

However, there's no denying it makes for an agreeable read, and most readers of this journal are likely to find much of interest, especially in looking at how "flagship" applications have emerged successfully in such a diversity of organizations. It should be pointed out that the world mostly consists of the USA and Japan, and that Europe outside the UK doesn't get a look in. DP or MIS departments are given a hard time, one of the threads running through this book being their reported hostility or inertia where expert systems ideas are concerned.

The book is mostly not about the technology of expert systems, nor about how the highlighted examples achieve their effects. Instead, most chapters contain one or more case histories of how expert systems infiltrated a corporation or a bureaucracy. The emphasis throughout is on stories about people—highly-placed champions who protect the first awkward investment until a spectacular payoff takes place, or individual workers fired with enthusiasm to show a better way forward. More than one such story, particularly in the latter half of the book, dribbles away into anticlimax, but this is offset by the fun of reading some of the others and comparing cultures.

In most cases, the level of cost saving or productivity increase due to the introduction of an expert system is clearly identified. These primary concerns make the book particularly appropriate for managers wanting to look beyond simple hype to some concrete examples using monetary and organizational criteria of success. As long as they are clear-eyed about the deliberate narrowness of some of the domains in which this success is achieved, and also about the book's bias towards success stories, they should gain from reading it. For instance, in the chapter on the Du Pont company, we find a Du Pont executive saying, "... we have averaged over the seventy expert systems in routine use seven times return on our money". Combine that with the statement a paragraph later that "... typically, a system requires a man-month of effort to build and yields \$100,000 savings per year", and it is difficult not to sit up and take notice.

Clearly, a system that takes a man-month to build is not going to make AI researches excited, and they will perhaps be inclined to dismiss the book rather too readily. There are plenty of books now that deal with the theoretical underpinnings of expert systems technology, and that do good service by making us keenly aware of how crude the existing examples will look in 20 years' time, say. There has been for some time a need to expand the current stock of documented (well, outlined) instances of expert systems paying their way in grand style. Feigenbaum and his co-authors have written a book that will find a place on many companies' shelves as a source of useful ammunition, and that will also serve as a snapshot of a consolidating technology at a particular time.

The rise of the expert company (2) by Edward Feigenbaum, Pamela McCorduck and H. Penny Nii, Macmillan 1988, pp 322, £14.95.

This is disappointing stuff. It must be clear to anyone who has worked with expert systems that for every one that is dealing with real world problems there are many that are at best demonstrators. (I was tempted to say "50" rather than "many" but resisted the temptation towards further hyperbole.)

The real challenge now is to identify the circumstances that determine whether a system is going to succeed in the real world, yet nothing is said on this crucial topic. My own work encourages me to offer the following; I do this tentatively.

For success there must be an executive with authority to spend the necessary money. He must know how the system will be used and by whom. He must have reasonable evidence that it will help to make better and quicker decisions and that it will help to ensure that all relevant factors have been addressed. He must be sure that the method of use will be understood by the proposed users. He, or his advisers, must ensure that the system is introduced in a non-threatening way. Above all he should carry out a cost/benefit study in advance and be reasonably sure that the cost will be justified.

We might add to these comments that our executive is more likely to succeed if he adopts a problem-oriented approach rather than one which tries to find applications for an existing solution. He should be prepared to accept, and even welcome, solutions that are not expert systems and should be encouraged if the solution is a hybrid.

I offer these comments tentatively as the research I have done is not yet sufficient to be more positive. My view about general publications on expert systems is that they should be addressing these very real problems.

Although "The rise of the expert company" makes reference to a number of real world systems, it is anecdotal rather than explanatory. We are told how enthusiastic everyone is and, in general terms, we are told how each system works. What we are not told is the detail of the environment in which they were produced. In regard to most of the systems we are left with a host of unanswered questions such as

- Does the system merely select from a number of pre-determined outcomes?
- Does the system represent expertise that existed originally, or has the production of the system involved research into the nature of the domain?
- Could the system have been written without difficulty as an algorithm?

Some years ago perhaps, a book which described expert systems in glowing terms, as the New Jerusalem of computing, may have served a useful purpose. The research community may have needed stimulation to get started. But now surely we need careful analysis of the conditions that promote success. We need to know why such a high proportion of systems remain as fascinating demonstrators rather than real world tools. Armed with this knowledge we could move forward at a greater rate towards the exploitation of the brilliant ideas that have characterized the development of this new technology.

The rise of the expert company (3) by Edward Feigenbaum, Pamela McCorduck and H. Penny Nii, Macmillan 1988, pp 322, £14.95.

It is difficult to read this book without feeling a mixture of admiration and irritation; admiration at the infectious enthusiasm and lucid style of the authors and irritation at the understatement here and the overstatement there deftly woven to give a particular impression; admiration at the determination of individuals ("champions" as they are called here) who are chronicles in these case studies as pushing against much resistance to embrace new technology and irritation at the lack of recognition of the European contribution to the field of expert and knowledge-based systems. Therefore, on the one hand, I am inclined to recommend that every European researcher should read it in the hope that a similar reaction might inspire and galvanise them into furious and constructive activity. On the other hand, I can well imagine that the pot-boiler cover and the acknowledged business manager audience might be offputting for industrial and academic researchers who pale at the mention of such phrases as "killer technology", "return on investment" and "internal rate of return".

It will be disheartening for many to witness the authors' put-down, gentle as it is, of the European expert and knowledge-based systems scene. The classification of expert systems in use in Europe as rare and "rabbit" sized may be correct in comparison to the many "buffaloes" implemented in the USA ("elephants" are yet to evolve). Perhaps, the more reticent European style and, in particular, the British fear of overt enthusiasm—something which oozes from every page here—are restraining a number of "buffaloes" awaiting liberation. Moreover, as some of us have found when experimenting with different knowledge representation formalisms, a large knowledge base may just be a question of rabbits dressed in a buffalo's clothing. However, to be fair to the authors, they do give Ed Mahler of Du Pont considerable free rein and column inches to espouse his "small is beautiful" philosophy. Small as Du Pont's expert systems are (some are of the order of one man-month in the making), they are reputed to be over 200 in number and have an estimated "return on investment" of some ten million dollars over the past four years.

No doubt, there will be much sympathy with the view of ESPRIT expressed thus; "as usual with things European, the terms were complex". For many academic and no doubt for many industrial researchers, jumping through hoops and over hurdles while competing for European funding has