
Book Review of Artificial Legal Intelligence

by Pamela N Gray, Dartmouth Publishing Company, USA 05036 (1997)

Review by John MacMillan, Solicitor, Phillips & Wilkins

If you have only ever considered Artificial Legal Intelligence, defined by Gray as "... a technology which automates wholly or in segments, the collective legal intelligence", as a method of removing boredom from the law by processing a combination of facts and known law, this work will make you re-assess that analysis.

Gray who is a lecturer at Charles Sturt University sees Artificial Legal Intelligence as having the potential to "... constitute a new form of codification of law namely the codification of legal expert services" by the application of technological jurisprudence. By perhaps removing the emotion of humans from the application of jurisprudence ("hard cases make bad law"), such an approach will come close to Justice Wendell Holmes' aim: "An ideal system of law should draw its postulates and its legislative justification from science."

This reviewer was initially deterred by the presence of a history of legal philosophy and while providing the background and support for the author's analysis of Artificial Legal Intelligence and its likely benefits to the community at large seen from a philosophical viewpoint, such a substantial compendium appears unnecessary in a volume that bears the title 'Artificial Legal Intelligence'. The book's title leads one to the impression that here is a work which will put a professional on the path to Artificial Legal Intelligence in a meaningful way but, this is a daunting work and may well leave the average reader lost rather than expert or even comfortable with the subject and its potential for practical application. A more accurate title might be: eg "A History of the development of legal reasoning and the application of Information Technology to legal reasoning".

Assuming that readers are more familiar with the history of philosophy and legal philosophy in particular than this reviewer, the appropriate commencement point seemed to be with this description of legal reasoning - "Legal reasoning has been described as involving... many disparate activities only some of which are rigorously logical."¹ It is the combination, or conflict, of deductive reasoning and inductive reasoning which makes it difficult to replicate legal reasoning. This conflict is seen each day in any court and is reflected in the development of Artificial Legal Intelligence (ALI). Ms Gray describes (ALI) as "...involving a new interaction of law and science namely computer instrumentation, that advances legal choice." Rule based systems are based on the application of deductive reasoning to produce a result, while "expert systems" based on domain knowledge (q.v.) provide a base for inductive reasoning often using neural networks and 'fuzzy logic' to achieve a result comparable with judicial reasoning.

In her treatise, Gray takes us along this conflict/dichotomy via a history of legal philosophy to demonstrate that the analysis that a lawyer takes for granted in attempting to solve a problem is a more tortuous path than lawyers and laymen recognise. In passing we can be encouraged by the ability of the human brain (a neural network) to "reason" more quickly than a computer. While we can make an unconscious decision to 'jump' to a certain conclusion by some sudden intellectual decision, the computer processing (usually) a rule based program must grind its way through thousands of lines of codes in a structured manner - unless it has been given or taught Artificial Legal Intelligence.

Ms Gray opines from p 5 onwards that it is the need for legal choice to be enhanced that makes Artificial Legal Intelligence so desirable and several times reminds us that it is the codification of law which should make the law accessible. However, there is little evidence proffered to support the claim that codification of its own does achieve this desirable result. Anecdotal knowledge of the complaints made the world over by laymen about law's complexities and delays weakens this assertion. Her analysis of English law concludes that the application of casuistry has inhibited access to the law (which is not an infrequent view among lawyers and non-lawyers).

This theory is worked up in her argument to support the need for what is in effect technological jurisprudence as described by Gray in Chapter 6. At pp 180-2 she argues well for the development of Artificial Legal Intelligence to overcome such paradoxes as:

everyone is presumed to know the law (but) common law developed a rule previously non-existent - of which the litigant must per force have been unaware prior to its development in that particular case common law overturns a known rule (which is) presumed to be unjust.

