RISE OF THE ROBOT LAWYERS?

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The advent of artificial intelligence has provoked considerable speculation about the future of the American workforce, including highly educated professionals such as lawyers and doctors. Although most commentators are alarmed by the prospect of intelligent machines displacing millions of workers, this is not so with respect to the legal sector. Media accounts and some legal scholars envision a future where intelligent machines perform the bulk of legal work, and legal services are less expensive and more accessible. This future is purportedly at hand as lawyers struggle to compete with technologically savvy alternative legal service providers.

This Article challenges the notion that lawyers will be displaced by artificial intelligence on both empirical and normative grounds. Most legal tasks are inherently abstract and cannot be performed by even advanced artificial intelligence relying on deep-learning techniques. In addition, lawyer employment and wages have grown steadily over the last twenty years, evincing that the legal profession has benefited from new technologies, as it has throughout its history. Lastly, were large-scale automation of legal work possible, core societal values would counsel against it. These values are not merely aspirational but are reflected in the multi-faceted role of lawyers and in the way that the legal system is structured.

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INTRODUCTION

Economists and legal scholars have long speculated about technology's impact on the labor market.[1] The United States was sufficiently concerned about workforce automation and the potential displacement of American workers that President Johnson commissioned a blue-ribbon panel on the topic in 1964.[2] The hollowing out of the American manufacturing industry is due predominately to automation in the form of manufacturing robots.[3]

The advent of advanced artificial intelligence systems has raised the prospect that white-collar workers may be as susceptible to automation as their blue-collar counterparts.[4] A recent report by McKinsey Consulting suggests that half of all activities performed by American workers could be automated using available technologies.[5] Other observers offer lower estimates but acknowledge that millions of jobs could be lost, many of which may never be replaced.[6] If media coverage is any guide, we are rapidly nearing a future where most jobs, including those of lawyers and doctors, will belong to robots.[7]

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1.   *See, e.g.*, JOHN MAYNARD KEYNES, *Economic Possibilities for Our Grandchildren*, *in* ESSAYS IN PERSUASION 325 (2010) ("We are being afflicted with a new disease of which some readers may not yet have heard the name, but of which they will hear a great deal in the years to come—namely, technological unemployment."); DAVID RICARDO, ON THE PRINCIPLES OF POLITICAL ECONOMY AND TAXATION 393 (2001) ("[T]he substitution of machinery for human labour, is often very injurious to the interests of the class of labourers.").

2.   *See* David H. Autor, *Why Are There Still So Many Jobs? The History and Future of Workplace Automation*, 29 J. ECON. PERSP. 3, 3–4 (2015).

3.   *See* MICHAEL J. HICKS & SRIKRANT DEVARAJ, THE MYTH AND REALITY OF MANUFACTURING IN AMERICA 6 (2017), https://conexus.cberdata.org/files/MfgReality.pdf.

4.   *See* Dana Remus & Frank Levy, *Can Robots be Lawyers? Computers, Lawyers, and the Practice of Law*, 30 GEO. J. LEGAL ETHICS 501, 503 (2017).

5.   *See* JAMES MANYIKA ET AL., A FUTURE THAT WORKS: AUTOMATION, EMPLOYMENT,   AND   PRODUCTIVITY   2   (2017), https://www.mckinsey.com/~/media/mckinsey/featured%20insights/Digital%20Disruption/ Harnessing%20automation%20for%20a%20future%20that%20works/A-future-that-works-Full-report-MGI-January-2017.ashx.

6.   *See* Ljubica Nedelkoska & Glenda Quintini, *Automation, Skills Use and Training* 7 (OECD Soc., Emp. and Migration, Working Papers No. 202, 2017), https://www.oecd-ilibrary.org/docserver/2e2f4eea-en.pdf?expires=1552176316&id=id &accname=guest&checksum=261F4CA439211DFE24014E9DE2D52E0E (suggesting that 14% of jobs are at high risk of automation).

7.   *See, e.g*., Harold Stark, *Prepare Yourself, Robots Will Soon Replace Doctors in   Healthcare*,   FORBES   (July   10,   2017,   1:00   PM), https://www.forbes.com/sites/haroldstark/2017/07/10/prepare-yourselves-robots-will-soon-replace-doctors-in-healthcare/#7cd4da4e52b5; John Markoff, *Armies of Expensive Lawyers Replaced   by   Cheap   Software*,   N.Y.   TIMES   (March   4,   2011), https://www.nytimes.com/2011/03/05/science/05legal.html.

What has been lost amidst these prognostications is that automation is not merely a matter of technological capacity.[8] In some situations, it would be impractical or prohibitively expensive to replace human workers with machines.[9] Public attitudes are also relevant. Americans continue to work as bank tellers and in customer service although machines can perform many of the tasks associated with these positions.[10] Unsurprisingly, most human beings prefer to interact and conduct business with other humans.

To conceive of automation as antithetical to labor also overlooks that most technologies are labor augmenting.[11] Technological developments allow workers to devote their time to higher-order tasks, leading to increased productivity and boosting employment and wages.[12] For example, IBM's much-publicized Watson computer aids doctors in diagnosing patients, enabling them to see more patients and devise better treatments.[13]

The legal sector is a particularly interesting case study. Although automation has engendered alarm in other contexts, it has been welcomed in law.[14] Part of the reason may be that Americans tend to hold negative views of the legal profession.[15] However, a number of legal scholars maintain that intelligent machines will lower the cost of legal services and make it far easier for Americans to obtain legal representation.[16] The automation of legal work is allegedly very much in progress. Daniel Katz writes:

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8.   *See* Nedelkoska & Quintini, *supra* note 6, at 68–70.
9.   *See* MANYIKA, *supra* note 5, at 33–34.
10.   *See id.* at 68.
11.   *See generally* James A. Kahn & Jong-Soo Lin, *Skilled Labor-Augmenting Technological Progress in U.S. Manufacturing*, 113 Q. J. ECON. 1281, 1281 (1998) (defining "labor-augmenting technological progress" as an increase in the effective labor input of skilled workers).
12.   *See id.*; *see also* Daron Acemoglu, *Labor-and Capital-Augmenting Technical Change*, 1 J. EUR. ECON. ASS'N 1, 4 (2003) (suggesting that labor-augmenting role of technology follows from profit-making incentives).
13.   *See generally* David H. Freeman, *A Reality Check for IBM's AI Ambitions*, MIT TECH. REV. (June 27, 2017, 6:45 PM), https://www.technologyreview.com/s/607965/a-reality-check-for-ibms-ai-ambitions/ (describing progress and challenges of Watson in healthcare). Watson has received negative publicity recently for botching diagnoses and suggesting life-threatening treatments. *See, e.g*., Anne Palmer, *IBM's Watson AI Suggested 'Often Inaccurate' and 'Unsafe' Treatment Recommendations for Cancer Patients, Internal Documents Show*, DAILY MAIL (July 27, 2018), https://www.dailymail.co.uk/sciencetech/article-6001141/IBMs-Watson-suggested-inaccurate-unsafe-treatment-recommendations-cancer-patients.html.
14.   *See* Remus & Levy, *supra* note 4, at 502–03.
15.   *See, e.g.*, Eli Wald & Russell G. Pearce, *Being Good Lawyers: A Relational Approach to Law Practice*, 29 GEO. J. LEGAL ETHICS 601, 604 (2016); Leonard E. Gross, *The Public Hates Lawyers: Why Should We Care?*, 29 SETON HALL L. REV. 1405, 1415–17 (1999) (documenting the public's low opinion of lawyers from the 1930s to the 1990s, notwithstanding that clients seem to appreciate their own lawyers).
16.   *See, e.g*., BENJAMIN H. BARTON & STEPHANOS BIBAS, REBOOTING JUSTICE: MORE TECHNOLOGY, FEWER LAWYERS, AND THE FUTURE OF LAW 195 (2017); John O.

> The bundle of skills associated with the practice of law falls on a continuum where a number of basic tasks have already been displaced by computation, automation, and *"soft"* artificial intelligence. Faced with cost pressures, clients and law firms are leveraging legal information technology to either automate or semi-automate tasks previously performed by teams of lawyers. Like many industries before it, the march of automation, process engineering, informatics, and supply chain management will continue to operate and transform our industry.[17]

The legal sector is somewhat opaque in its operations. Yet, as this Article shall seek to demonstrate, lawyers should not fear artificial intelligence's rise. Lawyers are increasingly reliant on technology, but there is limited evidence that intelligent machines are performing even basic legal tasks without human assistance, and higher-order tasks will remain beyond intelligent machines' capabilities for the foreseeable future. New avenues of legal work are also being created as society becomes increasingly reliant on artificial intelligence.

Part I of this Article contends that the notion that most legal work can be automated fails to consider artificial intelligence's limitations and lawyers' day-to-day activities. As set out in Part II, employment and wage data also refute that lawyers are being replaced by machines. Even where automation may be possible, Part III maintains that important and deep-seated societal values may counsel against it. These values are not merely aspirational but are reflected in the multi-faceted role of lawyers and in the way that the legal system is structured. More than most other workers, lawyers are well-positioned to thrive alongside the machines.

I. AUTOMATION, ARTIFICIAL INTELLIGENCE, AND THE LEGAL PROFESSION

A. *The Potential and Limitations of Artificial Intelligence*

Technology has allowed for the automation of many activities that were once performed by human workers. The jobs that have historically been most vulnerable to automation consist of routine and repetitive tasks.[18] Although this dichotomy has been framed in terms of education and skill, some blue-collar jobs consist primarily of nonroutine tasks, and some white-collar jobs consist predominately of observing step-by-step procedures.[19] For example, many

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McGinnis & Russel G. Pearce, *The Great Disruption: How Machine Intelligence Will Transfer the Role of Lawyers in the Delivery of Legal Services*, 82 FORDHAM L. REV. 3041, 3055 (2014). *But see* Milan Markovic, *Juking Access to Justice to Deregulate the Legal Market*, 29 GEO. J. LEGAL ETHICS 63, 75–77 (2017) (noting the limits of technology in addressing the justice gap).

