

Book Reviews

Rae A. Earnshaw, ed., *Workstations and Publication Systems*. Berlin: Springer-Verlag, 1987. 229 p. DM58; £18.50. ISBN 0 387 96527 0.

This book, which includes numerous illustrations, contains 20 articles originally delivered at a London Conference. The section headings are Page Description and Graphics, Document Structures and Editing, Workstations and Human Interface Aspects, and Languages and Implementations.

A number of the articles are written in such a way that they will be comprehensible only to others engaged in depth in the same topic. For example Postscript is a language of great value to anyone interested in Desktop Publishing but the several articles about the subject are for the specialised specialist. Thus Mr. C.A.A. Goswell (Rutherford Appleton Laboratory) tells us that “The stack can be dynamically added to for creating local scopes... and... the name table was implemented by using a simple unbalanced tree structure with no garbage collection”. Simple? We must take Mr. Goswell’s word for it.

There are a number of items of wider interest. The first—“A five year publishing technologies forecast” by Ronald B. Campbell (Xerox)—is a nice speculative article with plenty of room for differences of opinion. Naturally “Intelligent Software” and “Expert Systems” are featured—for instance “a current example of intelligent support is the spelling checker software in word processors”.

In information technology it has become mandatory to hype up the ordinary—rather like the watch-repairer with the sign “horological precision laboratory” above his shop. I fail to see any kind of intelligent behaviour in a word look-up and match system.

However we may also expect “expert colour systems... to enable more effective communication” instead of getting “garish results in the hands of an inexperienced user”. Software which understands the aesthetics of colour would indeed be intelligent and might well pass the Turing Test (someone observing it would believe it to be under direct human control).

Most of the thousands of articles about “Office systems”, and nearly all of the voluminous sales literature are aimed at the people who can afford them—big business. Only occasionally are the results reported. Mr. B. Spicer (BP Research Centre, Sunbury) whets our appetite with “Electronic publishing system based upon DEC VAX minicomputers at the BP research centre”. BP can easily justify doing the job properly with 2,000 staff including the supporting secretarial staff who generate 350,000 A4 pages each year.

By 1985 they realised that something better than numerous stand-alone word processors and much manual cutting and pasting was needed. Spicer discusses their new integrated publishing system on a Local Area Network to which are connected workstations, local laser printers, image scanners, and an electronic typesetting machine.

A number of articles describing research at UK Universities on document formatting systems and interfaces follow. Michael Butcher (U. Swansea) reports on "A graded interface for novice/expert interaction"—a badly needed requirement. Butcher comments on the lack of communication between system designers and users suggesting that "if there is communication, users are often unable to be precise about their requirements". I would put it a little differently—if these systems are going to be successful the designer must take the view that the customer (the user) is always right.

The user does not know what he wants because he cannot conceptualise the possibilities of the man-machine interface. The most sensible procedure for the successful system designer is to keep on trying out his ideas on users and listening to their comments. Nearly all designers assume that their customers are computer buffs. In fact most of them much prefer interacting with people rather than with machines.

Robert Stutely (HMSO) provides an article about "The Standard Generalised Markup Language" and Peter Cadogan (Chelgraph) about "The Chelgraph Structured Editor". SGML is a draft standard providing authors with the means for including typesetting machine processing instructions with their word-processed text. This should enable a document to be formatted so that it automatically emerges exactly as the author intended. In WP systems the software automatically inserts instructions for basic printed layouts but different systems are not compatible. With author intervention SGML will do far more comprehensively that which is now done without author intervention.

As Cadogan says "the abstractness of SGML...is a potential threat to its widespread adoption...a complex document may contain more markup than text". This prompts the question "for authors, do the incentives justify the effort?" I have not yet met an author who would reply to that question with a "yes".

To conclude, this book should be of great interest to those engaged in the design of document processing systems. For others it represents a very mixed bag.

Georges Anderla and Anthony Dunning, *Computer Strategies 1990-9: Technologies-Costs-Markets*. New York: Wiley, 1987. 299 p. £25.95. ISBN 0 471 91585 8.

This is such an interesting book that I wrote a short article about it for the *Journal of Information Science* (14, 1988, pp. 171-173) with the curious title "Megatrends, hot niches in the market, and Le Défi Japonais", However, this

absurd title does capture the flavour of it. An abridged version of this piece follows.

