

IS LEGAL KNOWLEDGE REGRESSING (THANKS TO AI)?

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Abstract

This review article focuses on a recent book that poses the following question. Is law computable? In examining some of the contributions in this edited collection the article poses a second question. Is, as a result of artificial intelligence (AI) and law research, legal knowledge regressing? In its analysis of the book, the article examines several of the major epistemological problems facing the creators of a legal reasoning AI programme; and it concludes that some of the epistemological assumptions upon which AI research is based are assumptions rooted in old and discredited legal knowledge. Nevertheless, the article has few illusions that judging will one day be dispensed by robot judges, especially if liberal democratic cultures slide slowly into authoritarian societies.

Keywords: artificial intelligence; computer; Deakin (Simon); epistemology; Markou (Christopher); *mos mathematicus*; reasoning (legal); rule-model.

It might seem a most provocative reaction, in response to a recent edited work asking if law is computable, to suggest that legal knowledge might be regressing. Yet the encroachment of computer technology and artificial intelligence (AI) into the domain of legal reasoning, while raising some profound questions about legal knowledge, seems also to be exposing what some might consider to be rather naive thoughts about legal knowledge. Naive, because these thoughts often reveal an ignorance not just about the history of legal thought but also about the legal tradition that AI advocates are discussing. The purpose of this review article is, accordingly, to pose two general questions. Is law computable? And is legal knowledge regressing? There are, of course, a range of sub-questions provoked by these two general questions.

[A] INTRODUCTION

The question whether law is computable is a question that ought to be of particular interest not just to legal theorists and philosophers but equally to legal historians, comparative lawyers and specialists in legal education because it raises fundamental questions of an epistemological nature. What is it to have knowledge of law? And can such knowledge be reduced to an AI program that reasons more ‘efficiently’ (or whatever) than a human judge? According to Frank Pasquale, who writes the “Foreword” to a recent edited collection examining the question of whether law is computable, “the stakes of this volume could not be higher” because the future of law as a distinctive profession is in issue (Pasquale 2020, v). Might it just become a sub-field of computer science? Pasquale says that this issue involves three questions:

Are our current legal processes computable? Should they become more computable? And should scholars and practitioners in AI and computer science work to develop software (and even robots) that better mimic the performance of current legal professionals? (2020, v).

One might note at once that Pasquale does not seem to identify what “law” he is discussing. Is it American law (he is a United States legal academic), the common law in general, French law, German law, Roman law, Chinese law, Islamic law or what? He subsequently discusses *stare decisis* which would suggest that he has the common law tradition in mind, but in seemingly focusing on this tradition it leaves out an examination of the history of legal thought in continental Europe which actually has an epistemological history that embraced the idea that legal knowledge was “computable” in the sense that it could be dispensed by a machine.

Simone Deakin and Christopher Markou do not, however, ignore this continental tradition in that they implicitly refer to the era of the *mos mathematicus* in their discussion of the importance of Gottfried Wilhelm Leibniz (1646-1716)—a discussion about the conceptual origins of the computerization of law. As they say, “Leibniz believed that it was possible to develop a consistent system of logic, language and mathematics using an alphabet of unambiguous symbols that could be manipulated according to mechanical rules” (2020, 9). Yet, as important as Leibniz is regarding the conceptual origins, these origins stretch back much further into the history of Roman law in Europe (for Leibniz had Roman law in mind), and they reveal a number of distinct reasoning schemes. One question to be investigated, therefore, is the extent to which these different schemes are researched and discussed by those involved in the law and AI debate.

Associated with the *mos mathematicus* mentality are various other epistemological issues. Deakin and Markou talk of Leibniz's influence on legal thought and see this influence as one of an axiomatic conception of law and of legal formalism (2020, 12ff). These two issues are usually associated with the idea that law is a science. Yet what actually is the ontological and the epistemological basis of this science and what are its methods? It is here that one finds some of the most fundamental debates and tensions that underpin the discipline of law, and these tensions come to the surface in debates not just about legal theory but also about the relevance of interdisciplinary approaches to legal knowledge (see, for example, Bódig 2021; Husa 2022). One can see at once why these tensions become central to any discussion about AI and law. As the two authors point out, a certain type of computer programming "still rests on the Leibnizian-Langdellian assumption that there is a purified essence to law and legal reasoning there to be mathematised" (Deakin & Markou 2020, 16). Put another way, such computer programming is founded on the idea of a "legal singularity" which "describes a version of a complete legal system overseen by a superhuman intelligence" itself "premised on the possibility of the perfect enforcement of legal rights" (2020, 27). Accordingly, those advocating such a thesis often "have in their sights the eventual replacement of juridical reasoning as the basis for dispute resolution and the substitution of some protean triumvirate of powers, rights, and responsibilities for legal authority" (2020, 19). Were such advocates to be taken seriously, one can see, as indeed the Deakin and Markou book itself bears witness, a whole range of new tensions and issues arising whose roots are not just in legal knowledge but also in moral and social philosophy, political theory, economic theory and the like. The very issue of AI and law has, then, the effect of exposing all the contradictions and tensions that have "plagued" legal knowledge not just in recent times but in past centuries as well.¹

To say this risks the accusation of stating the obvious. Yet while the tensions and debates that "plague" legal knowledge might seem obvious, the moment one starts to talk about computer or robot judges one might also begin to appreciate the extent to which legal theory and legal education have in truth failed to expose the tensions in a way that actually impacts on legal learning and traditional (doctrinal) legal scholarship. As Mátyás Bódig notes in his attempt to defend traditional legal scholarship, "the contemporary agenda of mainstream legal theory is far removed from the

¹ The metaphor of a plague is employed in this contribution as a way of describing tensions within a discipline which some within the discipline might well want to suppress but which keep resurfacing to cause trouble.

epistemological challenges facing legal scholarship”. Indeed, he goes on to say, “one can argue that, in certain respects, the influence of contemporary academic legal theory has been positively unhelpful” (Bódig 2021, 12). The proof of this assertion would seem to be located in the fact that one can be a perfectly good—even an exceptionally good—lawyer and jurist without ever having studied legal theory (jurisprudence). Bódig is surely right to note that this situation results from a kind of layering of legal knowledge, the lower levels of theorizing engaging with law as a practical discipline while the highest level is too abstracted to be of any use to actual doctrinal scholarship (Bódig 2021, 34-45). This said, the fact that one can be a good lawyer without having studied jurisprudence (legal theory and philosophy) does not mean that such a lawyer is operating within some theory-less zone. As Terry Eagleton reminded his literary theory readers, and quoting the economist Keynes, “those economists who disliked theory, or claimed to get along better without it, were simply in the grip of an older theory” (Eagleton 2008, xiii).

What theory is gripping the advocates of AI and law? If such a theory can be identified, what can it reveal about the state of legal knowledge? If one adopts a diachronic approach to this question, might such a theory reveal an advance or a regression in legal knowledge? What one means by regression is of course a delicate question. But in order to appreciate what is meant by the idea of “legal singularity” it is necessary to examine it both from a synchronic—which is what the contributors to the Deakin and Markou collection largely do—and from an historical angle because, as indeed Deakin and Markou themselves indicate with their references to Leibniz, the past is always with us. What is legal knowledge? Well, one starting point is to ask: what has legal knowledge been? Saying this is not, however, enough. For how is this past to be understood? One of the problems with the teaching and the study of Roman law—important with regard to “legal singularity” because it was regarded by many Romanists as a closed and complete legal system—was that there has been a tendency to view it through modern eyes with the result that it became not so much a Roman as a modern system claiming to be the product of the Roman genius (see Ernst 2019, 109-110). The modern historian can no doubt see things in retrospect that the jurists or “theorists” of the time were not able to see—just as the hunter cannot see the forest but only the trees. Yet the past may still have epistemological lessons, and ones for those dreaming of an AI judge. A synchronic approach to “legal singularity” might, in other words, amount to a retrogressive step in that it eclipses these lessons.

