



ARTIFICIAL INTELLIGENCE AND THE FUTURE OF LEGAL PRACTICE

BY GARY E. MARCHANT

The alarming headlines and predictions of artificial intelligence (AI) replacing lawyers have no doubt created discomfort for many attorneys already anxious about the future of their profession: “Rise of the Robolawyers.” “Here Come the Robot Lawyers.” “Why Hire a Lawyer? Machines Are Cheaper.” “Armies of Expensive Lawyers, Replaced by Cheaper Software.” “Law Firm Bosses Envision Watson-Type Computers Replacing Young Lawyers.” “Why Lawyers and Other Industries Will Become Obsolete. You Should Stop Practicing Law Now and Find Another Profession.” And so on.

Despite these dire headlines, AI will fortunately not replace most lawyers’ jobs, at least in the short term. One in-depth study of the legal field estimated that AI would reduce lawyers’ billing hours by only 13 percent over the next five years.¹ Other estimates are a little less sanguine, but still not projecting a catastrophic impact on attorney employment. A database on the effect of automation on over 800 professions created by McKinsey & Company found that 23 percent of the average attorney’s job could be replaced by robots.² A study by Deloitte estimated that 100,000 legal jobs will be eliminated by automation in the United Kingdom by 2025.³ And last year JPM-organ used an AI computer program to replace 360,000 billable hours of attorney work, with one report of this development observing that “[t]he software reviews documents in seconds, is less error-prone and never asks for vacation.”⁴

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As with many new technologies, there is a cycle of hype at the outset that creates inflated expectations, even though the long-term implications of that technology may be profound and enormous. As Bill Gates perceptively noted in his book *The Road Ahead*, “[w]e always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten.”⁵ Right now, AI in the practice of law is more of an opportunity than a threat, with early adopters providing more efficient and cost-effective legal services to an expanding portfolio of existing and potential clients.

The use of AI in law will thus be an evolution, not a revolution.⁶ But make no mistake, AI is already transforming virtually every business and activity that attorneys deal with, some more quickly and dramatically than others, and the legal profession will not be spared from this disruptive change. Incorporation of AI into a law firm’s systems and operations is a gradual, learning process, so early adopters will have a major advantage over firms that lag in adopting the technology. The lawyers, law firms, and businesses that do not get on the AI bandwagon will increasingly be left behind, and eventually displaced. As a recent *ABA Journal* cover story explained, “Artificial intelligence is changing the way lawyers think, the way they do business and the way they interact with clients. Artificial intelligence is more than legal technology. It is the next great hope that will revolutionize the legal profession.”⁷

What Is Artificial Intelligence

At its simplest, AI is the development and use of computer programs that perform tasks that normally require human intelligence. At this time and for the foreseeable future, current AI capabilities only permit computers to approach, achieve, or exceed certain but not all human cognitive functions. While some researchers are working on developing computers that can match or eclipse the human mind, sometimes referred to as “general intelligence” or “superintelligence,”⁸ such

an achievement is likely decades away. That is why important legal skills based on human judgment, inference, common sense, interpersonal skills, and experience will remain valuable for the lifetime of any lawyer practicing today.

While AI has many attributes for its many different applications, two are currently most important for legal applications. First, *machine learning* is the capability of computers to teach themselves and learn from experience. This means that the AI can do more than blindly adhere to what it has been programmed to do, but can learn from experience and data to constantly improve its capabilities. This is how Google’s Deep Mind system was able to defeat the world’s best human Go players. Second, *natural language processing* is the capability of computers to understand the meaning of spoken or written human speech and to apply and integrate that understanding to perform human-like analysis.

AI is rapidly being applied to all major sectors of the economy and society, including medicine, finance, national defense, transportation, manufacturing, the media, arts and entertainment, and social relationships, to name just some. Many of these applications will create new legal issues for lawyers, such as the liability issues of autonomous cars, the legality of lethal autonomous weapons, financial bots that may run afoul of antitrust laws, and the safety of medical robots. But in addition to changing the subject matter that lawyers work on, it will also transform the way lawyers practice their craft.

AI Applications for Legal Practice

AI is rapidly infiltrating the practice of law. A recent survey of managing partners of U.S. law firms with 50 or more lawyers found that over 36 percent of law firms, and over 90 percent of large law firms (>1,000 attorneys), are either currently using or actively exploring use of AI systems in their legal practices.⁹ The following summary describes some of the major categories and examples of such applications.

