

Expert system applications' reviews

"Employment Law" Software by Expertech/Robson Rhodes

Available from Expertech House, 163 Bestobell Road

Slough, BERKS SL1 4TY. £295 per package. Suitable hardware: IBM PCs and compatibles

Reviewed by Keith Bannerman, Legal Systems Ltd; and John Mawhood, Nabarro Nathanson, London
Introduced by Dr Richard Susskind, Ernst and Young, UK

One of the major problems that will face users of expert systems in the future will be that of uncertainty over the quality of off-the-shelf application packages. Will the systems that claim, for instance, to interpret legislation do so reliably (never mind at the level of a human expert)? What about systems that will allegedly predict movements within the financial markets, or design building structures, or monitor the performance of plant and machinery; will these systems be dependable?

The consumer has a problem here. Paradoxically, the very fact that a person feels that he has serious need of an expert system invariably disqualifies that person from being an appropriate judge of the extent of the fallibility of the system in question: if you need an expert system, you can hardly be well placed to assess the quality of its expertise.

A similar problem might be said to confront readers of books. Yet there are a set of established social practices in relation to the activity of book reading. Readers examine the biographical details of authors, the quality of publishers. They are guided too by the presence of rival texts and by well settled conventions regarding cost. Furthermore, book reviews are invariably available for scrutiny. So book readers can make informed judgements about texts they are considering reading. Potential users of expert systems applications have far less to guide them.

Currently, one of the major sources of information about expert systems is the marketing, sales and promotional material that accompanies and advertises such products. Yet if people are to use expert systems responsibly, even as "intelligent assistants", they should surely have independent confirmation that any given application is authentic in terms of the knowledge it holds and robust by way of the technology deployed. There are, then, two issues here. First, does the system contain expertise? The AI community has a rather checkered history in this regard. For example, software houses and universities have developed so-called expert systems in law with no assistance from anyone who could reasonably be termed an expert. The knowledge has been derived from persons who would not dream of writing articles or books on the domain of application. The results have been expert systems, prejudicial to consumers and the AI community alike.

The second issue is the quality of the knowledge and software engineering. Even if a first rate expert has been working on the project, has his expertise been represented rigorously and methodically? Systems must be assessed for their computational and technical reliability.

To whom, then, can consumers turn for advice on particular applications? Currently, there are no such advisers. A sound assessment presupposes both domain and technical knowledge. Few are qualified to undertake impartial and authoritative evaluations. Even fewer have the time. It may well be in years to come that independent professional and trade bodies will bestow or withhold stamps of approval on systems. Or the expert systems or computing industries themselves may set up organizations to perform these functions.

Yet such bodies take years to set up. It is surely crucial, for prudential (and legal) reasons, that steps are taken immediately to guide possible users on the worth of systems upon which they may rely to their potential and significant detriment. What can be done now to endorse, or cast doubt on the quality of, particular expert systems applications?

Just as books are reviewed by authoritative commentators, is there not also a place in expert systems for evaluations of application packages? We believe there is and that a portion of such journals can valuably be devoted to this. It will not always be easy to identify reviewers with the necessary credentials, but we will endeavour to do so. We would appreciate developers' cooperation

in this respect and would encourage them to submit systems to us for scrutiny and appraisal. Thus we will be able to promote reliable systems and protect consumers and the AI industry from products of dubious quality.

Review by Keith Bannerman

Lawyers have many skills, for example advocacy, integrity, and objectivity. One such quality is the ability to apply a set of rules to work on a factual problem that is supplied by the client. It is this particular attribute which is, in theory, replicable by a knowledge-based expert system provided that it knows all the rules in question. Thus the "client" can commune with his "silicon solicitor" via a VDU and obtain the legal advice that is required.

Are legions of Luddite Lawyers rioting in protest at the technology that threatens their livelihood? Not at all—the reason being that there are virtually no functional legal knowledge-based systems available. Of the handful that do exist, the employment law topic must be one of the most promising subjects. It fits the "classic pattern" of expert system selection in that the scope is a well defined discrete area of the law, specified (largely) by the UK Employment Protection Act 1978 and the accompanying ACAS guidelines. So the field is complex enough to merit an expert system but not so huge as to defeat one. It is relevant to a large audience of non-lawyers (potentially every employer and employee in the country) and the field is fairly static as there is no legislation pending and the Industrial Tribunal tried not to bind itself with the precedent of decided cases.

Robson Rhodes have chosen their subject matter wisely—But is it a competent lawyer?

A protracted excursion through the system would cause me to award it an upper second class honours degree, at least. The bulk of material is concerned with dismissal (which divides into a number of routines to clarify all the law relating to Unfair dismissal, Justified dismissal and Redundancy. I was unable to fault the system and so was forced (as lawyers are fond of saying) to concur with it. With remorseless but courteous efficiency the system conducts a consultation by asking questions of the user until the problem is sufficiently defined for a conclusion to be proffered. The advice is comprehensive and the system is even kind enough to perform calculations where necessary, so that payment awards are quantified. Some consultations can appear very brief but this fact is inevitable given the variety of potential problems and the necessary number of entry/exit points from the system. A three question session is not inferior to a fifty screen marathon, although a human lawyer might never be so succinct!

It has to be said that the screen formats presented to the user are a little unimaginative, with no attempt to break up the text with colours and designs. This is probably due to the Expertech Xi plus development environment. Many users would prefer a more graphic format, such as that provided by Creative Logic's Leonardo.

