# A Computerised Business Ethics Expert System -A new approach to improving the ethical quality of business decision-making

Bernie Brenner

Dept Health Informatics, University of Otago, Auckland Campus, New Zealand

## Abstract

Where unethical business decision-making arises from failures of ethical perception, there is an important role for ethical training and decision-making tools. These may help business people to consider all relevant issues when assessing the ethical status of potential decisions. Ethical training programmes give business people a basic understanding of the principles which underlie ethical judgements and equip them with many of the necessary skills for dealing with the ethical dilemmas which they face in their jobs. Similarly, ethical decision-making tools may guide managers through the various ethical considerations which are relevant to business decision-making and help them to develop their ethical-perceptual skills. Furthermore, by establishing and reinforcing good ethical decision-making practices, training programmes and decision-making tools may also reduce the incidence of self-consciously unethical decision-making.

A new approach to improving the ethical quality of business decision-making by the use of computerized business ethics expert systems is proposed. These systems have the potential to guide business people through a process of ethical evaluation while simultaneously fulfilling an educational role, thus providing many of the benefits of both training programmes and decision-making tools. While the prospect of a computer system which could simply make ethical judgements for business people is both unrealistic and undesirable, a system which leads human decision-makers through a structured assessment process has the potential for genuine benefits.

**Keywords:** Expert Systems, Ethical Decision Making

## The Prototype Business Ethics Expert System

A Business Ethics Expert System prototype has been developed. The expert system asks the user several questions which are intended to shed light on key areas pertaining to ethical decision-making. The questions generally represent ethical principles which were identified as particularly powerful and useful by New Zealand and US business people in our study and in that of Carroll (1990). [4] These questions and the principles to which they each correspond are presented below. In addition, one question asks the user to rate the extent to which one would show integrity and a sense of justice by taking the potential course of action. This is intended to grasp an element of virtue ethics – an approach which has received considerable support in business ethics literature in recent years. The expert system also asks the user to state whether the conditions under which the decision is being made are stable or difficult. Where these are rated as difficult, the system is slightly more permissive, taking into account the other pressures which are faced by the decision-maker. Our research has highlighted differences in cross cultural ethical perceptions and also reviewed differences between self and non-self employed people within a national framework. These features are incorporated into the expert system and

play a role in terms of alerting the user of the risks in cross cultural ethical contact as in the case of the former and the relatively higher weighting for ethical egoism as in the latter.

Multiple-choice answers are offered for each question and users respond by selecting the one which best accords with their assessment of the situation. Based on the responses given by the operator, the Expert System evaluates the likelihood of the proposed decision or action being unethical and highlights particular aspects which may be ethically questionable. An overall evaluation is offered at the end and a score in percentage terms is delivered.

The expert system shell used for this project is Exsys Professional (Exsys Inc.). The software is a rule based expert system where if-then-else rules are used to describe the logic of the system. It supports fuzzy logic, an approach which allows it to reflect more closely real world processes, assigning degrees of confidence to various possible options based on the value of a variable.

### Question asked by Expert System with the principle involved in brackets

*The Cultural and Ethical framework you most closely identify with is: (Cultural Differences)*
*Is your main current employment? (Organisations/ Entrepreneurs)*
*How would you describe the current business environment? Chaos Theory)*
*Faced with an ethical dilemma would you feel that your decision is strong enough to become a universal law and be valid for all time. (Categorical Imperative)*
*Faced with an ethical dilemma you make a decision. Would you feel totally comfortable if this decision was printed in the local newspaper and made known to your family and friends. (Disclosure Rule)*
*As a general rule do you follow the principle of: "do unto others as you would have them do unto you?" (Golden Rule)*
*In dealing with an Ethical dilemma would you act in the best interests of the majority of people affected. (Utilitarianism)*
*In coming to a decision on an Ethical dilemma do you believe you have acted with integrity and good judgement? (Virtue Ethics)*
*Would a committee of your peers find your decision acceptable? (Peer Ethics)*

*Do you believe that this is an age of large-scale organisations - in making ethical decisions you should be loyal to the organisation. (Organisation Ethics)*
*When making an ethical decision you believe you should act primarily in your own interests. (Ethical Egoism)*

The system deals with knowledge (which is represented by rules) rather than data. A rule is made up of a list of IF conditions and a list of THEN conditions or statements about the probability of a particular data or choice being the appropriate solution to the problem. Wherever possible the program will derive information rather than asking the user. This ability allows the program to combine many small pieces of knowledge to arrive at logical conclusions about complex problems.

