

FEDERALISM IN THE ALGORITHMIC AGE

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NEW LAWS OF ROBOTICS: DEFENDING HUMAN EXPERTISE IN THE AGE OF AI. BY FRANK PASQUALE. HARVARD: BELKNAP PRESS. 2020. PP. 344. \$29.95.

INTRODUCTION

The robots will not be pleased with Frank Pasquale. In *New Laws of Robotics*, the Brooklyn Law professor outlines two possible futures that can emerge from a growing conflict between human and robotic thought. The first is a future of robotic dominance. In that future, decisions traditionally made by human professionals (*e.g.*, who goes to jail, what medicines are prescribed, and what news gets published) are decided by robots powered by artificially intelligent algorithms. The second future offers robots a less-favored role in the ordering of human affairs. Pasquale earns the displeasure of our would-be robotic overlords by outlining the path to this second future, where human professional judgment is enhanced by (but not replaced with) robotic systems.

The second future may seem too obvious a preference to merit a book-length discussion. Humans, after all, might be presumed to instinctively work towards a future where human thought prevails. But as Pasquale observes, economics make the first future appear attractive—at least in the short term (p. 172).¹ Robots have no need for vacation days, lunch breaks, or even sleep. Robots do not call in sick, nor do they ask for pay raises. Given as much, companies will increasingly have short-term incentives to replace costly human labor with less costly robotic systems. Cash-strapped governments face a similar calculus, too. It may one day be cheaper, for example, for governments to reimburse a fleet of robotic caregivers than a team of human nurses.

Of course, succumbing to the short-term incentives afforded by automation can lead to disastrous societal effects in the long run. Companies may find it difficult to sell their widgets if would-be consumers have been forced out of work on a widespread basis (pp. 188–89). And governments might find their fiscs emptier yet if citizens with taxable wages are replaced by tax-deductible machines (p. 26).² Thankfully,

[†] The views expressed in this Review are mine alone, and should not be attributed to my employer. I would like to thank Frank Pasquale, Matthew P. Sappington, and the editors of the *Duke Law & Technology Review* for helpful feedback on earlier drafts of this Review.

¹ All in-text citations in this Review are citations to *New Laws of Robotics*.

² See also Ryan Calo, *Artificial Intelligence Policy: A Primer and Roadmap*, 51 U.C. DAVIS L. REV. 399, 426–27 (2017) (“Robots do not pay taxes. . . .

humans have developed a system (*i.e.*, political governance) capable of producing outcomes (*i.e.*, laws) that can alter short-term incentives to advance society's long-term goals.

Thus enters Pasquale's four new laws of robotics.³ Collectively his laws aim to structure how human professionals incorporate artificially intelligent robots into their workplaces (pp. 3, 12–13). The goal is to ensure that professional judgment is exercised by disperse sets of humans with localized knowledge, not robots powered by algorithms that are centrally developed and controlled (pp. 4, 178). Pasquale's four new laws of robotics provide as follows:

1. Robotic systems and artificial intelligence ("AI") should complement professionals, not replace them (p. 3);
2. Robotic systems and AI should not counterfeit humanity (p. 7);
3. Robotic systems and AI should not intensify zero-sum arms races (p. 9); and
4. Robotic systems and AI must always indicate the identity of their creators, controllers, and owners (p. 11).

Pasquale applies these four laws in dozens of case studies. Each case study illustrates the harms his laws are intended to prevent—*i.e.*, the harms associated with centralizing professional judgment in the small group of roboticists and computer scientists responsible for developing and controlling advanced decision-making algorithms.

The education industry offers one such case study. In the near future, teachers may be required to cede decision-making authority to algorithms capable of running hyper-efficient classrooms (p. 176). By reviewing classroom video from all over the world, a centralized algorithm could analyze student behavior (such as puzzled looks and questions) to craft the perfect lecture (pp. 60, 75). One can imagine the benefits of utilizing such an algorithm to improve educational outcomes—particularly for students who might not otherwise have access to premiere

[P]olicymakers will have to figure out how to keep the lights on in the absence of . . . income taxes.”)

³ Pasquale's "new laws" are a play on the three laws of robotics proposed in 1942 by science fiction writer Isaac Asimov (p. 2). In short, Asimov's three laws provide: (1) a robot may not injure a human; (2) a robot must obey a human's order, unless it conflicts with the first law; and (3) a robot must protect its own existence, unless it conflicts with the first or second law. ISAAC ASIMOV, *Runaround*, in I, ROBOT 41, 53 (1950).

educators. But harnessing those benefits requires subjecting students to increased surveillance. And students, cognizant of such surveillance, might change their behavior in unhelpful ways—failing to ask clarifying questions or express confusion, lest the algorithm label them “problem kid[s]” unfit for certain colleges or occupations (p. 74). Further, centralized algorithms might fail to appreciate peculiarities for which human teachers readily account. Where an algorithm might schedule an afternoon multiplication lesson, a human teacher might recognize the need to reschedule the lesson when unseasonably warm weather makes it difficult for fidgety students to concentrate (p. 6).

Pasquale’s book is critical reading for those interested in addressing the harms and benefits of the coming algorithmic age.⁴ But if there is a critique to be made, it is that Pasquale offers little detail as to *who* is to enforce his new laws of robotics. Moreover, when he does offer detail, he appears to rely too heavily on federal regulators.⁵ In suggesting, for example, that his laws be enforced by “independent agencies,” such as those created in “the New Deal,”⁶ the book does not fully account for the critical role state governments play in shaping workplaces and professional responsibilities.

In this Review, I argue that while *New Laws of Robotics* presciently outlines the harms associated with centralizing *professional* decision-making authority, it remains silent (at best) as to the harms associated with centralizing *governmental* decision-making authority. This is notable because the two categories of harms share much in common.