[B] EPISTEMOLOGICAL APPROACHES (1): SYNCHRONIC APPROACH

How should one approach the question, vital surely to the AI project, of what it is to have legal knowledge? The late epistemologist of science, Robert Blanché (1898-1975), in his introduction to epistemology, identified four broad approaches. The first is what he described as a philosophic and a scientific approach. By this he meant that even when philosophy and science had undergone a separation the latter could not ignore the teachings of the old philosophers since the problems that they identified recur to “plague” modern science. It is not really possible, therefore, to make a clean separation between a philosophic epistemology and a scientific one (Blanché 1983, 30). Having discussed the work of various scientists and philosophers of science, he concluded that it would be better to talk in terms of approaches. There is a scientific approach associated with those actually working within the scientific community—practitioners of science one might say—and there is a philosophical approach associated with those writers whose writings have expanded beyond science into more abstract philosophizing. In fact, he said, it might be better to distinguish between an internal and an external epistemology, the scientist making internal contributions to epistemology without really knowing it since these contributions are integrated with their practical scientific work. As for the external contributors, they are more detached; they are consciously involved in speculating about scientific knowledge—about epistemology—as an end in itself (Blanché 1983, 33).

It hardly needs stating that the lawyer and the jurist will at once identify with this approach—or at least with the dichotomy between the internal and the external view of law. Bódig thus talks of legal scholars who “produce knowledge about law from an ‘internal point of view’”, that is to say, “the epistemological profile of the discipline is adjusted to the perspectives and practical orientations of participants of the legal practice” (Bódig 2021, 121). Dan Priel equally notes the distinction, saying that “‘external’ legal scholarship ... takes greater interest in ideas coming from other disciplines and seeks (to varying degrees) to use ideas coming from economics, philosophy, sociology, psychology, literary theory, or even neuroscience, to explain, justify, or challenge the law” (Priel 2019, 166). However, the analogy with science must be treated with some care because the jurists who specialize uniquely in legal theory, as opposed to those specializing in some positive legal subject (or indeed those in professional practice), are not necessarily to be classed as externalists. They may well be working, like the lawyer specializing in some specific

subject such as contract or property law, within what might be termed the authority paradigm (see Samuel 2009) and thus theorizing about law from the internal viewpoint.

Yet even if both groups of jurists—the specialists in doctrinal legal subjects and the legal theorists—are working within an internal point of view, this does not mean that their epistemological reflections will necessarily be the same. Will a person who spends most of their time reading judgments end up with the same view of legal knowledge as the person who spends most of their time reading books by Hans Kelsen, Herbert Hart and Joseph Raz? Again, what of the jurist who spends most of her time reading Rudolf von Jhering, Felix Cohen and Jerome Frank? Or, again, a jurist who spends at least half her time reading social science and humanities theorists? An AI “legal singularity” specialist keen to develop the notion of “legal singularity”, and who consults jurists from each of the above reading groups, might well find herself either having to abandon the project on the ground that there is no singularity or deciding to focus her attention on only one or two of the above groups. Such a specialist who is not keen to abandon her project might, therefore, adopt a view noted by Dan Priel. There are theories *of* law and there are theories *about* law (Priel 2019, 167), the latter theories being ejected from the domain of legal knowledge. In fact, Priel goes further and identifies within the group of internalist lawyers two categories of doctrinalists: there is one approach that is labelled “conceptualism” and another labelled “doctrinalists”. “The doctrinalist”, he says, “will cite lots of cases, and he or she will mostly cite cases; the conceptualist, on the other hand, will have relatively few citations to cases, which he or she will use to illustrate ideas said to be implicit in the law” (Priel, 2019: 167).

The second approach identified by Blanché is one that he described as a direct or intemporal analysis. This is a point of view that is static or synchronic in its timeless structure as it exists today (Blanché 1983, 34). The emphasis in this approach will often be on logic and on a symbolic language whose precision permits the operation of such logic. Blanché cited here the importance of the Vienna Circle and logical empiricism which, he said, in a way that can seem paradoxical, brought together the idea that science is based only on what the human senses see as real with the Russellian logic used to interpret the empirical data (1983, 35). Reality is accessed through a model consisting of symbolic language which translates this reality into a structure of formal concepts and of symbols that gives expression to these concepts (1983, 35). Blanché concluded that what one owes to logical empiricism is the introduction into epistemology of a systematized logical language whose utility endows

it with validity (1983, 36). Erica Thompson, writing recently, might characterize this as an escape *into* model land (Thompson 2022).

Again one can see the importance of this logic approach with regard not just to legal thinking in general but also, and more importantly for present purposes, to the search for a computable AI model of law and legal reasoning. As Deakin and Markou point out, “for machine learning to replicate legal reasoning it requires the translation of the linguistic categories used by the law into mathematical functions” (2020, 66). And these authors conclude by saying that what underlies this project “is the goal of a perfectly complete legal system” which in turn “implies that the content and application of rules can be fully specified *ex ante* no matter how varied and changeable the social circumstances to which they are applied” (2020, 66). Jennifer Cobbe, one of the contributors to the Deakin and Markou book, develops this point in examining the writings of those who assert “legal singularity” by saying that the supposed great value of it is “that advanced deep learning systems will be able to find the single “correct” answer to every legal problem” (2020: 107). Such a goal is not confined to AI and law specialists. If law is perceived as a closed highly coherent system consisting of axiomatic principles (or whatever), and, as the neo-formalist jurists claim, a system from which social goals are excluded (on which see, for example, Stevens 2009), then the idea that it ought to be capable of producing through deductive logic the correct answer is highly attractive. It is an epistemological paradigm (to borrow Kuhn’s expression) that is immensely powerful, and quite possibly is a rather dominant one for those faced with learning the law and with teaching it. For, as Bódig claims, the “influx of non-doctrinal knowledge into legal materials generates adaption pressures that complicate the job of cultivating doctrinal knowledge about law” (Bódig 2021, 216).

[C] EPISTEMOLOGICAL APPROACHES (2): DIACHRONIC APPROACH

The third approach suggested by Blanché is a historical-critical analysis. As he says, while the emphasis in the epistemology of science tends to be dominated by its actual state, such a state can be understood only by the past. History offers a means of analysis in separating by date and by the circumstances of their appearance, the various elements which have contributed to the formation, little by little, of the principles of modern science (Blanché 1983, 36). However, this history needs to be distinguished from a history of science as such in that the historical-critical approach is a means and not an end in itself (1983, 37). One is critically examining

the past in order to understand modern science and indeed the formation of the scientific ideal. However, distinguishing between the two is not easy since there are various ways in which such an historical approach can be undertaken. Is one focusing on the names of scientists in what is essentially a chronological approach? Or is one undertaking a history of ideas or of events or what? These questions matter because a history of ideas is not the same as a history of events, the latter emphasizing causal relations much more than the former. In the case of ideas, said Blanché, a history can only be written by grasping these ideas from their interior so to speak (1983, 38). However, this raises the historiographical problem of projecting the present on the past which means that a history of ideas is always, to some extent, a philosophical exercise.