How do you get into the world's most dynamic area of activity and become a millionaire? Don't worry about the first part of the question, because if you are reading this review you are already in it—it is the Information Business. With regard to the second part, my own view is that you must, above all, be interested purely in the act of making money, and then more money. Don't be sidetracked into doing anything interesting or genuinely creative—spend your spare time in counting the stuff.

But if there is a life in the information business *en route* to affluence, consider first the underlying economics of the hardware and software business and reflect upon the failed policies of some of the players. Then look at the market and identify business opportunity niches, but make sure that you are running with the right megatrend so you don't get clobbered on the way.

This last paragraph is a concentrated summary of the advice given in this book. It is excellent in its first part "The anatomy of costs", very good in the second part "The dynamics of marketing" (although I wasn't inspired by the bit about Hot Niches in the Market), and average in the last part "Megatrends in Technology".

Anderla and Dunning are at their best when analysing trends. In their analysis of chip costs, for instance, they observe that the price/time decaying curve must flatten out—production volume increases and improved methods cannot go on for ever. A more comfortable, predictable, period will arrive and the squeeze on profits will diminish. However, once the production techniques are mastered, the higher the storage capacity the more rapidly does the price per kilobit fall.

In 1987, the price for 32K, 64K, and 128K chips was not greatly different, but the price per kilobit was 5.5, 3.1, and 1.4 cents respectively. The Americans chose to concentrate on the smaller capacities with already-flattened price/time curves supposedly ensuring predictable profits. The Japanese moved production to 128K and 256K devices where prices were still falling and engaged in crippling price cutting. Result—the Americans surrendered their leadership.

Later the authors wax lyrical about Electronic Imaging—"a fabulous market" for which "our synthetic approach brings out immediately the vital issues at stake... the greatest single challenge and opportunity in the closing years of this millenium". Quite so, but the growth of imaging techniques has been evident for some time.

In the seventies the Japanese refused to import fibreoptic cables—they waited until they could make their own. They mastered facsimile machine production driven by the Kanji character communication incentive and soon dominated world production. In 1980 the MITI-industrial clique decided to make a long-term investment in optoelectronics.

When the Xerox patents expired the Japanese moved in to the copying machine market, perfected the Trinitron colour CRT, concentrated on LED flat panel displays, and mass-produced small lasers with electro-mechanical tracking mechanisms. The resulting end products are scanners and laser-printers in Desk-

top Publishing Systems (DTP), reading lasers in CD, CD-ROM, and CD-I players, scanners in medical scanning systems, scanners in hand-held strip-copiers, flat panel displays in lap-top microcomputers, and array-sensors in TV cameras to name but a few. The addition of colour is now in progress.

Servain-Schreiber's book *Le Défi Américain* ("The American Challenge") contributed strongly to the French turnaround in information/telecommunication policy. What European response (or American response for that matter) is there to "Le Défi Japonais"?

In their conclusions the authors identify the "big prize"—"the till-now non-user market made up of over 90% of the population in Western countries... Enough discretionary purchasing power is now concentrated in the hands of persons of independent means, rich widows, employees in between two jobs, the retired, the handicapped etc., to provide vendors with an incentive to design/redesign information systems and aids tailored to the needs of these much neglected categories".

There are doubts about the "discretionary purchasing power" of some of these groups, but even if all of them, and many others besides, had a considerable amount of disposable income, what percentage of it would they spend on information products? There is not much evidence suggesting that people are thirsting for them. Information providers do not seem to think that this very large group constitute a market. Apart from financial services, even information services designed for other groups with an apparently obvious occupational need have not been conspicuously successful.

But regard my remarks mainly as an opportunity to hold forth on the few aspects of the topic which I have studied. This book is not couched in slow-moving, pompous, pseudo-scientific infospeak—it reads more like a novel. Highly recommended.

Blaise Cronin, ed., *Information Management: From Strategies to Action*. London: Aslib, 1985. 189 p. £19. ISBN 0 85142 193 8.