Each rule has the ability to be referenced, facilitating the provision of background information on the principles which underlie the system's evaluative processes. This is intended to help the end user find the source of the knowledge contained within a rule or more information should they need it. This is, of course, most useful in the context of "teaching" business ethics to the user and explaining the rationale behind decisions. For example, users could request more information about the background reasoning which lies behind a specific question or principle. This information can be provided at increasing levels of complexity to satisfy the interest of the user and supplement his or her understanding of the ethical decision-making process. Potentially, a massive amount of information could be stored by the expert system and accessed by these means. This would allow users to develop a highly detailed knowledge of business ethics, learning about practical examples which illustrate the importance of a given ethical principle as well as the historical and cultural background of the principle.

This approach adopted by the Expert System serves a number of purposes. Most importantly it ensures a significant degree of

human involvement in the evaluative process. This overcomes the danger that managers could delegate all ethical responsibility to the Expert System in the false belief that the use of the System absolved them of any personal ethical responsibility. The use of a Business Ethics Expert System would not remove managers from the process of ethical decision-making, on the contrary it would allow them a significantly deeper involvement in ethical considerations. Using a Business Ethics Expert System is not simply a matter of inputting basic facts and then waiting for the computer to generate a solution, instead the system guides its operator through the relevant ethical considerations, providing information about different ethical approaches along the way, and ultimately advising which factors require further consideration before the proposed course of action should be pursued. Rather than alienating users from ethical issues, it requires that they reflect carefully upon them and it ensures that their reflections are both structured and informed.

## An Interactive Approach

This deep involvement by the human decision-maker also has important practical advantages. As James H. Moor [8] points out in his 1995 article 'Is Ethics Computable?', computers possess strictly limited cognitive powers. Making ethical decisions requires a great deal of information about the world. For example, in order to perform a utilitarian calculus we must have an elaborate knowledge of the consequences that are likely to flow from a given action. The incredibly rich detail required by the computer if it is to make unaided ethical decisions is a major stumbling block, however humans are well equipped to perform such complex cognitive activity. By asking questions of its operator the computer makes use of humans' impressive cognitive abilities and then utilises this information to make complex calculations and derive objective logical conclusions, activities for which we humans may not be so well equipped. In doing this the decision-making process employs a cognition versus computation division of labour between the human operators and their computers, a split

which reflects the respective strengths of the two (Moor, 1995) [8]. A further barrier which Moor identifies to the creation of an ethical computer is the difficulty in defining ethical goodness. The level of complexity and abstraction involved in the notion of "goodness" may appear to make it impossible for us to teach a computer to make ethically sound judgements. Again this difficulty is minimised through the use of a question-centred approach to ethical evaluations. As Nash (1981) [9] points out, while it is true that philosophers have pursued a definitive statement on the nature of the "good" for thousands of years without achieving any consensus, business ethics typically avoids abstract theoretical issues, remaining firmly grounded in concrete, real-life considerations. "Goodness" in business ethics terms is therefore best thought of as a quality of particular actions, decisions or organizations rather than an amorphous, hypothetical ideal. In keeping with this, Nash defines ethically good businesses simply as those which pursue their profit-making goals without causing "irretrievable social injury" (Nash, 1981)[9]. Under such a definition particular actions or decisions are ethically good in so far as they avoid such injury, and decisions or actions that accord with well chosen ethical principles, standards and tests are highly likely to meet this requirement. Therefore our Business Ethics Expert System need not hold any conception of the absolute good in order to make good ethical decisions, it simply has to follow prescribed principles and rules to prevent social injury and meet common ethical expectations.