Like how centralizing professional judgment can create an unacceptable “mental monoculture” (p. 178), so too can centralizing governmental authority. Notable efforts (such as Pasquale’s) to prevent the centralization of professional judgment should be careful to avoid an unnecessary centralization of governmental authority. Any success in maintaining a world of disperse sources of professional knowledge will be short-lived if it comes at the cost of policing professionals with single sets of requirements established by the federal government.

⁴ See Jack M. Balkin, *The Three Laws of Robotics in the Age of Big Data*, 78 OHIO ST. L.J. 1217, 1219 (2017) (referring to a coming “society organized around social and economic decision-making by algorithms, robots, and [artificially intelligent] agents, who not only make the decisions but also, in some cases, carry them out”).

⁵ See *infra* Part I.B.

⁶ Eric Allen Been, *Asimov’s Three Laws Helped Shape A.I. and Robotics. We Need Four More*, ONEZERO (Nov. 17, 2020), <https://onezero.medium.com/its-time-to-add-4-new-laws-of-robotics-8791139cdb11> (interview with Frank Pasquale discussing *The New Laws of Robotics*).

I. TWO CATEGORIES OF HARMS

In Part I of this Review, I address two categories of harms. First is the category attributable to a centralization of professional decision-making authority. Second is the category attributable to a centralization of governmental decision-making authority.

Pasquale dutifully describes the first category, which can arise when professional decision-making authority is shifted from disperse sets of human professionals to algorithms that are centrally developed and controlled. But Pasquale does not account for the second category of harm, which can arise when governmental decision-making authority is shifted from state governments to the centralized federal government. In failing to address the harms associated with centralized governmental authority, Pasquale risks undermining his arguments regarding the harms associated with centralized professional authority.

A. Centralized Professional Decision-Making Authority

Pasquale frames his discussion of the harms associated with a future of centralized robotic decision-making by outlining the economic incentives that might bring such a future into fruition.⁷ In “[f]ield after field,” employers face a temptation to replace costly human workers with relatively cheaper robots (p. 26). Replacing human labor can provide some benefits—namely, cheaper services (*id.*). “If I can replace my dermatologist with an app and my children’s teachers with interactive toys,” Pasquale writes, “I have more money to spend on other things” (*id.*). And “[t]he same goes for public services; a town with robot police officers or a nation with drone soldiers may pay less taxes to support their wages and health care” (*id.*).

But those benefits come with costs. For one, “doctors, teachers, soldiers, and police are all potential purchasers of what others have to sell. And the less money that they have, the less money I can charge them” (*id.*). When policymakers consider these economic factors in the aggregate, “mass unemployment” can become a major concern (p. 2). Aiming to balance the potential costs and benefits of cheap robotic labor, Pasquale offers a middle path: Some (but not all) jobs should be saved from automation (p. 4). His argument focuses on the “professions,” which he contends should be reserved for humans.

The vast amount of literature covered by Pasquale makes a clear

⁷ In highlighting these economic incentives, Pasquale builds off of his earlier work. See, e.g., Frank Pasquale, *Data-Informed Duties in AI Development*, 119 COLUM. L. REV. 1917, 1917 [hereinafter *Data-Informed*] (describing incentives “to substitute [AI] and robotics for human labor”).

definition of “profession” unavailable.⁸ He does offer a working definition of the term, which is “capacious, and . . . include[s] many unionized workers” (p. 5). Pasquale’s broad definition of “profession” thus includes traditional professionals—such as lawyers, doctors, and engineers—as well as new classes of professionals, each capable of “preserv[ing] certain human values in health, education, journalism, policing, and many other fields” (pp. 22, 171). Readers are left with the impression that, at bottom, determining whether a particular occupation qualifies as a “profession” requires determining whether the occupation amounts to a “fulfilling vocation[.]” (p. 4).

For Pasquale, human professionals are worth preserving from automation because they “alleviat[e] classic tensions between technocracy and popular rule” (*id.*). “The bargain at the core of professionalism,” he writes, “is to empower workers to have some say in the organization of production, while imposing duties upon them to advance the common good” (*id.*). Thus, “local professionals” help promote important societal benefits (p. 25). Throughout the book, Pasquale expresses his concern that the societal benefits he attributes to human professionals may be undermined should professional decision-making authority come to be exercised by centralized algorithms.

The fundamental problem with professional automation, from Pasquale’s perspective, is that algorithms seek to simplify complicated professional judgments that are unfit for simplification (pp. 23–24). “There is too much uncertainty in ordinary medical practice,” for example, “to reduce it all to algorithms, which are commonly derided as ‘cookbook medicine’” (p. 25). It would be better, he argues, to have different doctors exercise independent professional judgments informed by growing professional consensus (pp. 25, 44). More broadly, Pasquale expresses his concern that, when attempting to replicate and automate human professional judgment, “there is a temptation to simply set forth quantifiable metrics of success . . . and to optimize algorithms to meet them” (p. 28). This presents a problem because “the definition of what counts as success or failure in [professional] fields is highly contestable” (*id.*).⁹

⁸ This is in part a consequence of the book’s “balanced stance,” which Pasquale recognizes “will disappoint both technophiles and technophobes” (p. 4). The difficulty readers have in categorizing the book’s arguments as falling entirely on any one side of any one debate is part of what makes the book such an enjoyable read.

⁹ One example of a badly identified “success” involves identifying “successful” medical patients using data suggesting “poorer patients do worse after organ transplantation.” *Data-Informed*, *supra* note 7, at 1923. Such patients’ relative lack of success may be a result of income-related difficulties, not anything

Given the contested nature of defining successes and failures in professional fields, automation risks giving roboticists and computer scientists undue influence over some of society's most important decisions. In seeking to replicate complicated professional judgments in computer code, roboticists and computer scientists can define successes and failures pursuant to their own biases and motives.