This book has not become dated; it is about a concept which is slow in maturing. It contains a number of articles written by well known people in the UK information business at Professor Cronin's (U. Strathclyde) invitation. Given the intangible and usually unquantifiable value of information and the all-pervading implication of Information Management the book does well. It contains a number of opinions about the need for Information Managers and about what needs to be managed—but is this missionary zeal less necessary in 1988 in view of a recent advertisement?

An advertisement—for "A Director of Information Systems & Telecommunications"—appeared in *Computer Weekly* for April 21st 1988, and offered up to £100,000 for the job. The applicant would head up a large department operating a big IBM installation, be responsible for all telecommunications in the UK and

Europe, control UK office automation etc. Note the track record requirements. They included human communication and strong management skills, systems policy and planning, and technical background in IBM systems and telecommunications. Does this mean that companies have at last decided that Information is a resource or commodity that needs high level attention?

The answer is that we cannot tell—the emphasis in the advertisement is on the technology. The word “information” seems superfluous as the system could hardly be handling anything else. The advertiser is probably looking for a Director of Data Processing and Telecommunications. That is not what this book is about—it’s about the co-ordination of Information, these days often in daunting quantities, from internal and external sources—and its distribution. Of course computer systems have their place but here the technology receives little discussion. The authors would probably agree with Peter Drucker’s comment made in the late seventies: “All great ideas ultimately degenerate into hardware”.

Martin White makes this point in his article “Intelligence Management”. The UK Cabinet Office 1983 report “Making a business of information” which emanated from an advisory panel (ITAP) “made a very good attempt at a very difficult subject...but the Government failed to grasp the essential difference between technology in the service of information and information technology”. In fact the report produced little government action.

White thinks that information management implicitly arrived in the US with the Brooks Act of 1965 on Automatic Data Processing. This gave rise to a Commission on Federal Paperwork and later The Paperwork Reduction Act (PL 96-511) of December 1980 was passed under the Carter administration. Federal agencies were required to appoint a senior official with duties amounting to information management.

The need for information management is well summarised by Peter Vickers in “Information Management: selling a concept”.

Management of information is not concerned simply with documents, messages, and data, but with the entire apparatus of information handling, which in most organisations today is in a state of anarchy. Such information-handling skills as do exist are scattered among information scientists, librarians, data processing personnel, systems designers, statisticians and records managers working in a variety of different departments...information management means bringing some order to the chaos.

The difficulties of implementing information management are outlined by Bob Wiggins, appointed Information Resources Manager at BP headquarters in 1984, but now at Scicon, in “The evolving information manager”. Most of the other authors enthusiastically proclaim the benefits of appointing a Manager of Information Resources. Wiggins anticipates the problems.

The co-ordination of information activities means nosing about in other people’s empires. Wiggins puts it “The need to satisfy local requirements often conflicts with corporate concerns for information”. He advocates planning and co-ordinating activities by the Manager of a small Information Resources Unit

which “should not become involved in the provision or detailed running of specific information services”. After talking about unnecessary duplication and the introduction of Standards he continues “considerable corporate and personal tensions are arising as organisations come to develop such an approach”.

This has the ring of reality about it and may well be one of the reasons why some of the ideas in this interesting book are taking root rather slowly.

J.M. Preston, ed., *Compact Disc Interactive—A Designer's Overview*. Deventer: Kluwer, 2nd ed., 1988. 238 p. \$39.95. ISBN 90 2012121 9.

CD-I players were first revealed at a Seattle conference in March 1988. These prototypes are expected to be followed by production models selling for less than \$1,000 and scheduled for the consumer launch in mid-1989.

With CD-ROM development there were some delays because of problems about Standards, although they were fewer than has been the case with earlier consumer products. It seems that the backers—Philips and Sony—are determined that there should be still fewer problems with CD-I. They produced a draft “Green Book” specification and finalised it quickly after numerous responses were received.

An important factor in 1989 will be the availability of CD-I Program titles. Quite a variety of organisations have taken the plunge obviously believing that the days of “vapourware” are past, that the idea will catch on, and that there is money to be made. The Titles include mystery games, children's books and interactive puzzles, music collections, a guide to plants, the exploration of flight, a child's atlas and a multi-media encyclopaedia. Some well-known names are among the program suppliers including Grolier, Penguin, Rand McNally, the Smithsonian Institution, and Time-Life Books.

