

KEVIN D. ASHLEY, *ARTIFICIAL INTELLIGENCE AND LEGAL ANALYTICS: NEW TOOLS FOR LAW PRACTICE IN THE DIGITAL AGE*, (2017).

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Examining Issues in Next Generation Legal Computer Applications

“Cognitive computing in law will be happening soon!”¹

Kevin D. Ashley’s *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* is an important contribution to the field of computer science and the law. It details how computer applications will be increasingly capable of improving the performance of legal professionals and the delivery of legal services to clients. Ashley envisions future computer applications enabling collaborative human-machine activity in the delivery of legal services, which he calls “cognitive computing.”²

This book explores two central questions: how can text analytics methods extract the necessary information from legal texts and how can that information be applied to achieve

¹ See Kevin D. Ashley, *LEGAL ANALYTICS: NEW TOOLS FOR LAW PRACTICE IN THE DIGITAL AGE* 37 (2017).

² See ASHLEY, *supra* note 1, at 3.

“cognitive computing?”³ Ashley wrote this book to an audience of non-programmers with the hope of framing current issues in the field of legal analytics and facilitating the advancement of the field.⁴

This review discusses the book’s contribution to the field of artificial intelligence and law with the aim of introducing some of the large developments in legal services driven by Ashley and others’ work.

Dr. Kevin D. Ashley is a Professor of Law and Intelligent Systems at the University of Pittsburgh, a Senior Scientist at the Learning Research and Development Center, and Adjunct Professor of Computer Science at the University of Pittsburgh.⁵ He specializes in the fields of Artificial Intelligence Modeling of Legal Reasoning, Cyberspace Legal Issues, and Intellectual Property.⁶ Ashley has written three books and over twenty articles, in addition to serving as a Panelist on the National Science Foundation.⁷ He is also the Co-Editor-in-Chief of the journal *Artificial Intelligence and Law*.⁸

This book does not focus on a specific area of law but instead concerns itself with the application of artificial intelligence to the performance and delivery of legal services. Thus, Ashley’s analysis focuses on descriptions of computational and legal processes and how the former could perform the latter.⁹ Before non-programming readers stop reading, let me mention up front that this book’s great strength is the way it is organized to maximize accessibility.

³ See ASHLEY, *supra* note 1, at 31.

⁴ See ASHLEY, *supra* note 1, at 36.

⁵ Kevin D. Ashley, Biography, <http://law.pitt.edu/people/kevin-d-ashley> (last visited Dec. 3, 2017).

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

⁹ See ASHLEY, *supra* note 1, at 35-37.

Ashley has organized the book to benefit newcomers to the subject. Each chapter follows a consistent structure: it frames the issue it is addressing and summarizes the author's analysis, thus offering many access points into the rich and dense subject matter. Additionally, each chapter includes generous visualizations of difficult concepts, especially when two or more ideas are compared or contrasted. There is a glossary for terms. In essence, the large-scale structure of the book explores models and tools in Parts I and II, then discusses how integrating them together in Part III can result in the next generation of legal computer applications.¹⁰

Ashley writes that the fields of law and artificial intelligence are on the cusp of a "revolution" that will result in new tools for delivering legal services, promising greater efficiency and, possibly, greater public accessibility.¹¹ Computational models, such as question answering (QA) and information extraction (IE) have produced programs like IBM's "Watson" and "Debater," the former of which famously competed on the game show Jeopardy.¹²

Ashley envisions that the true usefulness of these programs will not be in winning prize money on game shows, but in enabling what he calls "cognitive computing," whereby people utilize a computer program to perform the kinds of intelligent activities that they are best suited to perform.¹³ Ideally, computer programs will provide raw computational power to comb through texts leaving humans to perform higher-level cognitive functions more efficiently. According to Ashley, these models will ideally generate arguments, predict a problem's outcome, and even proffer reasons for these tasks intelligible to humans.¹⁴

¹⁰ See ASHLEY, *supra* note 1, at 34.

¹¹ See ASHLEY, *supra* note 1, at 6-7.

¹² See ASHLEY, *supra* note 1, at 1, 30-31.

¹³ See ASHLEY, *supra* note 1, at 4.

¹⁴ *Id.*

Readers alarmed with the increasing automation of legal services can breathe easy: Watson, Debater, and other programs each face substantial challenges that hinder their advancement, not least of which is these programs' inability to perform legal reasoning. This means that Watson cannot explain its answers in a way that a lawyer or client could understand, therefore, it cannot produce legal arguments.¹⁵

Ashley devotes Chapters 2 to 5 to explaining the challenges inherent in modeling computer programs capable of performing statutory reasoning, case-based reasoning, and predicting legal outcomes. Ashley's writing in these chapters gives the reader an appreciation for the significant hurdles programmers face in constructing models and the same cognitive processes the human brain executes, albeit naturally.

Nonetheless, advances are being made. For example, Ashley writes about the feasibility of solving the "knowledge representation bottleneck."¹⁶ Up to the present, substantive legal knowledge has had to be extracted manually from cases, statutes, and other texts. This extraction process has been performed by human experts by reading texts, then constructing systems of representation for the information they contain in forms that computers can use. Humans then need to manually enter the information into the system. Ashley writes that the development of text analytic techniques may eliminate this bottleneck by automating the knowledge extraction and representations process, thus dramatically increasing its speed and efficiency.¹⁷

Ashley's goal of "cognitive computing" is premised on this innovation and it appears to be on the horizon. Once these text analytic techniques can automatically scan legal texts, the next step is honing the features of computer models to extract arguments. Part II explores the

¹⁵ See ASHLEY, *supra* note 1, at 31.

¹⁶ See ASHLEY, *supra* note 1, at 4.

¹⁷ *Id.*

capabilities of these models while Part III explores the results of successful mergers between the ideas analyzed in Parts I and II. Ashley's end-goal is the development of a hypothesis-based querying application that retrieves arguments from texts, so that lawyers can rely on a computer model to test hypotheses against a large number of sources.¹⁸

Ashley's book is focused on the technical feasibility of this "revolution" and only hints at the myriad of issues raised by the application of this new technology to the existing legal industry. This is appropriate, given his stated goal for the book. But one is left tantalized by questions arising from the creation of, for instance, a legal application that would allow users to enter search terms and return not just relevant texts but legal advice. How would this application affect the complexity of existing attorney-client privilege? Perhaps this technology could tap into latent markets of people currently underserved by the legal profession. Who would ultimately be responsible for the actions of such a machine providing such services? Ashley only raises the possibility of such issues.

Ashley writes with surpassing clarity and thoroughness. While the book is not necessarily written for readers with a background in computer sciences, basic knowledge of terms like machine learning, AI, question answer, argument mining, and legal analytics would be very useful in order to appreciate Ashley's presentation and arguments. Moreover, a reader must have a fairly sophisticated understanding of the law.

This book is a fascinating and challenging read and a valuable contribution to the field of artificial intelligence and law. I recommend it to anyone interested in understanding the current state of computational modeling as it is applied to the legal profession. Even though the subject can be difficult, Ashley organized the book as a reference with a glossary of terms, clear chapter

¹⁸ See ASHLEY, *supra* note 1, at 350.

and section organization, and frequent and vivid visualizations and graphs. This book is informative and engaging. The author has succeeded in creating a book that frames critical issues and identifies possible directions the technology can go.