

**LAW, COMPUTER SCIENCE AND ARTIFICIAL  
INTELLIGENCE,**  
**Ajit Narayanan and Mervyn Bennun (editors), Norwood,  
New Jersey, Ablex Publishing Corporation, 1991, 258 pgs  
plus index. (\$45 US).**

Like Julius Caesar's Gaul, this book is divided into three parts: theory, implications and applications. Each part is in turn divided into five chapters contributed by different authors.

Theoretically, artificial intelligence research (AI) seems to comprise an alliance (some would suggest an unholy one) between the social and natural sciences. As such the parameters, the limits and possibilities, of AI continue to be debated. Andrew Clark and Kim Economides, in their chapter, 'Computers, Expert Systems, and Legal Processes: Toward a Sociological Understanding of Computers in Legal Practice', contend that expert systems research must be anchored in real life. We must look at what computers are actually doing and adjudge what impact this is having on all those involved in the law: lawyers, clients and the public. We also need to be aware that there is a difference between the law as expressed in books and appellate decisions and the law in action. In the real world law consists of a 'plurality of fragmentary legal orders' not a system of rules which can nicely be formulated into a legal logic.

Similarly, Richard Susskind's article, 'Pragmatism and Purism in Artificial Intelligence and Legal Reasoning' decries two contradictory trends which have emerged in some of the AI developments. 'The first - pragmatism - concentrates on the development of working systems to the exclusion of of theoretical problems. The second - purism - focuses on the nature of the law and of intelligence with no regard for the delivery of commercially viable systems.'<sup>1</sup> The author contends that 'pragmatism within a purist framework is the only sound approach to developing reliable AI systems in law.'<sup>2</sup>

Chapter three, 'Computers in Court: The Irreplaceable Judge' by Mervyn E. Bennun extends the arguments above to the role of the judge. Again, the point is made that law is more than a system of rules and that the rules which do exist are necessarily imprecise.

Judges bring not merely "raw" knowledge of the law which frequently has to be refined and clarified by the trial process, which focuses attention on a particular context; in a general sense, they have already decided the case before the trial has started because they bring into the court a preconceived idea of what sort of decision will be acceptable. It is part of the judicial function to articulate these preconceptions, either expressly or by implication. This is a highly political process, and it is the moral conclusion of this chapter that we should be thankful that computers cannot do it.<sup>3</sup>

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1 p. 33  
2 Id.  
3 p. 60.

Finally, Bennun makes the point that, while law cannot be reduced to a self-sufficient black box and we need to understand its limitation, it is nevertheless helpful to use the science of AI to discover more about the inter-relationship of legal rules. In this way we may gain valuable insights into the nature of legal thinking and reasoning.

Chapter 4, by Ron Press, considers, 'Computer Judges and Judgments' and supports Bennun, but appears more sceptical about AI:

It would seem to me that a computer is no more than a tool--granted a very useful, accurate, and precise tool--but not more than a tool. As such it can do no more than its user and has the skill to ask of it. To raise the tool to the position to the position of governor is dangcrous nonsense.<sup>4</sup>

The final chapter in part one is 'Computers in Law--Hard Cases' by Indira Mahalingam who takes issue with AI pioneer John McCarthy who has been quoted by Weizenbaum as claiming that judges possess no knowledge that cannot be told to a computer and that it is 'perfectly appropriate for artificial intelligence to strive to build machines for making judicial decisions'<sup>5</sup> Mahalingam concludes:

Our examination of these varied hard cases shows that not all judicial decisions are a consequence of nondiscretionary application of legal rules. Judges, by and large, perceive their task as being one of carrying out justice, be it at the individual or social level, and to this end they take account of principles extraneous to legal rules and balance them in an arguably appropriate manner. Accordingly, if an expert system is to play a judicial function it is necessary that it exhibits creativity and flexibility that reflect the use and balance of the various values. . . . Perhaps Julius Stone is right when he says "machines can be programmed to overlook precedents, or even to neglect logic logic as human judges often, for the sake of justice, are seen to do. Machines cannot, however, be programmed to will to do justice, that is to make choices in each case in which they are consulted, according to the justice as seen at that future time by the still unknown value standards of unknown men of the future".<sup>6</sup>

Part II of the book moves from the theoretical plane to discuss several practical implications of AI.

