. But with the videodisc, we have made the transition to a new conceptual media. What is important now is not what 'bells and whistles' we blow. What is important is what we say with those 'bells and whistles.'"