Some may question whether we can genuinely capture the essence of ethical expertise through a computational process. It has been claimed that human experts do not rely on clearly expressible rules to guide their performance but rather act on the basis of finely-honed intuitions (Johnson, 1983). Just as an expert driver changes gears without conscious calculation or consideration of alternatives, an ethical expert may know how to act ethically without the need for reflective thought or recourse to guiding principles (Dreyfus, 1992)[5]. Since such intuitive

knowledge does not reach the level of conscious reflection, when experts are asked to explain their decision-making processes they fall back on the principles and rules that they used before they reached their highly-developed level of expertise. It may therefore be argued that an expert system which employs rules and heuristics is based on an inauthentic account of the expert decision-making process. Even if we choose to accept this understanding of human ethical expertise, we do not believe that it undermines the validity of a Business Ethics Expert System. Although rule-following may not reflect the *method* of ethical decision-making employed by human experts, this does not prevent them from reproducing expert decisions. We generally judge the ethics of a person or business according to the decisions that they make rather than the processes by which these decisions are reached. Evaluating ethical expertise is a matter of comparing ethical decisions and actions with those of experts rather than comparing the processes which underlie these decisions and actions. This suggests that we may measure the success of a Business Ethics Expert System by the degree to which its judgements conform to the ethical judgements of experts in business ethics. The fact that a rule-based expert system will not make decisions *in the same manner* as a human expert does not mean it cannot reach the same ethical decisions. In fact, a system such as ours which incorporates fuzzy logic should be able to make decisions which closely approximate those of human experts. The suggestion that human experts function at an intuitive rather than a reflective level may lead some to question the worth of a Business Ethics Expert System. Previous studies have indicated that many managers feel that personal intuitions are the most valuable ethical decision-making tool (Carroll, 1990) [4] and research findings which equate expertise with intuitive judgement seem to vindicate such a view. On this view a Business Ethics Expert System may be seen as superfluous - all a manager has to do to be ethical is follow his or her intuitions.

We believe that such a view is misguided - many business people are not ethical experts and their intuitive responses to ethical dilemmas have not reached an expert level. Intuitive expertise is developed through regular positive reinforcement of ethical conduct (Dreyfus, 1992) [5] and sadly the business world is not always the best environment in which to nurture worthy intuitions. Surveys of the state of business ethics show that the everyday deportment of business people is not particularly ethical and that good ethical behaviour does not generally receive positive reinforcement. In fact there is much evidence to suggest that pressure from superiors is a major influence in *unethical* behaviour (Carroll, 1975 [3]; Getschow, 1979 [6]; Posner & Schmidt, 1984 [10]; Soutar *et al*, 1994 [12]). This suggests that managers will not develop ethical expertise through environmental reinforcement - if anything the opposite will occur. As a result of this it seems unlikely that their intuitive ethical development will reach expert level. This makes the type of principled guidance available from a Business Ethics Expert System all the more important. Furthermore, while ethical intuition may guide everyday ethical deportment, they are of little help when one is faced by an unfamiliar situation. Here one has insufficient relevant experience to yield an appropriate intuitive response and even experts must deliberate carefully and seek guidance from general principles. In these extra-ordinary and unfamiliar cases (and most major decisions are in some way extra-ordinary and unfamiliar) a Business Ethics Expert System would be a highly useful decision-making tool.

A further benefit of a principle-based approach to ethical decisions over that of pure intuition is the fact that principles can be explained to others in a way that personal intuitions cannot. An important aspect of ethical decision-making in business is being able to justify one's decisions to others, and the way others are likely to perceive an action or decision is a significant factor in assessing whether or not it is ethically sound (Brenner & Molander, 1977 [2]; Carroll, 1990 [4]). In turn, the way one's decisions are perceived by others is affected by the justifications one may offer for those decisions. While personal

ethical decisions may be made purely on the basis of intuition, business decisions characteristically affect large groups of people and so the decision-maker may well be asked to justify their decision to the affected parties. Justifications in terms of personal intuitions will carry little weight with others - one must be able to explain one's decisions in terms of widely understood and accepted principles. It is therefore especially important that business ethics decisions are rule-based, and the conclusions offered by our Business Ethics Expert System which discuss the proposed action in terms of ethical principles are particularly valuable.

