# Will the "Legal Singularity" Hollow Out Law's Normative Core?

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*The big challenge is, if eventually we do get to the point where the numbers do the predicting, do you start to short-circuit the [legal] process?*[1]

- Edward Bird, Chief Revenue Officer of a legal analytics firm (2019)

*The proposition that tools are prolongations of human organs can be inverted to state that the organs are also prolongations of the tools.*[2]

- Max Horkheimer (1938)

## I.      Introduction

This Article will analyze the implications for the rule of law if predictive legal analytics evolves to such a degree that it is able to create a completely specified legal system bereft of all legal uncertainty. The term "predictive analytics" describes a wide-ranging assemblage of techniques and tools that learn from historical data to predict future behavior in order to drive better decisions and, ultimately, outcomes. Predictive analytics is part of a broader data science research program. It applies new computational power, especially in connection with machine learning, to obtain actionable insights from the massive amounts of stored data that only relatively recently became subject to programmatic analysis. Predictive *legal* analytics, then, consists of applications of predictive analytics to settings within the legal system.

According to some legal futurists, predictive legal analytics will soon result in a "legal singularity"—a moment when the legal system finally overcomes the problem of legal uncertainty. The legal system will emerge as completely specified—as a seamless legal order, accessible to all in real time. With the arrival of the legal singularity, anyone interested in exploring how the legal system bears on any completed or contemplated action will simply feed variables into an algorithm that will produce law's answer. The legal futurists maintain that predictive analytics, in ushering in the legal singularity, will also empower legislatures, regulators, and transacting commercial parties of the future to draft completely specified statutes, rules, regulations, and contracts.

What are the implications for the rule of law when the legal singularity arrives—that is, when it becomes possible to predict with certainty how the law applies to any and all persons in any and all circumstances? This Article invites the reader to a thought experiment that elucidates some potential implications of the legal singularity. Specifically, it asks the reader to imagine a world in which all relevant

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[1] Barney Thompson, *Big Data: Lawyers Play "Moneyball"*, FIN. TIMES, Feb. 5, 2019, at 7 (quoting Edward Bird, Chief Revenue Officer of a legal analytics firm).
[2] MAX HORKHEIMER, *Traditional Theory and Critical Theory*, in CRITICAL THEORY: SELECTED ESSAYS 188, 201 (Matthew J. O'Connell et al., trans. 1972).

legal data are subject to an algorithmic machine learning technology and impounded into a constantly updating software program that enables users to predict how the legal system will respond to any particular legal event. Such a technology will be computationally irreducible, meaning that the only way to obtain legal answers is to run the algorithm.[3] It will be an inscrutable black box defined by its sensory interfaces (namely, its answers to legal questions), and we will find ourselves unable to apply our design intuitions to the improvement of its inner workings.[4] Law on auto-pilot, if you will.

Legal futurists assure us of the eventual rollout of just such a predictive analytic technology, which I will call the "Singulatim" software. The name is intended to remind the reader of the legal singularity embodied in the program, as well as to invoke the word's Latin meaning "one by one, singly, or separately," which captures the basic logic of the new data epistemology on which the predictive analytics revolution depends.

There are two distinct, but not mutually exclusive, ways of analyzing a potential legal singularity. The first such perspective focuses on how such a technology would optimize the efficiency of the legal system. For instance, the legal singularity would reduce costs associated with the legal system by making many traditional modes of lawyering obsolete—obviating, for example, the need for companies to hire counsel to evaluate any individual dispute. It would forever change the nature of legal work, shifting from modestly productive professional expertise to hyper-productive software management. This perspective originates in a preoccupation with scarcity, and is most active when, for instance, a law firm or corporation seeks to minimize costs, or a government agency seeks to streamline its budget. Since those are precisely the settings in which the legal system operates, the legal singularity, ushered in with the Singulatim software, would understandably command attention from anyone interested in the legal system. Even more significantly, it would allow *all legal subjects* to better arrange their future affairs, safe in the knowledge of how the law will apply to them.

Nevertheless, this optimization perspective only scratches the surface of the implications of the legal singularity for the legal system. This Article therefore acknowledges upfront that the Singulatim software would *ceteris paribus* enhance the efficiency of the legal system. However, it then distinguishes and explores an altogether different set of questions that flow from acknowledging that data science

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[3] Stephen Wolfram, *Computational Law, Symbolic Discourse, and the AI Constitution*, *in* DATA-DRIVEN LAW: DATA ANALYTICS AND THE NEW LEGAL SERVICES 103, 115 (Edward J. Walters ed., 2018).

[4] *See* Steve Jurvetson, *Technology Design or Evolution?: The Two Processes for Building Complex Systems Are Fundamentally Different*, MIT TECH. REV. (Jul 1, 2006), https://www.technologyreview.com/s/406033/technology-design-or-evolution/ (making this point with respect to artificial intelligence generally).

not only creates new instrumental tools, but it augurs an entirely new epistemology for society.

In particular, the Article considers whether the legal singularity, in fully realizing a shrunken form of the rule of law's longstanding objective of maximal predictability, might in the process undercut what have traditionally been the core constituents of the rule of law, thereby hollowing out much of law's normative core.[5] Deterministic, automated, discretion-free systems abound in modern societies, but we do not describe those systems as *legal* systems because they lack the normative foundation that a liberal legal system enjoys—an endowment in large part attributable to its adherence to rule of law norms.[6]

According to the self-description of liberal legal systems, the legitimacy of law depends in part on its adherence to a constellation of attributes of the legal system referred to as the "rule of law." This belief in the rule of law has august roots in Locke and Rousseau, and it derives primarily from the principles of predictability and universality.

The predictability principle states that a liberal legal system must be roughly predictable, so as to provide legal subjects with guidance about how the law applies to them and their affairs. But this predictability principle can be conceived of in two variants: a functional, instrumental *weak-form* principle that prizes predictability because it enables subjects to plan their affairs and thereby fosters social stability, and a normative *strong-form* principle, traceable to Lockean political theory, that values predictability because it operates as a check on the exercise of arbitrary governmental power.

Importantly, the strong form emphasizes law's predictability as a procedural transparency device that restricts the government from enacting arbitrary legal rules to which the citizenry did not and would not consent. It is not just that the laws must be discernible; they also must be comprehensible, intelligible, and amenable, at least in theory, to contestation. As Locke put it, the authorities must "own willingly" their exercise of governmental authority, making it possible for the citizenry to demand reasoned explanations for incursions in their otherwise natural rights to liberty.[7] Predictability, then, is in practice a precondition of the people's

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[5] The Article considers whether integrating this new epistemology into the legal system might provoke effects that can be described as *reflexive* because they do not amount merely to changed practices within a largely static system, but rather they operate on the legal system itself, potentially changing what it is. In this sense, the questions examined here resonate with the line of social theoretical inquiry known as "reflexive modernization." *See, e.g.*, ULRICH BECK ET AL., REFLEXIVE MODERNIZATION: POLITICS, TRADITION AND AESTHETICS IN THE MODERN SOCIAL ORDER (1994). Though Horkheimer would have preferred the term *dialectic* to *reflexive*, it is in this spirit that the Article's epigraph is intended.