Blay Whitby's chapter is entitled: 'AI and the Law: Learning to Speak Each Other's Language' and represents a middle path. Whitby maintains that as AI researchers and lawyers interact with each other both will be forced to examine more closely the assumptions on which they operate. Also, the changes which AI produce in the law and vice versa, it is argued will be evolutionary and subtle rather than revolutionary and

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<sup>4</sup> p. 71.

<sup>5</sup> Citing Weizenbaum, J., (1985) *Computer Power and Human Reason* (Middlesex, Penguin Books) p. 207.

<sup>6</sup> pp 82-83, citing Stone, J. (1985) *Precedent and Law* (Melbourne, Butterworths) p. 21.

dramatic. Finally, Whitby makes the very useful point that if AI systems are to work at all, lawyers must be involved.

Legal professionals therefore need to develop a response to the introduction of AI which is:

1. Not luddite--little will be gained by the delay or denial of the new possibilities raised by developments in AI.
2. Constructive--that is, inclined to build upon these possibilities, rather than just to criticize. It should be clear that theoreticians from the legal sphere can make a contribution to the philosophical foundations of AI in areas such as the debate on "logicism".
3. Balanced--that is, neither overenthusiastic about new technology because of the perceived limitations of humans, nor set against it for equally irrational reasons.

A useful first step might be the introduction of something along the lines of an "ethical committee" which could consider some of the legal, social, and political implications of AI systems in law which present special problems. . . .

AI professionals, on the other hand, will have to acknowledge the importance of the contribution of experienced practitioners in changing their own methodological assumptions. It is important to remember that the methods of working in an application area, such as the law, form a significant proportion of the knowledge of that area. It is not always appropriate therefore to simplify or alter such techniques in order to render the area suitable to the introduction of AI. If simplifying assumptions are introduced in order to build a working program, there clearly will come a point at which experts in the application area will feel (rightly) that the program is no longer dealing with real problems, but rather with oversimplified pseudoproblems.<sup>7</sup>

If Whitby's chapter is the most balanced, Chapter 7, 'The Use of Logical Models in Legal Problem Solving' by Robert Kowalski and Merek Sergot of the Department of Computing Imperial College of Science and Technology University of London presents perhaps the most optimistic view of the potential of AI. The authors argue that 'reasoning by means of analogy with previous cases can also be viewed as a form of reasoning by means of rules--rules which are generally implicit.'<sup>8</sup> Further the authors 'expect that second-generations systems--systems that can reason with several interpretations and with conflicting rules arising from previous cases--will not only help test the technology further, but will help to identify extensions of the technology which may prove useful also in other application areas' and believe that 'their investigations will prove useful, not only for building computer programs for legal applications, but more importantly, for clarifying and improving the legal reasoning process whether performed with or without the assistance of computers.'<sup>9</sup>

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7 pp96-97.

8 p. 114.

9 p. 115.

Chapter eight, 'Liability and Consent' by Yorick Wilks and Afzal Ballim is rather technical but it attempts to explain how AI intelligence might deal with the notion of consent. The authors conclude that the problems for AI researchers are significant. They state: 'What is clear to us is that the issue is far, far more than the mere modelling of medical expertise: it requires also the modelling of ignorance, vagueness, and even medical misinformation, as well as complex heuristics manipulating complex belief objects.'

Chapter nine brings the discussion back to the legal world in considering 'The Data Protection Act and AI: A computer/Law Conflict?'. While the focus of the chapter is on the British Data Protection Act (1984) the issues raised have wider significance. These issues involve the following rights of persons who have become data subjects:

1. To be informed what data are held about them--the disclosure requirement.
2. to have errors in that information corrected--the correction requirement.
3. to have reasonable precautions taken to ensure that the information is kept both correct and safe from unauthorized access--the care requirement.<sup>10</sup>

Unfortunately, these principles can fit uneasily with the design and implementation of AI systems where data may be inaccurate, collected unnecessarily, or where otherwise harmless data might be combined with other data stored elsewhere to reveal information which one does not want revealed and so on. These are just a few of the issues raised.