### Conclusions

Expert systems represent a valuable new tool in the struggle to improve ethical standards in business. They have the potential to enhance the quality of ethical decision-making both through the computational capabilities which they may bring to the evaluative process and through their ability to store and access detailed information which may be made available to users whenever it becomes relevant. As well as guiding business people through the ethical aspects of specific decisions, the Business Ethics Expert System could prove extremely valuable in providing them with a general education in business ethics. The system provides a structured approach to decision-making, casting light on the multiplicity of ethical aspects involved in business decisions. The background information which it provides on ethical principles gives business people the opportunity to learn about abstract concepts through their own concrete examples. Such a process may prove to be more educational and valuable to the user's personal ethical development than any number of ethics lectures and generalised codes. The use of a business ethics expert system may also be particularly valuable for those involved in cross-cultural commercial interaction. Since business people from different cultures draw on different principles when assessing the ethical quality of a course of action, it would be helpful if one could use an expert system to guide one through the process of ethical evaluation as it is ideally carried out in another culture. The expert system could provide one with a great deal of information about this principle, thus explaining its historical origins in Western culture and the reasoning which lies behind it. Through such an interactive and informative decision-making process inter-cultural understanding can be fostered and the path of international commercial activity can be made a little smoother.

Of course, the utility of a business ethics expert system is not restricted to cross-cultural situations. The unattractive picture of the ethical health of the Western business world which has been revealed by numerous studies indicates that even those who have been immersed in a culture since birth may often fail to meet its ethical norms (Baumhart, 1961 [1]; Carroll, 1975 [3]; Brenner & Molander, 1977 [2]; Small, 1995 [11]). In some cases this may be the result of deliberate decisions to ignore ethical considerations, but in others it seems to be caused by a failure to recognize these aspects in the first place. In these latter cases there is a clear need for tools which can structure the business person's ethical approach, inform him or her about the relevant ethical principles and encourage a careful assessment of their relevance to the course of action in question. In these ways Business Ethics Expert Systems may guide and enrich the decision-making process, making it a less confusing, more enlightening experience for business people.

### References

1. Baumhart, R.C. (1961). How Ethical Are Businessmen? *Harvard Business Review*, 6

2. Brenner, S.N., & Molander, E.A. (1977). Is the Ethics of Business Changing? *Harvard Business Review*, 57-70.

3. Carrol, A.B. (1975). Managerial Ethics: A Post-Watergate View. *Business Horizons*, 75-80.

4. Carrol, A.B. (1990). Principles of Business Ethics: Their Role in

Decision Making and an Initial Consensus. *Management Decision*, *28,* 20-24.

5. Dreyfus, H.L. (1992). What is Moral Maturity? A Phenomenological Account of the Development of Ethical Expertise. In J. Ogilvy (Ed.), *Revisioning Philosophy*. Albany: SUNY Press.

6. Getschow, G. (1979). Some Middle Managers Cut Corners to Achieve High Corporate Goals. *The Wall Street Journal*, 1-34.

7. Johnson, P.E. (1983). What kind of expert should a system be? *Journal of Medicine and Philosophy*, 77-97.

8. Moor, J.H. (1995). Is Ethics Computable? *Metaphilosophy*, 1-21.

9. Nash, L.L. (1981). Ethics Without the Sermon. *Harvard Business Review*, 79-90.

10. Posner, B.Z., & Schmidt, W.H. (1984). Values and the American Manager: An Update. *California Management Review*, *16,* 202-221.

11. Small, M.W. (1995). Business Ethics and Commercial Morality: Report of the Royal Commission into Commercial Activities. *Journal of Business Ethics*, *14,* 613-628.

12. Soutar, G., McNeil, M.M., & Molster, C. (1994). The Impact of the Work Environment on Ethical Decision Making: Some Australian Evidence. *Journal of Business Ethics*, *13,* 327-339.