

Multimedia in Radiology Education

"The medium is the message. This is merely to say that the personal and social consequences of any medium - that is, of any extension of ourselves - result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology."

Marshall McLuhan (1911-80), Canadian communications theorist. Understanding Media, (1964).

"Tis education forms the common mind, just as the twig is bent, the tree's inclined."

Alexander Pope (1688-1744), English satirical poet. Epistle to Cobham.

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S you've just splashed out on a fancy new computer system with all the bells and whistles - CD-ROM drive, sound card, modem, plenty of RAM etc., and have survived the stress of getting Windows 95 up and running and talking to most of your hardware. What's in it for your radiology education? Is there any software worthwhile parting with your hard-earned cash for, and will it really make you a better radiologist? Some years ago I remember hearing an educational expert saying that he believed that computers were excellent for testing knowledge but not for teaching it. Was he correct when it comes to radiology?

To be fair to the new kid on the block, we are only beginning to plumb the depths of the technology. The high technical demands of the visual data in radiology images stresses all but the top of the range computer systems. Image quality on standard PC monitors, although reasonable, can't hope to match that of the standard radiograph. Colour, video and animation have yet to be utilised to their full potential in multimedia radiology. Sound reproduction is really only of direct

relevance in Doppler topics, although it does also humanise and soften the application's interface with the user. Speed of response is a critical factor - responses of under a second can totally change the nature of an interaction, transforming it from a sluggish wade through treacle to an exciting and stimulating interchange of inputs and replies. Unless one uses a really fast, RAM-crammed Pentium and a high speed CD-ROM drive, the tedium of waiting for images to appear can only be usefully countered by brewing a cup of coffee or reading a page in Grainger and Allison. Three-dimensional imaging makes especially severe demands on computer hardware, meaning that unless one spends tens of thousands of rands on state-of-the-art workstations, one can't view these images in anything like human-friendly form.

On the other hand, Peter Mayle in his recently re-released "Expensive Things" illustrates the human tendency to be dissatisfied with whatever one has, where nothing is good or perfect enough, particularly if one already has it all. This human weakness finds fertile ground in the computer world where speed, speed and more speed is the ultimate goal, driving users obsessively from one upgrade to the next.

Computer phobia is another hurdle which potentially isolates the new media from a sizeable chunk of the population. The reason for this phenomenon must be an area ripe for research - it is always intriguing to me how clear the divide between computerphobes and computerphiles is. Yet it is odd that even as a self-confessed computer fan I am seldom drawn to spend much time at computer exhibits at congresses. Is this because they lack the immediate gratification of conventional media such as books, journals or video, or is one just as unlikely to sit down and read an article on MRI of the shoulder at a congress as to spend half an hour going through a multimedia exhibit on the same topic? Or is it because a

limited range of predetermined interactions is likely to be available, or that one balks at the effort of mastering the operational basics of a particular exhibit?

Complete searchable textbooks on CD-ROM, such as Resnick's multi-volume "Diagnosis of Bone and Joint Disorders" are being released with increasing frequency. The gamut of list-type books is also eminently suitable for computerisation, with Dahnert's "Radiology Review Manual" being released on CD-ROM in April this year. One has to question though, whether the purchase of some of these isn't to fulfil a psychological need to feel omnipotent, to be in control of all the information by dint of possessing it, while suspecting that you will never read or view most of it? I'm sure the same often applies to textbooks.

The main advantage of software media must be the ability to structure sophisticated searches to produce customised output, compared to the more limited search permutations with books. The ability to search selectively with elaborate criteria is a major benefit as seen with the resounding success of computerised literature searches. Being able to interact meaningfully with information and produce personalised extracts of relevant material, being able to "cut-and-paste" selected text or images is very convenient - I have to confess that the quotes used here were lifted straight from Microsoft's "Bookshelf '95" CD-ROM.

One of the areas which seems to me to be especially suited to computerisation, particularly animation, is the principles of MRI physics. Although some software packages allow the input of sequence parameters and show the resulting MRI image, they do this without delving into the physics minefield. None to my knowledge have capitalised on the potential of displaying the various spin sequences