What about the workers?

Another mild criticism is that the preponderance of text in the system is tilted towards advising employers. The law is just the same for "us" and "them". If I were a Trades Union user I might well become irritated by the system's attitude.

Where is it employed?

The system is now in its second year and purports to be aimed at small to medium-sized businesses. Not surprisingly, it is being used by large corporations for management training purposes—currently this is the "safest" place for expert systems! They can do no damage there and people do tend to remember their lessons well, perhaps due to the novelty.

The writers claim that 100 copies have been "shipped" of what is (or was) the largest PC based expert system available, comprising four release disks. At £295 this must represent good value, considering that such a sum would only buy the services of a lawyer for one day on the current Legal Aid rates. The system deserves to spread further. The obstacles are likely to be:

- 1 Large firms already have in-house lawyers
- 2 Smaller firms may not be inclined to invest in a PC and the software when it might not be warranted.

We must expect the rising corporate awareness of expert systems to gain momentum and help promulgate such excellent products.

KEITH BANNERMAN is a barrister and director of Legal Systems Ltd. He has recently written a Sentencing Law Advisor.

Review by John Mawhood

Amongst those who work with them the term "expert systems" is increasingly regarded as a misnomer. The word "expert" somehow implies that the system is capable of supplanting a human expert. The reality is quite different; it would be better if we could all use a different expression, such as "advice system".

There may be objections that there have been systems whose "knowledge" exceeds that of experts in its domain. But how well can any system cope with circumstances that are wholly outside its knowledge, or apply its knowledge to problems outside its domain? The kind of systems which we may anticipate will become common, such as the Robson Rhodes/Expertech Employment Law Adviser, are really animated textbooks.

That may sound derogatory but in fact it is quite the reverse. For too long the focus of attention has been a kind of quest for a Holy Grail of artificial intelligence. There has been much hype but little in terms of general commercial usefulness has appeared. Unsurprisingly there is much scepticism about what can be done. What is required is a clear perspective on what can be achieved with advice systems. They have all the advantages of a text book or manual and some.

You can put knowhow about how a task is resolved into an advice system. This is precisely what has been done with the Employment Law Adviser. The knowhow of a number of "experts" in the domain of Employment Law has been carefully noted down, organized and written into an "expert system shell" (Xi Plus).

As a lawyer I can confess to being reasonably impressed with the system. I am not an employment law specialist but I could use it to generate a "perspective" on employment law issues that come up in my work. In doing this I found it a little confusing to use, but this may have been because I perhaps "know too much" already. It is clearly intended for use by a personnel manager or other "boss" figure in an employing position.

My criticisms relate more to style of presentation rather than any shortcoming in the technology. For example, I found that when you called up "help" at various questions you were simply offered a glossary of terms. Perhaps the designers assume that the user will only want help with a question when they do not understand a term. Similarly the "why" option calls up the underlying rule of the knowledge base which is in execution at the point that you are being asked the question. Although the rules are sometimes informative (more about the way the knowledge is structured and how you are conducted around it), they do not really address the kind of "why"s that people really ask when faced with a question from an adviser, namely: what is the range of possible answers, and what are consequences in general terms of them, why are you asking me this *now* etc?

The organization of the system did not seem to differentiate between a consultation where you have already sacked an employee and where you are contemplating doing so. This could make a difference and, one imagines, have helped make the comments made and the advice produced more focused. For example if you had already sacked someone without offering adequate opportunity for

their case to be investigated it is not very helpful to be told you should not sack them without proper investigation.

I would have thought that it was reasonable to anticipate that a user would be wishing to get advice on how best to extricate themselves from the situation (they might only buy the system after sacking someone).

This could be said to be a shortcoming of the system in that it is the context of the potential user that is almost as important as the information contained in the system. It is fair to say that the system offered plenty of opportunities to go off into different areas and one never felt stuck in an avenue of fruitless investigation.

As advice systems are still in their infancy we can benefit from comparing them to traditional advice systems, such as books or lectures. With a book there is a great deal of "body language" which is not contained in the text itself. The style of presentation, quality of production, name of the author and even the particular publisher, imply to the informed reader the quality of information that may be expected. Commonly reference works have contents pages and detailed indexes, which are difficult to prepare well. The weight of the book also gives a ready measure of its "depth". All of these factors influence the degree of weight which the user may give to the information derived from the book.

An advice system delivered as a number of disks is wholly outside the experience of the average user. It lacks (unless they are provided within the system itself) the visual and tactile cues of traditional printed matter. It was interesting that this system came in a thin cardboard folder with a pack of disks and some loose sheets of paper stapled together on which was a brief description of the two parts of the system and suggestions as to who might find it useful together with installation instructions.

Considering what can be offered in terms of visual stimuli via the screen of a computer at present, I believe there is still much scope for improvement of the interface and the concepts of representation of the knowledge within advice systems. As a medium for the publication of information, advice systems are no different from more traditional methods in requiring considerable attention to the quality of the expression and organization of the information. We can expect a whole new area of media to appear with new techniques and devices perhaps, but in the mean time much can usually be brought forward from the "technology".

Recent reports have made the rosiest of predictions for the future of "expert systems". Where this happens the degree of satisfaction and overall benefit will be enhanced if care is taken to exploit the medium properly. There is undoubtedly a role for systems such as Robson Rhodes' Employment Law system and it should be welcomed for its pioneering work.