

26TH AUSTRALIAN LEGAL CONVENTION

Our October 1989 newsletter contained abstracts of several "technology" papers presented at the 26th Australian Legal Convention.

We reproduce below a profile of Mr Graham Greenleaf's paper, presented at the Convention, which considers the application of expert systems to the law.

Legal Expert Systems – Robot Lawyers?

• by *Graham Greenleaf*

"Legal expert systems" usually refers to the attempt to develop programs which give advice on the application of the law to a user's particular legal problem. There is growing interest in developing legal expert systems around the world. This paper examines some of the issues involved in creating formal advisory legal expert systems.

Types of Legal Expertise

The different types of knowledge and skills that a lawyer must command (to a greater or lesser degree of expertise) in order to successfully carry out legal work include:

General domain knowledge – a knowledge of the general structure of the legal system.

Formal knowledge – knowledge of the content of formal sources of law in the field, particularly legislation and case law.

Logical reasoning – a certain level of deductive reasoning is required, although reasoning by analogy etc is also needed.

Interpretative skills – statutory interpretation, interpretation of cases in terms of their place and significance in the system of precedent, and instantiation, the ability to apply statute or case law to the facts of the problem at hand (includes drafting).

Research skills – retrieval of relevant statute and case law, obtaining expert opinions and marshalling evidence.

Organisational skills – eg observance of time limits, service and exchange, registration, management of witnesses and of funds. These require detailed knowledge of the practical operation of the organisational systems

within the legislative structure, and the establishment of organisational structures within the lawyer's workplace.

Communication skills – dialogue with clients and others, ability to frame relevant questions unambiguously.

Real world knowledge – inevitable because of the nature of law as a means of imposing society's norms on virtually all areas of human conduct.

Components of a Legal Expert System

Components of a legal expert system include the inferencing mechanism, the knowledge base, the application developer interface, the user interface and the user-supplied problem facts.

The inferencing mechanism is independent of any particular application to an area of knowledge. It is the part of the expert system which processes the

statements of legal knowledge in the knowledge base and the user-supplied facts concerning a particular problem. It may operate according to logical rules such as 'if A is true and B is true and (A and B implies C) is true, then conclude C is true'. It may also implement procedural criteria and embody certain tactical approaches.

The knowledge base must be represented in a formalism appropriate to the inferencing mechanism, such as in the 'IF premise THEN conclusion' form. Writing legal knowledge in this form is the task of a person writing an application for a particular area of law.



consisting of the inference mechanism, the corresponding requirements of the knowledge formalism, any developer interface, and the user interface.

Limitations on Automated Legal Reasoning

Although some non-lawyers have seen law as a promising area for expert system development, others have recognised that there are special problems presented by law, and certain characteristics that make it a more than trivial task to develop legal expert systems. These characteristics of law have been identified by Waterman et al as including:

The application developer interface may help the person developing the application by providing simple methods of stating legal knowledge which do not require that person to remember all the formal rules for writing the application.

The user interface is that part of the program through which the end user communicates with the expert system. It may provide the user with interpretative aids, such as definitions, to aid in

answering questions, and provide explanations and justifications concerning the conclusions which the system has reached.

The user-supplied problem facts are obtained from the end user as needed by the system in operation, and are processed with the knowledge base to produce the inferred conclusions which the system is capable of deriving.

A legal expert system 'shell' is an expert system with an empty knowledge base,

- (i) Its rules are complex and often expressed in lengthy natural language passages filled with jargon.
- (ii) The large body of rules are often contradictory, incomplete and often deliberately ambiguous.
- (iii) It is often difficult to state necessary and sufficient conditions for when a legal predicate will apply to a fact situation in a

way that a program can apply.