     17.   *See* Daniel Martin Katz, *Quantitative Legal Prediction— Or— How I Learned to Stop Worrying and Start Preparing for the Data-Driven Future of the Legal Services Industry*, 62 EMORY L.J. 909, 910–11 (2013) (citations omitted).

     18.   Autor, *supra* note 2, at 12.

     19.   *See, e.g.*, Carl Benedikt Frey & Michael A. Osborne, *The Future of Employment: How Susceptible Are Jobs to Computerisation?*, 114 TECHNOLOGICAL FORECASTING & SOC. CHANGE 254, 255 (2017); David H. Autor & David Dorn, *The Growth*

construction jobs involve nonroutine work and cannot be automated easily whereas various office jobs, such as loan underwriting, rely on predetermined procedures and can already be automated.[20] Consistent with this dichotomy, the number of people employed in nonroutine jobs has increased steadily for decades whereas the number employed in routine jobs has been flat.[21]

The term "artificial intelligence" originated in 1956.[22] Although definitions of artificial intelligence vary, the term is generally associated with the automation of intelligent behavior via computer processes.[23] Modern artificial intelligence systems operate by using algorithms to detect patterns in data; on the basis of these patterns, they discern rules that are used to make assessments that resemble those made by humans.[24] The classification of email as spam is a simple example.[25] After being trained on millions of emails, a spam filter is able to identify key characteristics that are associated with spam emails and quarantine emails that demonstrate those characteristics.[26]

More advanced artificial intelligence systems consist of vast artificial neural networks that make connections in their network via probabilistic inferences.[27] As they are exposed to more data, these systems engage in "deep learning" and reassess these connections so that they are more fine-tuned to the data in question.[28] Marvin Minsky and Herbert Simon were among the first thinkers to predict that intelligent machines would eventually master any work that humans could do.[29] While these predictions have proven overly optimistic, intelligent machines are expected to match—or surpass—humans in activities such as driving in the years ahead.[30]

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of Low-Skill Service Jobs and the Polarization of the US Labor Market, 103 AM. ECON. REV. 1553, 1559 (2013) ("[T]echnological progress . . . greatly reduces the cost of accomplishing routine, codifiable job tasks but has a comparatively minor impact on the cost of performing in-person service tasks.").

20. MANYIKA, *supra* note 5, at 13.

21. *See* Maximiliano Dvorkin, *Jobs Involving Routine Tasks Aren't Growing*, FED. RES. BANK ST. LOUIS: ON THE ECONOMY (Jan. 4, 2016), https://www.stlouisfed.org/on-the-economy/2016/january/jobs-involving-routine-tasks-arent-growing.

22. *See* STUART J. RUSSELL & PETER NORVIG, ARTIFICIAL INTELLIGENCE: A MODERN APPROACH 3 (1995).

23. *Id*. at 5 (citation omitted).

24. *See* Harry Surden, *Machine Learning and Law*, 89 WASH. L. REV. 87, 89–91 (2014).

25. *Id.* at 90.

26. *Id.* at 91.

27. *See* Yann LeCun, Yoshua Bengio & Geoffrey Hinton, *Deep Learning*, 521 NATURE 436, 441 (2015).

28. *See id*. at 438.

29. *See* Daron Acemoglu & Pascual Restrepo, *Artificial Intelligence, Automation and Work* 11 (Nat'l Bureau of Econ. Res., Working Paper No. 24196, 2018), https://www.nber.org/papers/w24196.

30. Erik Brynjolfsson, Tom Mitchell & Daniel Rock, *What Can Machines Learn and What Does It Mean For Occupations and the Economy*? 108 AEA PAPERS & PROC. 43, 43 (2018).

Thus far, the artificial intelligence's economic effects have been modest.[31] However, unlike other technological advances that have generally made workers more productive and increased demand for labor, there is growing concern that intelligent machines will displace workers and drive down wages.[32] Prognosticators warn of a "jobless future"[33] and "the end of work."[34] In this veritable dystopia, the only economic winners will allegedly be those who own, control, and service the machines.[35]

Notwithstanding artificial intelligence's rapid development, intelligent machines have significant limitations that popular discourse has ignored. As complex as a task such as driving may appear to be, it involves fixed rules and pattern recognition and therefore can be learned by machines.[36] Many other tasks fall outside of this paradigm. David Autor writes:

> One category includes tasks that require problem-solving capabilities, intuition, creativity, and persuasion. These tasks, which we term "abstract," are characteristic of professional, technical, and managerial occupations . . . they place a premium on inductive reasoning, communications ability, and expert mastery. The second broad category includes tasks requiring situational adaptability, visual and language recognition, and in-person interactions—which we call "manual" tasks. Manual tasks are characteristic of food preparation and serving jobs, cleaning and janitorial work, grounds cleaning and maintenance, in-person health assistance by home health aides, and numerous jobs in security and protective services.[37]

To overcome artificial intelligence's limitations with respect to abstract and manual tasks, there is growing consensus that artificial intelligence may have to jettison the deep-learning techniques upon which it is based.[38] Current research is only in the nascent phase of "reverse engineering" the human brain so that machines

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31. *Id.*
32. Acemoglu & Restrepo, *supra* note 29, at 1. Self-driving cars alone could cost the United States over 5 million jobs. *See* Steven Greenhouse, *Autonomous Vehicles Could Cost America 5 Million Jobs. What Should We Do About It?*, L.A. TIMES (Sept. 22, 2016, 4:00 AM), http://www.latimes.com/opinion/op-ed/la-oe-greenhouse-driverlessjob-loss-20160922-snap-story.html.
32. MANYIKA, *supra* note 5, at 13.
33. *Id.*
34. *See, e.g.*, JEREMY RIFKIN, THE END OF WORK: THE DECLINE OF THE GLOBAL LABOR FORCE AND DAWN OF THE POST-MARKET ERA (1995); Ji Shisan, *The End of Work?*, N.Y. TIMES (Dec. 10, 2015), https://www.nytimes.com/2015/12/10/opinion/the-end-of-work.html.
35. *See* Cynthia Estlund, *What Should We Do After Work? Automation and Employment Law*, 128 YALE L.J. 254 (2018).
36. Surden, *supra* note 24, at 99.
37. Autor, *supra* note 2, at 12.
38. *See generally* James Somers, *Is AI Riding A One-Trick Pony?*, MIT TECH. REV. (Sept. 29, 2017), https://www.technologyreview.com/s/608911/is-ai-riding-a-one-trick-pony/ (noting that artificial intelligence is based on techniques that are over thirty years old and that progress has plateaued).

can begin to make the type of judgments that humans make intuitively and on the basis of limited data in completing manual and abstract tasks.[39] Rather than contemplating artificial intelligence induced "joblessness," society would be better off identifying and cultivating the skills that are likely to be in demand in the economy of the future.[40]

B. Automating Legal Work

As highly educated professionals whose work involves "problem-solving . . . intuition, creativity and persuasion," as well as written and verbal communication, lawyers would seem to be poor candidates for automation.[41] Nevertheless, media accounts and a growing number of legal scholars have focused on the threat that artificial intelligence poses to the legal profession.[42] For example, John McGinnis and Russell Pearce have argued that the ability of intelligent machines to perform core legal tasks, such as document discovery, legal research, document drafting, and the prediction of case outcomes, will reduce demand for lawyers drastically.[43]

The notion that technology can supplant lawyers predates artificial intelligence. At one time, commentators speculated that technologies such as the typewriter would revolutionize legal practice and threaten attorney livelihoods by simplifying legal drafting, from which attorneys had derived much of their incomes.[44] The legal profession was able to survive the typewriter as well as other impactful technologies.[45] For example, until the advent of Westlaw's Keycite in the

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39.   Joshua B. Tenenbaum et al., *How to Grow A Mind: Statistics, Structure, and Abstraction*, 331 SCI. 1279, 1283–84 (2011). One of the stubborn obstacles to the adoption of automated vehicles is that they are not as adept as human drivers at predicting pedestrian behavior. *See* Amir Rasouli & John K. Tsotsos, *Autonomous Vehicles that Interact with Pedestrians: A Survey of Theory and Practice*, IEEE TRANSACTIONS ON INTELLIGENT TRANSP. SYSTEMS (May 30, 2018), https://arxiv.org/pdf/1805.11773.pdf ("Recent field studies of autonomous vehicles show how the lack of social understanding can result in traffic accidents or erratic behaviors towards pedestrians.").

40.   *See* Brynjolfsson et al., *supra* note 30, at 44 ("[A] shift is needed in the debate about the effects of AI on work: away from the common focus on full automation of many jobs and pervasive occupational replacement toward the redesign of jobs. . . ."); Acemoglu & Restrepo, *supra* note 29, at 1559 (postulating a mismatch between future employment opportunities and the skills of the available workforce).

41.   *See infra* note 67 and accompanying text.

42.   *See* Remus & Levy, *supra* note 4, at 506 (collecting examples from this genre).

43.   McGinnis & Pearce, *supra* note 16, at 3047–53. More recent focus has been on Blockchain and its potential to replace lawyer intermediaries (on the assumption that Blockchain is widely adopted). *See* Mark Fenwick et al., *Legal Education in the Blockchain Revolution*, 20 VAND. J. ENT. & TECH. L. 351, 359 (2017). These authors define "Blockchain" as "a shared digital ledger or database that maintains a continuously growing list of transactions among participating parties regarding digital assets. . . ." *Id.* at 366.