[6] As discussed below, the derivation of law's normative legitimacy from rule of law principles is only partial; other principles, especially democratic self-government, also play important roles.

[7] JOHN LOCKE, TWO TREATISES ON GOVERNMENT 360 (Peter Laslett ed., 1988) [hereinafter LOCKE, TREATISES ON GOVERNMENT] (Second Treatise, § 137).

informed consent—which, in turn, is the touchstone of a free people not subject to arbitrary rule. Moreover, the reserve power of the people to revolt, so familiar to the experience of American political theory, lurks in the shadows as a vagrant threat that disciplines the government in the exercise of its delegated powers.

However, the legal futurists privilege the weak-form of predictability over its strong-form variant. Their aim is in effect to resuscitate, and indeed fulfil, the century-old legal realist project to portray the legal system as systematized prediction—not only without regard to formalistic dogmas, but by treating the legal system as any other social system without any privileged claim to normativity. Legal futurists treat the legal system as a ready-formed thing that they would like to understand better and, ultimately, make susceptible to predictive analysis—as an empirical fact, not as a social process that relies for its legitimacy on its scrutability and susceptibility to review and contestation.

Weak-form predictability is unobjectionable on its own, since it facilitates efficient planning on the part of legal subjects. But weak-form predictability—again, on its own—has no intrinsic connection to the rule of law and the ideal of non-arbitrary government. When futurists advocate for the use of legal analytics to enhance legal predictability, we should beware of the threat that an inattentive and hurried embrace of analytics in service of (only weak-form) predictability will attenuate the rule of law's connection to the deeper (strong-form) predictability principle and its commitment to non-arbitrary government.

As for universality, the universality principle provides that the rule of law depends in part on its general applicability to all legal subjects. The futuristic rush to banish legal uncertainty and usher in a completely specified legal system also threatens to undermine this insistence that the law applies generally. An implicit bedrock of the universality principle is that the differences among legal subjects are outweighed by what we—or, better still, "We" who are, as Blackstone put it, the "community in general"[8]—have in common. It implies a logic of political and social connectedness. But the new epistemology of data science implies a logic of differentiation, with each data point, including data concerning legal subjects, being unique. The French social theorist François Ewald warns that this new data epistemology might also destabilize our ideas about human solidarity, calling into question the coherence of concepts like the universality of law.

The threat here is twofold. The first will preoccupy those of a critical bent: that the Singulatim software, in training itself on how the legal system works, would reproduce and institutionalize algorithmically the existing inequalities in the way the legal system treats its subjects. In the process, it would also threaten to belie and demystify once and for all the idea of equal justice before the law. The second threat, on the other hand, strikes even deeper at the rule of law, and can be

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[8] 1 WILLIAM BLACKSTONE, COMMENTARIES *44.

appreciated even by those disinclined to critical approaches to the law. The problem here is not that the legal singularity cements in place some extra-legal hierarchy or oppressive system of social relations; instead, the issue is that the basic terms of universal rights might cease to make sense in the face of this epistemological shift that allows a newly algorithmized legal system to only see pulverized, atomized data points where it used to see integral, individual legal subjects

The legal singularity therefore threatens to whittle away at the predictability and universality pillars on which the rule of law has traditionally relied for support. However, it would also prompt us to reassess whether the rule of law *would even matter* in a futuristic legal system. Traditionally, the rule of law was considered necessary because it operated as a check on arbitrary discretion on part of human government actors. At first blush, the legal singularity might seem to eliminate the discretion problem altogether. Nevertheless, the price of solving law's human discretion problem in this manner is high: casting aside, or at least fundamentally transforming, commitments to non-arbitrariness and universality. If the futurist response to the discretion problem is to imagine an algorithmic function that abstracts away from the human element of the law, have we solved the problem, or have we created a bigger problem of potential arbitrary government?

A cautionary directive emerges from this analysis: that lawyers should remain attuned to the possibility that an uncritical embrace of predictive legal analytics in pursuit of a shrunken ideal of predictability might ultimately require them to jettison much of the normative ballast that has kept the liberal legal order stable and afloat. Rule *by* algorithmic law hardly inspires the confidence in the liberal project that the rule *of* law formerly did. Indeed, the virtue of the Singulatim software thought experiment and its condition of the complete elimination of legal uncertainty is that it invites consideration of just such a result, which is the endgame for a futurist conception of law.

The rule of law contributes a significant degree of legitimacy to modern liberal government, but that contribution is distinct from contributions made by other liberal values—including democratic self-government, civil and political rights, and popular sovereignty. Accordingly, if the legal singularity ends up attenuating the rule of law, the legal system would lose the legitimating effects the rule of law provides, requiring it to lean on those other sources of legitimation for support. In this way, the legal singularity, by accelerating the demise of the rule of law as traditionally conceived, might catalyze a redoubled commitment to making an algorithmized legal system amenable to deliberate forms of democratic control. In this way, it is possible to imagine a futurist legal system that, all the while weakening the rule of law as a legitimating force, might counterintuitively reinvigorate—or even help to reinvent—legal liberalism.

### II.        **Predictive Legal Analytics**

This Part will introduce predictive legal analytics. It will begin in Section A by introducing predictive analytics generally. In Section B, it will briefly discuss how predictive analytics and data science, in addition to offering powerful new instruments to achieve objectives, are on some accounts re-constituting the epistemological foundations of much of modern social life. Next, in Section C it will describe several applications of predictive analytics in the legal field. It will also relate some of the extraordinary expectations of some legal futurists for the technology's future development, including the gradual evolution of a completely specified legal system that has eliminated all legal uncertainty, which some refer to as the "legal singularity." Finally, in Section D, it will introduce a thought experiment of a hypothetical technology that embodies the legal singularity—an experiment that will allow for exploration in the Part that follows of the deep implications of predictive legal analytics on the rule of law.

#### A.  Predictive Analytics, Generally

The term "predictive analytics" describes a wide-ranging assemblage of techniques and tools that learn from historical data to predict future behavior in order to drive better decisions and, ultimately, outcomes.[9] A similar industry formulation defines predictive analytics as the "use of data, statistical algorithms and machine learning techniques to identify the likelihood of future outcomes based on historical data."[10] These definitions embody practical, industry-focused perspectives, a decision undertaken intentionally. As discussed below, data science and predictive analytics were conceived as disciplines out of frustration with the lack of practical application of traditional statistics research.[11] Furthermore, the focus here on predictive *legal* analytics bears this out: to study this field today is to investigate the practical application of technologies that have been more or less untheorized.[12] This Article seeks to contribute to the project of filling the gap between the legal practice and legal theory of predictive analytics.