Poorly replicating professional judgment in computer code can cut short important professional disagreements that might otherwise crystallize into professional consensus.¹⁰ There may be a need, then, to avoid favoring the biases and motives of the relatively small number of roboticists and computer scientists charged with replicating the professional judgments of a larger class of varied professionals. Pasquale proposes fulfilling that potential need by placing human professionals “at the point of contact of AI—to meditate its effects, assure good data collection, report errors, and do other vital work” (p. 28).

Pasquale's efforts to keep human professionals “in the loop” are intended to bring about a future where “doctors, nurses, teachers, home health aides, journalists, and others . . . work *with* roboticists and computer scientists, rather than meekly serving as data sources for their future replacements” (pp. 2, 213). He would prefer a future of “distributed expertise,” where “variation” in professional thought can be appropriately “checked,” not a future where important professional decisions are made uniformly by centralized algorithms (p. 24).¹¹ His preference is in part informed by equitable considerations, and it seeks to avoid a world where human professionals are reserved for the wealthy (pp. 34, 57).¹²

indicating they are inherently bad patients from a medical perspective. Nonetheless, “machine learning algorithms may conclude such patients are less likely to benefit from further treatment—and recommend against it.” *Id.*

¹⁰ Consider the difficulty in replicating the legal profession's evolving consensus as to what a “successful” trial looks like; that definition of “success” must weigh the competing requirements of the Sixth Amendment, which “lays out labor-intensive conditions for a fair criminal trial that also has to occur quickly.” Calo, *supra* note 2, at 414.

¹¹ See also Frank Pasquale, *Toward a Fourth Law of Robotics: Preserving Attribution, Responsibility, and Explainability in an Algorithmic Society*, 78 OHIO ST. L.J. 1243, 1252–53 (2017) [hereinafter *Fourth Law*] (arguing “no respectable legal system” would replace the work of individual judges and clerks with a “voice-parsing algorithm”); Frank Pasquale & Sandeep Vaheesan, *Automation of Labor, Labor of Automation*, LPE PROJECT (Sept. 16, 2020), <https://lpeproject.org/blog/automation-of-labor-labor-of-automation/> (referring to “distributed, in-person, democratized expertise”).

¹² See also CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION 8 (2017) (“The privileged . . . are processed more by people, the masses by machines.”); Rory Van Loo, *The Corporation as Courthouse*, 33 YALE J. ON REG. 547, 564–65

Human professionals can make mistakes, of course; Pasquale freely admits as much (p. 5). But his concession does not undermine the broader observation that the mistakes and biases associated with human behavior are not magically avoided by automating professional judgment (p. 39). Instead, human mistakes and biases shape the algorithms intended to replicate professional thought.¹³ On this, Pasquale and I agree.¹⁴

Underpinning Pasquale's overarching concern is a tradeoff between (1) mistakes and biases attributable to human professionals accountable to the local community members they serve, and (2) mistakes and biases attributable to roboticists and computer scientists working in far-away places behind complicated corporate structures. Because "[d]istance frustrates accountability and threatens to obscure responsibility in a haze of computation," he posits that the mistakes and biases of faceless roboticists and computer scientists should not be favored over the mistakes and biases attributable to identifiable human professionals leveraging "local knowledge" (pp. 24–25, 213).

B. Centralized Governmental Decision-Making Authority

Pasquale offers his four laws as a path to a better future, one not overrun by centralized algorithmic decision-making. His laws, however, are not self-actualizing. To be sure, he expects organized professional associations to achieve much of his vision by voluntarily incorporating his laws into new professional norms (pp. 34, 177). But private ordering will quickly come up against the very economic pressures Pasquale outlines at the start of his analysis.¹⁵

Those professional associations that adopt Pasquale's laws will increase their members' labor costs, at least when measured against robotic substitutes (p. 170). Given as much, there is likely to be some hesitation to adopt newly crafted professional norms when there is no legal obligation to do so, and when one's competitors may not.¹⁶ In light of these economic considerations, Pasquale implicitly acknowledges that, for

(2016) ("When a consumer reaches out about a dispute, computer algorithms . . . estimate two main variables: behavior and net worth. . . . [That estimation] predicts the likely response for that particular consumer . . .").

¹³ *Data-Informed*, *supra* note 7, at 1924 ("Data are always socially shaped.").

¹⁴ See Note, Chad Squitieri, *Confronting Big Data: Applying the Confrontation Clause to Government Data Collection*, 101 VA. L. REV. 2011, 2031 (2015) ("Different professions operate under different premises as to what counts as data, and how data should be treated and relied on.").

¹⁵ See *supra* Part I.A.

¹⁶ Pasquale describes the incentives facing individual firms as something of a market failure, where "[i]ndividual market transactions are not . . . conducive to a broader social good" (p. 175).

his laws to have any real effect, they must become *actual* laws (*i.e.*, government mandates). Indeed, Pasquale is clear in arguing that, by regulating artificially intelligent technologies, “the state” can “better protect the rights and prerogatives of workers” (p. 172). But as is central to this Review, Pasquale is less clear as to which portions of “[t]he state” he is referring.

In the United States, state power (*i.e.*, governmental power) is split between the federal government and state governments. State governments are in turn made up of political subcomponents exercising various degrees of autonomy.¹⁷ Pasquale is of course familiar with this concept of federalism. Indeed, he notes the relationship between federalism and “subsidiarity,” the latter of which “commends a devolution of responsibility to the most local entity capable of handling it well” (p. 176).¹⁸ His book’s single reference to federalism, however, is only offered as something of an analogy from which lessons for the workplace can be derived. To wit, Pasquale draws on the concept of federalism to argue that “[m]aintaining human control over AI systems represents another form of subsidiarity, more functional than territorial” (*id.*). He analogizes to federalism to argue for “democracy in the workplace,” “local governance by . . . professionals,” and “democratically governed communities of expertise” (*i.e.*, professional associations), but never explains why federalism makes for good government in the first place (pp. 176, 187, 197).