This book is not a designer's guide and further editions are expected as experience is accumulated. It is claimed to be an introduction containing finer details for reference if needed. It turns out to be one of the very few books about new areas of Information Technology which does not assume that all readers will be programmers or computer buffs. The text is easily readable and is split into seven chapters—Introduction, Background, What It Can Do, Design Principles, Designing for Production, Typical Applications, and How it Works. An appendix summarises the technical specification, and there is an excellent 56-page glossary followed by a perfectly readable description of the operating system, CD-RTOS. The book concludes with a short index which is adequate in view of the 5-page table of contents at the beginning.

The market which is expected to develop for the interactive multi-media CD-I programs is obvious from the list of programs just given. CD-I is a development totally based on CD-DA—Compact Disk Digital Audio. When you go into your record shop you survey what everybody simply calls “CDs”. Launched in 1982, current total sales since then are about 550m. An add-on player costs around

£100 in the UK. The potentially superb quality is realised if you add it on to an existing high-quality amplifier, preferably with loudspeakers built in to the corners of a room.

CD-I design is an ingenious exercise in impressing and managing mixed-media data on a rotating disk played on a machine almost identical to a CD-DA player. The associated electronics and software are, however, something else altogether. Thus the relatively expensive bits are already mass-produced for CD players, and the relatively cheap bits are the chips for the electronics. The whole thing becomes available at a consumer-level price. CD-I programmes are displayed on the screen of either a US (NTSC standards) or European (PAL standards) TV set. These standards have been adopted world-wide although two or three countries use the French SECAM system.

The book provides a 35-page detailed description of the way CD-I works and rightly says that an understanding of the technical details will be necessary for creating a program or “authoring”. The supplier’s intention is to provide an authoring system comprising a number of tools—in other words special software associated with a workstation capable of simulating a CD-I in use.

The Philips/Sony team were up against quite severe constraints in providing the required facilities limited by a rotating disc with the track delivering data at 170.2 Kbytes per second from 75 sectors. The total capacity of a disc is 650 Mbytes.

If the CD-I contained simply audio data played back at 10.6 Kbytes/sec it would run for $650\text{M}/10.6\text{K}$ seconds or almost 17 hours. But if it was required to record a succession of full screen PAL colour TV data frames for motion, each of, say 1 Mbyte of data, then the total number of frames recordable on the disc would be $650/1 = 650$. This would be roughly equivalent to a TV programme lasting less than half a minute although from a CD-I it would last longer and would be in slow motion because of the disc’s 170.2 Kbytes/second bit rate delivery.

But thinking about CD-I in these terms is misleading. The CD-I player contains a store for holding a TV screenful of data—say a picture of a bunker on a golf course. The disc fills the store with data, and the stored data is repeatedly transferred on to the TV set’s screen at normal scanning rates. If the still picture lasts for ten seconds, no up-dating data is needed from the disc for that period. If then a golf ball alights in the bunker the disc delivers simply that very small amount of data needed to show the image of a ball occupying, say, less than 1% of the picture.

In fact once the disc has filled the store, then to keep the program going the disc is simply required to supply the *net difference data* between the new frame and the last one. The program design must be such that it will run to the user’s satisfaction without the screen refill rate ever exceeding 170.2 Kbytes/sec.

The CD-I electronics embodies a number of facilities to reduce this limitation and enable special effects as follows:

- Reduction of the colour data in pictures by special compression coding called DYUV.

- Providing for the coding of text and graphic images with a colour look-up table (CLUT) and Run-length Coding, which requires far less data.
- Providing the means for up-dating small areas of the screen in which motion is required at a rate acceptable to the eye—normally 10 to 15 frames per second.
- Providing four separate stores (image planes) with a total capacity of 1 Mbyte which can deliver data to the display simultaneously and in effect, permit four sets of data to be displayed. The benefits of this facility include:
 - The provision of “mattes” by overlaying the contents of one image plane with another. The “front” image may be partly transparent so that the “back” image is displayed, or a “solid” “front” image may have a transparent surround revealing a “background” image.
 - Move one image over another in order to provide full screen animation requiring far less data than with full-motion frames.