I wish to highlight four implications of the representative definitions above. First, predictive analytics is, well, *predictive*. It is less concerned with understanding the causal environment out of which relevant events come to pass than it is with being

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[9] *See* ERIC SIEGEL, PREDICTIVE ANALYTICS: THE POWER TO PREDICT WHO WILL CLICK, BUY, OR DIE 15 (2016).

[10] https://www.sas.com/en_us/insights/analytics/predictive-analytics.html.

[11] *See infra* text accompanying note 17.

[12] Of course, physical scientists have consciously operated in a data-constrained environment for most of modern history. The Big Data revolution therefore offers to solve one of the main problems of science. Consequently, as one might imagine, the gap between theory and practice in scientific fields is less pronounced than it is in the legal arena, although it is still significant. For an example of a thoughtful and measured contribution to this literature, see Steve Kelling et al., *Data-Intensive Science: A New Paradigm for Biodiversity Studies*, 59 BIOSCIENCE 613 (2009).

able to predict what future events will come to pass.[13] It is not that causal inference is irrelevant to the problems that predictive analytics seeks to solve. Rather, the exponential increase in information expands the universe of variables to explore, but it also complicates efforts to discern precise causal relationships.[14] As such, the practitioner of predictive analytics focuses on predicting the future, rather than understanding the past.[15]

The second attribute is related to the first: predictive analytics is fundamentally *useful*. In order to appreciate the usefulness of predictive analytic techniques, it is helpful to situate them under the broader "data science" or "data analytics" umbrella. Reading through the burgeoning data science and predictive analytics texts,[16] one detects instantly an instrumental ethic that pervades the literature. Hadley Wickham, the renowned developer of software packages in the open-source programming language R, attributes the development of "data science" as a recognizable field of inquiry to a failure of statistics to *apply itself*:

> There are definitely some academic statisticians who just don't understand why what I do is statistics, but basically I think they are all wrong. What I do is fundamentally statistics. *The fact that data science exists as a field is a colossal failure of statistics*. To me, that is what statistics is all about. It is gaining insight from data using modelling and visualization.[17]

Another commentator compares data scientists to the paradigmatic professionals of useful problem solving: engineers.[18] Thus, data scientists are those who "find solutions to problems by analyzing big or small data using appropriate tools and then tells stories to communicate findings to the relevant stakeholders."[19] Another

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[13] *See* Hal R. Varian, *Big Data: New Tricks for Econometrics*, 28 J. ECON. PERSP. 3, 21-24 (2014).

[14] *Cf.* NATE SILVER, THE SIGNAL AND THE NOISE: WHY SO MANY PREDICTIONS FAIL—BUT SOME DON'T 249-50 (2012) (explaining how "exponential growth in availability of information" simultaneously provides for more testable hypotheses and increased difficulties in individuating meaningful relationships in the data).

[15] *See* Daniel Martin Katz, *Quantitative Legal Prediction—or—How I Learned to Stop Worrying and Start Preparing for the Data Driven Future of the Legal Services Industry*, 62 Emory L.J. 909, 949-50 (2013) ("In comparing the sort of 'mental models' developed by human reasoners against competing algorithms, the question is simple: Can your model predict better than the leading existing approach? Whether the question is well posed or whether the causality is well understood is not particularly critical.").

[16] VINCENT GRANVILLE, DEVELOPING ANALYTIC TALENT: BECOMING A DATA SCIENTIST 2 (2014) ("Books, certificates, and graduate degrees in data science are spreading like mushrooms after the rain.").

[17] Dan Kopf, *Hadley Wickham, the Man Who Revolutionized R*, PRICEONOMICS (Jul. 24, 2015), https://priceonomics.com/hadley-wickham-the-man-who-revolutionized-r/ (quoting Wickham).

[18] *See* MURTAZA HAIDER, GETTING STARTED WITH DATA SCIENCE: MAKING SENSE OF DATA WITH ANALYTICS (2016).

[19] *Id.*

finds that data scientists are distinguished by their emphasis on using data to extract information that leads to decisions and actions.[20]

Unsurprisingly, this instrumental ethic, this drive to do something useful, sometimes assumes entrepreneurial tones. For example, one data scientist defines data science in terms of utility and value creation: "Data science is the transformation of data using mathematics and statistics into valuable insights, decisions, and products. This is a business-centric definition. It's about a usable and valuable end product derived from data."[21]

The third conceptual clarification concerns the relationship between predictive analytics and "Big Data." Big Data refers to a phase transition in society's relationship with data marked by heightened volume, velocity, variety, and exhaustiveness of available datasets.[22] It is most helpful to think of the term Big Data as referring to the object on which the predictive analytic techniques are performed in order to achieve their insights, rather than the techniques themselves.

Big Data's relation to data science and predictive analytics is ambivalent. On the one hand, it is the fuel of predictive analytics, the source of the data on which predictive analytics acts.[23] It is not that we live in a more data-rich moment in history; the data have always been there. The distinctive "big-ness" of Big Data is that we can harness computational power and technique to store the data and subject it to analysis.[24] On the other hand, the sheer quantity of data—when $n$=all—threatens to overwhelm researchers, particularly with respect to causal investigations, as noted above.[25] One commentator expresses the relationship well:

> Big Data and new data analytics enable new approaches to data generation and analyses to be implemented that make it possible to ask and answer questions in new ways. Rather than seeking to extract insights from datasets limited by scope, temporality and size, Big Data provides the counter problem of handing and analyzing enormous, dynamic, and varied datasets.[26]

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[20] GRANVILLE, *supra* note 16, at 11.

[21] JOHN W. FOREMAN, DATA SMART: USING DATA SCIENCE TO TRANSFORM INFORMATION INTO INSIGHT xiv (2014).

[22] *See* Rob Kitchin, *Big Data and Human Geography: Opportunities, Challenges, and Risks*, 3 DIALOGUES IN HUMAN GEOGRAPHY 262 (2013).

[23] *See* Jack M. Balkin, *The Three Laws of Robotics in the Age of Big Data*, 78 OHIO ST. L.J. 1217, 1219 (2017).

[24] *See* Michael L. Rich, *Machine Learning, Automated Suspicion Algorithms, and the Fourth Amendment*, 164 U. PA. L. REV. 871, 873 (2016) (noting that emerging applications of predictive legal analytics "arise from the intersection of two trends: the collection of massive troves of individualized data about people in the United States and the explosive growth of a field of computer science known as machine learning").

[25] *See* GRANVILLE, *supra* note 16, ch. 2

[26] Rob Kitchin, *Big Data, New Epistemologies and Paradigm Shifts*, 1 BIG DATA & SOC'Y 1, 10 (2014).