Another problem associated with the historical approach is how the whole notion of science is to be understood. What are the internal divisions? Does one, for example, make a division between the abstract and concrete sciences? Here Blanché made an interesting observation: the most concrete sciences need to call upon concepts and thus upon abstraction, while even the most abstract of sciences cannot completely cut themselves off from the concrete foundations of which they were once a part (1983, 65). Rather than a binary division, he said, it would be better to think in terms of deductive and inductive sciences and when such a distinction is placed in an historical context what emerges is a progression from induction to deduction. Indeed, he went on to say, all sciences pass through four stages; they start out in a descriptive stage and end up at an axiomatic one, passing on the way through an inductive and then deductive stage (1983, 65). Blanché also emphasized the importance, historically, of the division between mathematics and physics. There is *a priori* knowledge and there is experimental knowledge, and this led to the idea that mathematics is a science not like the others. It is not a knowledge of things; it is a coherent language that is indifferent to reality (1983, 66). What is important, epistemologically, about this distinction is that it represents a distinction between purely formal systems on the one hand and concrete interpretations that these systems can generate on the other (1983, 67-68). And as for these formal systems, they can be constructed, said Blanché, only when a science has become axiomatized (1983, 68).

Is this third approach of relevance to legal epistemology, and thus to AI and law? If one looks at the history of the civil law—in effect the history of Roman law in Europe (see Stein, 1999)—one analogy with science stands out at once. This is the progression, identified by Blanché, from the descriptive to the axiomatic. One starts with the Twelve Tables,

descriptive in essence, and moves, with the Republican and Classical jurists (and continued by the medieval Roman lawyers), to the inductive. The humanists then take Roman law to a deductive stage, and they were followed by the *mos mathematicus* jurists of the 17th and 18th centuries, and then the Pandectists of the 19th century, who sought to axiomatize law, those axioms being reflected in the civil codes of Europe (see, generally, Samuel 2022b). The basis of these axioms was to be found in the *regulae iuris* collected together in the last book of Justinian's *Digest*; and they then became, along with others from Canon law, the foundational *principia* of legal knowledge thanks particularly to the late medieval jurist Baldus (1327-1400). Matteo Gribaldi Mofa (1505-1564), writing in the early 16th century, described these principles as *axiomata*, and in the same century Hugues Doneau (1527-1591) rearranged the structure of the *Digest* along institutional (persons, things and obligations) lines—as well as reorientating the material in terms of individual rights—creating a much more systematic vision of law from which one could deduce these rights. It was upon this basis that Leibniz and Heineccius (1681-1741) built their mathematical view of law (see Samuel 2022b, 121-125).

However, the axiomatic stage did not prove a final end point for legal thought. During the 20th century such axiomatic thinking seemed, for some jurists, nothing but “transcendental nonsense” (Cohen 1935; and see Deakin & Markou 2020, 12-14) and so the law appeared to have entered a fifth, post-axiomatic, stage in which a much more functional orientation became influential. This was particularly true of the common law world where the axiomatic thinking had had much less of an influence thanks mainly to a historical tradition where jury procedure and the absence of law faculties until the 19th century kept much continental legal thinking at bay. The idea of a “legal singularity” during the last century thus became lost within a functional mentality in which the social sciences—and in particular economics—made their way into the domain of legal knowledge and legal reasoning. It is only with the rise of neo-formalism in the common law world that the realist view of law started to come under serious attack (see, for example, Robertson & Wu 2009; Robertson & Goudkamp 2019), while from another quarter—that of AI and law—“the idea of law as axiom” would inspire AI pioneers “to investigate whether the axiomatic method could be applied beyond mathematics” (Deakin & Markou 2020, 14). In the light of the historical development just outlined, one can ask whether this AI movement amounts to a progression or a regression (from post-axiomatic back to the axiomatic) in legal knowledge. Are there lessons from history yet to be learned by AI pioneers, or is

history simply irrelevant? This is a serious epistemological question, and sadly not one properly investigated in the Deakin and Markou collection.

Mention must also be made of Blanché's fourth approach which he called genetic epistemology and was one inspired by the work of Jean Piaget (1896-1980) who specialized in the psychology of children and how their minds developed. This approach emphasizes the psychological aspect of the acquisition of the scientific mind and is diachronic in its approach "in that it takes the development of knowledge below the point where the history of science commences" (Blanché 1983, 40). Science, even at its early stages, utilizes notions that have already been developed by an already constituted mind, and these notions themselves can only be understood thanks to a kind of embryology of the ability to reason (Blanché 1983, 40). It is not just the history of science (*res*) that the epistemologist must study but equally the history of the *intellectus*.

The relevance of this genetic approach to legal knowledge and to AI and law seems beyond doubt since one is attempting to understand the human mind (*intellectus*) so as to be able to reproduce its processes in a legal-reasoning machine. Does the mind have built-in psychological structures that act as a means for some kind of pre-understanding that in turn project themselves on how the legal mind (*intellectus*) comprehends the world which in its turn seems to project back onto reality (*res*) the mind creating the concepts and categories that form the basis of an actual understanding? Markou and Deakin, in their contribution, quote Manning and Schütze in respect of natural language processing (NLP). They say that "[o]ne has to assume [there is] some initial structure in the brain which causes it to prefer certain ways of organizing and generalizing from sensory inputs to others, as no learning is possible from a completely blank slate, *tabula rasa*" (2020, 42, quoting Manning & Schütze 1999, 5). NLP, continue Markou and Deakin, "assumes that a baby's brain starts out with general associative rules that allow it to detect patterns, generalise information, and that both can be recursively applied to sensory data in the baby's environment that allow it to learn detailed and nuanced structure of natural language" (2020, 43). Later these authors point out that researchers in psychology "observe that the capacity for inference and abstraction is seen in seven month old toddlers who can learn language rules from a limited number of labelled examples in under two minutes" (2020, 52).

How, then, might such a genetic epistemological approach aid the understanding of legal reasoning in a way that is useful both for jurists and for AI specialists? Much depends upon what might be described as the

ontological basis of law and legal reasoning. A rule-based model is likely to focus on the process of moving from the rule to its application to a set of facts, and here the basis is symbolic knowledge. As Christopher Markou and Lily Hands point out, in their contribution to the collection, “[a]t their core computers are ultimately symbol manipulating machines” (2020, 250). But this begs a question. What about the brain and non-symbolic knowledge? Markou and Hands make the point that the “classical view of the brain assumed that biological cognition in general, and language processing specifically, involved the manipulation of symbols according to various rules” (2020, 250). Such an assumption was to prove wanting; research along these lines turned out to be a matter of “over-promising and under-delivery” (2020, 252). The current approach, say the two authors, is “connectionism” which “incorporates elements of systems-thinking, cybernetics, and autopoiesis” (2020, 252).

Certainly these ontological elements of reasoning are by no means irrelevant to legal thinking and reasoning. Yet non-symbolic knowledge—the use of imagery in particular—does not seem to have been pursued in any seriousness (if at all) in the Deakin and Markou collection. Now metaphor and analogy may be inimical to proper legal reasoning for some jurists (see, in particular, Alexander & Sherwin 2008), but the fact is that the law reports, in the common law world at least, are full of such reasoning methods, and these are methods that appeal to the imagination rather than to symbolic processing. Moreover, there is serious work by legal theorists on the role of metaphor and analogy in legal reasoning (see Del Mar 2020, 278-329); and so it does seem extraordinary that the Deakin and Markou collection does not consider this important aspect of knowledge and reasoning. Indeed, Markou and Deakin’s own contribution about exploring the limits of legal computability, insightful as it is, ends with a particularly weak conclusion that simply begs questions. They say that “for machine learning to replicate legal reasoning it requires the translation of the linguistic categories used by law into mathematical functions”. They then, of course, conclude that the various “juridical forms ... cannot be completely captured by mathematical algorithms” (2020,: 66). Quite so, one might say.

