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AI and Legal Scholarship : Reflections on Evolution and Influences

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AI AND LEGAL SCHOLARSHIP: REFLECTIONS ON EVOLUTION AND INFLUENCES

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I. Abstract

With new advances in artificial intelligence (AI) and related emerging technologies, legal scholarship on AI has exploded in recent years. Yet the literature, at least until more recently, has been often overly narrow, predominantly focused on AI regulation or discussions of futuristic or as-yet-undeveloped AI technology, leaving uncertainty and a lack of guidance. Despite calls for a "shift" in legal research examining more systematically law's "diverse practice areas and functions" and to systematize related scholarship, there have been very few systematic reviews of legal scholarship on AI.

To help fill in this gap, this chapter outlines three traditional areas of inquiry in AI and legal scholarship, and a new emerging paradigm. The three traditional areas, though not exhaustive, include: (1) AI in Legal Processes and Practice; (2) AI in Government and Administration; and (3) AI in the Private Sector. I provide an overview for each, drawing on historical and contemporary legal commentary, and also provide insight into *influences* on AI legal scholarship. The few reviews of AI legal scholarship to date have all focused on how changes in AI technology have driven shifts in related legal scholarship. I highlight two additional factors: a tendency among legal scholars (1) to assume AI is neutral and objective; and (2) to employ more anthropomorphic approaches. These tendencies, I argue, can lead to important harms. However, there is an emerging body of scholarship—which may be called "critical" AI legal scholarship—that draws on social and critical theory and more directly challenges these assumptions and tendencies.

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II. Introduction

The artificial intelligence (AI) revolution has arrived, at least according to some.[1] Others say that it has not yet arrived, but is soon coming.[2] And there are still others who say it is more of an "evolution" than revolution.[3] Whatever we want to call this era, the reality is emerging technologies like AI, machine learning (ML), and automation are challenging countless areas of law[4] and creating powerful new capabilities for government and industry.[5] These technologies are also increasingly deployed to automate legal enforcement[6] and administrative processes,[7] and to preserve and promote legal rights and commercial interests.[8] Furthermore, ubiquitous computing and social media means the amount of data available to government and industry is unprecedented, and likely has contributed to recent advancements in AI and machine learning.[9]

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[1]   See e.g. Anthony Elliott, "The Culture of AI: Everyday Life and the Digital Revolution" (2019) 35:3 European J Communication 315; CP Gurnani, "The AI revolution is here. It's up to businesses to prepare workers for it" (30 May 2019), online: *CNN Business* < www.cnn.com/2019/05/30/perspectives/ai-business-jobs/index.html >.

[2]   See Michael I Jordan, "Artificial Intelligence—The Revolution Hasn't Happened Yet" (2019) 1:1 Harvard Data Science Rev 1; Spyros Makridakis, "The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms" (2017) 90 Futures 46.

[3]   See Kalev Leetaru, "Today's AI 'Revolution' Is More Of An Evolution" (2 August 2019), online: *Forbes* < www.forbes.com/sites/kalevleetaru/2019/08/02/todays-ai-revolution-is-more-of-an-evolution/#2437d9483e85 >.

[4]   See Woodrow Barfield, "Towards a Law of Artificial Intelligence" in Woodrow Barfield & Ugo Pagallo, eds, *Research Handbook on the Law of Artificial Intelligence* (Massachusetts: Edward Elgar Publishing, 2018) 2 at 35.

[5]   *Ibid* at 2.

[6]   See e.g. Woodrow Hartzog et al, "Inefficiently Automated Law Enforcement" [2015] Mich St L Rev 1763 at 1763 ("While it may sound like science fiction, the automation of law enforcement is already here"); Lisa Shay et al, "Confronting Automated Law Enforcement" in Ryan Calo, Michael Froomkin & Ian Kerr, eds, *Robot Law* (Massachusetts: Edward Elgar Publishing, 2016) at 235.

[7]   See Danielle K Citron & Ryan Calo, "The Automated Administrative State: A Crisis of Legitimacy", Emory LJ [forthcoming in 2020].

[8]   The automated enforcement of copyright interests under the *Digital Millennium Copyright Act*, 17 USC (1998) is a good example of this; See e.g. Niva Elkin-Koren, "Fair Use by Design" (2017) 64 UCLA L Rev 1082 at 1084 ("...Nowadays...much of copyright enforcement is performed using algorithms..."); Maayan Perel & Niva Elkin-Koren, "Accountability in Algorithmic Copyright Enforcement" (2018) 19 Stan Tech L Rev 473; Jennifer M Urban, Joe Karaganis & Brianna L Schofield, "Notice and Takedown in Everyday Practice" (2016), online (pdf): *Berkeley Law* < papers.ssrn.com/sol3/papers.cfm?abstract_id = 2755628/ >.