AI systems have difficulty complying with legal principles such as those under the Data Protection Act. However, it is the law which has difficulty in coping with issues such as the copyright protection of computer programs. Peter Stone's 'Copyright Protection of Computer Programs in the United Kingdom' (chapter 10) presents the UK view on these matters with some references to comparative material in Europe, the United States and Australia.

Having examined the theoretical issues and implications, Part Three and the last five chapters deal with 'applications'. These applications are too detailed to describe in a book review, but they include a descriptions of a number of widely known expert programs, including Prolog (a logic programming language), SAL (an AI program designed to evaluate the facts of a case) and Taxman (an AI application for the Canadian Income Tax Act).

The editors in their introduction to this section provide a useful, if not totally clear, description of expert systems:

Very simply, an expert system is an AI program which consists of two parts: a knowledge base, which uses a knowledge representation technique which is generally either rule-based or frame-based; and an inference engine. the knowledge base contains the specific, high-quality knowledge, and the inference engine contains general problem-solving

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<sup>10</sup> p. 132.

knowledge that might be tailored for specific subtopics. It just so happens that knowledge bases of most expert systems is rule-based, and the rule-representation techniques are typically logic and production systems.<sup>11</sup>

Particularly interesting in this Part is Chapter 13, 'Reasoning by Analogy: Equal Opportunity Law as a Case Study' by Alison Adam and Rosemary Mathams. As a backdrop to their discussions the authors chronicle the Leith-Kowalski debate of the late 1980's, a debate which continues in the present volume of this Journal.

Kowalski supports the contention that certain areas of the law can be usefully and meaningfully represented within logic-based programs: In other words, the very nature of these areas of legislation, which are in part represented as a series of logical propositions, makes them an ideal application for logic-based systems. Leith, on the other hand, adhering to a strong belief in the jurisprudential theories of Hart and others, maintains that the law defies logical analysis, and that there can be no such thing as a "clear legal rule" which could be adequately represented with a logic-based computer program:

the very idea of a clear rule of law is an invalid idea, and cannot be used successfully to provide legal expert systems which can predict real judicial decisions.

Leith is arguing against the conception of law as having Platonic form, where rules are set apart, and have meaning independently of their application or interpretation in a real situation or context. He argues, in support of Hart, that the law is not something which can have existence apart from those legal contexts in which it is applied, and that the law is "incurably open-textured" in the sense that written legislation does not contain unambiguously clear rules which have meaning in themselves. Rather, the meaning of a rule is established during the process of its interpretation in an actual situation.<sup>12</sup>

Adam and Mathams, mindful of the concerns raised in the Leith-Kowalski debate, see AI systems as valuable and impartial legal assistants, as 'a decision *support* tool rather than a decision *making* tool in any sense.' In effect the system accepts facts about an existing case and then its details are matched against cases already in the knowledge base. Accordingly, the main function of the AI system discussed is 'to assist in the researching of what may referred to as the "current case" by providing impartial advice or information in the form of the retrieval of similar or analagous cases.'<sup>13</sup> It is argued the system is best used by experienced case workers in the area, though it could also be employed to train new case workers.

Similar in operation is SAL (System for Asbestos Litigation) which is described in Jody Paul's chapter, 'Expert Systems, Legal Decision Making, and Self Revealing Software'. This system takes the facts involved in a particular case and uses those facts, its programmed

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11 p. 171.

12 p. 205.

13 p. 209.

expertise (obtained from lawyers and claims adjusters) and problem-solving techniques to give the inquirer an estimate of the dollar value of a particular claim. Finally, those seeking a discussion with a more immediate commercial application are referred to the final chapter by David Sherman, 'Reasoning in Income Tax Through Logic Programming'. Sherman concludes that :

There is no question that the implementation of a complete computer program which can advise the lawyer of the tax issues relating to everything he does is a long way off. However, this research has developed the broad structures necessary for a viable Canadian corporate tax planning system. With adjustments to correct the deficiencies noted, the program described could become the first comprehensive computer-based tool for Canadian corporate tax planning.<sup>14</sup>

In summary, *Law Computer Science, and Artificial Intelligence* provides an excellent collection of writings which convey both the theoretical debate and practical advances -- both the limits and possibilities -- of artificial intelligence and the law.

Review by E. Eugene Clark, Lecturer in Law, University of Tasmania.

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<sup>14</sup> p. 254.