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Book Review [An Artificial Intelligence Approach to Legal Reasoning]

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BOOK REVIEW

An Artificial Intelligence Approach
to Legal Reasoning
Author: Anne von der Lieth Gardner
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Mention the words "Artificial Intelligence" to the practicing lawyer and the response you may well hear is "Don't tell me that a machine can do what I do!" In a very realistic sense, Anne Gardner's book "An Artificial Intelligence Approach to Legal Reasoning" responds to the retort with the question, "What is it that you really do?" The author proceeds to examine the foundation of legal reasoning skills within the context of developing a computer system for the purpose of deciding whether two parties have entered into a binding contract.

The author, who became an attorney before turning to artificial intelligence, uses a mixture of 200 years of legal philosophy with state-of-the-art artificial intelligence techniques in the book. This book is a revision of the author's doctoral dissertation on the subject. For the artificial intelligence professional who has never studied law, Dr. Gardner's discussion of the conflict between legal positivism and legal realism may seem to lack relevance; indeed, it may be difficult to follow without having read the works of H.L.A. Hart or Lon Fuller. For the lawyer who wants to learn about the possible impact of artificial intelligence on what he or she does, the book presupposes a good deal of background in the milieu of artificial intelligence. It may be difficult for an attorney to understand

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why he or she should have to read such a theoretical work when computer software vendors are peddling allegedly "user friendly" expert systems for automating the practice of law.

Nonetheless, the material is relevant to all professional users or potential users of artificial intelligence systems. The legal profession presents perhaps the broadest of problem descriptions. Dr. Gardner compares legal systems with other domains in which data is collected from more objective sources. For other systems, however, the range of allowable data is strictly limited, at the extreme, to descriptions of instrument readings. In legal problems the potential data is not limited in this way. The facts are descriptions of human activity, and it seems impossible to set *a priori* bounds on the kinds of facts that may need to be represented because they are relevant to the analysis of a particular problem.[1]

In order to fully exploit the power of artificial intelligence, the artificial intelligence "knowledge engineer" must learn how to characterize problems which are dramatically "open textured." He or she must also learn how to limit the scope of systems and how to define priorities so as to provide meaningful guidance to the legal professional in enhancing the quality of legal reasoning.

The lawyer must come to terms with the reality of artificial intelligence as well. The author believes that it will be years, if ever, before computerized artificial intelligence will come close to duplicating human reasoning capability. Even so, as the complexity and volume of legal problems increase, lawyers will be turning to artificial intelligence techniques in order to organize, categorize, and simplify problems. The work of James Sprowl at Chicago-Kent Law School has already demonstrated that the quality of repetitive legal work product may be improved through computer techniques which are readily available today. If more lawyers can get through works like Dr. Gardner's, legal expert systems may soon be developed to solve problems which lawyers and judges currently have to solve themselves on a day-by-day basis.

While the initial chapters of the book deal primarily with the philosophical underpinnings of legal analysis, the balance of the book deals with computerizing that bugaboo of first year law school: "Is there an enforceable contract?" Dr. Gardner demonstrates that, in fact, the introductory contracts course may present the most difficult intellectual challenge to an artificial intelligence system. The task of answering a law school contracts essay ques-

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1. ANNE VON DER LIETH GARDNER, AN ARTIFICIAL INTELLIGENCE APPROACH TO LEGAL REASONING, 85-86 (1987).

tion must be divided into three tasks: (1) parsing the narrative question into meaningful statements of fact, (2) recognizing issues present in the facts, and (3) identifying conflicting rules or principles which must be resolved in order to find an overall solution.

She shows how the second of the above tasks may be the least challenging. Parsing narratives, however, requires not only a preliminary filter for determining legal relevance, but also a species of "common sense knowledge" which may rapidly outweigh the body of more formal legal knowledge. In like manner, the third task may be overwhelming because competing social considerations may result in the development of rules which are in direct conflict to one another. Any legal expert system will thereby have to be able to not only recognize and resolve some conflicts, but also be able to identify the limits of its capabilities and state conflicting arguments.