[9]   See Volker Boehme-Nessler, "Privacy: a matter of democracy. Why democracy needs privacy and data protection" (2016) 6 Intl Data Privacy L 222 at 222; Christopher Kuner, *Transborder Data Flow Regulation and Data Privacy Law* (Oxford: Oxford University Press, 2013) at 4ff; Ron Schmelzer, "Can't Define AI? Try Defining Intelligence" (27 February 2020), online: *Forbes* < www.forbes.com/sites/cognitiveworld/2020/02/27/cant-define-ai-try-defining-intelligence/#286003175279 >; "Datasets vs Algorithms" (31 March 2016), online: *Space Machine* www.spacemachine.net/views/2016/3/datasets-over-algorithms >; Mohamed Tharwat, "Datasets v Algorithms — A Breakthrough in AI 6X Faster" (8 August 2016), online: John Snow Labs < www.johnsnowlabs.com/datasets-vs-algorithms-a-breakthrough-in-ai-6x-faster/ >.

Not surprisingly, legal scholarship on AI has exploded in recent years.[10] Yet the literature, at least until more recently, has been often overly narrow, predominantly focused on AI regulation[11] or discussions of futuristic or as-yet-undeveloped AI technology,[12] leaving uncertainty and a lack of guidance for lawyers and policymakers.[13] Thus, Frank Pasquale and Glyn Cashwell have called for a "shift" in legal research examining more systematically law's "diverse practice areas and functions" in relation to AI and automation.[14] However, there have been very few systematic reviews or meta-analyses of legal scholarship on AI.[15] Harry Surden, for example, recently provided a categorical "overview," but focused primarily on what he called "AI users" in law.[16] Goanta and colleagues recently conducted a computational and statistical analysis of AI legal scholarship on HeinOnline, a large database of digitized legal literature, but only provided a brief thematic analysis for different periods of increased literature volume.[17] They noted limitations to their work and called for more "reviews" and "meta-analyses" of legal scholarship on AI.[18]

To help fill in this gap—and as an introduction to the AI law literature for this collection—this chapter outlines three traditional areas of inquiry in AI and legal scholarship, and a new emerging paradigm. The three traditional areas, though not exhaustive, include: (1) AI in Legal Processes and Practice; (2) AI in Government and Administration; and (3) AI in the Private Sector. I provide an overview for each, drawing on historical and contemporary legal commentary and scholarship. I also provide some insight into *influences* on AI

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[10] See Catalina Goanta, Gijs van Dijck & Gerasimos Spanakis, "Back to the Future: Waves of Legal Scholarship on Artificial Intelligence" in Sofia Ranchordás & Yaniv Roznai, eds, *Time, Law, and Change: An Interdisciplinary Study* (New York: Hart, 2020) 327 at 327 ("In the past years, artificial intelligence has received increased attention in legal scholarship"); see also Harry Surden, "Artificial Intelligence and Law: An Overview" (2019) 35 Ga St U L Rev 1305 at 1306 ("Much has been written recently about artificial intelligence (AI) and law").

[11] See Benjamin Alarie, Anthony Niblett & Albert H Yoon, "Regulation by Machine"(Paper delivered at the 29th Conference on Neural Information Processing Systems (NIPS), Barcelona, 5-10 December 2016), online (pdf): *Machine Learning and the Law* < www.mlandthelaw.org/papers/alarie.pdf > ("Legal scholars investigating artificial intelligence are preoccupied with regulation. The literature has largely focused on the need for humans to regulate the behaviour of automated systems."); Benjamin Alarie, "The Path of the Law: Towards Legal Singularity" (2016) 66:4 UTLJ 443.

[12] See Surden, *supra* note 10 at 1306.

[13] See Hartzog et al, *supra* note 6 at 1767 ("There is no guiding principle for policy makers and enforcement officers to ensure that automated law enforcement systems fulfill their objective in a way that respects privacy and civil liberties" and sets out to "remedy the dearth of guidance" in the literature).

[14] *Ibid* at 28—29.

[15] See Goanta, van Dijck & Spanakis, *supra* note 10 at 1—2.

[16] *Supra* note 10.

[17] For example, Goanta, van Dijck & Spanakis, *supra* note 10 conducted a largely computational analysis of HeinOnline, with *some* brief thematic analysis categorized by periods of increased literature counts See also. Surden, *supra* note 10 (focusing on AI in practice and administration).