44.   Michael Simkovic & Frank McIntyre, *The Economic Value of a Law Degree*, 43 J. LEGAL STUD. 249, 275 (2014).

45.   *See* Remus & Levy, *supra* note 4, at 503 ("The Internet, email, and legal research databases like Westlaw and Lexis have been impacting and altering legal practice for decades.").

late 1990s, attorneys would bill for time spent in library stacks ascertaining whether cited authorities constituted "good law;"[46] now overruled or superseded authorities are flagged electronically because of computerized research.[47] The finalizing of legal memoranda was also a laborious endeavor prior to word processing. Lawyers would draft tables of authority manually and would have to set their briefs in linotype and take them to commercial printers.[48] Improvements in technology ultimately facilitated and improved lawyers' representation of their clients by enabling lawyers to spend less time on ministerial tasks.

Artificial intelligence's potential impact on the law was first raised in a law review article written in 1970.[49] Although the authors considered artificial intelligence merely a potential "aid[] in the process of legal reasoning,"[50] the technology now has many practical applications. For example, artificial intelligence can simplify legal research by identifying authorities that are frequently referenced with respect to a particular proposition of law.[51] It can also assist with contract drafting by highlighting provisions that are apt to appear in certain types of contracts.[52]

Another promising field is legal analytics. Legal analytics is an application of artificial intelligence that makes probabilistic predictions in a matter based on similar, previously concluded matters.[53] The more data to which artificial intelligence systems are exposed, the better their ability to predict potential outcomes, whether they pertain to the likelihood of prevailing at trial, settlement value, or legal fees expended.[54]

To complete all of the aforementioned tasks, artificial intelligence requires substantial input and training from lawyers.[55] The dichotomy between routine and

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46. *See* Debra Baker, *The Enemy is in their Cites*, 84 A.B.A. J. 24, 24 (1998) (noting that citation checking required "hours in library stacks").

47. *See id.*

48. *See* William T. Braithwaite, *How is Technology Affecting the Practice and Profession of Law?*, 22 TEX. TECH L. REV. 1113, 1132 (1991).

49. Bruce G. Buchanan & Thomas E. Headrick, *Some Speculation About Artificial Intelligence and Reasoning*, 23 STAN. L. REV. 40, 60 (1970).

50. *Id.*

51. *See* Surden, *supra* note 24, at 89–90.

52. *See* William E. Forster & Andrew L. Lawson, *When to Praise the Machine: The Promise and Perils of Automated Transactional Drafting*, 69 S.C. L. REV. 597, 621–22 (2018).

53. "Legal analytics use big data, algorithms, and AI to make predictions from or detect trends in large data sets." Gary E. Marchant, *Artificial Intelligence and the Future of Legal Practice*, 14 SCITECH LAW. 20, 30 (2017).

54. *See* Surden, *supra* note 24, at 96.

55. *See generally* Remus & Levy, *supra* note 4, at 522 ("When a user builds a new system, much of the language-parsing module is prepackaged. But the retrieval and ranking neural nets must be trained through supervised learning, and so, like Westlaw and Lexis, require a substantial initial effort.").

nonroutine work is salient here.[56] There is a world of difference between locating an authority for a basic proposition of law versus identifying an authority that best advances a client's position in litigation. Similarly, the mere fact that employment contracts often feature standardized noncompete clauses does not mean that such clauses can, and should be, included in all employees' contracts or that they will be enforceable.[57] Many legal problems are not conducive to "one-size-fits-all" solutions and will require some lawyer involvement.[58]

In terms of legal prediction, artificial intelligence will likely complement lawyers without necessarily making litigation any less frequent.[59] The most sophisticated artificial intelligence system can be led astray if it does not have access to the "right" data.[60] For an intelligent machine to be able to predict the outcome of a case or regulatory action, lawyers must conduct a thorough investigation of a matter's particulars and collect information about similar matters before the same fact-finder or administrator.[61]

Prediction is less complex when there is a fixed record and reliable evidence of past outcomes—as there is when a case reaches the Supreme Court of the United States—but machines cannot determine definitively the set of precedents upon which a court (or agency) is likely to rely.[62] Precedents can also be cabined, revisited, or overruled. The fact-intensive nature of most legal disputes, the constant promulgation of new laws and regulations, and the presence of substantial legal indeterminacy all complicate legal analysis and prediction.[63] It may also be in the

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56. McGinnis and Pearce concede that there will be "superstar" lawyers in the automated legal future who will continue to practice much as they do today. *See* McGinnis & Pearce, *supra* note 16, at 3054–55.

57. As Professor Bishara has noted, "Despite some agreed-upon basic principles of how these restrictive covenants are reviewed by most state courts, there nonetheless exists no truly uniform approach across jurisdictions determining exactly what sorts of factors are sufficient to support an employer's claims for injunctive relief." Norman D. Bishara, *Fifty Ways to Leave Your Employer: Relative Enforcement of Covenants Not to Compete, Trends, and Implications for Employee Mobility Policy*, 13 U. PA. J. BUS. L. 751, 757 (2011).

58. Deficient one-size-fits-all legal solutions also strain the legal system. *See, e.g.*, Frank Pasquale, *A Rule of Persons, Not Machines: The Limits of Legal Automation*, 87 GEO. WASH. L. REV. 1, 12–13 (2018) (noting mistreatment of retirement funds in wills created by LegalZoom); Dustin A. Zacks, *Robo-Litigation*, 60 CLEV. ST. L. REV. 867, 884–90 (2013) (examining cases pertaining to robo-signing and the foreclosure crisis).

59. *See* McGinnis & Pearce, *supra* note 16, at 3053.

60. One particular issue is whether to provide access to unpublished cases, which often differ from published ones. For a discussion of implicit bias in artificial intelligence, see Amanda Levendowski, *How Copyright Law Can Fix Artificial Intelligence's Implicit Bias Problem*, 93 WASH. L. REV. 579, 583–85 (2018), examining possible sources of bias.

61. Surden, *supra* note 24, at 104–05; *see also* Remus & Levy, *supra* note 4, at 524–25 (noting the difficulty of predicting judicial and jury decision-making).

62. *See* Mark Tushnet, *Defending the Indeterminacy Thesis*, 16 QUINNIPIAC L. REV. 339, 346 (1996) (suggesting that to change the law lawyers need only identify a "background rule" that, once put into play, can provide the basis for an entirely different legal rule).

63. *See* Remus & Levy, *supra* note 4, at 519. For a discussion of the indeterminacy thesis in law, see, for example, Milan Markovic, *Advising Clients After Critical Legal Studies*

self-interest of parties to direct their attorneys to litigate in instances where the analytics suggest that they should not.[64]

A recent study by Dana Remus and Frank Levy of large- and medium-sized law firms' billings sheds light on intelligent machines' potential to displace lawyers.[65] Remus and Levy determined that lawyers spend little time on discovery and other automatable activities; most attorney time is allocated to legal strategy and analysis, client advising, fact investigation, negotiations, and court appearances.[66] Even ardent futurists have conceded that these activities are beyond the capabilities of intelligent machines and that they are unlikely to supplant lawyers with respect to these functions.[67]

Another key insight from the Remus and Levy study is that the nature of legal work is not static. The adoption of artificial intelligence in discovery, for example, has created other avenues of legal work.[68] Lawyers spend less time reviewing documents for production purposes than they have in the past but spend

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and the Torture Memos, 114 W. VA. L. REV. 109, 148–50 (2011); Tushnet, *supra* note 62, at 341. Of course, not all legal work involves indeterminacy, and some lawyers' practices consist partly of writing form contracts and "cookie-cutter" briefs. However, these tactics tend to be confined to narrow practice areas and are highly controversial insofar as they do not take into account the specific circumstances of a client's situation. *See, e.g.*, Landis v. Fannie Mae, 922 F. Supp. 2d 646, 650 (E.D. Mich. 2013) (chastising attorney for filing cookie-cutter complaints and briefs on behalf of defendants in foreclosure proceedings); Fobare v. Weiss, No. 99-CV-1452, 2000 WL 654969, at *1 (N.D.N.Y. May 16, 2000) (admonishing attorney for engaging in the "cookie-cutter" practice of law and failing to undertake a reasonable inquiry into his client's claims); *see also* Nora Freeman Engstrom, *Run-of-the-Mill Justice*, 22 GEO. J. LEGAL ETHICS 1485, 1546 (2009) (suggesting that "settlement mills" are law firms that are characterized by high volumes of cases and cookie-cutter assembly-line procedures).

64.   Clients may rationally choose to litigate although the prospect of prevailing is low. Litigation may confer a business advantage, for example, or may serve the public interest. *See, e.g.*, Ronald J. Gilson, *The Devolution of the Legal Profession: A Demand Side Perspective*, 49 MD. L. REV. 869, 875–76 (1990) (noting that litigation to secure a business advantage is "commonplace"); Thomas D. Rowe, Jr., *The Legal Theory of Attorney Fee-Shifting*, 1982 DUKE L.J. 651, 662 (noting public-interest rationale).

65.   Remus & Levy, *supra* note 4, at 529–30.

66.   *See id.* at 532–33.

67.   *See generally* RICHARD SUSSKIND, TOMORROW'S LAWYERS 58 (2013) (conceding that technology cannot replace oral advocates); Tom C. Lin, *National Pastimes*, 55 B.C.L. REV. 1197, 1205 (2014) ("A lawyer's critical skills of counsel and persuasion seem unlikely to ever be outsourced, in whole or in part, to machines."). A cognitive scientist explained recently in an interview with the *MIT Technology Review*: "It's not that computers can't replace lawyers because lawyers do really complicated things. It's because lawyers read and talk to people. It's not like we're close. We're so far." Somers, *supra* note 38 (quoting Eyal Dechter).