- (iv) Definitions of a complex term are often in terms of equal complexity, and legal reasoning must often take place with complex predicates.
- (v) Commonsense reasoning based on broad world knowledge is often required, making it difficult to maintain a narrow problem domain.
- (vi) These factors have contributed to the development of a body of informal knowledge, practices or strategies concerned with how to access and reason with the formal rules.
- (vii) Legal experts use many different kinds of reasoning processes, ranging from the if-then rules to analogical reasoning.

Legal reasoning is irreducibly based on language and its interpretation, whereas most other expert system domains are largely concerned with causal relationships between physical objects and processes.

Models of Legal Expert Systems

The passive user model

The model by which legal expert systems are often perceived is that of a user involved in an essentially passive interaction with an expert system program, providing unproblematic facts about a problem to the system in the order determined by it, and with the system then controlling the course of the problem's solution. This is likely to be completely misleading.

Irrespective of the inferencing mechanism employed, a user's experience in using a legal expert system to solve a problem will not be an experience in pure deduction. Effective use of most legal expert systems therefore requires at least some expertise in legal interpretation.

It may be that the key practical question in developing legal expert systems is in finding the dividing line between what an expert system can do (given existing technology) and what elements of the solution to a problem the user must provide during a dialogue with the system.

The interactive user (interpretative model)

The most useful general model by which we may

conceptualise a legal expert system therefore seems to be that of an interaction between a semi-expert inferencing system and a semi-expert user/interpreter, with control over the course of the problem's solution alternating between the two parties to the interaction.

The program controls those steps in the solution process that involve deductive steps by presenting appropriate questions to the user. It also applies such non-deductive reasoning techniques as may be developed from time to time, and are shown to be reliable in relation to particular types of legal problems. The human user controls those steps of the solution process which involve abilities which cannot (at least as yet) be reduced to a computerised form, including all of the various interpretative skills which lawyers must exercise.

The program must also provide aids to the user's exercise of his or her interpretative skills, such as warning that terms are defined elsewhere and giving those definitions, providing full text searches of statutes to find other contexts for the word(s), and the use of the facts of a problem to instantiate statutory language, and to remove all redundant

information from representations of sections.

This 'interpretative model' of legal expert systems is the only feasible one, based on the continuing interaction of the reasoning process alternating between

the two partners to the interaction. Seen from this perspective, the task of developing legal expert systems is feasible, useful and still just as challenging.

- *This paper is an edited version of the paper*

delivered by Graham Greenleaf, Senior Lecturer in Law, University of New South Wales, at the Australian Legal Convention in Sydney, August 1989.

LAPTOPS FOR LAWYERS

A four hour seminar to introduce lawyers to computers was held in Perth on each of three afternoons in mid-November 1989. The seminars were organised jointly by the Law Society of Western Australia and the Western Australian Society for Computers and the Law.

The formula was simple with:

- a maximum of ten participants seated at a round table;
- every participant having a Toshiba laptop computer; and
- the seminar leader displaying his screen using an overhead projector.

Many of the lawyers present had never used a

keyboard, let alone a computer. They were firstly introduced to basic word processing applications. Spreadsheet applications for crunching numbers and producing Scott Schedules were demonstrated. Tables of facts, or consolidated pleadings, to aid litigation management were then demonstrated. Finally, the participants were introduced to some document modelling applications.

The Western Australian Society would like to thank Toshiba for the use of the laptop computers, Imagineering for the Symphony software, to Legal Management Consultancy Services for the document modelling software and Deloitte Haskins & Sells for the use of their boardroom facilities.

It is likely that these seminars will become an annual event in Perth.

CASE NOTES

Injunctions Restraining Import

Lotus has obtained injunctions restraining a distributor from importing and distributing certain computer programs in Australia.

The respondent distributor did not present any serious grounds of defence to the allegations of infringement, conceding that the works were imported without licence and were identical with the works over which the applicants' copyright subsisted.

The Federal Court found that the evidence clearly indicated the goods were imported for distribution in the course of trade for a purpose that would seriously prejudice the owner of the copyright. The injunctions were applied until the determination of proceedings on copyright