[18] See Goanta, van Dijck & Spanakis, *supra* note 10 at 16.

legal scholarship. So far, the few reviews of AI legal scholarship have mostly focused on how changes in AI technology have driven shifts in legal scholarship. However, I highlight two additional factors—a tendency in some AI legal scholarship to assume AI is neutral and objective as well as a tendency towards anthropomorphic approaches. These tendencies, I argue, can lead to significant harms. However, there is an emerging body of scholarship—which may be called "critical" AI legal scholarship—that draws on social and critical theory and more directly challenges these assumptions and tendencies.

III. Legal Scholarship on AI and Its Influences

To understand legal scholarship on AI we must first define AI itself. Of course definitions of AI and machine learning are not necessarily settled.[19] Stuart Russell and Peter Norvig's leading text provides *four* different "approaches" to AI that involve *eight* different definitions.[20] A helpful and practical way of understanding "AI" is that it does not refer to any single technology or definition but is best understood as an umbrella term encompassing research and science aimed at "making machines smart."[21] Within that umbrella term are a range of different technologies, techniques, tools, and methods.[22] Among the most important of such techniques today is machine learning, a branch of AI that allows computers to learn how to perform tasks intelligently by learning from data.[23] As Ryan Calo observed, two important dimensions of contemporary AI research are, firstly, a shift toward practical applications of AI—often referred to as "narrow" AI—and, secondly, an emphasis on machine learning and data, referred to as "general" AI.[24] For further clarity, "narrow" AI is technology designed to address specific applications or to carry out specific tasks, while "general" AI refers to AI systems that exhibit more general forms of intelligence that allow them the flexibility and capacity to carry out a range of different tasks and adapt to new problems.[25] AI legal scholarship essentially explores law and policy issues raised by these technologies, including normative, theoretical, and empirical questions.

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[19]   See P M Kraff et al, "Defining AI in Policy versus Practice" (Paper delivered at the Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society, New York, 7-8 February 2020), online (pdf): *ACM Digital Library* < dl.acm.org/action/showFmPdf?doi = 10.1145%2F3375627 > .

[20]   *Artificial Intelligence: A Modern Approach* (Essex: Pearson, 2016) at 1—5.

[21]   See Princeton CITP, *On the Limits of Artificial Intelligence in Public Policy* (Princeton: Princeton CITP, 2018) at 3; Ryan Calo, "Artificial Intelligence Policy: A Primer and Roadmap" (2017) 51:2 UC Davis L Rev 399 at 405—406 [Calo, "AI Roadmap"].

[22]   See Calo, "AI Roadmap", *supra* note 21 at 405.

[23]   See Princeton CITP, *supra* note 21 at 3.

[24]   See e.g. Calo, "AI Roadmap", *supra* note 21 at 405—406; Princeton CITP, *supra* note 21 at 3.

[25]   See Princeton CITP, supra *note* 21 at 3.

In the next section, I examine three traditional areas of inquiry for legal scholarship on AI and highlight how two specific tendencies—anthropomorphism and neutrality—are apparent, at times, in the literature, and thus have shaped it. This is a problem as these approaches in AI and the law can have serious and harmful consequences. However, I also argue in Part IV that an emerging body of AI legal scholarship is more clearly tackling these issues.

IV. Three Traditional Areas of Inquiry

1. AI in Legal Processes and Practice

This first broad category of legal inquiry on AI concerns scholarship on how AI technology may impact, change, or innovate legal reasoning and legal processes as a practice, discipline, or profession, i.e., how AI impacts how law and legal reasoning is done *in practice* rather than how it might impact law and society more generally, like technology regulations imposed by societies. This is arguably the oldest and most common legal scholarship on AI, and remains a prolific area of scholarship today. A classic early example of this AI legal scholarship is Bruce Buchanan and Thomas Headrick's article, *Some Speculation About Artificial Intelligence and Legal Reasoning*, published in the Stanford Law Review in 1970,[26] one of the "earliest" and most "comprehensive" reflections on AI and the law.[27] Characteristic of legal scholarship on AI during this period—the late 1950s to early 1970s—the article is technical, interdisciplinary, and focused on how AI might be employed to carry out legal processes, while largely eschewing theoretical or normative questions.[28] Specifically, the authors explore how "computer modeling of legal reasoning" might shed light on the "legal reasoning process" and possibly lead to "the design of machine methods for performing parts of it."[29] Another typical area of focus in this earlier literature is AI and legal research, a topic that would also receive sustained interest in the 1980s as new legal information processing and retrieval systems emerged.[30]

A half-century after Buchanan and Headrick's article, AI's use and application in law and legal practice still remains an important and timely area of legal scholarship. An example of this literature today would be work in computational legal studies, an emerging field of empirical legal studies that