68.   Katz concedes that artificial intelligence will create work in other areas for attorneys but appears to assume that most lawyers lack the skills that will be in demand in the data-driven future. *See* Katz, *supra* note 17, at 964. This does not mean, of course, that they cannot acquire them; lawyers have strong cognitive and social skills that are integral to the contemporary economy.

more time familiarizing themselves with their clients' data and negotiating and contesting document-review protocols.[69] Lucrative practice specialties, such as cybersecurity and data privacy, would have been unimaginable a generation ago but are integral to today's data-driven economy.[70]

In light of the varied and evolving set of tasks carried out by attorneys, it should come as no surprise that artificial intelligence researchers have predominately regarded lawyers as relatively immune from automation. In their influential 2016 paper, Benedikt Frey and Michael Osborne estimate that lawyers have only a 3.5% risk of automation—far less than computer programmers, petroleum engineers, and reporters, among other professionals.[71] Other empirical accounts are in accordance.[72] This literature has received minimal attention from legal scholars who have chosen to focus on document discovery and other discrete legal tasks where artificial intelligence has had a major impact.[73] But lawyers have proven resistant to automation throughout their history, and the automation of certain routine types of legal work is hardly evidence that attorneys' core tasks will soon be performed by intelligent machines.[74]

II. EVIDENCE OF AUTOMATION IN THE LEGAL MARKET

As described in the previous Part, much of what is known about artificial intelligence suggests that it will not displace attorneys. Nevertheless, technology is improving continuously, and it is conceivable that lawyers devote more time to

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69. *See* Remus & Levy, *supra* note 4, at 517–18; *see also* Benjamin L. S. Ritz, *Will This Dog Hunt?: An Attorney's Guide to Predictive Coding*, 57 S. TEX. L. REV. 345, 374 (2016) (noting cases where the costs of motion practice far exceeded the savings from the adoption of predictive-coding protocols).

70. *See, e.g.*, Allison Grande, G*rowing Privacy Laws Raise GCs' Fears of Legal Exposure*, LAW 360 (Nov. 15, 2018, 11:04 PM), https://www.law360.com/legalindustry/articles/1102301/growing-privacy-laws-raise-gcs-fears-of-legal-exposure.

71. Frey & Osborne, *supra* note 19, at 269–72.

72. *See* Autor & Dorn, *supra* note 19, at 1559; David J. Deming, *The Growing Importance of Social Skills in the Labor Market* 3 (Nat'l Bureau of Econ. Res., Working Paper No. 21473, 2017), https://www.nber.org/papers/w21473.pdf; *see also* Daron Acemoglu & David Autor, *Skills, Tasks and Technologies: Implications for Employment and Earnings*, 4 HANDBOOK LAB. ECON. 1043, 1076–77 (2011) (noting that difficult-to-automate abstract tasks are "characteristic of professional . . . occupations, such as law . . . [and] medicine . . . .").

73. *See, e.g.*, Katz, *supra* 17, at 936–40 (describing the Supreme Court Forecasting Project and private analytics company Lex Machina); William D. Henderson, *A Blueprint for Change*, 40 PEPP. L. REV. 461, 489 (2013) (describing the profitability and visibility of legal-document provider LegalZoom). *But see* JOANNA GOODMAN, ROBOTS IN LAW ii (2016) (suggesting that lawyers may benefit from artificial intelligence more than other professionals because it could free them from the burdens of process work and enable them to refocus on their core functions).

74. *See* Brook E. Gotberg, *Technically Bankrupt*, 48 SETON HALL L. REV. 111, 116 (2017) (describing consensus that artificial intelligence will not come for lawyers "anytime soon").

routine tasks than assumed, rendering them vulnerable to automation.[75] Scholars have referenced, *inter alia*, falling pay for newer lawyers and the rise of alternative legal service providers to argue that technology is already disrupting the legal market and shifting legal work away from lawyers.[76]

To measure automation's effects in a given industry, economists assess the relationship between productivity and employment.[77] Employment and wages have traditionally increased with productivity; however, partly due to automation, productivity has grown in certain industries while workers' incomes and job prospects have faltered.[78] Automation is labor displacing when it causes a "decoupling" between productivity on the one hand and employment and wages on the other.[79]

The manufacturing industry is a dramatic example of labor-displacing automation.[80] Table 1 illustrates that manufacturing output has increased steadily since the late 1980s while employment has fallen precipitously.[81] Unsurprisingly, real wages in manufacturing have also fallen over this same period, with workers in manufacturing now earning less than other goods-producing workers.[82]

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75.   *See* SUSSKIND, *supra* note 67, at 109 ("In the long run, increasing amounts of legal work can and will be taken on by advanced computer systems, with a light hand on the tiller from the human beings who are their users.").

76.   *See, e.g.*, Henderson, *supra* note 73, at 482–83. "Disruption theory" was coined by Harvard Business School's Clayton Christensen and refers to a process whereby a smaller company with few resources is able to successfully challenge established incumbent businesses by serving an overlooked market and then extending its reach to the incumbents. *See* Clayton M. Christensen, Michael E. Raynor & Rory McDonald, *What Is Disruptive Innovation?*, HARVARD BUS. REV. (Dec. 2015), https://hbr.org/2015/12/what-is-disruptive-innovation. Numerous acolytes have sought to apply his theory to the law. *See, e.g.*, Michele R. Pistone & John Hoeffner, *No Path but One: Law School Survival in an Age of Disruptive Technology*, 59 WAYNE L. REV. 193 (2013); Ray W. Campbell, *Rethinking Regulation and Innovation in the U.S. Legal Services Market*, 9 N.Y.U. J.L. & BUS. 1 (2012).

77.   *See* Amy Bernstein & Anand Raman, *The Great Decoupling: An Interview with Erik Brynjolfsson and Andrew McAfee*, HARV. BUS. REV. (June 2015), https://hbr.org/2015/06/the-great-decoupling.
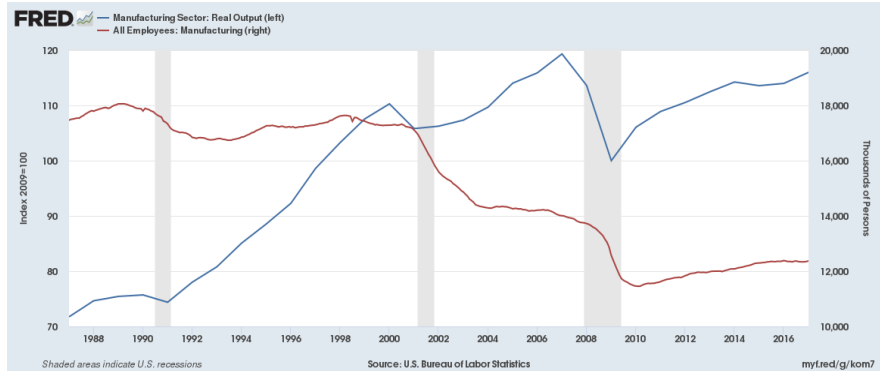
78.   *Id.*

79.   Acemoglu & Restrepo, *supra* note 29, at 1.

80.   *See* HICKS & DEVRAJ, *supra* note 3, at 6.

81.   Author's calculations drawn from U.S. Bureau of Labor Statistics ("BLS"), *Manufacturing Sector: Real Output and All Employees: Manufacturing*, FRED, https://fred.stlouisfed.org/series/OUTMS (last visited Mar. 29, 2019).

82.   *See* Catherine Ruckelshaus & Sarah Leberstein, *Manufacturing Low Pay: Declining Wages in the Jobs That Built America's Middle Class*, NAT'L EMP. L. PROJECT 6–7 (Nov. 2014), https://www.nelp.org/wp-content/uploads/2015/03/Manufacturing-Low-Pay-Declining-Wages-Jobs-Built-Middle-Class.pdf.

Table 1

Shaded areas indicate U.S. recessions   Source: U.S. Bureau of Labor Statistics   myf.red/g/kom7

       To assess whether similar trends are present in the legal market, Table 2 uses Bureau of Labor Statistics ("BLS") data to track full-time employment among all legal occupations, as well as among lawyers and certain nonlawyer subgroups.[83] If automation has been labor displacing rather than labor augmenting in the legal sector, we would expect to see job losses or at least flat employment.[84]

Table 2

Shaded areas indicate U.S. recessions   Source: U.S. Bureau of Labor Statistics   myf.red/g/koGl

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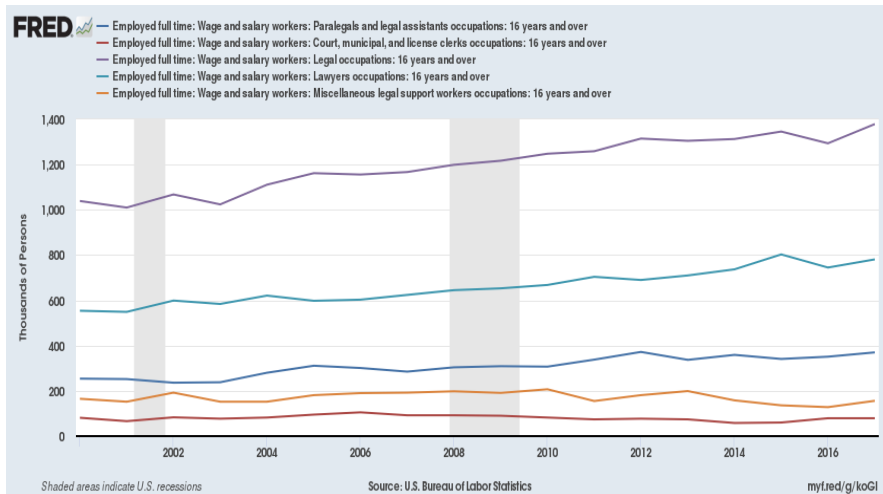
     83.   Author's calculations drawn from *Occupational Employment and Wages, May 2017: 23-0000 Legal Occupations (Major Group),* BUREAU LAB. STAT, https://www.bls.gov/oes/2017/may/oes230000.htm (last visited March 30, 2019). BLS employment data does not include legal workers, including lawyers, who may be self-employed. Thus, the data does not include law-firm partners and solo practitioners. *See Occupational Employment and Wages May 2018,* BUREAU LAB. STAT, https://www.bls.gov/oes/2017/may/oes230000.htm (last visited March 30, 2019).