Federalism produces two positive goods worth mentioning here. First, federalism helps prevent tyranny. “[T]he genius” of the Framers was to “split the atom of sovereignty” such that “citizens would have two political capacities, one state and one federal, each protected from incursion by the other.”¹⁹ Because state governments and the federal government exercise different authorities, no single government can wield absolute power. Federalism thus protects individual liberties in a way similar to the separation of federal powers.²⁰ As James Madison put it,

¹⁷ It is frequently worthwhile to distinguish between local and state governments. *See, e.g.*, Richard C. Schragger, *Federalism, Metropolitanism, and the Problem of States*, 105 VA. L. REV. 1537, 1541 (2019). But in an effort to be succinct, this Review uses the terms “state” and “local” interchangeably.

¹⁸ Pasquale also includes “sweeping preemption” within what he refers to as the “Four Horsemen of Irresponsibility” (p. 40). This reference to preemption, however, does not distinguish between federal and state power. Instead, the reference addresses a concern that some regulatory proposals for AI would “diminish the role of *courts* in the AI field, preempting *their* traditional role in assigning blame for negligent conduct” (*id.*) (emphases added).

¹⁹ U.S. Term Limits, Inc. v. Thornton, 514 U.S. 779, 838 (1995) (Kennedy, J., concurring).

²⁰ Antonin Scalia, *Foreword: The Importance of Structure in Constitutional*

federalism and the separation of powers offer the people “a double security.”²¹

In addition to helping prevent tyranny, federalism helps promote competition between governments, which can produce better policies. Unlike a centralized government, where decisions to implement AI may be made uniformly, federalism permits different states to take different approaches. As Justice Brandeis famously explained: “It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”²²

Both the prevention of tyranny and the promotion of competition suggest that state governments should play a key role in any effort to enforce Pasquale’s four laws. As to the prevention of tyranny, developing labor law was a responsibility historically reserved for state governments—although that responsibility was altered in the wake of the New Deal, when the federal government came to play a larger role in regulating workplaces.²³ That altering of the traditional balance between federal and state power was supported by a broader interpretation of Congress’s power to regulate commerce.²⁴ For some, the growing prevalence of AI may signal a need for an even stronger federal role. Placing AI in historical context counsels against such an approach.

As Pasquale has elsewhere argued, AI represents only an “evolution, not revolution” in technology.²⁵ “In many cases, AI is little more than a better-marketed form of statistics,” a method of analysis long utilized by professionals.²⁶ Those professionals, still today, remain closely regulated by state governments.²⁷ As the Supreme Court has recognized, the “State[s] bear[] a special responsibility for maintaining standards among members of the licensed professions.”²⁸

Should AI be used as a rationale for the federal government to play a new, outsized role in overseeing the professions, policymakers may

Interpretation, 83 NOTRE DAME L. REV. 1417, 1418 (2008).

²¹ THE FEDERALIST No. 51, at 323 (James Madison) (Clinton Rossiter ed., 1961).

²² *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932).

²³ Paul R. Hays, *Federalism and Labor Relations in the United States*, 102 U. PA. L. REV. 959, 959–62 (1954).

²⁴ *Id.* at 961 (citing *NLRB v. Jones & Laughlin Steel Corp.*, 301 U.S. 1 (1937)).

²⁵ *Data-Informed*, *supra* note 7, at 1919.

²⁶ *Id.* at 1922.

²⁷ Some argue that state professional regulations have become too prevalent, creating a need for federal action. *See, e.g.*, Aaron Edlin & Rebecca Haw, *Cartels by Another Name: Should Licensed Occupations Face Antitrust Scrutiny?*, 162 U. PA. L. REV. 1093, 1096, 1156 (2014).

²⁸ *Ohralik v. Ohio State Bar Assn.*, 436 U.S. 447, 460 (1978).

unknowingly usher in something of a Trojan Horse. As AI becomes a regular feature in the modern workplace, a federal government with outsized enforcement responsibilities would be able to assert itself more aggressively in professional decision-making. And permitting federal technocrats to more aggressively insert themselves between professionals and their clients would seem to upset the very balance between technocracy and popular rule that Pasquale identifies as a benefit of professionalism (p. 4). To prevent that sort of unchecked federal “incursion”²⁹ into the arena of professional relationships, state governments should play a leading role in any regulatory regime addressing AI in the workplace.

As to promoting competition, introducing AI into the workplace presents a moment ripe for state experimentation. There is little reason to dictate the precise forms nascent technologies might evolve into when different states can instead experiment with different regulatory regimes.³⁰ If a uniform regulatory regime were to be selected, it should only be selected after a period of percolation, during which time states’ relative successes can be comparatively examined.³¹ Even if some states initially choose “wrong” regulatory regimes, this would not merit premature intervention by the federal government, which is at least just as likely to choose “wrong” in the first instance.

States that initially choose “wrong” regulatory regimes are free to change course after observing the relative successes enjoyed by states utilizing different regimes. This point is not novel; the law has long promoted regional variety in regulating professionals, even when it means some localities may initially choose the “wrong” paths. The locality rule in tort law, for example, requires physicians to provide patients the degree

²⁹ U.S. Term Limits, Inc. v. Thornton, 514 U.S. 779, 838 (1995).