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26   23:1 Stan L Rev 40.
27   See Goanta, van Dijck & Spanakis, *supra* note 10 at 1—2.
28   See *ibid* at 9—10.
29   Buchanan & Headrick, *supra* note 26 at 41.
30   See Goanta, van Dijck & Spanakis, *supra* note 10 at 9—11 (citing Philip Slayton, "Electronic Legal Retrieval - A Report Prepared for the Department of Communications of the Government of Canada" (1974) 15 Jurimetrics J 108; Kenneth Katz, "Computerized Research: An Editorial" (1973) 14 Jurimetrics J 25).

applies tools, methods, and forms of analyses common to computational social science and computer science—including AI and automation technology—to "enrich" legal theory and analyze legal issues and processes.[31] Like Buchanan and Headrick's earlier research, this modern area of research remains highly technical, interdisciplinary, and specialized. Another example of this AI legal scholarship today is what Pasquale calls "legal futurism," that is, legal scholars examining future-oriented technologies that may automate legal tasks and one day possibly replace lawyers.[32]

2. AI in Government and Administration

A second category of legal inquiry on AI concerns scholarship on how AI technology may be employed in government and in government-related administration. This is also a literature with a decades-old lineage, which largely emerged in legal scholarship following the second AI boom in the 1980s.[33] During this period legal scholars began examining applications of AI beyond the law, to government and industry.[34] This legal scholarship explores, among other things, AI in law enforcement,[35] judicial decision-making,[36] and governmental administration.[37] There is also a growing body of AI legal scholarship examining military applications of AI, like examining autonomous weapons under international law.[38]

A typical earlier example of this AI legal scholarship is Armand P. Hernandez's 1986 article, *Police Microcomputing: Strategies and Concerns*, which examined the employment of micro-computing, including AI-driven

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[31] See Daniel Martin Katz et al, "Reproduction of Hierarchy? A Social Network Analysis of the American Law Professoriate" (2011) 61 J Legal Educ 76 at 79 ("Computational legal studies is a sub-field dedicated to applying tools from computer science, applied physics, informatics, complex systems and applied mathematics to help enrich positive legal theory."). See also Nicola Lettieri et al, "Ex Machina: Analytical platforms, Law and the Challenges of Computational Legal Science" (2018) 10:5 Future Internet 1 at 1—2; Nicola Lettieri & Sebastiano Paro, "Computational Social Science and its Potential Impact Upon Law" (2012) 3:3 European JL & Technology. See also Nicola Lettieri, "Computational Social Science, the Evolution of Policy Design and Rule Making in Smart Societies" (2016) 8:2 Future Internet 1.

[32] Frank Pasquale, "A Rule of Persons, Not Machines: The Limits of Legal Automation" (2019) 87:1 Geo Wash L Rev 1, at 4.

[33] See Goanta, van Dijck & Spanakis, *supra* note 10 at 10—11.

[34] *Ibid.*

[35] See Hartzog et al, *supra* note 6.

[36] See Jeanne Lee, "The Era of the Computer Judge" [1995] U College London Jurisprudence Rev 249.

[37] See Hartzog et al, *supra* note 6 at 1767 ("There is no guiding principle for policy makers and enforcement officers to ensure that automated law enforcement systems fulfill their objective in a way that respects privacy and civil liberties" and sets out to "remedy the dearth of guidance" in the literature).

[38] See e.g. Ian Kerr & Katie Szilagyi, "Asleep at the switch? How killer robots become a force multiplier of military necessity" in Calo, Froomkin & Kerr, *supra* note 6 at 352; Peter Asaro, "Jus nascendi, robotic weapons and the Martens Clause" in Calo, Froomkin & Kerr, *supra* note 6 at 367.

hardware and software, in policing.[39] Hernandez's paper, like other AI legal scholarship in this period, remains more technical and process-oriented,[40] with the primary focus being the *management* of AI technologies in policing. Hernandez does not theorize the governance of AI in policing, nor does he interrogate normative questions about whether AI should be employed in policing at all. The article, in ways, takes the use of AI in policing as inevitable, and directs its focus on competently managing the implications of that development.