The fourth and final implication to note for present purposes is that the definitions of predictive analytics are framed in terms of the objects of learning rather than the instruments of learning. Of course, the basic toolkit of predictive analytics—consisting of machine learning, artificial intelligence, and natural language processing technologies—is obviously important. Nevertheless, by abstracting away from the specific analytic *techniques*, these definitions elucidate the *purpose* of predictive analytics. This Article therefore asks the reader's indulgence to forbear an elaboration of the dizzying array of complicated statistical and computer science techniques used in connection with predictive analytics.[27]

## B. Predictive Analytics as a New Epistemology

Predictive analytics does not simply refer to application of expanded computational power to generate new data sets and analyze these new data sets (as well as older ones) more powerfully—although it certainly includes that. It also entails a new epistemology. It "changes the definition of knowledge" and creates a "radical shift in how we think about research," effectuating "profound change at the levels of epistemology and ethics."[28] It "reframes key questions about the constitution of knowledge, the processes of research, how we should engage with information, and the nature and the categorization of reality … Big Data stakes out new terrains of objects, methods of knowing, and definitions of social life."[29]

Technology author and entrepreneur Chris Anderson famously suggested that predictive analytics embodies a new empiricist epistemology heralding the "end of theory" altogether—and along with it, methods of inquiry predicated on hypothesis and causality:

> Petabytes allow us to say: 'Correlation is enough.' We can stop looking for models. We can analyze the data without hypotheses about what it might show. We can throw the numbers into the biggest computing clusters the world has ever seen and let statistical algorithms find patterns where science cannot. . . . The new availability of huge amounts of data, along with the statistical tools to crunch these numbers, offers a whole new way of understanding the world. Correlation supersedes causation, and science can

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[27] For the curious, an excellent (but rather technical) primer is Kevin Ashley's *Artificial Intelligence and Legal Analytics*. *See* KEVIN D. ASHLEY, ARTIFICIAL INTELLIGENCE AND LEGAL ANALYTICS: NEW TOOLS FOR LAW PRACTICE IN THE DIGITAL AGE (2017).

[28] Dana Boyd & Kate Crawford, *Critical Questions for Big Data*, 15 INFO., COMM'N, SOC'Y 662, 665 (2012).

[29] *Id.*

advance even without coherent models, unified theories, or really any mechanistic explanation at all.[30]

If we read through the messianic—if not perhaps equally apocalyptic—tone,[31] Anderson's remarks testify to an excited holding-out of mere prediction as the ultimate objective of what used to be scientific, but now is purely technical, inquiry. With this new data epistemology, the need to develop and test and understand a basic model of reality—what positivist science refers to as "theory"—disappears altogether.[32] We no longer need to understand; instead, we predict.[33] The new epistemology is a key marker of our in-process transition from the internet age to what Jack Balkin has labeled the "Algorithmic Society."[34]

French social theorist François Ewald characterizes the new data epistemology in terms of a tension resulting from requiring ever greater aggregates of data while also insisting on the uniqueness of each data point:

> Knowledge, in the world of data, is produced based on a twofold requirement which, in other configurations, would appear contradictory: on the one hand, we must gather the greatest amount of data (data that only exists *en masse*), the more the better; and on the other hand, they are treated one to one, without trying to erase their differences by integrating them into categories. It is a type of resolutely nominalist knowledge, which bans the universal. . . . This tension is permanent in the epistemology of data.[35]

By banning universal concepts in favor of limitless new distinctions among social actors, this new data epistemology inevitably "opens up a new political universe" concerning how these distinctions are to be drawn.[36] In fact, in terms that evoke the opaque phraseology of his mentor Michel Foucault, Ewald argues that "digital power-knowledge must be regarded as original and in the process of transforming all power relations."[37]

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[30] Chris Anderson, *The End of Theory: The Data Deluge Makes the Scientific Method Obsolete*, WIRED, Jun. 23, 2008, https://www.wired.com/2008/06/pb-theory/.

[31] I borrow the characterization from Julie Chu. Julie Y. Chu, *The Noise of Data: Comments on Ewald's "After Risk"*, 7 CARCERAL NOTEBOOKS 109 (2011).

[32] *See* JOSHUA PEARL & DANA MACKENZIE, THE WHY OF THE WORLD: THE NEW SCIENCE OF CAUSE AND EFFECT 30 (2018).

[33] In this respect, the data epistemology might be interpreted as a further step along the evolution of modern societies from "memory" of the past to "prognosis" of the future, as described by German sociologist Niklas Luhmann. *See* NIKLAS LUHMANN, THE DIFFERENTIATION OF SOCIETY 349 (Stephen Holmes & Charles Larmore trans., 1982).

[34] Balkin, *supra* note 23, at 1219.

[35] François Ewald, *Omnes et Singulatim: After Risk*, 7 CARCERAL NOTEBOOKS 77, 84-85 (2011).

[36] *Id.* at 81.

[37] *Id.*

When actors within the legal system (lawyers, law firms, judges, legal software vendors) harness the powerful and useful analytics toolkit, they also participate in the same epistemological turn. And just as the data epistemology will inevitably occasion a new data politics, so too will it disturb settled theoretical and practical understanding in the legal field. Data scientists, in their guise as software entrepreneurs and consultants, are hard at work in churning out practical applications of these new technologies—they are "disturbing," in the patois of the age. As is typical, though, the technology disturbs and the law reacts,[38] both in terms of how the law responds to new technology and in terms of how the law understands itself in the light of the new technology. The former process has already catalyzed interesting debates about, for instance, professional responsibility in an era of artificial professionals. This Article is concerned with the latter process, which has barely begun.

### C. Predictive Legal Analytics

Adding the adjective "legal" to predictive analytics appears at first straightforward: it simply signals one particular field of application for these powerful instrumental techniques. Predictive legal analytics, then, refers to the business of predicting behavior by legal officials and institutions so as to drive better decisionmaking. It can be used by a wide array of actors who desire to predict how the legal system will impact their affairs. For instance, my own university has established a "legal analytics lab," the mission of which is to "analyze millions of litigation filings and outcomes, corporate financial disclosures, patent applications and other legal documents to identify patterns and evaluate how the law operates to predict future outcomes."[39]

The aim of this Article is to get us to reflect a bit more on what the "legal" in predictive legal analytics means—on what special implications might follow from applying predictive analytic methodologies to the discipline of the law. To explore the potential depth of those implications, it uses as a test case an admittedly hypothetical, futuristic thought experiment (the Singulatim software). As such, it is not necessary to set forth an extensive taxonomy of the existing applications of these technologies; able treatments have recently appeared elsewhere.[40] Nevertheless, this Section addresses two other matters that are necessary in order to appreciate the Singulatim software's possible implications. First, it will highlight a few particular first-generation applications of predictive legal analytics, inviting the reader to consider their practical effects on the practice of law. Second, and more importantly, it will describe the perspective of so-called legal futurists, a

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[38] *See* Ryan Calo, *Robotics and the Lessons of Cyberlaw*, 103 CAL. L. REV. 513 (2015).