³⁰ See Adam Thierer, *The Internet of Things and Wearable Technology: Addressing Privacy and Security Concerns without Derailing Innovation*, 21 RICH. J.L. & TECH. 6, 8 (2015) (referring to “permissionless innovation”); Andrea O’Sullivan, *Don’t Let Regulators Ruin AI*, MIT TECH. REV. (Oct. 24, 2017), <https://www.technologyreview.com/2017/10/24/3937/dont-let-regulators-ruin-ai/> (same); but see ARIEL EZRACHI & MAURICE E. STUCKE, VIRTUAL COMPETITION 224 (2016) (“Intervention should not be categorically set aside . . .”).

³¹ See Herbert Hovenkamp, *Regulatory Conflict in the Gilded Age: Federalism and the Railroad Problem*, 92 YALE L.J. 1017, 1034 (1988) (noting that “extraordinary successful” state railroad regulations existed for “nearly a century” before “federal policymakers” decided regulation was appropriate); Thierer, *supra* note 30, at 9 (arguing for a “bottom-up” approach to “not preemptively suffocate technological experimentation and innovation”).

of skill that a reasonable physician *in the same locality* would provide.³²

Throughout the book, Pasquale is (understandably) more focused on the substance of his four laws than he is the procedure of how those four laws might be enforced. When he does mention enforcement, he suggests a federal-centric approach. “Because legislators cannot possibly anticipate every situation that authorities may need to address,” he argues, the “[n]ew laws of robotics should be . . . [enforced by] dedicated regulators” that can “solicit expert advice” (pp. 3, 41). This reference to “regulators” is left undefined, and thus could be a reference to *state* regulators. But the benefits offered by state governments justify more than a potential reference. Moreover, Pasquale’s warning to avoid “kneecap[ing] federal regulatory agencies” suggests that he has *federal* regulators in mind (p. 40). Indeed, he specifically calls for “independent . . . regulatory bodies,” (p. 131), and has elsewhere proposed that his four laws be enforced by “independent agencies” like those created in “the New Deal.”³³

To be sure, Pasquale would carve out some role for “local entities . . . to develop their own standards” (p. 41). But even if that is a reference to local *governments*, rather than local professional associations, the envisioned role is marginal at best. State governments can do more than offer “granular” changes to regulations that are otherwise “harmonized internationally or for a nation” (*id.*).

My critique of Pasquale’s relative silence as to who should enforce his four laws constitutes more than an idiosyncratic reader’s request for additional information. I readily acknowledge that there is only so much one author (at least one human author) can fit in a single book. Pasquale cannot be expected to explain every nook and cranny of his proposal. But the proper division of governmental power is a core consideration in evaluating the correctness of the book’s overall proposal.³⁴ Because Pasquale so masterfully highlights the benefits of promoting subsidiarity when it comes to professional decision-making, he prepares readers to expect a similarly commanding analysis of the benefits of promoting federalism when it comes to governmental decision-making. His relative silence as to enforcement and federalism is therefore notable.

Throughout the book, there are instances when offering more detail about enforcement would have resulted in a more complete

³² Marc Ginsberg, *The Locality Rule Lives! Why? Using Modern Medicine to Eradicate an “Unhealthy” Law*, 61 *DRAKE L. REV.* 321, 323 (2013) (citing *Kaiser v. Suburban Transp. Sys.*, 398 P.2d 14, 16 (Wash. 1965)).

³³ Been, *supra* note 6.

³⁴ See Hovenkamp, *supra* note 31, at 1070 (“An important part of any theory of regulation is the identification of the optimal regulatory sovereign.”).

argument. Consider again Pasquale's suggestion that, for an occupation to be worth preserving for human labor, the occupation must be a "fulfilling vocation[]" (p. 4). It is crucial for local government officials to play a role in making that determination, or at least just as crucial as the need (which Pasquale identifies) for professionals to play a role in defining successes and failures within their own professions (p. 28).

A federal regulator in Washington, D.C. might determine that a West Virginia coal miner and a Massachusetts fisherman perform "dangerous or degrading" work unfit for humans (p. 4). But local government officials, by comparison, may readily recognize that certain miners and fishermen find significant fulfillment in their jobs. Perhaps they find fulfillment in performing work that connects them to family members from past generations, or work connecting them to a prized natural resource unique to their home state. This is not to say that *every* miner and fisherman enjoys such fulfillment; it is unlikely that such a blanket statement could be made about any occupation. But it is to say that determining which occupations qualify as being worth preserving for human labor is a determination that would benefit from input by local officials.

Pasquale's relative silence on enforcement and federalism is also notable because the technological advances encouraging a centralization of professional judgment are some of the same advances encouraging a centralization of governmental power. Consider the driverless car. Traditionally, automobile speeds have been established by state and local governments targeting human drivers.³⁵ In setting speed limits, local officials could consider a wide set of factors, including safety, the needs of industry, and urban planning goals. A key route connecting two markets, for example, might be assigned a relatively high speed limit in order to facilitate trade—save for a few miles where officials determine that speeds should be reduced so as to limit unwelcome noise, or where slower speeds might encourage patronage at local establishments.

Locally established speed limits may be eliminated, however, when a national set of regulations targeting *driving technologies* can replace localized sets of regulations targeting *human drivers*. Technology empowering driverless cars, after all, could be programmed with nationwide maps pre-set with speed limits designed to achieve national prerogatives. Sure, driverless cars could be programmed to respect locally set speed limits to the extent that federal law does not preempt them. But once it is determined that speed limits are a proper federal concern, is there any doubt that local speed limits will be preempted?

³⁵ See Frederick K. Beutel, *Law Making by Professional and Trade Associations*, 34 NEB. L. REV. 431, 432 (1955).

How much influence, for example, would local home and business owners in Topeka, Kansas have in shaping national speed limit legislation identifying Topeka (and dozens of other towns) as existing along a key trade route between New York and Los Angeles? Would those local home and business owners have more or less influence than they would if their speed limits were set by local officials who drive on the very roads they regulate? One need not be an expert in Topeka politics to have informed answers to those questions.

