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# Techno-Utopianism for Lawyers?: Abdi Aidid & Benjamin Alarie, *The Legal Singularity* (2023)

Wolfgang Alschner\*

Legal professionals seem to have a sixth sense for the risks involving new technologies, including artificial intelligence (AI). From concerns over data privacy and opaque black-box algorithms to the potential of biased data perpetuating inequities—lawyers and legal academics are quick to spot the dangers flowing from unfettered technological progress. This acute awareness of risks, however, tends to blind the legal community to the opportunities presented by AI. Lawyers are notoriously slow to integrate new technologies into their practice, and apart from the trailblazing work of thought leaders like Richard Susskind,<sup>1</sup> scholarship on the promises of technology for law is rare or technical in nature.

Abdi Aidid and Benjamin Alarie's book, *The Legal Singularity*, is set to change that.<sup>2</sup> In well-written prose that is accessible to a wide readership, the book charts a positive vision of how technology can fundamentally transform law for the better.

The book starts from the premise that the legal system is failing to deliver.<sup>3</sup> Even in the richest and most sophisticated legal systems, access to justice remains an aspiration rather than a reality. Legal services price most

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1 Richard Susskind, *Tomorrow's Lawyers: An Introduction to Your Future*, 2nd ed (Oxford: Oxford University Press, 2017).

2 Abdi Aidid & Benjamin Alarie, *The Legal Singularity: How Artificial Intelligence Can Make Law Radically Better* (Toronto, Buffalo & London: University of Toronto Press, 2023).

3 *Ibid* at 28.

citizens out of the market. The law remains unintelligible for non-lawyers. Complexity and ambiguity compound these challenges by making the law hard to navigate, even for experts. As a result, the law fails to achieve one of its most basic functions: to provide predictability so that its subjects can tell right from wrong and adjust their behaviour accordingly.<sup>4</sup>

To Aidid and Alarie, the solution lies in *The Legal Singularity*. The idea behind the legal singularity is perfect legal predictability. As Aidid and Alarie put it, “law will reach functional completeness, in the sense that practically any legal question will have an instantaneous and just resolution.”<sup>5</sup> No longer will the public be at the whims of a small club of experts who struggle to consistently apply vague law to specific circumstances after the fact. Instead, in the legal singularity, the law will be knowable in advance and understandable by everyone (which is what the authors call “universal legal literacy”).<sup>6</sup>

This fundamental transformation will be achieved with the help of technology. Ajay Agrawal and colleagues have likened AI algorithms to “prediction machines.”<sup>7</sup> Aidid and Alarie build on that idea and point to AI’s potential for better legal predictions as a generational opportunity to fundamentally transform legal institutions.<sup>8</sup> On the path towards legal singularity, they cite a range of ways in which predictive technology can help transform the judiciary: from improving legal research to enhancing discovery and fact-findings.<sup>9</sup> Judges will thereby be able to render more decisions and of better quality in terms of accuracy, consistency, and justice. The government will benefit, too, with AI helping lawmakers craft and draft better legislation.<sup>10</sup>

Aidid and Alarie offer a few specifics on how the legal system will function once we achieve the legal singularity. They leave little doubt, however, that they imagine a fundamental transformation of current norms and institutions. Drawing on work by Anthony J. Casey and Anthony Niblett,<sup>11</sup> they see a looming shift from unspecific rules and ambiguous standards

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4 *Ibid* at 74.

5 *Ibid* at 8.

6 *Ibid* at 156.

7 Ajay Agrawal, Joshua Gans & Avi Goldfarb, *Prediction Machines: The Simple Economics of Artificial Intelligence* (Boston: Harvard Business Review Press, 2018).

8 Aidid & Alarie, *supra* note 2 at 9.

9 *Ibid* at 125–35.

10 *Ibid* at 175–81.