Take the following example that perhaps best illustrates this point, especially as the Markou and Deakin paper actually looks at employment relationships in the context of AI:

In order to decide whether a person carries on business on his own account it is necessary to consider many different aspects of that person’s work activity. This is not a mechanical exercise of running through items on a check list to see whether they are present in,

or absent from, a given situation. The object of the exercise is to paint a picture from the accumulation of detail. The overall effect can only be appreciated by standing back from the detailed picture which has been painted, by viewing it from a distance and by making an informed, considered, qualitative appreciation of the whole. It is a matter of evaluation of the overall effect of the detail, which is not necessarily the same as the sum total of the individual details. Not all details are of equal weight or importance in any given situation. The details may also vary in importance from one situation to another (Mummery J in *Hall v Lorimer* 1992, 944).

Can mathematics capture the mind's capacity for imagination—for “painting a picture”? Maybe it will be able to at some point in the future. Or maybe, as Larry Alexander and Emily Sherwin (2008) assert, reasoning by analogy and metaphor should be expunged from legal reasoning (which might delight some AI specialists). Whatever the situation, Professor Del Mar thinks that we “need to take seriously what goes on when we imagine metaphorically, including not only how we do so as individuals, but how we do so interactively and collectively” (Del Mar 2020, 288). One might think that those involved with the question of whether law is computable would be at the forefront of jurisprudential debates and thus immersing themselves in the challenges presented by legal theorists such as Del Mar. Yet, if the Deakin and Markou collection is anything to go by, one wonders whether such a book—and indeed the whole AI and law debate—is still rooted in old thinking.

[D] EPISTEMOLOGICAL PROBLEMS

Not that old thinking is irrelevant. Yet the different approaches to epistemology, while vital to an understanding of how one might engage with legal knowledge, do not, in themselves, provide answers to some of the most fundamental problems that can plague disciplines. One of these problems is the level at which engagement takes place. Can “law” be reduced to a single form of knowledge? Do the different actors within the knowledge domain all conform to just one type of knowledge that can be, or ought to be, captured in a single book of legal knowledge? Or do judges, legislators, practitioners, professors, bailiffs and so on operate according to different epistemological models? Even among professors, one can ask if they all conform to some *savoir collectif*. Do legal theorists have the same knowledge, and conform to the same epistemological model, as a specialist in arbitration or immigration law? Do comparative lawyers conform to the same epistemological model as experts in employment law or contract law? Or what of the law and economics professor in comparison with a doctrinal professor who considers interdisciplinarity

to be an “enemy”? According to one specialist in legal epistemology, the late Christian Atias (1947-2015), the “different categories of lawyers do not use exactly the same knowledge” (Atias, 1994: 21). Thus, he said, the judge presents his or her decision in applying (or indeed not applying thanks to interpretation) established rules and by reference to the mass of previous decisions usually applied to the kind of case he or she is confronting. The legislator, in contrast, works with reference to the parliamentary debates and to a range of data from human nature and life in society. The practitioner works according to the interests of his or her client; what matters is the result and how to achieve it which may involve procedures that do not have their source in legislation or case law (1994, 21-28).

Legal singularity by its very conceptual nature wants to coalesce these different models into a single knowledge model that is computer readable, and its focal point for doing this is the judge. As Markou and Deakin themselves say, the view of some AI experts is that “human judges are not just replaceable with AI, but that ‘AI judges’ should be preferred on the assumption that they will not inherit the biases and limitations of human decision-making” (2020: 5). Another contributor notes that some AI specialists such as Daniel Goldsworthy not only believe that the machine could become equivalent to or even better than humans “at understanding, applying, and, potentially, writing the law” but “that advanced deep learning systems will be able to find the single ‘correct’ answer to every legal problem” (Cobbe 2020, 107; and see Goldsworthy 2019). As Goldsworthy indicates, this was “Dworkin’s dream”, though it has to be said that Ronald Dworkin never saw himself as formulating some computer readable model (Dworkin 1986, 412). If anything is to be noted in Goldsworthy’s defence it is that he does see this whole AI exercise as a matter of collective knowledge culled from the “great legal minds across countries, continents and generations – past and present” (quoted by Cobbe 2020, 107-108). In other words, he does see legal knowledge as something that transcends both space and time. This is probably one of the most important asides (so to speak) in the whole collection in that he is implying that if one wishes to have knowledge of law there is a whole two thousand (or more)-year tradition in Europe which must be carefully mined for information. What, then, does this judge who transcends time and space know and how can it be modelled into computer-readable knowledge?

Viewed from this historical and transnational position, it hardly needs to be said that the epistemological problems facing the AI specialist are, to say the least, considerable. Several fundamental questions present

themselves. First, how has legal knowledge been, and how is it to be, represented? Secondly, what are the reasoning methods and techniques associated with decision-making in law? The two questions are by no means exclusive, and so it might be useful to add a third: how is law taught and learned? After two millennia, one might think that these questions would have been much researched and some sophisticated answers formulated. Yet it is not entirely clear that this is the case. Writing in 1985, Stig Strömholm said that “whereas substantive Roman law belongs, since more than eight hundred years, to the most widely and intensely studied among all fields of human knowledge ... the methods, and habits of thought, of ancient Roman lawyers have never been made the object of systematic study” (Strömholm 1985, 67). No doubt some Romanists would claim the position has changed over the last 40 years, but, if it has (which is by no means certain), none of this learning seems to have found its way into the Deakin and Markou collection.

No doubt the AI specialist might respond in asserting that Roman law is of no relevance today. Yet Roman law should, arguably, be of great interest to law and computer research since many of the categories and concepts are still to be found in modern legal systems and, just as important, it is a complete and closed system that could be ideal in terms of what Cobbe calls “reflexivity”. By this she means that “law is not just a product of its society (as certain strands of jurisprudence have argued), but also something that affects, alters, and itself produces that society” (Cobbe 2020, 111). It is “a reflexive construct of society that not only reflects society but itself has significant influence on society” (2020: 111). Cobbe makes it clear that the reflexivity that concerns her is its social effect. She is not concerned with legal and process and reasoning, or the operation of the law in relation to itself; she is interested in “how law functions within society more generally to reflexively reproduce the conditions, assumptions, and priorities from and upon which it is constructed” (2020, 111). This is not an unreasonable position by any means—in fact Cobbe, as we shall see, makes some very pertinent social and political points which elevates her contribution to one of the most interesting in the whole collection. But it can be asked if making the distinction between what might be called internal reflexivity (internal to law) and external reflexivity (how the system acts reflexively in society) does not eclipse the possibility that an internal reflexivity might not always be the result of intentional design. Is not one of the characteristics of a system that it can create its own elements simply as a result of the internal interactions within the system itself? One of the values of studying Roman law is that one can see how, for example, a corporate group (*universitas*) became a

legal subject almost by accident; the jurists arrived at the conclusion that a town ought to be able to bring an action against anyone who walks off with an item of public property. Having established this action, they had indirectly turned the town into a person.