Driverless cars offer just one example of a broader trend. Similar mismatches between local interests and national decision-making can arise in other contexts. Do we need doctors in Appalachia when it may be more efficient for a robot to collect medical information from a patient, send the information to Boston to be analyzed on cutting-edge equipment, and have a diagnosis delivered back to Appalachia? As “smart contracts” proliferate with the promise of automatically enforceable agreements based on software programmed in San Francisco, do we really need judges and lawyers in Reno? And what happens to state licensing associations (and the state tort law they help create) when it becomes possible to regulate legal and medical technologies on a national level, rather than regulate human lawyers and doctors on a regional basis?

These hypotheticals present complex questions requiring complex answers. In one sense, individuals in Appalachia or Reno might prefer to have their medical information analyzed and contracts drafted by advanced algorithms designed and controlled elsewhere. On the other hand, the widespread adoption of those preferences reduces the ability for doctors and lawyers to make a living in Appalachia and Reno, where those professionals might have otherwise provided personalized services difficult to replicate by machine.

There is something to be said about receiving diagnostic information from a human capable of expressing empathy in person, or having a will drafted by a neighbor who personally understands the subjective value assigned to each heirloom. Pasquale agrees that those types of values are worth preserving (pp. 25, 33, 65), but he does not argue for the type of federalist regulatory structure that can ensure that those values are preserved.³⁶ State and local governments can play a critical role in ensuring that values associated with human professionalism are

³⁶ The need to affirmatively develop a federalist regulatory structure is highlighted by recent history in the data privacy space. In that space, a single federal agency—the Federal Trade Commission—“has become the broadest and most influential regulatory force . . . in the United States—more so than nearly any privacy statute or common law tort.” Woodrow Hartzog & Daniel J. Solove, *The FTC and the New Common Law of Privacy*, 114 COLUM. L. REV. 583, 585–86 (2014).

protected, but that role is at risk of extinction if the wisdom of our federalist system is not carried forward into the algorithmic age.

II. FOUR LAWS

The remainder of this Review examines each of Pasquale's four laws in greater detail. In doing so, I offer recommendations as to how each law could be enforced so as to best account for the benefits of federalism. My recommendations are not incompatible with Pasquale's thesis. To the contrary, it is my hope that Pasquale and others will utilize these recommendations to expand upon the arguments offered in *New Laws of Robotics*.

A. Complement Not Replace

Pasquale's first law provides that robotic systems and AI should complement professionals, not replace them (p. 3). "While economic imperatives will pressure" employers "to substitute software" for humans, "professional associations should ensure that cost considerations are balanced against the many virtues of direct human involvement" (pp. 33–34). Pasquale argues that striking the right balance requires determining how to utilize both AI and "intelligence augmentation," or IA; IA describes the use of technologies (such as information sensors) to better inform human decisions (p. 13).

Technologists have long aspired to create "[s]trong" or "[g]eneral" AI "with abilities that meet or surpass human-level cognition."³⁷ But current AI excels only "in narrow, limited settings . . . where there are clear right or wrong answers."³⁸ Because humans and robots have different strengths and weaknesses, Pasquale contends that "[j]oint working" (*i.e.*, work involving both AI and a human professional) can be "more valuable than either working alone" (p. 37).

Pasquale's "joint working" proposal can be naturally extended to inform who should enforce his first law. Like humans and robots, the federal and state governments have different strengths and weaknesses. While the federal government is well-positioned to establish uniform (if generalized) standards, state governments are better positioned to leverage localized knowledge to develop standards tailored to local circumstances. Different professionals in different locations can appropriately use new

³⁷ Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. U. L. REV. 1305, 1308–09 (2019).

³⁸ *Id.* at 1309. Pasquale highlights this point with a medical example: "Narrow AI for detecting polyps . . . might 'see' a problem polyp that no gastroenterologist would, but it might also be incapable of recognizing other abnormalities that it was not trained to detect" (p. 37).

technologies in different ways. There need not be a rigid national standard governing how professionals will incorporate new technologies into varied workplaces. Instead, state officials, who already have a “special responsibility for maintaining standards among members of the licensed professions,”³⁹ should continue to play a “special” role in enforcing Pasquale’s first law. To understand how, consider an example Pasquale offers concerning clinical decision support software, or “CDSS” (*id.*).

By monitoring patient conditions and prescriptions, CDSS can alert physicians to potentially problematic combinations (*id.*). “Ongoing regulation will be critical,” Pasquale argues, “to assure that patients will have the benefits of [this] cutting-edge technology, without burdening doctors and nurses” (*id.*). The “ideal” situation would be one where CDSS is “neither overbearing nor merely a quiescent watcher of practitioners” (*id.*). CDSS should therefore be “continually calibrated,” he proposes, so that “physicians, nurses, and pharmacists actually welcome its use, and have ongoing opportunities to critique and improve it” (p. 38).

Pasquale smartly proposes that individual physicians, nurses, and pharmacists play a continual role in shaping software—those professionals have the on-the-ground expertise needed to ensure that software remains useful (*id.*). But he does not offer insight as to who should promulgate the “[o]ngoing regulation” that is “critical” to ensuring that those professionals play a continuous role in shaping CDSS (p. 37). Regularly taking physicians, nurses, and pharmacists from their work to update software is bound to be costly for hospitals, clinics, and pharmacies; governmental incentives may be necessary. State governments, which are already familiar with the peculiarities of the professionals they supervise, are best positioned to create those incentives. Indeed, state governments can engage in the “sector by sector” approach Pasquale deems necessary for striking the best balances between human and machine (p. 14). The federal government, by comparison, is more prone to offer the “one-size-fits-all model of technological advance” that Pasquale correctly dismisses (*id.*).