     84.   *See* Acemoglu & Restrepo, *supra* note 29, at 11.

Two main trends emerge from Table 2. First, full-time employment in law increased by approximately 340,000 from 2000 to 2017. Although growth was not even throughout this period, with declines between 2002 and 2003 and again between 2015 and 2016, on the whole, the legal sector has added substantial numbers of jobs in stark contrast to industries such as manufacturing that have been wracked by automation.

Second, Table 2 demonstrates that employment growth was not distributed evenly among legal occupations. Lawyer positions represent the majority of legal jobs created; there were approximately 227,000 more lawyers in 2017 than in 2000. The number of paralegal positions also increased significantly (by 116,000).[85] Court and municipal clerks[86] and miscellaneous workers—e.g., legal secretaries and other support personnel—experienced declines in employment. The declines were particularly precipitous after the 2008 recession. On January 1, 2017, there were approximately 13,000 fewer court clerks and 42,000 fewer "miscellaneous" legal workers than there were on January 1, 2008, while the number of lawyers grew by 136,000 over this time period. These occupations' divergent fates follow from the dichotomy introduced above: clerks and other support staff, unlike their lawyer counterparts, generally engage in routine tasks and can have their functions automated. [87]

The heterogeneity in legal market employment has been overlooked by some scholars. For example, William Henderson relies on census data to argue that lawyers are being replaced by technology as part of a fundamental restructuring of the legal services industry.[88] To support this claim, he notes that that employment in U.S. law offices fell by approximately 47,000 from 2004 to 2010, whereas employment in "all other legal services" grew by nearly 8,000.[89] However, census data does not distinguish lawyer and nonlawyer employment in law offices, and Henderson concedes that it is ultimately speculation that lawyers have suffered the steepest job losses.[90]

As Table 2 indicates, contrary to Henderson's supposition, lawyer employment has grown steadily, including after the 2008 recession, whereas nonlawyer employment (other than paralegals) has not. The recession undeniably affected lawyers, but layoffs were mostly limited to large corporate law firms that

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85. This is surprising because scholars have claimed that paralegals are highly susceptible to automation. *See* Osborne & Frey, *supra* note 19, at 267.

86. This category does not include judicial law clerks.

87. *See also* Nir Jaimovich & Henry E. Siu, *The Trend is the Cycle: Job Polarization and Jobless Recoveries* (Nat'l Bureau of Econ. Res., Working Papers 18334, 2012), https://econ.tau.ac.il/sites/economy.tau.ac.il/files/media_server/Economics/PDF/2014%20se minars/Jaimovich_Siu_2014.pdf (demonstrating that middle-skill jobs that involve routine work are lost mostly during recessions and never fully recover).

88. *See* William D. Henderson, *From Big Law to Lean Law*, 38 INT'L REV. L. & ECON. 5, 12 (2013).

89. *Id.* at 8.

90. *Id*. at 8 n.1.

employ a relatively small percentage of practicing attorneys.[91] Legal employers such as governments and corporations also do not appear in the above census data and may have been better positioned to weather the recession.[92] Many of the attorneys who separated from private firms during the recession transitioned to positions in smaller firms, government, and industry.[93]

Henderson may be correct that the growth of employment in "other legal services" is an important harbinger for the legal market.[94] However, the "other legal services" sector consists of a number of different types of businesses, including patent agent services, jury consultants, notary publics,[95] and alternative legal service providers (ALSPs).[96] It is unclear if these types of businesses truly compete with lawyer-owned firms, let alone constitute a threat to attorneys' livelihoods. For example, the largest ALSPs currently compliment traditional firms by employing temporary attorneys and facilitating large-scale document reviews.[97]

Stagnation of attorney wages would also constitute evidence that automation is displacing attorneys. Yet, as demonstrated in Table 3, the legal services industry as a whole has seen wage growth that far exceeds that of domestic private industries generally.[98] The average full-time worker in a law firm saw his or her income grow from $56,000 in 1998 to $99,000 in 2016, with lawyers seeing

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91.   The recession predominately affected hiring at the largest U.S. law firms. *See, e.g.*, Bernard A. Burk, *What's New About the New Normal: The Evolving Market for New Lawyers in the 21st Century*, 41 FLA. ST. U. L. REV. 541, 543 (2014); Gary A. Munneke, *Recessionary Road*, 81 N.Y. ST. B.J. 43, 44 (2009) ("[T]he recession has not been as tough on solos and small firms as it has for the large firms we read about in the legal press."); *see also* Milan Markovic & Gabriele Plickert, *Attorneys' Career Dissatisfaction in the New Normal*, 25 INT'L J. LEGAL PROF. 147, 162 (2018) (noting that most attorneys in private practice work for firms with five or fewer attorneys).

92.   The data also does not include solo practitioners who do not incorporate their practices. *See Total Employer Establishments*, U.S. CENSUS BUREAU, https://www.census.gov/quickfacts/fact/note/US/BZA010216 (last visited Mar. 29, 2019).

93.   *See generally* Joyce S. Sterling & Nancy Reichman, *So, You Want to Be a Lawyer? The Quest for Professional Status in a Changing Legal World*, 78 FORDHAM L. REV. 2289, 2311 (2010) (describing career paths of laid-off attorneys).

94.   The growth in employment, if any, does not appear to be matched by gains in terms of revenue. *See Total Revenue for Other Legal Services, Establishments Subject to Federal Income Tax, Employer Firms*, FRED, https://fred.stlouisfed.org/graph/?g=krxL (last visited Mar. 29, 2019) (comparing total revenue of all "Offices of Lawyers" versus total revenue of "All Other Legal Services").

95.   *See NAICS Code 541199 All Other Legal Services*, SICCODE.COM, https://siccode.com/en/naicscodes/541199/all-other-legal-services (last visited Mar. 29, 2019).

96.   *See* GEORGETOWN LAW CTR. FOR THE STUDY OF THE LEGAL PROFESSION, ALTERNATIVE LEGAL SERVICE PROVIDERS: UNDERSTANDING THE GROWTH AND BENEFITS OF THESE NEW LEGAL PROVIDERS 4 (2017), https://www.2civility.org/wp-content/uploads/Alternative-Legal-Service-Providers.pdf.

97.   *Id*. (noting the different types of ALSPs).

98.   Author's calculations drawn from *Wage and Salary Accruals Per Full-Time Equivalent Employee: Domestic Private Industries*, FRED, https://fred.stlouisfed.org/series/J4422C0A052NBEA (last visited April 11, 2019).

substantially higher growth than nonlawyers.[99] By way of contrast, the average American private sector employee saw his or her earnings grow only from $35,000 to $59,000 over the same time period.

Table 3
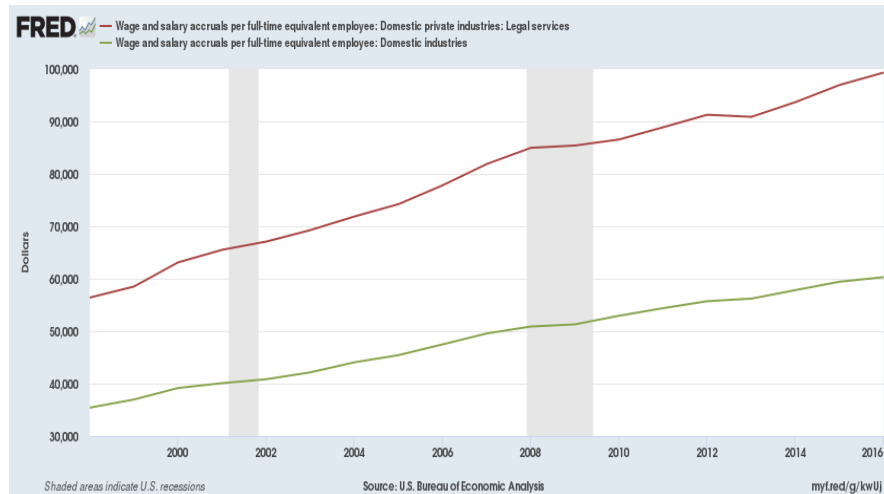
One limitation of the analysis to this juncture is that the foregoing figures do not take into account the many lawyers who are self-employed. It is also possible that the analysis masks the degree to which specific groups of attorneys are being impacted by automation. Commentators have speculated about the plight of solo practitioners and new attorneys in particular.[100]

Reliable income data for these categories of attorneys are not available at the national level. However, statewide data is available and provides some insight. For example, the State Bar of Texas, the second largest organized bar association in the United States, has periodically collected income data from its members since 2005.[101] Table 4 compares median incomes for all full-time attorneys, solo practitioners, and new attorneys—attorneys who have been practicing for two or

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99. According to BLS data, lawyers who worked in the legal services industry saw their incomes increase from $96,120 on average in 2000 to $141,890 in 2017; by comparison, paralegals' incomes grew from $38,020 in 2000 to $50,410 in 2017. *Compare 2000 Occupational Employment Statistics Survey with 2017 Occupational Employment Statistics Survey*, BUREAU LAB. STAT., https://www.bls.gov/oes/tables.htm (last modified March 29, 2019).

100. *See e.g.*, Benjamin H. Barton, *A Glass Half-Full Look at the Changes in the Legal Market*, 38 INT'L REV. LAW & ECON. 28, 29, 33 (2014); Deborah Merritt, *What Happened to the Class of 2010? Empirical Evidence of Structural Change in the Legal Profession*, 2015 MICH. ST. L. REV. 1043, 1104–05 (2014).