This AI legal scholarship, of course, remains important and fruitful today, as governments increasingly incorporate AI and related technologies in government and administration. More contemporary versions of this legal scholarship tackle more sophisticated forms of AI and big data practices by government, and often raise questions of AI *regulation* to ensure sufficient human control and oversight, or to ensure traditional legal and regulatory norms—like the rule of law—are observed. The scholarship is also, therefore, far more normative and theoretical today. For example, Woodrow Hartzog et al.'s 2015 article, *Inefficiently Automated Law Enforcement*, examines the employment of automation in law enforcement and adjudication, and offers suggestions about how best to ensure human oversight, control, and due process.[41] Another example is Cary Coglianese and David Lehr's 2017 article, *Regulating by Robot: Administrative Decision Making in the Machine-Learning Era*, which offers a comprehensive analysis of whether a range of present and future government uses of AI and ML conform to "time-honored doctrines of administrative and constitutional law."[42]

3. AI and the Private Sector

A third traditional or predominant category of legal scholarship examines AI use by industry, organizations, and average consumers.[43] This literature largely emerged in the 1980s, alongside scholarship on AI in government. Scholarship in this area, past and present, typically examines how businesses, organizations, and consumers may use or be impacted by AI. Private law issues are a common topic, examining how contract law, intellectual property, trust law, and torts, among other bodies of law, might accommodate, apply to, or intersect with emerging AI technologies.[44] A classic earlier example of this legal scholarship is L. Thorne McCarty's 1977 article, *Reflections on Taxman: An*

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[39]   5:2 American J of Police 1.

[40]   See Goanta, van Dijck & Spanakis, *supra* note 10 at 11—12.

[41]   See Hartzog et al, *supra* note 6 at 1767.

[42]   105:5 Geo LJ 1147.

[43]   See e.g. Surden, *supra* note 10 at 1334, referring to a similar body of scholarship as focused on "users of AI."

[44]   *Ibid* at 1334—1335.

Experiment in Artificial Intelligence and Legal Reasoning, which describes and analyzes how well an AI computer program handles "taxation of corporate reorganization."[45] This piece is more technical and, again, more concerned with how AI may impact legal reasoning—in this case taxation of companies—rather than broader normative or theoretical questions.

This also remains a timely and important area of legal scholarship. As with other areas of AI legal scholarship, work in this area has become more normative over time, examining issues of AI regulation and impact on legal rights and interests, and remains an important and growing body of work today. An example of contemporary scholarship in this area is David Vladeck's *Machines without Principals: Liability Rules and Artificial Intelligence*, which examines tort liability in light of AI, including challenges posed by autonomous systems.[46] Legal scholarship on how AI may transform the commercial sector or various industries—like driverless cars transforming the automobile industry—is also a common subject matter in this literature. An example is Jessica Brodsky's 2016 article, *Autonomous Vehicle Regulation: How an Uncertain Legal Landscape May Hit the Brakes on Self-Driving Cars*, which examines driverless and autonomous vehicles and argues for a "uniform" federal approach to remove state obstacles from the "design and release of autonomous vehicles."[47] This description, of course, is not exhaustive; there are other issues covered as well, but most could be described as concerning the private sphere—businesses, organizations, or your average consumer.

V. An Emerging Paradigm and Why It Matters

1.   AI Legal Scholarship and its Influences

So, what has influenced *legal scholarship* on AI? The few systematic reviews that have been done on AI legal scholarship have largely focused on how changes in the technology itself have driven shifts in related legal scholarship. It is surely true that technological change is an important and influential factor. Surden, for example, observes that the "history of AI within law roughly parallels the wider arc of AI research more generally."[48] Similarly, Goanta et al., in their extensive recent study, found that increases in the volume of legal commentary on AI tended to coincide with or follow years of an AI "boom," that is, years of AI investment and advancement. There is then a corresponding dearth in periods when development slows—like during the "AI winter."[49]

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45   90:5 Harv L Rev 837 at 837.
46   (2014) 89 Wash L Rev 117.
47   31 BTLJ 851 at 853.
48   *Supra* note 10 at 1327.
49   Goanta, van Dijck & Spanakis, *supra* note 10 at 9—12.

Along the same lines, Frans Coenen and Trevor Bench-Capon's "A Brief History of AI and the Law" also largely analyzes legal scholarship on AI as coinciding or evolving with shifts in the technology over time.[50]

However, AI legal scholarship has not *only* been influenced by technological change alone. The story, as with other areas of technology law scholarship, is far more messy and varied.[51] I want to highlight two additional factors. The first is the tendency for legal scholars to treat AI and related technology—like algorithms and automation—as neutral, objective, and unbiased. No technology is truly neutral. As Langdon Winner argued four decades ago, a technology can create new social, political, or legal possibilities or foreclose them.[52] Winner's famous example was the bridges and overpasses between New York City and Long Island. Though this technology appeared to be neutral, the bridges were all built with low clearance preventing public buses from using the roads.[53] This had the effect of denying low-income populations in the city—often minority communities—that predominantly used public transit from accessing certain parks and other public spaces.[54] This infrastructure technology enabled the rights and interests of certain citizens and marginalized those of others.