This is by no means to question Cobbe's point about the actual marginalizing effects of a legal system or how it strengthens the power of capital (2020, 113). Yet if one could look at Roman law from the position of an AI "legal singularity" system (assuming such a thing is possible) and how it has reflexively developed over both its first life (Roman law in the Roman Empire) and its second life (in Europe from the 11th century onwards), it does have to be asked if the machine would have developed the system in the same way as did the generations of jurists (on which see Gordley 2013). The point of saying this is to elicit what must surely be the immediate responses of any epistemologist. What is the ontological basis of the system? What makes up the "singularity"? What are the reasoning methods associated with the system and its elements? What are the internal factors within the legal knowledge system that stimulated the evolution of the system over the centuries? What non-legal factors stimulated the developments?

[E] IS LAW A SYSTEM OF RULES?

One early AI and law specialist answered the ontological questions unambiguously. Richard Susskind asserted:

Before proceeding, however, one fundamental assumption ... should be articulated: that *rules* do and should play a central role in legal science, legal knowledge representation, and in legal reasoning. Overwhelming authority for this proposition can be found in legal theory, and even a philosopher such as Dworkin, who has questioned the sufficiency of rules for legal decision-making, does nevertheless himself seem to presuppose a predominant place for them, as MacCormick has shown (Susskind 1987, 78-79).

It would be idle to claim that rules are not of ontological and epistemological importance (see, generally, Stein 1966). The Roman jurists frequently employed the term *regula* and the final title of the *Digest* consists uniquely of over 200 *regulae iuris*. However, the first of these rules or maxims states that the law does not arise out of a rule, but a rule is fashioned out of the law as it is (*non ex regula ius sumatur, sed ex iure quod est regula fiat*: D.50.17.1). What did the jurist Paul mean by this comment? One other *regula* possibly gives a hint: all definitions in the civil law are dangerous (*omnis definitio in iure civili periculosa est*), for they are insufficient, said Javolenis, and the possibility exists that they may

be rendered meaningless (D.50.17.202). This perhaps is reflected in a comment by two modern AI specialists:

Traditional rule systems are *brittle*, and can be made to capture ... detailed phenomena only awkwardly (eg, by having a separate rule for each “exception”). ... Rules and symbols have their most obvious use in building higher-level models that abstract away from many of the detailed phenomena exhibited in behavioural data. When the details are not needed these are the models of choice (at least for description); but to model the actual mechanisms of cognition, more detailed, less brittle models are needed [T]he behaviour of the cognitive system is not *rule-governed*, but rather is only (approximately) *rule-described* (Bechtel & Abrahamsen 1991: 227).

This comment seems uncannily close to Paul’s view about rules, and so the question arises as to what was, then, the ontological foundation of the law if not a system of rules? The answer to this question is by no means easy because, while we are informed by Paul where the law is not to be found, no jurist in the *Corpus Iuris* tells us directly where it is to be found ontologically. There are, nevertheless, a number of observations that one can make with regard to the Roman materials.

The first is that one of the main focal points in terms of the operation of the law was the legal action (*actio*). The jurists, when considering a problem, tended to ask not what the applicable rules were but whether or not an action would lie (see D.9.2.52.2 for a typical example). Secondly, the late medieval Italian jurists (the Post-Glossators) formulated the expression *ex facto ius oritur*, that is to say the law arises out of facts (see, for example, Baldus’ comment on D.9.2.52.2). The actual method employed by the Roman jurists when analysing factual situations was to apply an early form of dialectics: the jurist would examine the facts and the possibility of an action by creating an either/or dichotomy. Again one can see this in Alfenus’ analysis of the wagons accident case (D.9.2.52.2). What is useful here for the AI specialist is that such a dialectical approach was in essence a form of algorithmic reasoning, later to be developed into a more sophisticated method by the Post-Glossators (especially Bartolus). Thirdly, and interestingly, the Romans made a distinction between texts designed for students and texts for practitioners, the former being known as *institutiones*. What is striking about the two classes of books is that the *institutiones* read more like books of general rules while the principal practitioner work (the *Digest*) is largely a collection of problem cases and factual examples. Moreover classification and systematization is a notable characteristic of Gaius’ and Justinian’s *Institutes*; the *Digest* and the *Codex*, in contrast, pay no regard to taxonomical organization. One had to wait until the 16th century before the institutional scheme was used

to reorganize the *Digest*. One can, possibly, conclude that learning rules, or at least rule-like descriptive statements, was essential in learning the law, but not so important for practical analysis by experienced lawyers. Problem solving involved knowledge that extended beyond the rule-model.

This distinction between learning the law and practising it finds some reflection in the Deakin and Markou collection. In their contribution to the book, Christopher Markou and Lily Hands quote Edward Feigenbaum and Pamela McCorduck who claim that domain expertise is reducible to two categories. The first is the knowledge to be found in textbooks and expounded by professors, and the second is heuristic knowledge which is knowledge of good practice and good judgment employed by practitioners in the field (Markou & Hands 2020, 243, quoting Feigenbaum & McCorduck 1983, 76-77). They then go on to note, again referring to Feigenbaum and McCorduck, that practical expertise is not something “that can be atomized into constituent parts and recombined using formal rules to form a valid diagnosis” (2020, 247). The expert is not following rules but recognizing thousands of special cases, and this is why expert systems are never as good as actual human experts. Accordingly, if “one asks the experts for rules, one will, in effect, force the expert to regress to the level of the beginner and state the rules he still remembers, but no longer uses” (Feigenbaum & McCorduck 1983, 184, quoted in Markou & Hands 2020, 247). Rules, in short, do not capture understanding. Admittedly, Feigenbaum and McCorduck are not referring to the legal expert but to medical and psychology professionals. Yet if their analysis has relevance for all professional activities, then it would appear that an AI program based on a rule-model of legal knowledge might well result in knowledge regression. Legal knowledge becomes a matter of learned rules operating at different levels; there are the rules of law itself, the rules referring to the interpretation of these rules and the rules concerning the application of the legal rules to the facts. There are probably other rules as well, one of which, as Feigenbaum and McCorduck point out, would be a rule about knowing “when to break the rules” (Feigenbaum & McCorduck 1983, 184-185, quoted in Markou & Hands 2020, 248).

A rule-model approach to law seems effective, therefore, only at an early learning stage. Nevertheless it would be idle to think that such a model does not have a strong grip on what is considered to amount to legal knowledge. Article 12 of the French code of civil procedure states that “the judge must decide a case in conformity with the legal rules that are applicable to it” (*Le juge tranche le litige conformément aux règles de droit qui lui sont applicables*); and common law judges often talk about law as pre-existing rules or principles to be applied to the cases before them (see,

for example, Samuel 2016, 36-38). At its strictest, the application of such rules can be described as a matter of syllogistic logic (see, for example, Lord Simon in *Lupton v FA & AB* 1972: 658-659), although in fairness other judges have not been hesitant in declaring that judges are prepared to abandon logic in favour of a “pragmatic solution” when necessary (see, for example, Griffiths LJ in *Ex parte King* 1984: 903). Academic lawyers have equally championed the rule model. Alexander and Sherwin, for example, argue that “the rule model of common-law decision making has advantages that we believe justify the courts in adopting it” (Alexander & Sherwin 2008, 43).

Indeed, these two authors present a view of the common law that would surely appeal to the AI specialist keen to develop a computerized judge:

The rule model of judicial decision making, which allows the common law to function as law and to settle controversy, is defensible only when judicial rules are justified as rules, and only when judicial rules are generally followed. Rule following depends on the willingness of judges and actors to apply rules even when the results the rules prescribe conflict with their own best judgment (Alexander & Sherwin 2008, 127).