11 Anthony J Casey & Anthony Niblett, “The Death of Rules and Standards” (2017) 92:4 *Ind LJ* 1401.

to dynamic rules (e.g. speed limits adjusted based on traffic conditions) and “microdirectives” that personalize rules (e.g. speed limit based on a specific driver’s experience).<sup>12</sup> On courts, Aidid and Alarie speculate about a transition towards distributed decision-making where a mix of systems, some fully automated and some crowdsourcing human intelligence, will render millions of decisions and replace today’s judiciary.<sup>13</sup>

*The Legal Singularity*, however, is not a work of legal science fiction or fanciful speculation. It is rather a thoughtful, well-researched roadmap that invites readers to consider, as the subtitle puts it, a “radically better” future of law. It sketches out the trajectory of legal systems from their analogue history to their computational future and carefully evaluates the implications of this transition from the perspectives of judges, governments, and consumers.

### **KICKSTARTING AN OPTIMISTIC, INTERDISCIPLINARY CONVERSATION ON THE FUTURE OF LAW**

The book makes two important contributions. First, it provides a hopeful and encouraging account of how technology has the potential to change the law for the better. That positive vision will captivate the imagination of a wide readership. However, it is also deeply needed. Technology is advancing quickly. The legal community risks being sidelined if it sticks its head in the sand and ignores the changes underway. The book encourages legal professionals to shape that future.

While embracing the potential of AI, Aidid and Alarie are careful to take concerns about the technology’s negative impact seriously. They acknowledge criticisms levied at the legal singularity and provide thoughtful retorts.<sup>14</sup> Moreover, in their last chapter on ethical problems in legal AI, they introduce a useful framework for mapping concerns.<sup>15</sup> They distinguish between problems that are rooted in technology (like omitting crucial data when building predictive algorithms) and problems rooted in society but magnified through technology (like racial bias in police arrests that then inform predictive policing). Societal problems, they argue, need

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<sup>12</sup> Aidid & Alarie, *supra* note 2 at 88–92.

<sup>13</sup> *Ibid* at 140.

<sup>14</sup> *Ibid* at 93–117.

<sup>15</sup> *Ibid* at 188–98.

to be fixed at their source and should not be redefined as technical issues that could be addressed by manipulating input data.<sup>16</sup>

The second contribution of the book is that it weaves distinct, interdisciplinary strands of scholarship together in a gripping narrative and brings them to the attention of a broader legal audience. For example, computer scientists currently obsess over the “Alignment Problem”: a risk that an AI’s actions may not be aligned with the intentions and values of its human creator.<sup>17</sup> The “Paperclip Maximizer” thought experiment is a well-known example where an AI tasked with making as many paperclips as possible consumes all the world’s resources and destroys humanity in its single-minded quest to maximize paperclips. Law, write Aidid and Alarie, suffers from its own alignment problem.<sup>18</sup> The legal system risks being out-of-step with the needs and values of society, especially in an age of rapid change that requires adaptive institutions. *The Legal Singularity* is a call to action to help the law keep pace with and thrive in an ever-changing world.

## COMPUTATIONAL LAW IS MORE THAN PREDICTIVE ALGORITHMS

While the book elegantly weaves insights from diverse disciplines together to form a cogent narrative, the central building blocks of the book, the idea of “computational law” and “the legal singularity” seem, like the current legal system the authors critique, strangely underspecified.

Take the idea of computational law first. Following the era of analogue law (think of law libraries and paper-based information) and of digital law (think of electronic indexing and searchable legal information systems), Aidid and Alarie suggest that the age of computational law fueled by advances in artificial intelligence, notably machine learning and natural language processing, has begun and has brought about technology that can perform tasks hitherto reserved to human lawyers.<sup>19</sup> To Aidid and Alarie, the most prized of these tasks mastered by AI, and central to the idea of the singularity, is the task of prediction.<sup>20</sup> However, that focus risks exaggerating while also understating today’s computational law revolution.

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<sup>16</sup> *Ibid* at 194–96.

<sup>17</sup> Brian Christian, *The Alignment Problem: Machine Learning and Human Values* (New York: WW Norton, 2021).

<sup>18</sup> Aidid & Alarie, *supra* note 2 at 20.

<sup>19</sup> *Ibid* at 43–59.

<sup>20</sup> *Ibid* at 9, 64, 75, 91, 99.

