

## FUTURES

# CD-ROMs

In the first of a new series where we look at what tomorrow's world has to offer, Francis Botto asks if Atari will take CD-ROM from a shady past into a bright future.

**W**hen CD-ROM emerged soon after the Philips video disc, officially called LaserVision, it was assumed correctly that it was the storage media the computer world had longed for and would soon be in vogue. The first year of existence was accompanied by a multitude of CD whats?. Eventually, despite brave efforts, CD-ROM disappeared into oblivion, leaving several egg-faced believers to drown in embarrassment.

It seems that all the advancements in optically-encoded storage media like LaserVision and CD-ROM have been unable to defeat the seemingly stubborn and sometimes unreliable charms of magnetic storage media like the faithful 5¼ in. floppy diskette, which will even step aside for the more practical 3½ in. disc. Now that CD-ROM is receiving the attention of Atari, will things soon change or will the inability of the CD-ROM to permit the user to write to it render CD-ROM as a high-tech medium for book publishing, leaving the magnetic disc to continue to reign supreme?

## Matured

As its name would suggest, CD-ROM is a storage system using normal compact discs and is a read only memory device offering unprecedented capacity. A CD can store up to 550MB; in graphics terms that is about 54,000 high-res screens on most 8-bit micros. Apart from CDs being used for audio use - LPs and so on - the technology has now matured into the realms of data storage.

You need have been interested in computers only for the shortest of periods to witness radical change. Recently perhaps the most poignant and desperately innovative have taken place in memory, not so much electronic memory but in storage media. It seems that magnetic discs are becoming smaller and smaller, while the idea of storing data or information via optical means raises a serious question-mark over the future of magnetic storage media, including magnetic tape. It seems CD technology is really putting on the pressure now.

To assess the whys of CD-ROM, consider

a normal person taking some first steps in personal computing. First, we might buy an 8-bit micro, together with a cassette recorder - a recorder which will more often than not store data by encoding the tape with magnetic remnants according to a continuously-varying analogue signal, just like a normal audio cassette recorder.

Eventually, tape becomes a nuisance; it sometimes proves unreliable and it is always too slow; its sequential access becomes a real bind and we really want or perhaps need a fast and random access storage capability. Sensibly, we upgrade, investing in a floppy disc system offering anything from a meagre 40K to more than 1MB. After filling a few disc boxes, we might upgrade to a hard disc system, if funds permit. Hard disc systems represent either the ultimate computer storage status symbol or, alternatively, a complete waste of space and money; it really depends on the kind of use to which, you put your micro.

Assuming those were the only options available and we had taken advantage of them, we would probably draw the conclusion that magnetic tape is too slow, floppy diskettes, of whatever size, are ideal for most purposes but when a vast store of data needs to be processed they are useless; and, finally, hard discs can be ridiculously bulky as well as being expensive.

You might be thinking you could live with some of those problems. You might even think you could live very happily with a cassette recorder; no doubt many people find them adequate for their purposes.

Having experienced the kind of dilemma the computer industry faced we can appreciate the search for a more physically compact medium which could be written to as well as read from a number of times. Perhaps having seen Philips LaserVision as used in the Domesday project in a spectacularly interactive guise, it might have been thought that a possible solution had been found; it was thought so in many quarters.

Unfortunately, in terms of revolutionising storage media, LaserVision floundered. To be accurate it floundered twice; Philips

entry into the computer market was a second effort to launch LaserVision, as already it had failed convincingly to make a significant impression as a video machine as long ago as 1970 in the U.S. It seemed the public was as apathetic about purchasing a video machine with no recording facility as film companies were about releasing films on LaserVision; it seems understandable or even obvious with hindsight.

When video discs were being developed, a number of techniques were tried and tested. Telefunken and Decca offered functional vinyl disc systems which suffered from an understandable amount of mechanical wear. Later, RCA and Zenith developed jointly the Capacitance Electronic Disc, a system which is still around today.

It was not until Philips embarked on the optical disc trail that the real solution was found. First, it experimented by shining laser light through appropriately-encoded opaque and transparent patches of an optical disc; then, by using an optical detector on the other side of the disc it was able to read information. Eventually it opted for a light reflection system, in which a low-power helium-neon laser was used to rebound light off encoded tracks, where pits and land represent '0' and '1' respectively.

## Electrical impulses

The light is then detected and converted appropriately into electrical impulses which the micro understands. The technology paved the way for CD and, for interest, the pits are about 1.6 microns deep on a normal CD.

It is all very ingenious but still a ROM-type beast. At present the only drive capable of writing to a CD-ROM is a Write Once Read Many drive system used mainly by manufacturers. There are no prizes for guessing what must represent the next objective in the development of optical storage media, a CD-RAM, but let us hope they will not use that awful RAM misnomer again.

Enter CD-ROM, the perfect solution. It has all the qualities apart from being able