

though it was set up within twenty yards of them. Perhaps most depressing for the designers was that “no actual arrests were made . . . so at the end of the trial it was not possible to say conclusively that the system does detect the correct burglars”, nor, I would add, that it does not detect too many incorrect ones. In spite of these obstacles, which are instructive in themselves, the book gives an interesting and convincing account of the value of this prototype. The lessons learned are applicable to other areas, such as clinical diagnosis which has to deal with case histories and many sources of data within the hospital administration. Indeed this project addresses a huge potential market, the application of expert systems to the problem of administrative paperwork in any large organization.

The book also describes a fault-finding diagnostic system for a substantial network maintained by ISTE Ltd. I have to say that I did not get so much enlightenment from the description of this project, but the area of expert systems applied to the maintenance of large scale information systems clearly targets another market with enormous potential. The last system concerns a motor car assembly line. Apparently the robots in control of paint spraying sometimes spray the oncoming cars with the wrong colour and this has to be ‘rectified’ at extra cost. The point of this application was to show that the system could be used in a real time context. The final section of the book is concerned with a restricted form of natural language interface for rule acquisition. After a review of some aspects of natural language processing, an interface is described which is menu-driven but allows the expert to respond in natural language.

In summary I would recommend the book to the expert system practitioner and to students specializing in this field. It has the important merits of encouraging a clear logical way of using Prolog, a very systematic way of analyzing problem specifications in three important application areas, and it collects under one cover the necessary background material. There are also many points of interest for the researcher, especially in the treatment of the applications and the rule acquisition interface.

The rise of the expert company (1) by Edward Feigenbaum, Pamela McCorduck and H. Penny Nii, Macmillan 1988, pp. 322, £14.95.

It is difficult to come away from reading this book with other than a feeling of optimism and satisfaction. Here, it would seem, are a set of ready answers to those questions that the unconverted frequently pose—“After XCON and Dipmeter Advisor, then what? Where are the installed expert systems that really offer a payback?”. Well, take your pick from dozens of examples in this book—from steel furnaces to disk drives, from the early estimation of building costs to the evaluation of medical care in the NHS. The range is deliberately chosen to be wide and impressive, the claims for the savings in human time are often startling.

And yet it is also difficult to come away without a feeling of unease and frustration. Wouldn't it all be even more impressive if some failures were reported in the book too, and their causes discussed a little? What about all the prototypes that don't scale up into money-spinners? Whose fingers got burned in tackling the technology unwisely, and what can we learn from their mistakes? There is nothing of that to be found within these pages, and it results in a distinctly unbalanced tale.

Prof. Feigenbaum was recently quoted in an interview in a British computing newspaper as saying that the authors wanted to include some negative stories, but could find none. I doubt whether this means that failures cannot be found when one digs for them; more likely, it reflects a natural preference within companies for positive image making in a book like this. The authors clearly derived much of their material from interviews with the successful knowledge engineers, experts and technology champions in these companies. This is an entirely natural and reasonable thing to do, but it is as well to approach it with a healthy curiosity about the casualties of the learning curve, too. I don't regard it, for instance, as sullyng the reputation of my own employer, some of whose successful internal applications are well covered in the early part of the book, to comment that not every prototype started within the company has been successfully scaled up or has found a profitable niche.

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.