First, computational law is broader than predictive algorithms. Ryan Whalen suggests in *Computational Legal Studies* that all “computational methods in legal analysis” fall under computational law’s umbrella.<sup>21</sup> Similarly, the AI and Law community has long distinguished between logic-based systems and data-driven systems.<sup>22</sup> Logic-based systems hard-code human intelligence into rigid rules. Data-driven systems employ statistical algorithms, such as probabilistic machine learning, to detect latent patterns in unstructured data. While Aidid and Alarie hone in on data-driven methods by rightly noting the potential of machine learning algorithms to perform predictions, they confusingly introduce their analysis by borrowing from Jeffery Atik and Valentin Jeutner to define computational law as “law in algorithmic form...that proceed[s] through *logical* processes.”<sup>23</sup>

This confusion of logic and data-driven approaches is problematic because each approach offers distinct advantages and drawbacks. Logic-based approaches promise absolute certainty and predictability and provide clear legal answers to legal problems.<sup>24</sup> For that reason, legal scholars have long been drawn to them. Since the 1980s, scholars have been building expert systems that distill messy expert knowledge into logical decision trees.<sup>25</sup> More recently, governments have been attracted to the idea of rules-as-code whereby laws are translated into computer code that can be executed to model or enforce legislation.<sup>26</sup> The Canadian government has run rules-as-code trial projects for a number of years.<sup>27</sup> In the private sector, the idea of smart contracts that are automatically enforceable is based on similar premises.<sup>28</sup>

Logic-based approaches are well aligned with the idea of a predictable and fully specified law, which is at the heart of Aidid and Alarie’s legal singularity. It is all the more surprising that the approach receives so little

21 Ryan Whalen, ed, *Computational Legal Studies: The Promise and Challenge of Data-Driven Research* (Cheltenham, UK & Northampton, Mass: Edward Elgar Publishing, 2020) at 9.

22 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” (2019) 47:1 Fla St UL Rev 29 at 33–34.

23 Aidid & Alarie, *supra* note 2 at 67 [emphasis added].

24 Denvir et al, *supra* note 22 at 38.

25 Richard E Susskind, “Expert Systems in Law: A Jurisprudential Approach to Artificial Intelligence and Legal Reasoning” (1986) 49:2 Mod L Rev 168–94.

26 Matthew Waddington, “Research Note. Rules as Code” (2020) 37:1 Law in Context 179.

27 Government of Canada, “Rules as Code, Part 1 (DDN2-V16)” (27 November 2020), online: <[www.cspc-efpc.gc.ca/video/rules-as-code-1-eng.aspx](http://www.cspc-efpc.gc.ca/video/rules-as-code-1-eng.aspx)>.

28 Harry Surden, “Computable Contracts” (2012) 46 UC Davis L Rev 629, online: <[scholar.law.colorado.edu/faculty-articles/148/](http://scholar.law.colorado.edu/faculty-articles/148/)>.

attention in the book. Perhaps that is because its downsides are just as important as its upsides: it is hard, laborious, and often impossible to craft logical rules to capture the often-messy nature of the law.<sup>29</sup> Conversely, probabilistic algorithms, which Aidid and Alarie favour, are well equipped to deal with the law's messiness aggregating thousands of unstructured texts into statistical relations.

At the same time, probabilistic algorithms come with their own problems. Most importantly, they are, in fact, bad at providing predictability. Aidid and Alarie's beef with the current system legal system is that the law is underspecified.<sup>30</sup> Participants in the legal system do not know what is asked of them because the law is vague, complex, and unintelligible. They have recourse to lawyers, but lawyers can offer at best what may be called "soft" predictability—their best guess at how courts will decide an issue, *i.e.* a probability. Aidid and Alarie's legal singularity, in contrast, provides "hard" predictability, *i.e.* certainty, because the law is fully specified.

However, all that predictive algorithms can provide is "soft" predictability, too. Machine learning algorithms are probabilistic, not deterministic. They may correctly classify a worker as an independent contractor in four out of five cases, but they are not providing certainty or something close to "effective and accurate legal prediction."<sup>31</sup> Aidid and Alarie themselves rightfully point out towards the end of the book that predictive algorithms may not have access to all legally relevant information, which undermines their predictive prowess.<sup>32</sup> It is therefore unclear how far probabilistic algorithms can get us to the fully predictable legal system imagined by the legal singularity.