101. To practice law within the State of Texas, one must maintain active membership in the State Bar. TEX. GOV'T. CODE § 81.051.

fewer years—for the years 2005, 2011, and 2017.[102] Focusing on these years is instructive because they encompass the years leading to the boom, recession, and recovery.[103]

Table 4
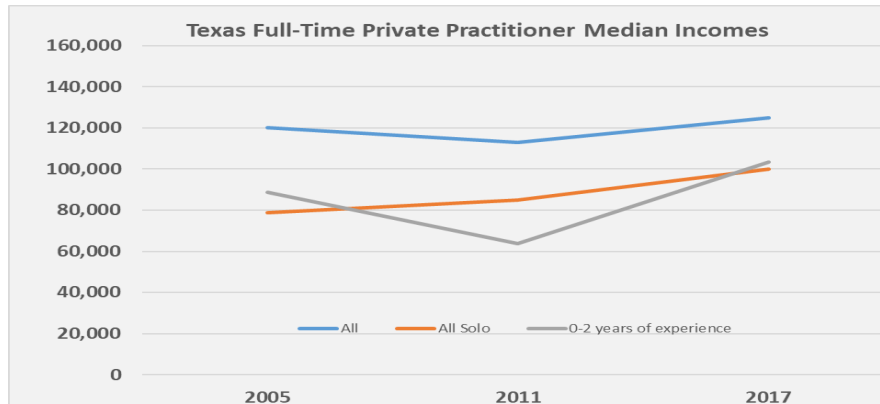
As Table 4 shows, the median income of full-time Texas private practitioners rose slightly from 2005 to 2017. However, growth was unsteady as the median income fell by over $7,000 from 2005 to 2011, before increasing by nearly $12,000 from 2011 to 2017. This trend is consistent with the postrecession recovery seen in Tables 2 and 3. On the whole, private practitioners' real wages have fallen slightly from 2005. Solo practitioners were not as affected by the recession and have seen an increase in their median incomes of over $21,000 since 2005, outpacing inflation.

Less experienced attorneys' economic prospects have varied greatly across this time period. The median income of a Texas private practitioner with zero to two years' experience in 2011 was approximately $25,000 less than it was in 2005. However, by 2017, these attorneys' incomes rebounded such that they earned nearly $15,000 more than they did in 2005. This nevertheless represents a small decline in real wages from 2005.

Although automation cannot be excluded as a cause of the modest income growth shown in Table 4, there are reasons to doubt its impact. From an economic perspective, the replacement of newer attorneys—whose incomes were most impacted by the recession as indicated in Table 4—would also have been less beneficial for firms than the replacement of middle-aged (and higher-paid) attorneys.[104] Tasks, such as document review, that have become increasingly

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102.	Author's calculations based on survey data from members of the State Bar of Texas (on file with author).

103.	*See 2015 Economic Growth Strongest Since 2005*, REUTERS (July 28, 2017, 5:43 AM), https://www.reuters.com/article/us-usa-economy-gdp/2015-economic-growth-strongest-since-2005-idUSKBN1AD1JM.

104.	*See* Daron Acemoglu & Pascual Restrepo, *Secular Stagnation? The Effect of Aging on Economic Growth in the Age of Automation* 5 (Nat'l Bureau of Econ. Res., Working

automated are, as noted above, a small part of most attorneys' day-to-day tasks, and law firms outsourced such tasks to low-paid contract attorneys long before the recession.[105] Lastly, historically, law firms have been reluctant to invest in new technology, and there is no evidence that they made substantial outlays in the midst of a cataclysmic economic downturn that decimated profits.[106]

A more plausible explanation for the tepid income growth, particularly among younger attorneys, is that it is a function of the 2008 recession.[107] The recession dampened demand for high-end legal work, allowing corporate clients to insist on various types of cost-cutting, including the exclusion of junior attorneys from matters.[108] Rather than sacrificing profits, firms laid-off less experienced attorneys, cut compensation, and have only recently begun to revert to prerecession norms in hiring.[109]

Employment and wages in the legal sector have risen steadily over time, particularly for attorneys. However, the slow growth in median wages shown in state data bears scrutiny. If wages were to continue to stagnate and even fall, this would be evidence that automation in the legal sector is reducing demand for attorneys.[110]

III. LAW WITHOUT LAWYERS?

Thus far, this Article has maintained that the threat posed by intelligent machines has been overstated and fails to account for artificial intelligence's

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Paper 23077, 2017), https://www.nber.org/papers/w23077.pdf (documenting that automation is more prevalent when there is a shortage of newer workers to replace older ones).

105. *See* Remus & Levy, *supra* note 4, at 531–32. For a discussion of the rise of contract-attorney work, see R.A. BROOKS, CHEAPER BY THE HOUR: TEMPORARY LAWYERS AND THE DEPROFESSIONALIZATION OF LAW (2012).

106. Law firms, unlike most other businesses, are not permitted to accept investment from nonlawyers. This limits their ability to invest in technology as any outlays will have to come from the partners themselves. *See* Edward S. Adams & John H. Matheson, *Law Firms on the Big Board?: A Proposal for Nonlawyer Investment in Law Firms*, 86 CALIF. L. REV. 1, 30 (1998).

107. *See, e.g.*, Hoynes et al., *Who Suffers During Recessions?*, 26 J. ECON. PERSP. 27, 45 (2012); Philip Oreopoulous et al., *The Short- and Long-Term Career Effects of Graduating in a Recession*, 4 AM. ECON. J, 1, 3 (2012) ("The persistent effects from adverse labor market conditions are much larger for individuals in the first year of their careers than for individuals with just a few years of experience.").

108. *See* Remus & Levy, *supra* note 4, at 531; *see also* Douglas R. Richmond, *The Contemporary Legal Environment and Employment Claims Against Law Firms*, 43 TEX. TECH. L. REV. 471, 489 (2011) (noting that firms justified layoffs of junior attorneys and compensation cuts as mandated by clients even though "clients simply want cheaper sausage-they do not care how it is made").

109. *See* Richmond, *supra* note 108, at 488–90. The nation's largest law firms recently increased starting-associate salaries to $190,000, the second increase since the recession. *See* Sarah Randazzo, *Starting Law Firm Associate Salaries Hit $190,000*, WALL ST. J. (June 12, 2018), https://www.wsj.com/articles/starting-law-firm-associate-salaries-hit-190-000-1528813210.

110. *See also* Acemoglu & Restrepo, *supra* note 29, at 11 (positing that automation via artificial intelligence is associated with reduced demand for labor and lower wages).

limitations. That legal work is increasingly being automated is also inconsistent with most economic data. This Part contends that important policy considerations also counsel against replacing lawyers with intelligent machines in law, even if technical hurdles can be overcome.

One consideration is largely practical. Intelligent machines pose a challenge to the dominant liability regime.[111] If lawyers fail to deliver competent legal services to their clients, they are subject to ethical discipline as well as malpractice suits.[112] Their responsibility can extend to the actions of third parties that are involved in the provision of legal services.[113] When lawyer robots err, who should be held responsible and compensate injured clients?[114]

What complicates such questions is that artificial intelligence is a "fluid system"; engineers periodically update software, but the system evolves on its own as it encounters more data.[115] Uncertainty over liability and remedies may chill the adoption of artificial intelligence in law but may also lead to a regime where the lawyer remains the fulcrum of the legal representation, with ultimate responsibility for the services provided, although most of the day-to-day work would be performed

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111. The literature on artificial intelligence and the appropriate liability regime is voluminous. *See, e.g.*, Mariano-Florentino Cuéllar, *A Simpler World? On Pruning Risks and Harvesting Fruits in an Orchard of Whispering Algorithms*, 51 U.C. DAVIS L. REV. 27, 27 (2017); Curtis E. Karnow, *Liability for Distributed Artificial Intelligences*, 11 BERKELEY TECH. L.J. 147, 147 (1996).

112. *See* MODEL RULES OF PROF'L CONDUCT r. 1.1; McKnight v. Dean, 270 F.3d 513, 518 (7th Cir. 2001) ("Legal malpractice is not a failure to be brilliant, but a failure to come up to even a minimum standard of professional competence.").

113. For rules governing lawyers and nonlawyers within the firm, see MODEL RULES OF PROF'L CONDUCT. r. 5.3(b) & (c). But lawyers are also responsible for the actions of lawyers and nonlawyers outside the firm. *See, e.g.*, VA Legal Eth. Op. 1850, 2010 WL 5545407, *4 (Jan. 1, 2010) ("The lawyer must be able to adequately supervise the nonlawyer if the work is outsourced."); Nebraska Ethics Advisory Opinion for Lawyers No. 10-03, 2010 WL 11064777, *3 (NE. Jud. Eth. Comm. Jan. 1, 2010) ("A lawyer who accepts assignments or referrals from a legal service plan or referrals from a lawyer referral service must act reasonably to assure that the activities of the plan or service are compatible with the lawyer's professional obligations."). For a discussion of the liability of online providers of legal services such as LegalZoom, see Benjamin A. Barton, *Some Early Thoughts on Liability Standards for On-Line Providers*, 44 HOFSTRA L. REV. 541 (2015).

114. There may also be the possibility of imposing penalties directly on the robots. *See* Mark A. Lemley & Bryan Casey, *Remedies for Robots* 90–93 (Stan. Law and Econ. Olin, Working Paper No. 523, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3223621##. For a discussion of the procedural challenges associated with imposing liability on robots, see generally Roger Michalski, *How to Sue a Robot*, 2018 UTAH L. REV. 1021.