If ever there was a manifesto for an AI judge, this must surely be a ready-made one. Moreover, as has been mentioned, these two authors are sceptical about analogy:

In our view, there is no such thing as analogical decision making, case to case. Judges who resolve disputes by analogy either are acting on a perception of similarity that is purely intuitive and therefore unreasoned and unconstrained, or they are formulating and applying rules of similarity through ordinary modes of reasoning (Alexander & Sherwin 2008, 234).

The argument here appears to assert that reasoning by analogy is either unacceptable because it is not reasoning but intuition or that the reasoning is not actually analogous but founded upon a rule. In other words, the rule model governs.

[F] NORMATIVE AND DESCRIPTIVE EPISTEMIC APPROACHES

The two authors are of course entitled to their view. However, from an epistemological viewpoint there are some problems because the two authors are not actually describing how judges think and reason; they are asserting how they *ought* to reason. This presents an epistemological challenge for those involved in constructing an AI model of legal reasoning. Should such a model be based upon how judges actually think and

reason or how they ought to think and reason? Once this dichotomy between what might be termed descriptive epistemology and normative epistemology is appreciated, one can begin equally to appreciate that the debates around the question of whether or not law is computable is not just about constructing an AI robotic judge. It might well be about reconstructing law and legal reasoning themselves. This is the great value of the Alexander and Sherwin book because in arguing for a strict rule-model approach to legal reasoning they are, unconsciously no doubt (because their book is not about AI), exposing the fundamental issue that underpins the search for the robot judge. Is one modelling such a judge on an “is” or an “ought”?

The Deakin and Markou book seems ambiguous on this question. These two authors themselves say that “legal singularity ... describes a version of a complete legal system, overseen by a superhuman intelligence” and that such “a system is premised on the possibility of the perfect enforcement of legal rights” (2020, 27). This statement suggests that legal singularity is simply a highly refined version of law as it is; it is “a perfectly complete legal system” (2020, 66). Yet is a perfectly complete legal system—if such a thing is possible—based on a descriptive epistemology or a normative one? Given that this is an ideal rather than a present fact, such legal singularity, because “it requires the translation of the linguistic categories used by the law into mathematical functions” (2020: 66), cannot be entirely descriptive. It is a process by which one is attempting to fashion an idealistic legal system. This, surely, is a lesson that can be learned from history. Anyone familiar with Roman law will know that it was anything but an axiomatized legal tradition (see, for example, D.50.17.1). Studying Roman law, as has been mentioned, involved studying in great detail the *Digest* and the *Codex*, but neither of these books was organized in any systematic way and the former book consists largely of a mass of factual problems discussed in the opinions of jurists. In the 17th century the French jurist Jean Domat (1625-1696) considered that the Roman laws as set out in their source texts “were not easy to learn in depth” (*il n’est pas aisé de les bien apprendre*) and required “a long and painful study” (*une longue et pénible étude*) (*Loix Civiles*, first edition 1689, ‘Preface’). He thus produced a work that set out Roman law in a systematized and “scientific” body of axioms (*ordre universel*). In doing this he insisted that he was not producing some abridged version of Roman law, but a work on Roman law in all its detail (thus each principle or axiom is footnoted to the relevant Roman authority). In the following century Robert Pothier (1699-1696) undertook a similar exercise. However, as James Gordley

has pointed out, the “price paid for this [ease of reading] advantage was that the student learned Roman law as described by Domat and Pothier, and not as presented by the Roman jurists” (Gordley 2013, 145). In other words they were not really learning Roman law but a kind of “legal singularity” version of law supposedly based on Roman law.

What this means is that the project to translate law into a computerized model is a project that in many ways is analogous to the project undertaken by Domat and Pothier. Were it to succeed, it might give the impression that it is reflecting supposedly existing legal rights and duties under the control of a superhuman intelligence. Yet, of course, not only is the whole idea of “existing” law something that is debateable in itself (see Glanert & Ors 2021, 1-30; Legrand 2022, 219-220), but the transposition or translation of the “existing law” into a computer-readable “law” to be “read” and “applied” by a brain that is not human will result in a new “law” that is not the same as the old “law” even if this appears undetectable.

Does the Deakin and Markou collection investigate this epistemological conundrum? It is fair to say not as such—or at least not directly. But the two authors themselves do get close to appreciating the issue:

Efforts to formalise legal knowledge into mathematical axioms and transform judicial reasoning into something that can be modelled echo the Neo-platonism of the early scientific era and revive the Leibnizian assumption that there exists a hidden mathematical order underlying the structure of reality and human cognition. With the rise of “LegalTech”, it is now presumed that mathematical formalisation is not just possible, but that strategic reasoning expressed via computation should be considered ontologically superior to inherently faulty practical reasoning expressed through natural language categories (2020, 50).

In fact Mireille Hilderbrandt, in her contribution to the book, perhaps comes closer in highlighting “computational legalism”. By this she means the assumption in code-driven normativity that legal systems are coherent and complete, whereas the reality is that text-driven normativity does not in truth afford logical and deductive coherence (2020, 75). This distinction suggests that the translation of a text-driven normativity into a code-driven one would result in two rather different normativities. As she says:

The force of code differs from the force of law. The act of translation that is required to transform text-driven legal norms into computer code differs from the constructive interpretation typically required to “mine” legal effect from text-driven legal norms in the light of the reality they aim to reconfigure. The temporal aspect is different because code-driven normativity scales the past; it is based on insights from

past decisions and cannot reach beyond them. The temporality also differs because code-driven normativity freezes the future; it cannot adapt to unforeseen circumstances due to the disambiguation that is inherent in code (2020,78).

One might note, finally, that Lyria Bennett Moses observes that “[u]sing rules as code techniques to render all law computable would require changing the content of that law” (2020, 210). Indeed, one might say.

[G] METHODOLOGY AND KNOWLEDGE

Be that as it may. If one is attempting to develop an AI programme on the basis of an “is”, then, of course, one has—or at least it would seem necessary—to examine in all its complex depth how judges actually decide cases and the reasoning involved in such decision-making. Yet if, as Alexander and Sherwin hope, metaphor and analogy are to be consigned to the side-lines, what are the methodological orientations that receive attention? Algorithms, of course, are central and are defined in the Deakin and Markou collection as “a finite sequence of defined instructions used to solve a class of problems or perform a computation” (2020, 286). And such sequence thinking has a long methodological history in law and so may reasonably be seen as one of the foundational methods that underpin casuistic analysis typical of the inductive stage of legal thought (see Samuel 2018, 12-32; Samuel 2022b, 72-74). However, there is more to legal reasoning than just dialectical and algorithmic methods. One might ask, accordingly, whether legal singularity is a promising epistemological starting point. This idea of legal singularity which, as has been seen, appears to be the major epistemological model that has underpinned the question of whether law is computable, seems methodologically to be a matter of producing solutions to legal problems through deduction from a set of positive rules. At least this was the methodology that informed the original machine-learning projects and remains one that has not lost its influence even if AI research has moved on. As Hildebrandt says, formalization and logical deduction “are crucial for automation, which is the core of computing systems” (2020, 72).

