Of Multimedia CD-ROMs And Real-Time Access: 'Information Nirvana' Is Still Not On The Horizon

By Eugene Garfield

Franklin Hoke recently gave our readers an interesting view of the prospects and problems of the new generation of scientific journals on CD-ROM (The Scientist, Sept. 19, 1994, page 17). It is indeed exciting to contemplate the convenience of having instantaneous, fingertip access to the Journal of Biological Chemistry, Journal of the American Chemical Society, and other primary-research publications.

Of course, major reference works are also available on CD-ROM, such as the Science Citation Index and the Oxford English Dictionary. These are being joined by a growing number of encyclopedias, including Microsoft's Encarta (based on the Funk &Wagnalls New Encyclopedia) Compton's Interactive Encyclopedia, and the New Grolier Multimedia Encyclopedia.

"Multimedia" is the buzzword of choice for these latter publications because they boast not only articles and illustrations, as in the print versions, but also audio narrations, animations, and even video clips. It is debatable whether these multimedia applications truly "bring the book to life," as the publishers tend to claim. You can access tens of thousands of articles on the CD-ROM, but the number of video clips ranges anywhere from 20 to 80. Nevertheless, the multimedia bells and whistles are diverting and make browsing more fun. It is interesting to note that the CD-ROM edition of Encyclopaedia Britannica is text only and includes no illustrations.

This burgeoning catalog of multimedia reference works promises to make a reality of early visions of universal, real-time access to our accumulated archive of knowledge--what Vannevar Bush called "Memex" and H.G. Wells termed the "World Brain." But don't hold your breath for the dawn of this information nirvana.

A major stumbling block is that there is no generic, standardized software for all the different multimedia CD-ROM encyclopedias. Each runs on its own specialized software, which you have to store on your hard drive. Encarta, for example, requires at least 2.5 megabytes (MB) of available disk space, while Compton's requires either 8 or 20 MB, depending on how fast you want to run it.

Assuming an average of just 5 MB per multimedia CD-ROM encyclopedia, loading 20 separate reference works would take up 100 MB of hard-disk space just to store the search-and-display software!

Add to this the many other programs you typically use--word processing, spreadsheets, graphics, relational databases, bibliographic management software, mathematical and statistical packages, and so forth--as well as all the text and data files stored on your hard drive, and you'll soon need at least a gigabyte of hard-disk memory.

Another stumbling block to real-time accessing of multiple CD ROM reference works is the need for mechanical "jukebox" CD- ROM readers or electronic "towers." The price of a mechanical six pack jukebox is under $500. More important, whenever you switch from one CD to another, you have to wait while the drive reads through all six disks. This takes only a few minutes, but it is long enough to interrupt your thought process and raise your frustration level. An alternative is the electronic tower containing seven drives. The seven drives are read once, allowing you to switch between disks with little delay. But they come at a cost closer to $2,500. Three towers can be linked for an additional $5,000. This would provide a library of 21 CD-ROM reference works with essentially random access.

Reaching the information nirvana of rapid access to all the world's knowledge in a way that allows us to work--and think-- in real time will require some major technological fixes in hardware capabilities as well as software compatibility. I do not doubt that the stumbling blocks can be overcome. Memory is becoming cheaper. Data-compression techniques may increase CD ROM storage capacity by an order of magnitude. Optical disks may even achieve terabyte storage capacity. Chips are becoming ever faster. And modems may soon have the bandwidth necessary for instantaneous search and retrieval of massive online databases via the Internet or other networks.

But my optimism that the technological solutions are near at hand is tempered by impatience. After waiting more than 40 years for Memex or the World Brain, a few more years may not seem too burdensome. Then again, I still get annoyed by the few minutes it takes for my CD-ROM jukebox to read and open the six disks in the cartridge.

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