In short, there is little need to reinvent the wheel to enforce Pasquale’s first law. States already play a special role in overseeing professional associations, which in turn influence how professionals utilize all sorts of technologies. There may be a role for the federal government to play when national interests are at stake and one of the federal government’s enumerated powers is applicable. But the mere fact that artificially intelligent software is involved does not mean that the federal government’s regulatory role should be all-encompassing. A contrary position would risk, to paraphrase a popular phrase, allowing the

³⁹ *Ohralik v. Ohio State Bar Assn.*, 436 U.S. 447, 460 (1978).

regulation of software to eat federalism.⁴⁰

B. Counterfeiting Humanity

Pasquale's second law provides that robotic systems and AI should not counterfeit humanity (p. 7). "As engineers scramble to fine-tune [technologies] . . . creating pictures of 'fake people,' and convincing synthetic voices," Pasquale asks: "Do we want to live in a world where human beings do not know whether they are dealing with a fellow human or a machine?" (*id.*). He answers that question with a straightforward no, which he defends with two justifications.

First, the "transition" to a "world of robots indistinguishable from humans . . . entails massive surveillance of humans" (p. 8). Second, "[t]he voice or face of another human being demands respect and concern," while "machines have no such claim on our conscience" (*id.*). Thus, to avoid massive surveillance and an improper anthropomorphization of machines, Pasquale's second law would maintain a distinction between humans and robots. In doing so, his second law promotes values advanced by his fourth law (discussed below) by ensuring that humans are not lulled into assigning rights (*e.g.*, free expression) and responsibilities (*e.g.*, tort liability) to robots.⁴¹

State-sanctioned professional associations have long prohibited their members from engaging in acts of deception, a category of behavior that would seem to comfortably cover Pasquale's conception of human counterfeiting. Legal professional rules, for example, prohibit solo practitioners from implying that they are part of a law partnership.⁴² One can imagine an analogous rule prohibiting a robot from deceptively suggesting that it is human.

As with enforcing Pasquale's first law, then, there is little need to reinvent the wheel when it comes to enforcing his second law. As new and existing categories of professionals begin to incorporate AI into their work, state-sanctioned professional associations can establish industry and state specific rules to ensure that professionals do not engage in deceptive

⁴⁰ *C.f.* Marc Andreessen, *Why Software Is Eating The World*, WALL ST. J. (Aug. 20, 2011), <https://www.wsj.com/articles/SB10001424053111903480904576512250915629460> (referring to the "phenomenon of software eating a traditional business").

⁴¹ *Infra* Part II.D; *see also* *Data-Informed*, *supra* note 7, at 1918 (discussing "AI 'personhood'").

⁴² MODEL RULES OF PRO. CONDUCT R. 7.5(d) (AM. BAR ASS'N 2001) ("Lawyers may state or imply that they practice in a partnership or other organization only when that is the fact."); *see also* Kathryn A. Thompson, *Naming Rights and Wrongs*, ABA J. (Dec. 4, 2004), https://www.abajournal.com/magazine/article/naming_rights_and_wrongs.

forms of human counterfeiting.

As already described, professional rules can increase the cost of providing professional services.⁴³ It is therefore critical that different states and different professions have the flexibility to focus on some rules rather than others. State X, when regulating Profession X, may deem it imprudent to expend regulatory resources and raise the cost of professional services in order to target a type of behavior that is only problematic in Profession Y or State Y. State-sanctioned professional associations are best positioned to establish the basket of rules best designed to balance the costs and benefits of embracing a particular technology. Federally established professional rules, by comparison, are less able to adjust for such professional or geographic differences.

This is not to say that federal standards should be shunned entirely. Legal professional rules—which include model national rules and state-specific alterations—again offer an example framework. An American Bar Association (“ABA”) model professional rule prohibits lawyers from “engag[ing] in conduct involving dishonesty, fraud or misrepresentation.”⁴⁴ Some state bar associations have opted to adopt the ABA’s model rule as written.⁴⁵ Others have enacted the rule with unique changes.⁴⁶ Additional regional variety can be found in how state bar associations interpret their rules when applying them to the unique facts and circumstances arising within their jurisdictions.⁴⁷ This framework could be readily extended to address the types of deception targeted by Pasquale’s second law, which might arise differently in different professional contexts.

C. Arms Races

Pasquale’s third law provides that robotic systems and AI should not intensify zero-sum arms races (p. 9). Traditionally, the judgment of military professionals has been relied upon (within democratic constraints) when military decisions are made. But, where human decision-making moves too slowly and countries feel pressured to adopt the newest forms of automated weaponry, pushbutton wars can become a concern (p. 154).

⁴³ *Supra* Part I.B.

⁴⁴ MODEL RULES OF PRO. CONDUCT R. 8.4(c).

⁴⁵ *See, e.g.*, N.Y. CODE OF PRO. RESPONSIBILITY DR 1-102(A)(4) (22 NYCRR 1200.3).

⁴⁶ *See, e.g.*, OREGON RULE OF PRO. CONDUCT R. 8.4(a)(3), (b) (clarifying “it shall not be professional misconduct for a lawyer to advise clients or others about or to supervise lawful covert activity”).

⁴⁷ *See* David L. Hudson Jr., *Split intensifies over prosecutors’ ethical disclosure duties*, ABA J. (Oct. 2, 2019, 8:30 CDT), <https://www.abajournal.com/web/article/split-over-prosecutors-ethical-disclosure-duties-intensifies>.

Such wars can result when countries program their weapons to respond to perceived threats, and adversarial countries program their own weapons to respond in kind.⁴⁸ As a result, an escalating series of tits-for-tats can be set in motion with minimal opportunity for human involvement.