Gray states that "...these paradoxes pertain to the justice of developing artificial legal intelligence." implicitly by providing easier access to the law and its underlying reasoning. Technology can be used to spread "...the expertise of the best specialists across time, and across jurisdictions at the same cost." [Cf Split Up a program of Family Law Act property distribution analysis being developed at La Trobe University Melbourne by John Zeleznikow, Dan Hunter,

Andrew Stranieri and others]. If we accept that "the legal system is founded on primal intelligence and the simulation of greater (supernatural?) power then Gray argues, we must re-invent the system to overcome its shortcomings. Information technology - the application of science can achieve this goal.

From here Gray studies "survival jurisprudence" and the development of norms which can be replicated in computers programs eg SURMET a program for the orderly processing of information. Thus society could manage "...cognitive choices for viewing and evaluating the law" by modelling the collective mind of society which Gray argues will overcome the "loss of the cognitive bridge between human needs and wants, and moral and legal principles, which was dismantled during the 'English period of casuistry.'

SURMET is described as based on the "...paradigms of the computer system" and together with parallel processing are suitable metaphors for understanding the architecture of legal intelligence and how it may be particularised" for computation.

In the last chapter "Fifth dimension of Designer Legal Intelligence " Gray returns to SURMET and to a theory that we have arrived at the end of an era whereby "...technical mismanagement now threatens life..." but Gray encourage us that SURMET and its successors will "...aid the rationalisation of quid pro quo in the social contract, co-ordination of the relativity of diverse ethics within the scope of law, and reconciliation of natural selection and designer legal choice of possibilities." But we may ask who will be the designer setting the " range of possibilities", a judge or an Artificial Legal Intelligence expert or indeed an Artificial Legal

Intelligence expert formally appointed a judge.

No matter how useful such tools will be, it seems that in the foreseeable future, some human input will be required in the development and application of Artificial Legal Intelligence but we should see the development of Artificial Legal Intelligence as a method of attaining affordable justice based on knowledge and accessibility to the law.

Based on the three physical dimensions of our world namely height, width and depth combine with time to create the four dimensions in which we live, Gray argues that law also has three dimensions namely: concepts of law, concepts arranged for the positive case and concepts arranged for the negative case, leading to the result which she characterises as the arrangement of a new three dimensional structure "...that represents equitable discretion, development of the law and legal strategy" which in turn combine as the "essentials of law".

To achieve the fourth dimension requires semantic processing of legal knowledge which in turn depends on facts, rules in the domain of expertise and the rules for processing the rules of the domain. This leads in turn to a detailed description of CLIMS a project of the author and others at Charles Sturt University. The author provides detailed analyses of backward chaining of logic and the development of inference engines which rely on the development of a system of "river" rules and then a more complex system develops. Ultimately (users) by access to "... this graphical representation of legal knowledge [can use] the paradigm of chain journeys to enhance a comprehension of the system of legal choices in relation to the user goal."

Interestingly Gray compares such a system with aboriginal paintings with (pre-determined) placement of eg circles and dots to enable much to be understood at a glance. [If only this were true of the law as we practise it.]

The above represents merely a quick brush with the detailed analysis presented by Gray. In addition her work contains an historical chart from 1946-1991 from basic computing to neural networks and descriptions of many Artificial Legal Intelligence programs. The bibliography contains some 500 entries from Aristotle and St Thomas Aquinas to more local and perhaps personally known authors as Professor Alan Tyree of Sydney and CG Weeramantry. Its index is comprehensive and thorough.

This exceptionally detailed treatise by Pamela Gray will find a place in any library where research into the history of Artificial Legal Intelligence is conducted. It will not be suitable for the average firm library as it is a source of primary materials and the development of the jurisprudence which justifies Artificial Legal Intelligence rather than the secondary application of principles which busy practising lawyers require.

Regarded in that light it is ideal as a source to develop an understanding of the evolution of Artificial Legal Intelligence through its history of analyses of legal reasoning and the application of Information Technology to such analyses and provides a challenging argument as to the need to develop Artificial Legal Intelligence to assist in providing a better system of accessible justice.

¹ "How to practice (sic) law with computers" Henry H Perritt Jnr . Practising Law Institute New York City (1992).