[39] GEORGIA STATE UNIVERSITY LEGAL ANALYTICS LAB, https://robinson.gsu.edu/academic-departments/insight/innovation-labs/legal-analytics-lab/ (last visited Oct. 11, 2019).

[40] [Insert cites]

group that extrapolates from these first-generation technologies to imagine how predictive analytics might transform and reinvent the legal system. This Section quotes heavily from the futurists not because their voices are the most prevalent among those interested in predictive legal analytics, but rather because their project is transformational and their ideas require engagement from anyone interested in the future of the legal system.

### 1. *First-Generation Applications*

These first-generation applications open up opportunities for lawyers, judges, and regulators to better understand how the legal system actually works in practice, as well as for legal subjects to more reliably plan their affairs based on an understanding of what the law requires. Thus, for instance, a practicing lawyer might use predictive analytics to gauge the likelihood that a regulator will grant a client's application for a power plant license. Manufacturers might seek to predict products liability exposure associated with a new product rollout for purposes of setting up a reserve fund. A wealthy individual might utilize an algorithmic application to determine whether a tax planning strategy is likely to succeed. A deeply indebted family business might seek a comprehensive assessment of the range of post-bankruptcy capital structures available to it. A city government might allocate enforcement resources based on algorithmic predictions of which restaurants are most likely to run afoul of public health codes. A nationwide employer might seek to tailor its workplace practice guidelines geographically to limit discrimination complaints based on predictions of jurisdiction-specific liability exposure. A non-profit community organization might use data concerning police stops and charging practices to predict how to minimize interactions between black youth and the criminal justice system. A central bank might implement a dynamic, automated system of legally binding loan loss provisioning rules that adjusts consistent with the results of a multi-agent system simulation of financial institutions. A judge might use a machine learning tool to alert herself to legally irrelevant factual circumstances that have the power to bias her decision.

These are hypothetical applications, but they are not unrealistic—it would be surprising if some of them were not already operating in some settings. Machine learning algorithms are already outperforming humans in the task of accurately predicting Supreme Court decisions.[41] And researchers are using natural language processing and machine learning to build successful predictive models of other courts, such as the European Court of Human Rights.[42]

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[41] *See* Daniel M. Katz et al., *Predicting the Behavior of the United States Supreme Court: Toward a General Approach*, PLOS ONE (2017).

[42] Nikolaos Aletras et al., *Predicting Judicial Decisions of the European Court of Human Rights: A Natural Language Processing Perspective*, 2 (2006) 2 PEERJ COMP. SCI. 92 (2006).

While many of these first-generation applications of predictive analytics focus on forecasting the outcome of court cases, they are by no means limited that relatively narrow context. For instance, applications such as IBM's Ross are able to answer legal questions posed by users with astonishing accuracy, even providing citations and suggestions for further reading.[43] Governments have for some time used assistive, facilitative predictive analytics tools to help allocate enforcement and adjudicatory resources.[44] Some governments are even experimenting with machine learning systems to automatically generate binding legal orders—what legal researchers Cary Coglianese and David Lehr call "rulemaking by robot."[45] With all this technological development, futurists hypothesize that we may look back at the twentieth century and wonder how we ever found it acceptable to maintain a legal system *without* machine learning algorithms.[46]

That said, even the more modest legal technologists acknowledge how predictive legal analytics will change the practice of law. Thus, for instance, Harry Surden tells us that "statistical and other heuristic-based automated assessments of data can sometimes produce automated results in complex [legal] tasks that, while potentially less accurate than results produced by human cognitive processes, can actually be sufficiently accurate for certain purposes that do not demand extremely high levels of precision and accuracy."[47] And John McGinnis predicts that improvements in computing power will lead to an increasing legislative preference for standards over rules, as well as "dynamic rules" that are adjusted with increasing frequency as algorithms process new information.[48] The technologies have experienced uptake in private sector alternative dispute resolution settings too.[49]

Barring an unlikely aggressive approach by state bar regulators, these changes are forthcoming no matter what the lawyers themselves have to say.[50] In fact, the predictive analytics turn is as much a demand-side phenomenon as it is a supply-side phenomenon. Lawyers might be prone to a little navel-gazing when they survey the innovative analytics technologies that their peers are developing in

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[43] *See* ASHLEY, *supra* note 27, at 351-52.

[44] *See* Cary Coglianese & David Lehr, *Transparency and Algorithmic Governance*, 71 ADMIN. L. REV. 1, 8-9 (2019) (referring to "adjudication by algorithm"); Daniel E. Ho & David F. Engstrom, Process as Product, Process as Punishment: Algorithmic Adjudication and Enforcement in the Administrative State (Apr. 2019) (unpublished manuscript) (on file with author).

[45] *See* Cary Coglianese & David Lehr, *Rulemaking by Robot: Administrative Decision Making in the Machine-Learning Era,*105 GEO. L.J. 1147, 1167-76 (2017).

[46] *See* Benjamin Alarie et al., *Regulation by Machine*, J. MACHINE LEARNING RES. (2017).

[47] Harry Surden, *Machine Learning and Law*, 89 WASH. L. REV. 87 (2014).

[48] John O. McGinnis & Steven Wasick, *Law's Algorithm*, 66 FLA. L. REV. 991, 1039-48 (2015).

[49] *See* BENJAMIN H. BARTON & STEPHANOS BIBAS, REBOOTING JUSTICE: MORE TECHNOLOGY, FEWER LAWYERS, AND THE FUTURE OF LAW (2017).

[50] For a thoughtful discussion of the impact of unauthorized practice of law rules on emerging legal technology (including predictive analytics), see Dana Remus & Frank Levy, *Can Robots be Lawyers? Computers, Robots, and the Practice of Law*, 30 GEO. J. LEG. ETHICS 501 (2017).

coordination with data scientists. But the fundamental marketplace reality is that clients "are increasingly asking for probability-based terms to express outcomes."[51]

What these clients are, in effect, asking for is a prediction for how the law applies to their situations. The initial forays into predictive legal analytics world aim at forecasting the outcomes of actual disputes. Lex Machina is a big player in this arena. It touts itself as representing a "paradigm shift for lawyers."[52] "For the first time," its website tells us, "lawyers can combine insights gleaned from bottom-up data with traditional top-down controlling authority found in statutes, rules, and court opinions."[53] Lex Machina promises to "gain actionable insights across the data that is relevant to your strategic question."[54] These insights might pertain to judges, venues, opposing counsel, prospective counsel, adverse party strategy, and damages. Ravel, another predictive legal analytics provider, advertises its ability to instantly assess a user's chances of winning a case based on how many times the opposing lawyer has filed a certain type of lawsuit, in which court, with what success rate, whom that lawyer has represented, and which opposing counsel that attorney has faced.[55] It promises similar insights regarding the behavior of individual judges and specific courts and law firms.[56] Predictive legal analytics software for cash bail and sentencing have also already been integrated into the American lawyer's workaday toolkit.[57]

Other researchers are using predictive legal analytics to improve judicial performance.[58] For instance, professor Daniel Chen explains a new research program of "predictive judicial analytics" that holds to promise of de-biasing judicial decision-making and increasing what he calls the "fairness of law."[59] Researchers have established that machine learning can be used to automatically detect circumstances where the decisions of judges, or even those of a particular judge, are likely to be affected by irrelevant factors. In response, targeted interventions, such as judicial education programs or automated red-flag systems alerting the judge to the potential of bias, may be designed to de-bias decisions at early stages of the proceedings.