Technology-Assisted Review

Technology-assisted review (TAR) was the first major application of AI in legal practice, using technology solutions to organize, analyze, and search very large and diverse data sets for e-discovery or record-intensive investigations. Going far beyond keyword and Boolean searches, studies show that TAR provides a fifty-fold increase in efficiency in document review than human review.¹⁰ For example, predictive coding is a TAR technique that can be used to train a computer to recognize relevant documents by starting with a “seed set” of documents and providing human feedback; the trained machine can then review large numbers of documents very quickly and accurately, going beyond individual words and focusing on the overall language and context of each document. Numerous vendors now offer TAR products.

Legal Analytics

Legal analytics use big data, algorithms, and AI to make predictions from or detect trends in large data sets. For example, Lex Machina, now owned by LexisNexis, uses legal analytics to predict trends and outcomes in intellectual property litigation, and is now expanding to other types of complex litigation. Wolters Kluwer leverages a massive database of law firm billing records to provide baselines, comparative analysis, and efficiency improvements for in-house counsel and outside law firms on staffing, billing, and timelines for various legal matters. Ravel Law, also recently purchased by LexisNexis, uses legal analytics of judicial opinions to predict how specific judges may decide cases, including providing recommendations on specific precedents and language that may appeal to a given judge. Law professor Daniel Katz and his colleagues have utilized legal analytics and machine learning to create a highly accurate predictive model for the outcome of Supreme Court decisions.¹¹

Practice Management Assistants

Many technology companies and law firms are partnering to create programs that can assist with specific

practice areas, including transactional and due diligence, bankruptcy, litigation research and preparation, real estate, and many others. Sometimes billed as the first robot lawyer, ROSS is an online research tool using natural language processing powered by IBM Watson that provides legal research and analysis for several different law firms today, and can reportedly read and process over a million legal pages per minute. It was first publicly adopted by the law firm BakerHostetler to assist with its bankruptcy practice, but is now being used by that firm and several others for other practice areas as well. A similar system is RAVN developed in the United Kingdom and first publicly adopted by the law firm Berwin Leighton Paisner in London in 2015 to assist with due diligence in real estate deals by verifying property details against the official public records. According to the law firm attorney in charge of implementation: “once the program has been trained to identify and work with specific variables, it can complete two weeks’ work in around two seconds, making [it] over 12 million times quicker than an associate doing the same task manually.”¹² Kira is another AI system that has already been adopted by several law firms to assist with automated contract analysis and data extraction and due diligence in mergers and acquisitions.

Legal Bots

Bots are interactive online programs designed to interact with an audience to assist with a specific function or to provide customized answers to the recipient’s specific situation. Many law firms are developing bots to assist current or prospective clients in dealing with a legal issue based on their own circumstances and facts. Other groups are developing pro bono legal bots to assist people who may not otherwise have access to the legal system. For example, a Stanford law graduate developed an online chat bot called DoNotPay that has helped over 160,000 people resolve parking tickets, and is now being expanded to help refugees with their legal problems.

Legal Decision Making

AI is enabling judicial decision making in a number of ways. For example, the Wisconsin Supreme Court recently upheld the use of algorithms in criminal sentencing decisions.¹³ While such algorithms represent an early use of primitive AI (some may not consider such algorithms AI at all), they open the door to use more sophisticated AI systems in the sentencing process in the future. A number of online dispute resolution tools have or are being developed to completely circumvent the judicial process. For example, the Modria online dispute resolution tool, developed from the eBay dispute resolution system, has been used to settle many thousands of disputes online using an AI system. The U.K. government is developing an Internet-based dispute resolution system that will be used to resolve minor (<£25,000) civil legal claims without any court involvement. Microsoft and the U.S. Legal Services Corporation have teamed up to provide machine learning legal portals to provide free legal advice on civil law matters to people who cannot afford to hire lawyers.

The Future of AI and the Law

These initial applications of AI to legal practice are just the early beginnings of what will be a radical technology-based disruption to the practice of law. AI “represents both the biggest opportunity and potentially the greatest threat to the legal profession since its formation.”¹⁴ The transformative impacts of AI on legal practice will continue to accelerate going forward. AI will take over a steadily increasing share of law firm billable hours, be applied to an ever-expanding set of legal tasks, and require knowledge and abilities outside the existing skill set of most current practicing attorneys. Today AI represents an opportunity for a law firm or an attorney to be a leader in efficiency, cost-effectiveness, and productivity, but soon incorporation of AI into practice will be a matter of keeping up rather than being a leader.