Yet once one focuses on methodology it might be valuable to recall that lawyers and jurists have not been particularly good at articulating their methods (see van Gestel & Lienhard, 2019, 449). As the position does not appear to have improved much, it has to be asked if this lack of methodological insight is a serious obstacle to constructing any AI programme capable of reasoning like a human judge. Now it would be misleading to say that the Deakin and Markou book ignores completely this methodological problem, but it does have to be stressed that the

chapters seem little interested in investigating methodology in the social and human sciences despite the existence of a huge body of literature. This literature reveals that how a researcher engages with a text or with facts is governed (for want of a better term) by a range of schemes of intelligibility, programmes and paradigm orientations (see, for example, Berthelot, 2001) and the employment of different schemes, or mixture of schemes, results in different knowledge. These issues have been investigated elsewhere (see Samuel 2022b, 50-55), but it might be useful to return to them, if only briefly, because it is difficult to conceive of an AI reasoning programme that is unaware that a causal scheme of engagement is very different from a hermeneutical one and that structural approaches are different from interactional ones. Functional schemes of engagement can also be contrasted with dialectical ones.

That these schemes are very relevant to legal reasoning has hopefully been demonstrated elsewhere (see Samuel 2018, 273-277), but it might be useful to recall just how relevant they are. One can often discern this relevance when there are differences between judges which may occur in the same court—dissenting opinions—or between two courts when, say, the Supreme Court judges overrule a decision of the Court of Appeal. These different schemes of engagement often reveal themselves in cases involving statutory interpretation (see, for example, Samuel 2022a, 60-61). And in *Campbell v Gordon* (2016) Lord Toulson said:

30 ... I have set out the alternative approach, which looks at the function and substantive effect of the deeming provision in real terms. The choice between a formal approach and a functional approach in the interpretation and application of statutory language is an aspect of the choice between formalism and realism which has been a fruitful subject since as long ago as the publication of Holmes's *The Common Law* in 1881. In deciding which approach is preferable, the context matters. The present context is legislation for the protection of a vulnerable group, a company's employees. In that context I regard the functional approach as more appropriate.

There is equally the engagement with facts. This, surely, is an aspect of legal reasoning that presents one of the greatest challenges to formulating an AI programme since there is no such thing as raw or brute facts. As Stephen Waddams has noted, facts “may be stated at countless levels of particularity” and that no “map or scheme could possibly classify all imaginable facts, for there is no limit whatever to the number of facts that may be postulated of a sequence of human events” (2003, 14). Take the famous case of *Donoghue v Stevenson* (1932). How does one describe the “relevant facts”? Was it a case about a bottle of ginger beer causing damage, about a consumable item causing damage, a product causing

damage, or the negligent act of a person causing damage? Alexander and Sherwin argue that in the case involving the application of a legal rule it is the rule itself that determines “the important features of individual cases” (2008, 22), but a case from Roman law indicates that matters are not so simple (on which see, generally, Ernst 2019). As recorded by the jurist Gaius, the *lex Aquilia* stated in its first chapter that “one who unlawfully (*injuria*) kills another’s slave or female slave, or a four-footed animal belonging to the class of *pecudes*, let him be condemned to pay to the owner an amount that was the highest value in the previous year”. (D.9.2.2).

The problem raised by the jurists was this. What if a person mortally wounds a slave but before he dies another person delivers a further mortal wound that immediately causes the death of the slave? Is the first attacker to be liable for the death of the slave or only for wounding? The jurist Ulpian thought that the first attacker was not to be liable for the killing:

Celsus writes if one man strikes [a slave] with a mortal wound, and afterwards another kills him, the first of them is held not liable for killing but for wounding, because he died from another wound; the second is held liable [for killing] because he killed. Marcellus seems to be of the same view, and it is the more plausible one (D.9.2.11.3).

However, another jurist, Julian, thought the opposite:

So badly wounded was a slave from a blow that it was certain he would die; then, in the time between the hit and death, he was made an heir and following this he died from a blow by another person. I ask whether an action for killing under the *lex Aquilia* can be brought against each of them. He [Julian] replied: in fact it is commonly said to have killed whoever is the cause of death (*qui mortis causam*) by whatever means; but under the *lex Aquilia*, is considered to be held liable only he who applied violence and by his own hand, so to speak, caused the death, that is to say in extending the interpretation of the words “to kill” (*a caedendo*) and “to hit” (*a caede*). Again, however, under the *lex Aquilia*, have been held liable not only those who wound in such a manner to deprive immediately life but also those who as a result of wounding it is certain that life will be lost. Therefore if someone mortally wounds a slave, and another, during the interval, hits him in such a way that he dies more quickly than he would have done from the first wound, it is determined that the two are held liable under the *lex Aquilia* (D.9.2.51pr).

Interestingly, Julian does not stop here. He continues by justifying his conclusion in two ways. First:

And this is in accord with the authority of the old jurists who, where several persons wound the same slave in a way that it is not apparent

which one committed the mortal stab, decided that all were held liable under the *lex Aquilia* (D.9.2.51.1).

And secondly:

With regard to this, if anyone thinks that what we have decided is absurd, he should reflect that it would be far more absurd if neither is held liable under the *lex Aquilia*, or one rather than the other [be held liable]; for wrongs ought not to go unpunished and nor is it easy to establish which of the two is to be held liable under the statute. Many are the examples that can be proved in civil law that go against rational reasoning and argumentation (*contra rationem disputandi*) in favour of the common policy good (*pro utilitate communi*). I shall content myself with one example. Where several people with an intent to commit theft carry off a wooden beam belonging to another that no single person could do himself an action for theft lies against all of them, although subtle reasoning (*subtile ratione*) says it would lie against no one of them because in truth no one of them could carry it (D.9.2.51.2).

This conflict of opinion may seem ordinary enough in that judges and jurists regularly disagree over a decision. Yet there are reasoning complexities here that need further examination because they arguably present fundamental challenges to the question of computability of law. The first challenge is with regard to the facts. Ulpian is seeing the whole episode as two individual events that from a causal point of view must be kept separate. Julian, in contrast, is seeing the episode as one single event; he is, in other words, adopting a very different—and holistic—view of the facts. This difference between an individualistic vision and a holistic one is often to be found at the basis of a difference of opinion in legal reasoning (see, for example, *Re Rowland* 1961) and so the question arises as to how the AI programme is going to accommodate such different visions.

The second challenge is the engagement with the text itself. Ulpian's engagement is via a scheme of intelligibility that is causal, while Julian's is functional (although he also adds an argument founded on precedent authority). Not only, then, is there a difference at the level of engagement with facts (holistic versus individualistic) but also a divergence at the level of the text (causal versus functional scheme). How is an AI programme going to handle these different scheme possibilities? One answer, of course, is not to have a single robot judge, but a college of them, different robots being programmed with different schemes of intelligibility and different paradigm orientations (holism versus individualism). Yet this would seemingly undermine part of the purpose of replacing human judges with a computerized judge supposedly free of human biases. It would undermine the idea of legal singularity.

[H] NATURALISM AND ANTI-NATURALISM

Regarding legal singularity, much that has been said so far might be said to fall within a paradigm orientation that is labelled “naturalist”. What this term means is an epistemology that assumes that the social sciences are governed by the same “scientific” laws (axioms, principles) as the hard sciences; it is associated with positivist thinking that displays a number of characteristics, two of which are objectivism and reductionism (Berthelot 2006, 379). In other words, law not only is the object of a scientific approach whose assertions are subject to a rigorous deductive logic but is governed by a unitary epistemological model. In contrast to this paradigm, there is an anti-naturalist one that sees law as a cultural phenomenon that has to be *understood* rather than explained in scientific terms. Law is a sign which, through a hermeneutic scheme of intelligibility or engagement, reveals deeper significations within a cultural mentality itself embedded in social, political, economic, philosophical and theological matrix. Within this latter paradigm there is not the same rigid distinction between the scientific model and the object of the scientific model—between, one might say metaphorically, the map and the territory (on which see Markou & Hand’s 2020 contribution, 280-281). Instead the map is the territory and the territory is the map (see Glanert & Ors 2021, 1-30). As Frank Pasquale says in his “Foreword” to the Deakin and Markou book, “a plant does not grow differently in response to a botanist’s theory of photosynthesis” but “in the social world, a hall of mirrors of perceptions and counterperceptions, moves and countermoves, endangers any effort to durably and effectively predict the behaviour of humans, much less control them” (2020, x-xi).