115. Karnow, *supra* note 111, at 159; *see* Iria Giuffrida, Fredric Lederer & Nicolas Vermeys, *A Legal Perspective on the Trials and Tribulations of AI: How Artificial Intelligence, the Internet of Things, Smart Contracts, and Other Technologies Will Affect the Law*, 68 CASE W. RES. L. REV. 747, 753 (2018).

by intelligent machines.[116] Under this scenario, demand for lawyers would not necessarily decrease if the cost of legal services were to fall such that more people would seek legal assistance.[117]

Yet, the lawyer's role should not be reduced to that of "cheapest cost avoider" in the delivery of legal services.[118] To be sure, clients turn to lawyers because they need legal services, and they might not be overly concerned if a machine, rather than a lawyer, completes much of the work. Sophisticated corporate clients, in particular, are likely to negotiate warranties and other protections into their engagements to shield themselves from any errors resulting from the use of artificial intelligence.[119] Ordinary individuals are not in a position to negotiate these protections or to assess the quality of the legal services they receive, which explains, in part, the rise of attorney licensing.[120]

But the attorney–client relationship is, at its core, dialectical.[121] Regardless of their level of sophistication, clients often do not have clear objectives and require assistance in shaping them.[122] Clients also sometimes misunderstand the legal system and do not view their situations, including any wrongs they may have

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116. Lawyers already have an obligation to be familiar with technological changes relevant to their legal practices, which will eventually include artificial intelligence. *See* MODEL RULES OF PROF'L CONDUCT r. 1.1 cmt. 8.

117. *See also* Barton, *supra* note 100, at 36–38 (examining the impact of technology and other factors on the price of legal services).

118. Calebresi and Hirschoff famously suggested that, in accident cases, liability should be apportioned to the person or entity who was in the best position to avoid the accident, i.e., "the cheapest cost avoider." Guido Calebresi & Jon. T. Hirschoff, *Toward a Test for Strict Liability in Torts*, 81 YALE L. J. 1055, 1060 (1974). Some scholars have sought to apply this framework to the lawyer's ethical role. *See, e.g.*, Adam Samaha & Lior J. Strahilevitz, *Don't Ask, Must Tell – And Other Combinations*, 103 CALIF. L. REV. 919, 968 (2015) (noting that in discovery production the lawyer is almost always the "least cost avoider"); F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. REV. 55, 99 (2003).

119. The *Model Rules* recognize, in the context of conflict-of-interest rules, that clients that are experienced users of legal services do not require the same protections as less experienced ones. *See* MODEL RULES OF PROF'L CONDUCT r. 1.7 cmt. 22. *But see* Milan Markovic, *The Sophisticates: Conflicted Representation and the Lehman Bankruptcy*, 2012 UTAH. L. REV. 903 (questioning whether in-house counsel is able to monitor outside counsels' conflicts of interest, particularly when they have not been informed of their specific nature).

120. *See also* Mark T. Law & Sukkoo Kim, *Specialization and Regulation: The Rise of Professionals and the Emergence of Occupational Licensing Regulation,* 65 J. ECON. HIST. 723, 724 (2004) ("The sale and purchase of professional services are often subject to problems of asymmetric information . . . [P]rofessionals may choose to self-regulate, or professionals and consumers may seek government regulation to 'eliminate charlatans, incompetents or frauds' and 'protect the safety and welfare' of consumers.") (citations omitted).

121. Robert Gordon, *The Independence of Lawyers*, 68 B.U. L. REV. 1, 73 (1988).

122. *See also* Wald & Pearce, *supra* note 15, at 605 ("Self-interest accordingly requires consideration of the long-term impact of conduct on family, friends, neighbors, and communities. Such a relational approach not only provides a foundation for a fulfilling professional role for lawyers but also for a more effective representation of clients.").

suffered, in legalistic terms.[123] A fully autonomous, composed, and decided client may not require the counseling of an attorney, but that is not the messy reality of the law as lived.[124]

Conceiving of "legal assistance" as a transaction cost to be minimized through technology or otherwise is equally problematic.[125] Historically, lawyers have safeguarded the public interest while pursuing their clients' objectives.[126] This continues to be a fixture of many types of legal practice. For example, prosecutors do not merely seek convictions on behalf of the state; they are required to ensure that the accused is "accorded procedural justice."[127] Family lawyers are exhorted to consider the welfare of the children.[128] Corporate lawyers bridge the gap between an unfettered free market and the highly regulated market that exists in the real world[129] and also mitigate negative externalities associated with their clients' conduct.[130] The former general counsel of General Electric has described the corporate lawyer's role thusly:

> [The] ideal is that of a genuinely independent advisor who occupies a dual role: he not only guides clients through the maze of law and regulation to help realize the company's profit goals but also affirmatively promotes the company's compliance with law and

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123.　　*See* Catherine R. Albiston & Rebecca L. Sanderfur, *Expanding the Empirical Study of Access to Justice*, 2013 WIS. L. REV. 101, 117–18 ("How people understand their problems plays a large role in how they respond to them . . . [R]esearch reveals that when Americans are asked about their experiences with problems or situations that happen to be justiciable, 'they often do not think of their justice problems in legal terms.'") (citation omitted).

124.　　*See also* David Luban, *Optimism, Skepticism, and Access to Justice*, 3 TEX. A&M L. REV. 495, 504 (2016) ("Civil justice deficits are not simply information problems. They are emotional problems as well, and dealing with those emotions—the fears, stresses, and anxieties . . . may be an essential part of the legal solution.").

125.　　*See* Pasquale, *supra* note 58, at 5 (summarizing views of futurists and technologists); *see also* Barton, *supra* note 100, at 27 ("The work of lawyers is a quintessential transaction cost.")

126.　　Rebecca Roiphe, *The Decline of Professionalism*, 29 GEO J. LEGAL ETHICS 649, 665 (2016) (suggesting that professionalism is grounded in "suppressing individual self-interest for the good of all").

127.　　MODEL RULES OF PROF'L CONDUCT r. 3.8. cmt. 1.

128.　　*See* Lewis Becker, *Ethical Responsibilities of a Lawyer for a Parent in Custody and Relocation Cases: Duties Respecting the Child and Other Conundrums*, 15 J. AM. ACAD. MATRIMONIAL L. 33, 45 (1998).

129.　　Ronald J. Gilson, *Value Creation by Business Lawyers: Legal Skills and Asset Pricing*, 94 YALE L.J. 239, 258 (1984).

130.　　*See* Eli Wald, *An Unlikely Knight in Economic Armor: Law and Economics in Defense of Professional Ideals*, 31 SETON HALL L. REV. 1042, 1062 (2001) ("The public service ideal . . . correspond[s] to the social good as it guides lawyers to advise their clients against actions that impose negative externalities on other parties, and suggests that lawyers refrain from assisting clients in the pursuit of such goals."). In-house lawyers may be better positioned to prevent negative externalities. *See* Sung Hui Kim, *The Banality of Fraud: Re-Situating the Inside Counsel as Gatekeeper*, 74 FORDHAM L. REV. 983, 998–99 (2005) (suggesting that in-house counsel are better situated to detect and interdict fraud).

fosters cooperation with other companies to engage in collective action for the public good.[131]

One especially vital responsibility of attorneys is to push back against clients' unlawful and misguided ends.[132] In this regard, the lawyer is a gatekeeper who functions as a "buffer between the illegitimate desires of his client and the social interest."[133] Lawyers sometimes fail to abide by their gatekeeping obligations, as high-profile failures, like the Enron bankruptcy, indicate.[134] But the expectation that attorneys will gatekeep is ubiquitous and applies to matters ranging from private securities offerings to personal-injury cases.[135]

An intelligent machine may be able to determine if a course of conduct is unlawful; it may also be able to calculate the probability that any misconduct will be detected. What it cannot do is fulfill the other crucial "half" of a lawyer's role: shaming and persuading clients and would-be clients "that they are damned fools and should stop."[136] As David Luban has explained, intelligent machines lack emotional intelligence and moral authority and cannot buttress legal and non-legal considerations to exhort clients to act in accordance with the law.[137]

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131.   *See* Robert Gordon, *The Return of the Lawyer Statesman*, 69 STAN. L. REV. 1731, 1753 (2017) (citations omitted); *see also* W. Bradley Wendel, *In Search of Core Values*, 16 LEGAL ETHICS 350, 365 (2014) ("The lawyer's role is best understood as mediating between the interests of clients and the public interest. Professionalism . . . refers not to a closed cartel or to the abnegation of the desire to earn a living, but to a commitment to maintaining the law and related institutions in good working order instead of attempting to game or subvert it.").

132.   *See* MODEL RULES OF PROF'L CONDUCT r. 2.1; *see also* Fred C. Zacharias, *Lawyers as Gatekeepers*, 41 SAN DIEGO L. REV. 1387, 1405 (2004) ("[T]he lawyer's job consists as much of standing in the way of misguided client pursuits as of implementing client desires.").

133.   Talcott Parsons, *A Sociologist Looks at the Legal Profession* in ARTICLES ON SOCIOLOGICAL THEORY 370, 384 (1954) *cited in* Ronald Gilson, *The Devolution of the Legal Profession: A Demand Side Perspective*, 49 MD. L. REV. 869, 884 (1990).

134.   *See, e.g.*, Susan P. Koniak, *Corporate Fraud: See, Lawyers*, 26 HARV. J. L. & PUB. POL'Y, 195, 198–207 (2003); Robert W. Gordon, *A New Role for Lawyers?: The Corporate Counselor After Enron,* 35 CONN. L. REV. 1185, 1185–90 (2003).

135.   *See, e.g.*, Mark C. Suchman & Mia L. Cahill, *The Hired Gun as Facilitator: Lawyers and the Suppression of Business Disputes in Silicon Valley*, 21 LAW & SOC. INQ. 679, 698 (1996) (suggesting that lawyers gatekeep by determining which clients gain access to investors by placing their reputational capital behind certain entities and not others); Herbert M. Kritzer, *Contingency Fee Lawyers as Gatekeepers in the Civil Justice System*, 81 JUDICATURE 22, 22–23 (1997) (noting that personal-injury lawyers serve as gatekeepers by screening out cases that are frivolous and are unlikely to net a substantial return); *see also* MODEL RULES OF PROF'L CONDUCT r. 1.13(b) (describing the lawyer's duty to report substantial wrongdoing imputable to his or her organization up the organizational ladder).