In other words, despite appearances of neutrality, the technology was decidedly *political,* as its use, deployment, and implementation were discriminatory, reinforcing existing relationships of power in society and negatively impacting rights and interests. Technologies, Winner concluded, are neither neutral nor unbiased. Yet, despite the work of Winner, and others in socio-technical studies who document and analyze these dimensions of technology, lawyers and legal scholars continue to ignore them and treat technology as neutral.[55] Indeed, too often, AI legal scholarship implicitly assumes that AI technology is neutral and unbiased. Buchanan and Headrick, for instance, do not discuss at all the political dimensions, implications, or biases in the AI technology they seek to apply to legal processes, nor any normative questions related to those issues. Similarly, Hernandez's piece on computing in policing does not address normative concerns with AI, but simply treats the technology as neutral, inevitable, and without inherent biases.

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[50] (Slideshow prepared for the 37th International Conference of the Specialist Group on Artificial Intelligence, Cambridge, 12 December 2017), online (pdf): *University of Liverpool* < cgi.csc.liv.ac.uk/~frans/KDD/Seminars/historyOfAIandLaw_2017-12-12.pdf > [https://perma.cc/L77R-S52N].

[51] See e.g. Meg Leta Jones, "Does Technology Drive Law: The Dilemma of Technological Exceptionalism in Cyberlaw" [2018] U of Illinois J L, Technology & Policy 249 at 250—251.

[52] "Do artifacts have politics?" (1980) 109:1 Daedalus 121 at 123.

[53] *Ibid* at 123—124. There is some debate as to whether these results were intended or not foreseen. See also S Woolgar & G Cooper, "Do Artefacts Have Ambivalence? Moses' Bridges, Winner's Bridges and Other Urban Legends in S&TS" (1999) 29:3 Soc Studies of Science 433.

[54] See Winner, *supra* note 52 at 123—124.

[55] See Kerr & Szilagyi, *supra* note 38 at 352.

However, this is also an assumption in many influential contemporary works as well. For example, Coglianese and Lehr's article, while offering a trenchant analysis of ML and AI in government in relation to legal and constitutional requirements, ignores the politics of AI. Rather, the authors argue that AI will reduce prejudice, bias, and other "negative features of human judgment" and thus *advance* values like fairness and due process.[56] And in more recent legal scholarship on efforts to incorporate AI and automation in legal systems, these technologies are often presented as "neutral" and "value-free" and thus enhancing, rather than detracting, from the integrity of the legal system by reducing bias and human error.[57]

A second tendency in AI legal scholarship is toward anthropomorphic approaches and conceptualizations. Generally, anthropomorphism involves attributing and projecting distinctively "human-like" emotions, mental states, and behavioural traits and characteristics to inanimate objects, animals, and natural phenomena.[58] It is a "well-known fact" that people anthropomorphize AI technologies, that is, they describe, analyze, and conceive of AI technology as "characterized by human traits."[59] AI legal scholarship is no different. Indeed, anthropomorphism, and anthropomorphic reasoning, has recently been documented as afflicting a range of different areas of AI and the law, including tort law, contracts, criminal law, and intellectual property.[60] In fact, even the entrenched *definitions* of AI in law and policy discussions are anthropomorphic. Recently, Kraft et al. conducted an extensive review of AI literature—including technical and policy literature—and found that, while AI researchers favored definitions focused on technical functionality, those in AI policy literature—which included legal scholarship—preferred anthropomorphic definitions that compared AI technology and systems to "human thinking and behaviour."[61] This, too, is an anthropomorphic conceptualization of AI, and quite obviously entrenched in the literature.

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[56] Coglianese & Lehr, *supra* note 42 at 1186.

[57] See Catrina Denvir et al, "The Devil in the Detail: Mitigating the Constitutional & Rule of Law Risks Associated with the use of Artificial Intelligence in the Legal Domain" (2020) SSRN Working Paper at 4—5. See also Linda J Skitka, Kathleen Mosier & Mark D Burdick, "Accountability and Automation Bias" (2000) 52 Int J Human-Computer Studies 701 (discussing the potential for automation to reduce error).

[58] See Arleen Salles, Kathinka Evers & Michele Farisco, "Anthropomorphism in AI" (2020) 11:2 AJOB Neuroscience 88 at 89.

[59] *Ibid* at 88.

[60] See Deepak Somaya & Lav R Varshney, "Embodiment, Anthropomorphism, and Intellectual Property Rights for AI Creations" (Paper delivered at the Proceedings of the 2018 AAAI/ACM Conference on AI, Ethics, and Society, New Orleans, 2-3 February, 2018) at 278, online: *ACM Digital Library* < dl.acm.org/doi/pdf/10.1145/3278721.3278754 > (noting anthropomorphism "emerging" in discussions of "liability, contracts, and criminal law" and also demonstrates the same in "intellectual property").