The associated software provides the necessary control including that for “interactive play” routines—for instance to enable a user with a suitable control device such as a joystick, mouse, etc., to set up a golfer to play a shot down what appears to be, say, the 18th hole at St. Andrews.

Anon, *The UK Information Industry: A Financial Survey*. London: Jordan & Sons, 1987. 117 p. £150. ISBN 085938 294 4.

The book contains a commentary on the industry by Phil Holmes and a series of tables with organisations ranked in different ways, e.g., by Turnover, Assets, Profits, etc. Lists of company information about 240 companies follow comprising 131 companies with at least one year’s full accounts, 24 with one year’s modified accounts, 41 including foreign owned, not trading, or with insufficient data for analysis, and 34 who have not yet filed. The book concludes with definitions of the terms used and an alphabetised lists of all companies covered.

The Information Industry is defined, for the purposes of this survey, as “those companies who exploit computers and other new technologies to generate and/or supply information to third parties...including creators of library and information systems, specialist software houses, consultants, specialist conference organisers, and journal publishers”.

This definition seems somewhat out of line with others although opinions about what constitutes the “Information Industry” vary widely. For instance membership of the US Information Industries Association includes telecommunication companies, newspaper publishers, software suppliers, system designers, and processing bureaux.

Holmes considers that the UK industry is fragile, with business information providers showing the best performance. The size of the industry is hard to estimate and none is provided; many suppliers are not incorporated in the UK.

Ten companies with a turnover exceeding one hundred million pounds in 1986 are shown, ranked as follows: Reed International, International Thomson, Re-

uters Holdings, Maxwell Communication Corp., Pergamon Holdings,, Extel Group, Honeywell Information Systems, Honeywell Control Systems, AGB Research, and Reed Publishing.

In 1986 the pre-tax profits of 12 companies exceeded seven million pounds: Reed, Reuters, Maxwell, Thomson, Honeywell Information, Financial Times, Extel, Pergamon, Butterworth, AGB Research, Scicon, and Dun & Bradstreet.

If you want information about UK companies in the information business for whatever reason, this is probably the best source available.

William J. Martin, *The Information Society*. London: Aslib, 1988. 174 p. £24. ISBN 0 85142 219 5.

As a well rounded broad review of the many facets of the Information Society this book could hardly be bettered. The chapters cover the Nature of Information, Communication, Information Technology, The Information Society, Social Impacts, Economics, The Information Industry, Information Management, International Aspects and Policy. Appropriately enough the author is lavish with his references and there is also a very good index. Why can't all books contain a complete list of the abbreviations and acronyms used, as does this one?

According to the Preface The book "seeks to put across a different way of looking at society and at contemporary events, particularly those in the economic sphere". If this means that for many people the notion of interpreting a wide range of human activities under the general heading "The information society" will be different, then this statement is correct. People already familiar with the concept will not find very much different or new—what they will find is comprehensivity.

The author succeeds in covering that incredibly broad subject "Information Technology" in one chapter and manages to pack down some equally wide areas in others. Small wonder that several aspects which could have been included do not appear.

There is no mention of the many devices classifiable under "optoelectronics" or "imaging"—extravagantly described in the Anderla and Dunning book already reviewed as "the greatest opportunity...in the closing years of this millennium". It also seems strange that nothing is said in Chapter 5, "Social Impacts", about the widely discussed "Information rich–Information poor" idea—the concluding paragraph in this chapter headed "Alienation" concentrates on unemployment. In recent re-examinations of this issue it appears that the connection between information technology and unemployment is weaker than was thought a few years ago.

I also found that while the Chapter entitled "The economics of the information society" covered this subject quite well, there were some notable omissions. Price/demand elasticity problems received little discussion. Flowerdew and

Whitehead's work was appropriately cited but the notable work by Arrow and Stigler in this field—both received Nobel prizes for it—received no mention.

Apart from some omissions what about inclusions? The table on page 40 clearly sets out the criteria for the development of an information society. People who pick up the idea as if a new era is already here should read it carefully. The headings are Technological criteria, Social criteria, Economic criteria, Political criteria, and Cultural criteria. When and if the details of these criteria are met then the Information Society will have arrived.

A.E. Cawkell