Dr. Gardner's skeletal contracts analysis system attempts to deal with the first two tasks and to provide a backbone for resolving the third task. Working with a combination of rules embodied in the Restatement Second of Contracts, a limited grammar and vocabulary for describing offer and acceptance problems, and a primitive mechanism for abstracting and representing case paradigms, she shows how a system can be built to walk through a fairly common type of contract question.

In order to deal with the "simple" problem of offer and acceptance, she has developed a generalized "augmented transition network" which defines a sequence of "states" and "events." As the narrative of the examination question is parsed in chronological order, each "event" is analyzed to see whether it establishes a state (*e.g.*, an offer is outstanding) or removes a state (*e.g.*, the offer is withdrawn). The actions constituting the event may or may not be "effective" depending on the state of the system preceding the event. Thus, actions otherwise sounding like an "acceptance" may be ineffective because the offer was withdrawn or expired after a reasonable time.

The logical extension of such a transition network is more than the familiar "flow chart," or "decision tree," computer users have come to know over the years. It provides a framework for building up layers of additional expertise and refining the analysis without requiring a total restructuring of the tree.

The current technological limitations of such a system are shown to be substantial. Law students are trained to discern many concepts intuitively. Those concepts must be formalized and ren-

dered explicit in order to effectively automate the legal reasoning process.

The output of Dr. Gardner's system appears to be quite primitive, compared to the content of even that produced by the newest law student. The narrative questions must first be hand-coded into a highly-stylized language which, the author admits, involves the application of a significant body of legal knowledge. The output of the system merely lists the discernible final "states" at the end of the narrative.

Even so, it does not take too much imagination to extrapolate her techniques into many practical problems. In narrow domains of expertise, such as tax, products liability, and securities regulation, the vocabulary of problem description is not the entirety of human activity. Instead, the user is concerned that, in managing a complicated legal analysis, a variant in the facts might cause the addition or deletion of one or more "states." Thus, a prerequisite of a securities law exemption might suddenly appear or disappear, or a corporate reorganization might suddenly create a "boot." By tackling primitive and open textured legal structures, Dr. Gardner can help lawyers and artificial intelligence professionals learn to identify similar types of problems which might arise in far less ambitious projects, such as those listed above.

Dr. Gardner's work is not the first on the block. Professor L. Thorne McCarty of Rutgers began to publish works on the application of artificial intelligence techniques to law more than a decade ago. He showed how rule-based techniques could be used to characterize relatively sophisticated tax problems involving corporate reorganizations. Professor McCarty (who is the co-editor of the series to which Dr. Gardner's book belongs) has since expanded his work to deal with more primitive, and hence more difficult, concepts. The bulk of his published work, however, has dealt with the relatively narrow domain of corporate tax law.

By focusing on legal reasoning more fundamental to the training of a lawyer, Dr. Gardner has opened up a more theoretical and a more practical line of inquiry. Only when artificial intelligence techniques are capable of dealing with those fundamental issues will legal expert systems become fully automated "partners" in the practice of law.

At a recent conference on computerization for practicing attorneys, more than one hundred lawyers attended a seminar on expert systems. To be sure, some were there because of the "Gee, Mr. Wizard" syndrome. The vast majority, however, had been reading

advertisements for so-called legal expert systems and were there to learn when and how they could put artificial intelligence techniques to practical use in their respective law firms. Major law firms are beginning to develop expert systems in narrow problem areas.

Anne Gardner's book is not likely to be terribly useful to those who are chafing at the bit to implement legal expert systems. Because it started as a doctoral dissertation, it presupposes too much knowledge of artificial intelligence techniques. It also suffers from the prolix writing style encouraged in that milieu. It is a start, however, and can be very valuable even to the system developer, provided that developer is committed to understanding the expertise he or she is modeling.

What is needed is a practical extension or translation of what Dr. Gardner learned in her investigations. She is in the enviable position of having a deep understanding of artificial intelligence and an understanding of what it means to be a practicing lawyer. She should be encouraged to write another book which would look at the current platforms for developing legal expert systems and explain to potential users the fundamentals which define the scope of viable legal expert systems. In the meantime, the lawyer who has a rudimentary knowledge of artificial intelligence techniques should seriously consider taking the time and effort to concentrate on "An Artificial Intelligence Approach to Legal Reasoning."