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[51] Thompson, *supra* note 1, at 7.

[52] LEX MACHINA, https://lexmachina.com/what-we-do/ (last visited Oct. 3, 2019).

[53] *Id.*

[54] LEX MACHINA, https://lexmachina.com/what-we-do/whats-unique/ (last visited Oct. 3, 2019).

[55] *See* Thompson, *supra* note 1, at 7.

[56] RAVEL LAW, https://home.ravellaw.com/products (last visited Oct. 3, 2019).

[57] *See, e.g.*, Alexei Koseff, *Jerry Brown Signs Bill Eliminating Money Bail in California*, THE SAC. BEE, Aug. 28, 2018, at [__], https://www.sacbee.com/news/politics-government/capitol-alert/article217461380.html.

[58] *See* Daniel L. Chen, *Machine Learning and the Rule of Law*, *in* LAW AS DATA: COMPUTATION, TEXT, AND THE FUTURE OF LEGAL ANALYSIS 433 (Michael A. Livermore and Daniel N. Rockmore eds., 2019).

[59] *Id.*

## *2. The Futurist Perspective*

Most lawyers can grasp the feasibility of these first-generation analytics applications, as well as the evident efficiency enhancements they entail for the lawyers, organizations, citizens, courts, and administrative agencies that would use them. But to the legal futurists, they are but a prelude to a revolutionary re-conceptualization of what it means to practice law—"a new form of law" altogether.[60] They are precursors to the apotheosis of law-as-prediction in the form of the "legal singularity," or the "completely-specified" legal system, or "complete law," or the "self-executing" legal system.

Anyone paying attention to the legal profession in recent years is familiar with pronouncements that the "practice of law is going through its most dramatic change since laws were written down."[61] Legal futurist Richard Susskind, using only a slightly more modest look-back period, announced to fanfare that "legal institutions and lawyers are at a crossroads . . . and will change more radically in less than two decades than they have over the last two centuries."[62] Predictive legal analytics should be thought of as a core pillar of this radically changed legal system. At the most basic level, legal analytics involves deploying algorithmic computer systems (the "machine" in machine learning) to "train" themselves through exposure to large datasets so as to infer rules from the patterns it observes.[63]

According to another legal futurist, Benjamin Alarie, predictive legal analytics will soon result in a "legal singularity." He borrows the "singularity" term from Vernor Vinge, who used it to describe the "imminent creation by technology of entities with greater than human intelligence."[64] Whereas the singularity overcomes the limits of human intelligence, the *legal* singularity will overcome the problem of legal uncertainty:

> The legal singularity will arrive when the accumulation of massively more data and dramatically improved methods of inference makes legal uncertainty obsolete. The legal singularity contemplates complete law. . . . The legal singularity contemplates . . . the emergence of a seamless legal order, universally accessible in real-time. . . . The law will be functionally complete.[65]

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[60] Anthony J. Casey & Anthony Niblett, *The Death of Rules and Standards*, 92 Ind. L.J. 1401, 1403 (2017).

[61] Matthew Stubenberg, *Better Position Yourself for the Legal Technology Wave*, 23 TYL 5, 5 (2019).

[62] Richard Susskind, Tomorrow's Lawyers: An Introduction to Your Future xvii (2d ed. 2016).

[63] *See* Joshua A. Kroll et al., *Accountable Algorithms*, 165 U. Pa. L. Rev. 633, 679 (2017).

[64] Vernor Vinge, *The Coming Technological Singularity: How to Survive in the Post-Human Era*, 1993 Vision-21: Interdisc. Sci. & Engineering Era Cyberspace 12.

[65] Benjamin Alarie, *The Path of the Law: Towards Legal Singularity*, 66 U. Toronto L.J. 443, 445-46 (2016).

With the arrival of the legal singularity, anyone interested in exploring how the legal system bears on a contemplated action will simply feed variables into an algorithm that will produce law's answer. At the 2019 meeting of Stanford Law School's annual FutureLaw conference, a panel moderator framed the discussion by observing that some people think we will eventually "reach legal singularity, where we can predict every case with perfect confidence."[66]

Although most of the early work in predictive legal analytics repeats the seemingly ineradicable urge of lawyers to focus on litigation activity, the futurists maintain that analytics will also empower legislatures, regulators, and transacting commercial parties of the future to draft completely specified rules and contracts. We are invited to imagine the legal system as a dynamic compendium of "microdirectives," where lawmakers enact a catalog of precisely tailored laws, specifying the exact behavior that is permitted in every situation."[67] With the benefit of virtually unlimited data and powerful predictive technologies, legislators will "have enough information to anticipate virtually all contingencies, such that laws are perfectly calibrated to their purpose."[68]

Stephen Wolfram provides one of the frankest explications of the implications of futurism for the legal system. Wolfram proposes that it will be possible to develop a fully symbolic and computer programmable human language to supplant natural language. In the process, "the whole spectrum of activities covered by law becomes potentially accessible to structured computation."[69] His focus is on contract, but he acknowledges that his ideas apply to public law as well. In both contexts, the law displays an algorithmic logic: "Typically a contract defines some model of the world, and specifies what should happen in different situations."[70] He augurs a sort of return to the origins of the codex, the Latin word denoting the systematic collection of legal rules. The word code was repurposed two millennia later by computer scientists to refer to the systematic rules for operating computers. Now, the challenge is to "put all those legal codes and contracts into computational form," using a universal, programmable symbolic discourse language—to use computer code to implement and enforce new legal codes of the future.[71] At that point, the legal system could, in principle, be governed entirely by artificial intelligence. At that point, the system would reach computational irreducibility, a condition obtaining when "there really isn't any way to see what will happen much more

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[66] Stanford Law School, *FutureLaw 2019 | The Future of Legal Tech, Civil Procedure, and the Adversarial System*, YOUTUBE (Apr. 12, 2019), https://www.youtube.com/watch?v=bGNNiy99I7c&t=470s.

[67] Casey & Niblett, *supra* note 60, at 1401.

[68] *Id.*

[69] Wolfram, *supra* note 3, at 126.

[70] *Id.* at 120.