[61] Krafft, *supra* note 19 at 6.

Indeed, anthropomorphic approaches are apparent in legal scholarship on AI today. This can be easily seen in "legal futurist" scholarship, wherein scholars that advocate for "automating the law" tend to present their work as the next step in the evolution of the legal system—moving beyond human fallibility to unbiased and objective AI and machines.[62] For many legal futurists, "substitutive automation"—like the rise of robot lawyers to replace present-day practicing lawyers—is central to the long-term goal of legal technology.[63] Here, both the descriptive and prescriptive aim—automating and replacing lawyers with AI—is wholly anthropomorphic, projecting onto AI and automation technologies human capabilities as well as behaviours and traits suitable to a complex human task—legal reasoning and practice.[64] As Salles and colleagues write, among the most common forms of anthropomorphism—seen in popular culture and among the general public—is the tendency to conceive of AI as "people-like," including "emotionally, cognitively, and morally."[65] Legal scholarship that makes projections about AI, and conceives of it as carrying out lawyerly tasks and roles (and also one day replacing lawyers entirely), is fully consistent with this common form.

Scholarship on robotic technology particularly tends to rely on anthropomorphic reasoning.[66] Indeed, Coglianese argues that we are "closer than we think" to a world of "regulation by robot" where the "machinery of government" is entirely carried out by "machines" rather than "human public servants."[67] This is a world where bias, prejudice, and human error are eliminated while also saving money.[68] Interestingly, AI neutrality and anthropomorphic projection are again linked here, as they were in legal futurist scholarship. Like legal futurists advocating for the replacement of lawyers, these sentiments project complex human designs, traits, and professional capabilities, as well as human aims, onto the technology, making the technology a seemingly valid option for replacing public servants and cost efficiencies. And a *justification* for that link is the greater neutrality and objectivity the technology offers.

So why does this matter? Ignoring the politics of AI, and assuming it and related technologies like algorithms, ML systems, and automation—and the big

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62 Pasquale, *supra* note 32, at 4 (see works cited).
63 Pasquale, *supra* note 32, at 44.
64 See Melissa Love Koenig, Julie A Oseid & Amy Vorenberg, "Ok Google, Will Artificial Intelligence Replace Human Lawyering" (2019) 102:4 Marq L Rev 1269 at 1276.
65 Salles, Evers & Farisco, *supra* note 58 at 90—91.
66 See Kerr & Szilagyi, *supra* note 38 at 333. This has been also documented in discussions of AI in military uses: see e.g. Peter Asaro, "Jus nascendi, robotic weapons and the Martens Clause" in Calo, Froomkin & Kerr, *supra* note 6 at 367.
67 Cary Coglianese, "Robot Regulators Could Eliminate Human Error" (5 May 2016), online: *San Francisco Chronicle* < www.sfchronicle.com/opinion/article/Robot-regulators-could-eliminate-human-error-7396749.php > .
68 *Ibid.*

data systems used to design, build, and power these systems—are neutral and objective can cause serious harms. AI technologies are often promoted in both government and industry as a means to achieve more objective and unbiased decision making, like hiring and employment or in making decisions about allocating government benefits to people.[69] But the reality is that these technologies can be corrosive to fairness,[70] privacy,[71] and human rights,[72] and actually have "the potential to reproduce inequality on a massive scale."[73]

And anthropomorphic approaches can also be harmful. Scholars like Neil Richards and William Smart have argued that such anthropomorphic approaches in law can be "dangerous."[74] They can, for example, lead us to treat AI as possessing agency, rather than as mere tools, leading to "grave mistakes" of law and policy, like ascribing less legal and regulatory responsibility to the people designing and controlling the AI technology.[75] Or, if ignored or assumed, anthropomorphic AI design can also be used to mislead and harm people, like fooling people into disclosing more information than they would otherwise, causing privacy harms.[76]

2. A New Paradigm of Critical AI Legal Scholarship

Thankfully, there is a growing body of contemporary legal scholarship on AI that more directly challenges these assumptions of neutrality and objectivity in AI technology, and which is also more cognizant of how anthropomorphic approaches or reasoning can, if not moderated, lead to harmful results. Arguably, earlier works like Michael Gemignani's 1984 article, *Laying Down the Law to Robots*, or Lawrence Solum's oft-cited 1992 piece, *Legal Personhood for Artificial Intelligences*, are precursors to this emerging body of literature. Gemignani's essay was a sustained critical examination of the challenges robots pose to law,[77] while Solum uses an issue in trust law—whether an artificial intelligence could "serve as a trustee"—to pursue an in-depth analysis on the

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[69] See Solon Barocas & Andrew D Selbst, "Big Data's Disparate Impact" (2016) 104 Cal L Rev 671 at 671; Stephanie Bornstein, "Antidiscriminatory Algorithms" (2018) 70:2 Ala L Rev 519 at 530.