However, irrespective of their value for *prediction*, machine learning and natural language processing have enormous benefits for *description*. Aggregating large amounts of information efficiently can transform legal research and analysis.<sup>33</sup> It is also an area where lawyers can live with higher error margins. When human lawyers, rather than the AI, are the

29 Harry Surden, "Machine Learning and Law Essay" (2014) 89:1 Wash L Rev 87 at 94.

30 Aidid & Alarie, *supra* note 2 at 76.

31 *Ibid* at 73–75.

32 *Ibid* at 197.

33 Urška Šadl & Henrik Palmer Olsen, "Can Quantitative Methods Complement Doctrinal Legal Studies? Using Citation Network and Corpus Linguistic Analysis to Understand International Courts" (2017) 30:2 Leiden J Intl L 327 ("quantitative methods, such as corpus linguistics and citation network analysis, ensure the reproducibility, generalizability, and empirical validity of doctrinal studies. They add to the transparency of legal methodology while substantially clarifying the legal method. They can provide empirical evidence to validate hunches and prove legal intuitions correct. Furthermore, they effectively address

decision-makers, they can then counter flaws stemming from probabilistic uncertainty through other information sources. A better empirical and doctrinal understanding of the law is likely the more consequential impact of data-driven technologies than the often-flawed guesswork algorithms can provide, at least at this early stage of AI deployment.

Finally, while AI is comparatively bad at prediction in the legal domain, it excels at prediction outside of it, especially in environments where data is abundant and easily available. In fact, many of the use cases Aidid and Alarie describe in the book, from drawing up instantaneous speed limits based on traffic conditions to more efficient fact-finding, deal with predictions of *real-world* data and not *legal* data. Traffic data, for instance, is readily available, complete, and observable, whereas legally-relevant data is often unavailable, incomplete, and unobservable.<sup>34</sup> It would have been useful if the book were more explicit about differences between legal and non-legal data prediction given that the case for the widespread use of the former is more robust than for the latter.

None of these points undermine Aidid and Alarie's ultimate argument. However, accounting for these distinctions would have strengthened an already compelling case. Acknowledging the more modest role probabilistic algorithms may play, describing the law rather than predicting its outcomes, whilst highlighting the importance of predictive analytics for real-world data would have shielded the book from criticism of exaggerating the power of predictive algorithms. A deeper discussion of the role logic-systems can play, like rules-as-code, would illustrate how the legal singularity may operate in areas suitable for detailed specification.

## LIFE IN THE SINGULARITY: HUMANS AND MACHINES

Aside from the concept of computational law, the second idea in need of further unpacking is the legal singularity itself. Although Aidid and Alarie are careful to distinguish their notion from the technology singularity popularized by Ray Kurzweil,<sup>35</sup> the similarities shine through but its implications are not systematically discussed. As Meghan O'Gieblyn shows in

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the limitations of traditional legal scholarship, including a lack of precision, subjectivity, a surplus of anecdotal evidence, and a tendency to succumb to herd behavior" at 330).

34 Wolfgang Alschner, "AI and Legal Analytics" in Florian Martin-Bariteau & Teresa Scassa, eds, *Artificial Intelligence and the Law in Canada* (Ottawa: LexisNexis Canada, 2021) (noting that legal data is scarce).

35 Aidid & Alarie, *supra* note 2 at 10; Ray Kurzweil, *The Singularity Is Near*, illustrated ed (Penguin Books, 2006).



her excellent book, *God, Human, Animal, Machine*, the singularity idea is linked to the philosophical movement of transhumanism.<sup>36</sup> The intellectual current, popular in Silicon Valley, foresees a merging of “man and machine” to acquire new capabilities and transcend the limitations of the human condition. The legal singularity therefore raises fundamental questions about the relationship between humans, machines, and the law.