136.   Elihu Root famously declared that "half the practice of a decent lawyer consists in telling would-be clients that they are damned fools and should stop." PHILIP C. JESSUP, 1 ELIHU ROOT 133 (1938).

137.   *See* Luban, *supra* note 124, at 505 ("[H]uman beings can have moral authority, and machines have none . . . Moral sense is . . . an indispensible piece of legal judgment and legal advice.")' MODEL RULES OF PROF'L CONDUCT r. 2.1.

To illustrate the ramifications of substituting machines for attorneys, consider DoNotPay, a smartphone application that assists users in fighting parking tickets.[138] DoNotPay suggests various defenses for parking violations and prepares a filing based on the user's inputs.[139] One such defense is that the user was facing a medical emergency at the time of the alleged violation.[140] Although a small number of individuals may park illegally because of medical emergencies, the reality is that any unscrupulous DoNotPay user can obtain the app's assistance to raise the "medical emergency" defense.[141] DoNotPay, unlike a lawyer, has no obligation to weed out illegitimate defenses or dissuade the user from lying as part of his or her appeal of a ticket.[142] Rather, users agree to indemnify DoNotPay in connection with claims that arise from the user's misdeeds.[143] DoNotPay aspires to migrate into family law and other practice areas.[144]

Parking disputes are admittedly low stakes, but even in traffic court, truth and justice matter. One can conceive of a future where litigants, assisted by apps utilizing artificial intelligence, flood real (or virtual) courts with unsustainable claims, with harried judges left to separate the wheat from the chafe.[145] That some courts operate in this manner already—albeit without the involvement of intelligent machines—does not mean that society should emulate and expand upon these flawed models.[146]

Attorneys also differ from intelligent machines in another crucial respect: they can explain themselves. In offering legal advice to clients, lawyers articulate

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138.   *See* John Mannes, *DoNotPay Launches 1,000 New Bots to Help You with Your Legal Problems*, TECHCRUNCH (July 12, 2018), https://techcrunch.com/2017/07/12/donotpay-launches-1000-new-bots-to-help-you-with-your-legal-problems.

139.   *See* Pasquale, *supra* note 58, at 15.

140.   *Id.*

141.   *See id.* at 13.

142.   *See* MODEL RULES OF PROF'L CONDUCT r. 3.1 & 3.3.

143.   Pasquale, *supra* note 58, at 16. As Pasquale notes, lawyers generally cannot shift risk to clients. *See id.* at 18.

144.   *See* Elliot Krause, *This Robot Will Handle Your Divorce Free of Charge*, WALL ST. J. (Oct. 26, 2017), https://www.wsj.com/articles/this-robot-will-handle-your-divorce-free-of-charge-1522341583.

145.   *See also* Daniel Currell & Todd M. Henderson, *Can Lawyers Stay in the Driver's Seat?*, 38 INT'L REV. L. & ECON. 17, 28 (2014) ("Increasing access to lawyers, which lowering prices would presumably do, is not clearly a good thing. For it to be so, one would have to believe that lawyers and legal processes add social value beyond their social cost, which is not at all obvious.").

146.   In bemoaning the rise of self-representation, the former chief judge of the Court of Appeals of the State of New York likened these courts to "the emergency room for society's worst ailments." Jonathan Lippman, *A Proactive Judicial Branch: Confronting the Crisis of the Unrepresented*, 2011 CARDOZO L. REV. DE NOVO 1, 1; *see also* Roger C. Cramton, *Delivery of Legal Services to Ordinary Americans*, 44 CASE W. RES. L. REV. 531, 562–65 (1994) (summarizing concerns about various forms of litigation simplification); *cf.* Jessica K. Steinberg, *Adversary Breakdown and Judicial Role Confusion in "Small Case" Civil Justice*, 2016 BYU L. REV. 899, 947–48 (2016) (suggesting that judges take a more active role in cases involving unrepresented litigants).

reasons for their positions; the reasons justify the conclusions reached.[147] Reason-giving recognizes the autonomy of the client and also ensures accountability and transparency.[148] The attorney can be judged based not only on the outcome obtained for the attorney but also on the reasoning that led to the outcome. If the reasoning is unconvincing or faulty, the client can push back against the attorney or choose to terminate the representation.

Intelligent machines—especially advanced ones—do not provide reasons for their decisions.[149] Their reasons are inscrutable even to their creators[150] because they alter their programming as they "learn" more data.[151] Some degree of opacity is inevitable and perhaps welcome: the public is generally unconcerned with the inner workings of email spam filters.[152] But when rights and liabilities are concerned, this inscrutability is highly problematic. Harry Surden writes:

> Articulated rationale is a central tenet of legal decision-making, particularly when decisions involve the deprivation of liberty or property. However, to the extent that legal officials are assisted by artificial intelligence systems that have core interpretability limitations, such articulable rationales may not be possible, undermining central legal norms . . . [S]uch such uninterpretable mathematical models may further mask underlying, and undesirable, biases . . . .[153]

No matter how sophisticated the artificial intelligence, clients cannot be expected to conform their activities pursuant to reasoning that they cannot access, let alone comprehend.[154]

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147. Frederick Schauer, *Giving Reasons*, 47 STAN. L. REV. 633, 635 (1995); *see* Herbert Wechsler, *Toward Neutral Principles of Constitutional Law*, 73 HARV. L. REV. 1, 19–20 (1959) ("The virtue or demerit of a judgment turns, therefore, entirely on the reasons that support it.").

148. *See* Mathilde Cohen, *When Judges Have Reasons to Not Give Reasons: A Comparative Law Approach*, 72 WASH. & LEE L. REV. 483, 504–08 (2015) (summarizing main rationales for reason-giving).

149. *See* Harry Surden, *Values Embedded in Legal Artificial Intelligence* 4 (U. Colo. L. Legal Studies, Research Paper No. 17-17, 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2932333; Jenna Burrell, *How the Machine 'Thinks': Understanding Opacity in Machine Learning Algorithms*, BIG DATA & SOC'Y 5 (2016), https://journals.sagepub.com/doi/pdf/10.1177/2053951715622512.

150. Surden, *supra* note 149, at 4.

151. Burrell, *supra* note 149, at 5.

152. *But see id*. at 7–9 (examining false positives in spam).

153. Surden, *supra* note 149, at 4.

154. Some artificial intelligence researchers are seeking to train intelligent machines to explain their reasons, but this research is in its infancy. *See* Alex Woodie, *AI, You've Got Some Explaining to Do*, DATANAMI (July 6, 2018), https://www.datanami.com/2018/07/06/ai-youve-got-some-explaining-to-do/; *see also* Davide Castelvecchi, *Can We Open Up the Blackbox of AI?*, NATURE (Oct. 5, 2016), https://www.nature.com/news/can-we-open-the-black-box-of-ai-1.20731 (likening the effort to have artificially intelligent systems explain their reasoning to humans "explaining Shakespeare to a dog").

One possible counterargument is that for most legal matters, clients are simply seeking a sense of the legal terrain. They are uninterested in reasons; they merely seek to know whether their actions are illegal and their potential liabilities. But, even accepting this premise,[155] clients do certainly have an interest in accurate legal assessments. Because clients can neither monitor nor comprehend intelligent machines' reasoning, they will be unable to discern whether their robot advisors have erred, and any flaws could go uncorrected.

A legal system dominated by intelligent machines would differ radically from one populated by lawyers. In theory, such a system would be more accessible if everyone were guaranteed equal access to these machines.[156] But attorneys sustain the legal system by forming trusting relationships with their clients and ensuring compliance with the law. Core values, such as truth and transparency in the legal system, would be jeopardized without them.

CONCLUSION

Much of the discourse surrounding artificial intelligence and the law provides an impoverished understanding of artificial intelligence and lawyers' actual work. Artificial intelligence is changing legal practice, as it is other human domains, but most legal tasks that occupy lawyers' days do not lend themselves to automation. The rise of intelligent machines should induce anxiety only among segments of the legal profession that provide routinized and formulaic solutions for clients.

In some respects, the legal services market has been slow to recover from the 2008 recession, and this has coincided with the emergence of alternative legal service providers. However, these developments should not obscure that lawyer employment and wages have been growing steadily over the last twenty years, which would not be the case if automation were taking hold. To the extent that automation has had a negative impact on the legal sector, it has been on nonlawyer staff. Artificial intelligence is likely to benefit lawyers by freeing them from low-margin, unrewarding work, such as document review, and allowing them to concentrate on their core duties: advising and advocating for clients.

Whatever the eventual capabilities of intelligent machines, lawyers fulfill an invaluable and multi-faceted role in the legal system. They support and counsel their clients, effectuate compliance with the law, and help to safeguard the public interest. Lawyers are also responsible and can be held accountable for deficient representation. The legal system is not a parking ticket to be gamed, and reckless automation of whole swaths of legal work is bound to destabilize the system. Rather

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155.   *See* Oliver Wendell Holmes, *The Path of the Law*, 10 Harv. L. Rev. 457, 459 (1897) (positing that law should be viewed from the perspective of the "bad man . . . who cares only for the material consequences").

156.   Artificial intelligence is currently more effective for white populations than minority ones. *See* Ryan Calo, *Artificial Intelligence Policy: A Primer and Roadmap*, 51 U.C. Davis L. Rev. 399, 411–12 (2017). Intelligent machines are also unlikely to be free to use, potentially exacerbating existing inequalities. *See generally* McGinnis & Pearce, *supra* note 16, at 3065 ("The commodification of legal services highlights the reality that legal services, and therefore access to justice, are bought and sold. As with other commodities, more money can buy better quality.").

than fearing obsolescence, lawyers should work in tandem with intelligent machines to better serve the public.