[71] *Id.* at 109.

efficiently than just by running [the machine learning algorithm]."[72] Law will become self-executing, like a computer algorithm, across all its applications.[73]

### D. Introducing the Singulatim Software as a Thought Experiment

In the seventeenth century, advocates of the divine right of kings often affirmed that monarchs wrote and published general laws only because their limited attention and knowledge prevented them from writing a fully specified legal code for all of their legal subjects.[74] Early liberals like John Locke were outraged by this line of argument, instead viewing the generality of law as a prerequisite for liberty and a bulwark against arbitrary government.[75] However, both the authoritarian monarchists and the liberals shared an assumption that in any event the limits of human cognition rendered it epistemically impossible to conceive of a predictable, but not general, system of laws—a comprehensive code that answered all formulations of the questions "how exactly does the law apply *to me*?" And yet that is exactly the endgame of legal futurism. Imagining the legal singularity therefore allows us to exhume an old debate about the legal order of liberalism itself.

This Article asks the reader to participate in a counterfactual thought experiment in imagining a technology that does not yet exist, and that many believe cannot exist in the future. Nevertheless, such an exercise is fruitful because it allows us to imagine the consequences of the futurists' announced project to create a completely-specified predictive analytic tool. The hypothetical technology will be called the "Singulatim" software. The Singulatim software would allow a user to input parameters relevant to a matter to generate a probabilistic assessment of how the legal system would be expected to apply to the problem. The Singulatim software would offer actionable insights to individuals, businesses, non-government organizations, legislatures, administrative agencies, and courts. Its operations would achieve a perfectly predictable legal system no longer saddled with the twin problems of discretion and uncertainty that have occupied so much energy in legal theory debate.

The applications of the Singulatim software would be limited only by the extent of the user's curiosity in imagining settings in which the legal system comes into play. For example, the Singulatim software would permit an electric utility to supply details of a proposed nuclear power plant project in order to prepare a license application that will be granted. It would also empower a products liability

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[72] *Id.* at 115.

[73] Frank Pasquale, *A Rule of Persons, Not Machines: The Limits of Legal Automation*, 87 GEO. WASH. L. REV. 1, 6 (2019).

[74] *See, e.g.*, ROBERT FILMER, PATRIARCHA AND OTHER WRITINGS 45-47 (Johann P. Sommerville ed., 1991) (1680).

[75] Indeed, John Locke's *First Treatise of Government* is an express refutation of Filmer's monarchism. *See* LOCKE, TREATISES ON GOVERNMENT, *supra* note 7, *passim*.

defendant to formulate expectations concerning the extent of its potential liability for producing a product known to cause harm, both in general and with respect to specific venues to which they might credibly transfer cases (an issue on which the Singulatim software could also shed light). It would also allow a municipality to set an optimal speed limit at a busy intersection based on data relating to driver behavior and enforcement practices. It would enable a legislature to encode a system of dynamic rules determine whether a business's workers are properly categorized as employees or independent contractors based on the legislature's policy assessment of the factors that ought to govern that determination. It would allow a community non-profit to provide real-time guidance to young black men in heavily policed neighborhoods in order to limit encounters with the legal system and maximize the availabilities of defenses in the case of such encounters.

The Singulatim software would bring obvious efficiencies in terms of cost reduction.[76] In embodying the legal singularity, it would eliminate the cost of legal uncertainty. Other things being equal, cost reduction is at worst neutral, and at best a clear improvement. That said, others things are frequently unequal. Pasquale is right when he observes that while "cost savings are a powerful argument in an era of increasing competition and declining state revenues," in many cases the automation of the legal system "hides the externalization of cost and risk to customers, citizens, and business rivals."[77] But these apt observations, articulated in the language of microeconomics, are focused on *external* effects of the legal system. The next Part explores the Singulatim software's *internal* effects on the legal system—in particular, on law's continuing claim to normative force.

Some critics question whether predictive legal analytics will work, whether there are important elements of legal practice that resist the analytics turn.[78] Other critics caution against the likely power dynamics of algorithmic law.[79] Still others worry about unintended consequences.[80] But this Article inquires into the normative consequences for the rule of law if the futurist conception of the legal singularity comes to pass.

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[76] *See* Darrell M. West & John R. Allen, *How Artificial Intelligence Is Transforming the World*, BROOKINGS INST. (Apr. 23, 2018), https://www.brookings.edu/research/how-artificial-intelligence-is-transforming-the-world/.

[77] Pasquale, *supra* note 73, at 18.

[78] *See, e.g.*, Mark K. Osbeck, *Lawyer as Soothsayer: Exploring the Important Role of Outcome Prediction in the Practice of Law*, 123 PENN. ST. L. REV. 41, 96-97 (2018) ("[I]t is premature to say that [predictive legal analytics] will replace these traditional tools in the near future; rather, predictive analytics can be expected to complement the traditional tools of outcome prediction."); Lisa A. Shay et al., *Do Robots Dream of Electric Laws? An Experiment in the Law as Algorithm*, *in* ROBOT LAW 274 (Ryan Calo et al. eds., 2016).

[79] Pasquale, *supra* note 73, at 14; *cf. also* David Lazer et al., *Computational Social Science*, 323 SCI. 721 (2009).

[80] [Insert cites]

### III.        The Implications of the Legal Singularity on the Rule of Law

In modern societies, law enjoys a special claim to legitimacy and normative validity. Legal subjects do not mold their behavior according to the legal system simply because they fear the coercive power of the state.[81] Instead, law draws its binding force from what Jürgen Habermas—one the most important philosophers, jurisprudes, and social theorists of the past half century—referred to as the "alliance that the facticity of law forms with the claim to legitimacy."[82] The *facticity of law* here refers to the coercive force of duly promulgated standards and rules. If a government audit reveals you have misstated your income tax liability, it will be difficult to evade the plain fact of civil enforcement, and perhaps criminal punishment, by the authorities. However, it is law's special *claim to legitimacy* that causes many people to consider lawbreaking simply inconceivable, irrespective of the contours of the coercive sanctions regime.[83] This is not to say that everyone molds their behavior to the shape of the law at all times,[84] particularly when no one is watching, but only that people's empirically observable behavior is consistent with some respect for the legitimacy of law—that law's command is different than that of a gun-toting robber (who might inflict harm by shooting you) or an imperious boss (who might inflict harm by depriving you of your means of subsistence).

The sources of law's legitimacy and normative force are multiple, and this Article only focuses on one: adherence to the *rule of law* principle. The rule of law can be thought of as a condition precedent for any legitimate liberal social order.[85] Hence Voltaire's exaggerated quip, which nevertheless reflects the basal association

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[81] The best empirical exploration of how law achieves normative legitimacy remains Tom Tyler's *Why People Obey the Law*. *See* TOM R. TYLER, WHY PEOPLE OBEY THE LAW (2d ed. 2006). The deepest theoretical engagement with the issue of the legitimation of law is found in the German sociological tradition, where the issue has been at the forefront of social-theoretical inquiry for over a century. *See, e.g.,* JÜRGEN HABERMAS, LEGITIMATION CRISIS 95-101 (Thomas McCarthy, trans. 1975); 3 MAX WEBER, ECONOMY AND SOCIETY: AN OUTLINE OF INTERPRETIVE SOCIOLOGY 953 (Guenther Roth & Claus Wittich eds., Ephraim Fischoff trans., 1968).