Transhumanist ideas occasionally shine through in the book. Aidid and Alarie briefly discuss the potential of brain-machine interfaces to augment the cognitive capabilities of judges.<sup>37</sup> Similarly, the “collaborative network populated by humans, humans with AI, and pure AI systems” for judging has a transhumanist ring.<sup>38</sup> Apart from these few more futuristic excursions, however, large parts of the book read rather conventional. The chapter reviewing applications of AI in judging consists of a laundry list of ways technology is already being used in the judiciary.<sup>39</sup> The chapter on AI in government discusses how technology can enhance lawmaking and enforcement, but only begins to scratch the surface of how the government, which sits on more legal data than any other stakeholder, may be shaped through AI.<sup>40</sup>

Most surprising for a 2023 release, the book makes scarce reference to generative artificial intelligence powered by large language models and popularized through ChatGPT. Today’s most transformative technology promises to accelerate the transition to the legal singularity and may do more to bring about universal legal literacy than anything that has come before it. Aidid and Alarie liken the law to “credence goods”—goods and services whose price and quality cannot be assessed by the consumers which leaves experts with specialized knowledge in a position of market power.<sup>41</sup> They speculate that while in medicine the gulf between patients and doctors remains unsurmountable, advances in technology may bridge the gulf between lawyers and laypeople.

The marvel of large language models is that they are likely to bring about the end of all credence goods. Models like GPT-4 can generate recipes or write poems, but they can also give cogent medical and legal

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36 Meghan O’Gieblyn, *God, Human, Animal, Machine: Technology, Metaphor, and the Search for Meaning* (Anchor, 2022).

37 Aidid & Alarie, *supra* note 2 at 136.

38 *Ibid* at 140.

39 *Ibid* at 119–24.

40 *Ibid* at 175–76.

41 *Ibid* at 151.

advice. Famously, GPT-4 achieved a passing grade on the U.S. bar exam.<sup>42</sup> Notwithstanding current growing pains (so-called “hallucinations” occasionally generate incorrect information), large language models promise to radically lower the gulf between experts and novices.<sup>43</sup> Machine-mediated universal literacy is not only possible in law but across many domains, and is likely only a few years away. It would have been illuminating had the authors been able to factor in these recent developments to discuss the fusion of human and machine expertise.

More generally, it would have been fascinating to see the human-machine interactions likely to occur in the singularity spelled out further. Aidid and Alarie’s ideas of universal legal literacy, combined with an optimally specified law, promise radical disintermediation. There seems to be little use for traditional lawyers or judges as the legal singularity cuts out the “middleman.” Even more importantly, it is easy to imagine the legal singularity cutting out clients, too. The rules of the future may be destined for machines rather than humans. A factory may regulate its emissions based on dynamic rules-as-code if it is enforced automatically by governmental algorithms without any human intervention. Or, if transhumanists have it their way, there may not be a meaningful distinction between us and the machines we use. Whatever the future holds, the idea of the singularity begs the question of who the law of the future will be for, and how the relationship between humans and machines will shape and be shaped through the legal singularity.

## LAWYERS AS MASTERS OF THEIR OWN DESTINY

Good books raise as many questions as they answer. That is true for *The Legal Singularity*. It is a book that inspires the imagination and calls on the legal community to seize the opportunities presented by technology. It will rightfully draw praise and inspire critical reflections for the years to come. The book also leaves ample opportunities to add to the future path of the law. From governments writing rules-as-code to large language models democratizing access to legal expertise, many exciting developments that may bring us closer to the legal singularity remain yet to be fully explored.

42 Daniel Martin Katz et al, “GPT-4 Passes the Bar Exam” (2024) *Philosophical Transactions Royal Society A* 382, online: <[royalsocietypublishing.org/doi/10.1098/rsta.2023.0254](https://royalsocietypublishing.org/doi/10.1098/rsta.2023.0254)>.

43 Fabrizio Dell’Acqua et al, “Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality” (2023) Harvard Business School, Working Paper 24-013.

Aidid and Alarie provide a refreshingly positive vision of how technology can transform the law and they deserve much credit for helping today's lawyers to imagine tomorrow's law.