AI in the practice of law raises many broader issues that can only be briefly

listed here. How will AI change law firm billing, where a smart AI system can conduct searches and analyses in a few seconds that formerly would have taken several weeks of an associate's billable time? If AI eliminates many of the more routine tasks in legal practice that are traditionally performed by young associates, how will this affect hiring and advancement of young attorneys? How will legal training and law schools need to change to address the new realities of AI-driven legal practice? How will AI affect the competitive advantage of large law firms versus small and medium-sized firms? Will companies start obtaining legal services directly from legal technology vendors, skipping law firms altogether? Will AI systems be vulnerable to charges of unauthorized practice of law? Given that AI systems increasingly use their own self-learning rather than preprogrammed instructions to make decisions, how can we ensure the accuracy, legality, and fairness of AI decisions? Will lawyers be responsible for negligence for relying on AI systems that make mistakes? Will lawyers be liable for malpractice for not using AI that exceeds human capabilities in certain tasks? Will self-learning AI systems need to be deposed and take the stand as witnesses to explain their own independent decision making?

One thing is certain—there will be winners and losers among lawyers who do and do not uptake AI, respectively. As one senior lawyer recently remarked, “Unless private practice lawyers start to engage with new technology, they are not going to be relevant even to their clients.”¹⁵ The AI train is leaving the station—it is time to jump on board. ♦

Endnotes

1. Dana Remus & Frank S. Levy, *Can Robots Be Lawyers? Computers, Lawyers, and the Practice of Law* 46 (Nov. 27, 2016) (unpublished manuscript), <https://ssrn.com/abstract=2701092>.

2. David Johnson, *Find Out If a Robot Will Take Your Job*, *TIME* (Apr. 19, 2017), <http://time.com/4742543/robots-jobs-machines-work/>.

3. *Deloitte Insight: Over 100,000 Legal Roles to Be Automated*, *LEGAL IT INSIDER* (Mar. 16, 2016), <https://www.legaltechnology.com/latest-news/deloitte-insight-100000-legal-roles-to-be-automated/>.

4. Hugh Son, *JPMorgan Software Does in Seconds What Took Lawyers 360,000 Hours*, *BLOOMBERG* (Feb. 27, 2017), <https://www.bloomberg.com/news/articles/2017-02-28/jpmorgan-marshals-an-army-of-developers-to-automate-high-finance>.

5. BILL GATES, *THE ROAD AHEAD* (1995).

6. JOANNA GOODMAN, *ROBOTS IN LAW: HOW ARTIFICIAL INTELLIGENCE IS TRANSFORMING LEGAL SERVICES* 3 (2016).

7. Julie Sobowale, *Beyond Imagination: How Artificial Intelligence Is Transforming the Legal Profession*, *A.B.A. J.*, Apr. 2016, at 46, 48.

8. NICK BOSTROM, *SUPERINTELLIGENCE: PATHS, DANGERS, STRATEGIES* (2014).

9. THOMAS S. CLAY & ERIC A. SEEGER, *ALTMAN WEIL INC.*, 2017: *LAW FIRMS IN TRANSITION* 84 (2017), <http://www.altmanweil.com/LFiT2017/>.

10. Maura R. Grossman & Gordon V. Cormack, *Technology-Assisted Review in E-Discovery Can Be More Effective and More Efficient Than Exhaustive Manual Review*, 17 *RICH. J.L. & TECH.* 11, 43 (2011).

11. Daniel Martin Katz et al., *A General Approach for Predicting the Behavior of the Supreme Court of the United States*, 12 *PLoS ONE*, 2017, <https://doi.org/10.1371/journal.pone.0174698>.

12. GOODMAN, *supra* note 6, at 31.

13. *State v. Loomis*, 881 N.W.2d 749 (Wis. 2016).

14. GOODMAN, *supra* note 6, at 129 (quoting Rohit Talwar).

15. LEXISNEXIS, *LAWYERS AND ROBOTS? CONVERSATIONS AROUND THE FUTURE OF THE LEGAL INDUSTRY* 3 (2017) (comment of David Halliwell of U.K. law firm Pinsent Masons).

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