Pasquale's third law is a natural one for the federal government to enforce. Indeed, federal enforcement would promote some of the fundamental principles that resulted in American federalism. Fearful that European sovereigns would rip the newly-formed United States apart if individual states were permitted to enter into their own international alliances, the Framers ensured that "[n]o State shall enter into any Treaty, Alliance or Confederation,"⁴⁹ and that "[n]o State shall, without the Consent of Congress, . . . enter into any Agreement or Compact . . . with a foreign Power."⁵⁰

As John Jay wrote, "[i]t is of high importance to the peace of America that she observe the laws of nations . . . [and] it appears evident that this will be more perfectly and punctually done by one national government than it could be either by thirteen separate States or by three or four distinct confederacies."⁵¹ By adopting treaties to address artificially intelligent weaponry, the federal government can work to avoid unnecessary, automated warfare. By comparison, states would upset fundamental principles of federalism should they interfere with foreign relations—an objectively federal prerogative.

Pasquale's third law, moreover, is not limited to military operations. This law can also reduce the incentive for private companies to continually one-up each other with increasingly pervasive forms of data collection (pp. 143–44).⁵² To the extent Pasquale's third law might be enforced in such a fashion, federal enforcement could promote fundamental conceptions of federalism.

Federal enforcement of Pasquale's third law can harmonize data collection standards across the country. Doing so could avoid an alternative where states face incentives from locally headquartered companies to permit more profitable forms of collection in order to compete with competitors headquartered elsewhere. And even if states wished to establish a uniform standard themselves, their agreement to do

⁴⁸ Frank Pasquale, 'Machines set loose to slaughter': the dangerous rise of military AI, THE GUARDIAN (Oct. 20, 2020), <https://www.theguardian.com/news/2020/oct/15/dangerous-rise-of-military-ai-drone-swarm-autonomous-weapons>.

⁴⁹ U.S. CONST. art. I, § 10, cl. 1.

⁵⁰ U.S. CONST. art. I, § 10, cl. 3.

⁵¹ THE FEDERALIST No. 3, at 43 (James Madison) (Clinton Rossiter ed., 1961).

⁵² See also FRANK PASQUALE, BLACK BOX SOCIETY 4 (2015) ("As technology advances, market pressures raise the stakes of the data game.").

so would require federal approval. As the Constitution provides, “[n]o State shall, without the Consent of Congress, . . . enter into any Agreement or Compact with another State.”⁵³ In short, the federal government is best positioned to enforce Pasquale’s third law, which calls for uniform standards across jurisdictions.

D. The Duty to Identify

Pasquale’s fourth and final law provides that robotic systems and AI must always indicate the identity of their creators, controllers, and owners (p. 11).⁵⁴ This can help maintain legal accountability for flawed robotics, such as a medical app that misdiagnoses a rash (pp. 64–65).

As Pasquale would have it, a robotic duty to identify would be a duty East Coast Code (*i.e.*, statutory and regulatory law) requires to be enacted directly within West Coast Code (*i.e.*, software language).⁵⁵ “Regulators will need to require responsibility-by-design,” Pasquale argues, and those regulators should consider “requiring certain hard-coded audit logs, or licensing practices that explicitly contemplate problematic outcomes” (p. 12). He stresses that such regulation must come early, so that it can “influence systems development by foreclosing some design options and encouraging others” (*id.*).

Pasquale’s intention to shape nascent technologies weighs heavily in favor of assigning enforcement responsibilities to state governments, at least for the moment.⁵⁶ As mentioned above, one of the benefits of federalism is that different states can experiment with different regulatory regimes and learn from experience.⁵⁷ As technologies develop and it becomes apparent which regulatory regimes work best, states can change course and leverage the lessons offered by other states. The federal government, too, can learn from state regulatory experiments when creating its own regime after technology has matured.⁵⁸

If the federal government, however, were to prematurely select a uniform regulatory regime, technological developments may be forever tainted. This may make it impossible to determine whether the “correct”

⁵³ U.S. CONST. art. I, § 10, cl. 3.

⁵⁴ See also *Fourth Law*, *supra* note 11, at 1252–53 (“[W]e may need to ensure that robots and algorithmic agents are traceable to and identified with their creators.”).

⁵⁵ LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* 53 (1999).

⁵⁶ See also *Data-Informed*, *supra* note 7, at 1918 (“[D]raw red lines of responsibility and attribution now, while the technology is still nascent.”).

⁵⁷ *Supra* Part I.B.

⁵⁸ See, e.g., Note, Henry Adams, *The Federalist Regulation of Privacy: The Happy Incidents of State Regulatory Activity and Costs of Preemptive Federal Action*, 84 MO. L. REV. 1055, 1070 (2020) (“[S]tate-level data breach notification statutes provided federal lawmakers useful templates . . .”).

regulatory regime was chosen or whether a different regime would have better balanced the relative costs and benefits. State governments, which are already familiar with identification regimes such as driver's licenses and license plates,⁵⁹ as well as professional disclosure requirements such as those stemming from fiduciary responsibilities,⁶⁰ are best positioned to take the initial lead in enforcing Pasquale's fourth law.

CONCLUSION

In *New Laws of Robotics*, Frank Pasquale proposes four laws designed to ensure that important societal decisions remain informed by human professional judgment. In this Review I recommended how, if his four laws are to be enforced, they might be enforced so as to best promote principles of federalism. It is my hope that Pasquale and others will incorporate these recommendations as they build upon his remarkable contribution.

⁵⁹ Marybeth Herald, *Licensed to Speak: The Case of Vanity Plates*, 72 U. COLO. L. REV. 595, 596 (2001).

⁶⁰ Kimberly D. Krawiec & Kathryn Zeiler, *Common-Law Disclosure Duties and the Sin of Omission: Testing the Meta-Theories*, 91 VA. L. REV. 1795, 1808–09 (2005).