How, then, is the research into an AI law program to be viewed from the position of an anti-naturalist paradigm? Not very favourably if some of the contributors to the Deakin and Markou book are to be believed. Hildebrandt sees what she calls computable code-driven law as having a number of challenges that are not faced with text-driven law. Basing herself on Dworkin’s work, she sees code-driven law as lacking the “implied philosophy” that is inherent in Dworkin’s integrity thesis because code-driven law is too closed to be able to interact with legal intra- and extra-systematic meaning, such interaction creating fundamental uncertainty that sustains the “dynamic between the internal coherence and the performative nature of attributing legal effect” (2020, 75). The implied philosophy “must take into account both the justice and the instrumentality of the law (next to legal certainty)” which involves a Dworkinian “constructive interpretation, which emphasises that the right interpretation is not given but must be constructed as part of the

refined but robust fabric of legal meaning production” (2020, 76). A feature of text-driven law is its adaptability to changing circumstances. It might be worth recalling here that Dworkin himself asserted that he had “not devised an algorithm for the courtroom”. And thus no “electronic magician could design from my arguments a computer programme that would supply a verdict everyone would accept once the facts of the case and the text of all past statutes and judicial decisions were put at the computer’s disposal” (1986, 412).

Cobbe notes that absent from the notion of legal singularity “is any meaningful discussion of the role that law plays in society; of the effect it has on society and the people within it; or of how those things should be” (2020, 108). While Hildebrandt talks of the implied philosophy inherent in law, Cobbe is more interested in the social function and social effects of law which, she says, does not necessarily live up to its supposed “lofty normative ideals of justice, fairness, accessibility, and so on” (2020, 113). What, she asks, are the actual effects of the system of law? Her answer is that the “purpose of law as historically and currently constructed has been to reflexively entrench the power of capital, strengthen the position of the wealthy, reinforce inequalities, and protect established interests from outside challenges” (2020: 113). It is tempting to say that one only has to look at some contemporary cases—such as *Director General of Fair Trading v First National Bank* (2002), *Shogun Finance Ltd v Hudson* (2004), *Arnold v Britton* (2015) and *ParkingEye Ltd v Beavis* (2015)—where the consumer interest came up against the commercial interest, to see that she may have a point. Indeed, one United Kingdom (UK) Supreme Court judge has suggested recently that the “rule of law” is all about protecting the interests of the commercial community and that one should celebrate the income that it generates for the UK (Hodge 2022). The implication here is that law, like accountancy and banking, is simply a commercial service, presumably to be readily available to the power and interests of capital. Be that as it may, Lord Hodge’s lecture certainly appears to confirm Cobbe’s assertion that legal AI proponents may well “prioritise the kind of market-orientated and commercially driven ways of thinking about and seeing the world”—that is to say a “neo-liberal capitalist frame of thought” (2020, 125). Given, then, the role of law “in reproducing inequalities and hierarchies of contemporary society, and given the reflexive, sociotechnical nature of AI, how are Legal AI’s algorithmic systems, trained on data about society and the law, supposed to be objective?” (2020, 120). As she says, no answers are readily forthcoming.

Sylvie Delacroix approaches the AI issue from the position of moral change which, she thinks, presents a serious methodological problem

for automated systems. “Systems designed to simplify our practical reasoning”, she says, “can also undermine our ability to keep calling for better ways of living together” (2020, 161-162). Algorithms are backward-looking because they are based on historical data and thus will be inadequate when faced with dealing with the changing views and circumstances of the future. Moreover, “an established legal system may be particularly conducive to a society that is ‘deplorably sheeplike’” and thus “our ability to question and call for better ways of doing things – calling to account a perverted legal system or denouncing deficient automated systems – cannot be preserved through cognitive vigilance alone” (2020, 169-170). This sheeplike-ness is likely to be exacerbated by the epistemic confidence and reliance on automated systems. This could lead to the end of ethics, for “we might be normative animals, but without regular exercise, our moral muscles will just wither away, leaving us unable to consider alternative, better ways of living together” (2020, 172). Indeed, one might again say. But while Delacroix is offering a warning to those of us steeped in a liberal democratic social and political culture, she is equally offering what would be a most valuable tool to those desirous—and they seem to be on an upward march in parts of the world (including Europe)—of an authoritarian society where people are not continually thinking of better ways of living together. An appropriately programmed AI-controlled legal system might well appear as a most attractive proposition especially if it could result in a society that is “deplorably sheeplike”. Cobbe might well agree.

[I] CONCLUDING OBSERVATIONS

If this sounds a little pessimistic it is only because there is something very pessimistic underpinning the question of whether law is computable. The pessimism springs primarily from the woeful state of epistemological thinking in law. This is not to criticize the contributors themselves to the Deakin and Markou book who, on the whole, are aware of some of the epistemological issues at stake. It is to criticize those who think in terms of legal singularity because this is, it is submitted, nothing less than legal knowledge regression. It is to resurrect the jurists from the past era of the *mos mathematicus* who dreamed of a law that consisted of axioms and theorems capable of answering any legal problem and thus freeing students from having to learn hundreds of cases (see Samuel 2022b, 121-125). Yet it is not just those in computer and AI departments who are to blame for this regression; legal theorists have been churning out rule-model—and often simplistic—theories about the nature of law and legal reasoning, and so it is not surprising that those trained in computer

logic and systems have come to believe that there exists out there (so to speak) something called law. One may be highly critical of Bódig's attempt to defend legal doctrinal scholarship (see Samuel 2022a), but he is surely right in his observation that in certain respects "the influence of contemporary academic legal theory has been positively unhelpful" in that the "dominance of legal positivism in mainstream legal theory (which is, to an extent, the by-product of the rise of analytical legal theory), lends credibility to the idea that doctrinal reflection does not need to worry about its justificatory background" (Bódig 2021, 12). Many of the contributors to the Deakin and Markou collection would surely agree.

The other principal question—the principal question really—is whether law is computable. The contributors to the Deakin and Markou book are all offering a pushback of one kind or another against such an AI trend. But they are probably, in one respect at least, on a doomed mission. It would be idle to think that by the end of this century (if not before) much of the work of lawyers and judges will not be handled by legal robots and these robots will, if nothing else, be producing very convincing judgments probably indistinguishable as texts from those once produced by humans. Yet this does not mean that the doomed mission is in vain. Hildebrandt, Cobbe and Delacroix, in particular, have few illusions as to what this might mean and about the kind of society that will host such machines. If the society is an authoritarian one, as it well might be given the crises facing the world, the "sheep" will not be encouraged—and one is going to mix metaphors here—to open the "black box" to see what is going on in the "mind" of the robotic judge. Those who assert that legal singularity is nothing but epistemological fantasy will be arrested, interned and "re-educated" on books like the one written by Alexander and Sherwin. The intellectual gyms will be closed, thus depriving the intellectual "muscles" of any exercise. But the great strength of the Deakin and Markou book (and many of the references cited or noted therein) is that it will prevent present and future jurists claiming that they had not been warned.

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