[70] See Bornstein, *supra* note 69 at 522, n 12.

[71] *Ibid.*

[72] *Ibid* at 522, n 13.

[73] *Ibid* at 522—523.

[74] See Neil Richards & William Smart, "How should we think about robots?" in Calo, Froomkin & Kerr, *supra* note 6 at 18. See also Surden, *supra* note 10 at 1306 ("Much has been written recently about artificial intelligence (AI) and law").

[75] Richards & Smart, *ibid.*

[76] See Margot E Kaminski et al, "Averting Robot Eyes" (2017) 76:4 Md L Rev 983 at 997; Brenda Leong & Evan Selinger, "Robot eyes wide shut: Understanding dishonest anthropomorphism" (Paper delivered at the Conference on Fairness, Accountability and Transparency, Atlanta, 29-31 January 2019) at 299, online (pdf): *ACM Digital Library* < dl.acm.org/doi/10.1145/3287560.3287591 >.

[77] 21 San Diego L Rev 1045.

deeper normative question of legal personhood for AI.[78] Solum's article, for instance, foreshadows debates about "robots' rights" today.[79]

However, the new and emerging body of legal scholarship on AI is still qualitatively different in many ways from these works, as it is often informed by insights from science and technology studies (STS) and not socio-technical studies and social and critical theory, including critical race and feminist approaches. Examples of such works include Safiya Noble's *Algorithms of Oppression: How Search Engines Reinforce Racism*[80] and Ruha Benjamin's *Race After Technology: Abolitionist Tools for the New Jim Code*,[81] which both offer different but similarly compelling and insightful examinations of how algorithms, AI, and code perpetuate racism, racial stereotypes, discriminatory norms, and unequal treatment. Works by Ifeoma Ajunwa, Pauline Kim, and Salon Barocas on the privacy and discriminatory implications of algorithms and big data in a range of contexts likewise form part of this important new body of work.[82]

Along similar critical lines, Virginia Eubank's book, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*,[83] and Deirdre Mulligan and Kenneth Bamberger's article, *Saving Governance-by-Design*,[84] both expressly rely on STS, including the work of Winner, for insights about the nature and social impact of AI and related technologies, like automation and algorithms. And the volume, *Robot Law*, with contributors like Ryan Calo, Ian Kerr, Kate Darling, Neil Richards, and Kristen Thomasen, all likewise offer critical perspectives on AI and robotics and the law, including critiquing anthropomorphic premises and approaches in AI law scholarship.[85] All of these works challenge the notion of AI technology as neutral, objective, and anthropomorphic—a premise assumed or simply not interrogated in much of traditional AI legal scholarship.

VI. Conclusion

With new advances in artificial intelligence and related emerging technologies, legal scholarship on AI has exploded in recent years. Yet,

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[78] 70:4 NCL Rev 1231 at 1231—1232.

[79] See e.g. David Gunkel, *Robot Rights* (Cambridge, MA: MIT Press, 2018).

[80] (New York: NYU Press, 2018).

[81] (Cambridge: Polity Press, 2019).

[82] See e.g. Ifeoma Ajunwa, "Age Discrimination by Platforms" (2019) 40 BJELL 1; Pauline T Kim, "Auditing Algorithms for Discrimination" (2017) 166 U Pa L Rev 189; Pauline T Kim, "Data-Driven Discrimination at Work" (2017) 58 Wm & Mary L Rev 857; Barocas & Selbst, *supra* note 69.

[83] (New York City: St Martin's Press, 2018).

[84] (2018) 106:3 Cal L Rev 697 at 704.

[85] See e.g. Neil Richards & William Smart, "How should we think about robots?" in Calo, Froomkin & Kerr, *supra* note 6 at 18—19.

despite calls for a shift in legal research to examine more systematically law's "diverse practice areas and functions" and to systematize related scholarship, there have been very few systematic reviews of legal scholarship on AI. This article has aimed to help fill this void, introducing and systematizing the three traditional areas of inquiry in AI legal scholarship—all three of which remain timely and important areas of legal research and scholarship today. However, I have also introduced and heralded a new and emerging body of AI law literature that critically interrogates key assumptions about AI technology that have so far had a heavy impact on legal scholarship on AI. This new body of work is more diverse—both in its range of contributors and in the theory that they rely on for their analysis—and already is providing powerful new insights into AI and its law and policy implications.