[82] JÜRGEN HABERMAS, BETWEEN FACTS AND NORMS: CONTRIBUTIONS TO A DISCOURSE THEORY OF LAW AND DEMOCRACY 38-39 (William Rehg trans., 1996).

[83] The incremental causal impact of legitimacy perception on law-abidingness contravenes the classic economics models of law-abidingness. *See, e.g.*, Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169, 176 (1968) ("[T]he economists' usual analysis of choice and assumes that a person commits an offense if the expected utility to him exceeds the utility he could get by using his time and other resources at other activities."); Louis Kaplow & Lucian Bebchuk, *Optimal Sanctions and Differences in Individuals' Likelihood of Avoiding Detection*, 13 INT'L REV. L. & ECON. 217, 219 (1993) ("Individuals will choose to act whenever their benefit exceeds their expected sanction.").

[84] *See* Sanford Levinson, *Escaping Liberalism: Easier Said Than Done*, 96 HARV. L. REV. 1466, 1472-73 n.25 (1983) (cautioning legal profession against overstating the legitimating effects of law).

[85] *See, e.g.*, PAUL STARR, FREEDOM'S POWER: THE TRUE FORCE OF LIBERALISM 21 (2007); Nicola Lacey, *The Jurisprudence of Discretion: Escaping the Legal Paradigm*, *in* THE USES OF DISCRETION 361, 369 (Keith Hawkins ed., (1992).

between liberty and law: "freedom means dependence on nothing other than law."[86] And Tom Paine's invocation of the law as a replacement for the arbitrary will of monarchs: "But where says some is the King of America? . . . . [I]n America THE LAW IS KING. For as in absolute governments the King is law, so in free countries the law *ought* to be King; and there ought to be no other."[87] This sentiment also figured prominently in the writings of John Locke, widely regarded as the father of liberalism,[88] who wrote that "*the end of Law* is not to abolish or restrain, but *to preserve or enlarge Freedom*."[89]

This Article focuses on the rule of law principle because when legal futurists trumpet the impending elimination of legal uncertainty and the creation of a completely predictable legal system, they are drawing from themes that legal and political theorists have traditionally considered to be constituents of the rule of law. We have already seen how legal futurism promises enhanced efficiency of the market for legal services, not to mention the likely benefits to economic actors and even social actors more generally, flowing from perfect knowledge of how the law will apply. This Part assumes that all this is true, and against that background sets forth the Article's main claim and contribution: that legal futurism, in providing those apparent benefits, might strip some or all of the normative legitimating force the legal system enjoys in virtue of the rule of law principle. Stated differently, the concern is that the legal system, as we understand it, might not survive attempts to make it more efficient and effective.[90]

It starts in Section A with an introduction to the basic idea of the rule of law, explaining its association with non-arbitrariness in government, and identifying its two fundamental pillars: predictability and universality. Next, Section B situates the futurist project to eliminate legal uncertainty in the debates about legal discretion and arbitrariness that generally attend the rule of law concept. It cautions

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[86] VOLTAIRE, PENSÉES SUR LE GOUVERNEMENT (1752), *reprinted in* OEUVRES COMPLÈTES DE VOLTAIRE 523, 526 (Louis Moland ed., 1883) ("La liberté consiste à ne dépendre que des lois.") (author translation).

[87] THOMAS PAINE, COMMON SENSE 98 (Penguin Books 1976) (1776).

[88] *See, e.g.*, MICHAEL P. ZUCKERT, LAUNCHING LIBERALISM: ON LOCKEAN POLITICAL PHILOSOPHY (2002).

[89] LOCKE, TREATISES ON GOVERNMENT, *supra* note 7, at 306 (Second Treatise, § 57). The basic idea can be traced even further back to Cicero, who argued that the rule of law was the "foundation of our liberty," in the following terms: "[t]he ministers of the law are the magistrates; the interpreters of the law are the judges; lastly, we are all servants of the laws, for the very purpose of being able to be freemen." MARCUS TULLIUS CICERO, THE ORATIONS OF MARCUS TULLIUS CICERO 146 (trans. C. D. Yonge, 1856).

[90] The Article focuses on the rule of law, but legal futurism has potential implications for other core legal concepts, such as legal regulation and legal reform. Both legal regulation and legal reform only make sense in an environment structured by cause and effect. Legal regulatory interventions have intended effects, and legal reform efforts conceive of the law as a transformative causal agent. To the extent that legal futurism follows Anderson's example and jettisons efforts to understand causation in preference for correlation data alone, we should expect destabilization of our current modes of understanding legal regulation and legal reform.

that while futurism might solve the problem of human discretion in the law, it does not necessarily solve the problem of arbitrary government.

Section C and Section D take up the predictability principle and the universality principle, respectively. As regards predictability, Section C will argue that the futurists are privileging a weak-form of functional predictability over a strong-form of normative predictability that is rooted in liberty and non-arbitrary government power. Weak-form predictability is unobjectionable on its own, since it facilitates efficient planning on the part of legal subjects. But weak-form predictability— again, on its own—has no intrinsic connection to the rule of law and the ideal of non-arbitrary government. When futurists advocate for the use of legal analytics to enhance legal predictability, we should beware of the threat that an inattentive and hurried embrace of analytics in service of (only weak-form) predictability will attenuate the rule of law's connection to the deeper (strong-form) predictability principle and its commitment to non-arbitrary government.

As for universality, Section D will argue that the futuristic rush to banish legal uncertainty and usher in a completely specified legal system also threatens to undermine the rule of law's insistence that the law applies generally. The threat here is twofold. The first is essentially critical: that the Singulatim software, in learning from how the legal system works, would institutionalize algorithmically the existing inequalities in the way the legal system treats its subjects.[91] The second threat, on the other hand, strikes even deeper at the rule of law. The problem here is not that the Singulatim software cements in place some extra-legal hierarchy; instead, the issue is that the basic terms of universal rights might cease to make sense in the face of an epistemological shift that allows the law to only see atomized data points where it used to see integral, individual legal subjects.

### A.  The Idea of the Rule of Law

The rule of law is a protean concept.[92] Legal theorist Brian Tamanaha clarifies the term by helpfully distinguishing between a "thick" interpretation of the rule of law and a "thin" interpretation of the concept.[93] Some theorists adopt a thick, capacious formulation of the rule of law that associates it with a broad constellation of liberal values, such as justice, transparency, rationality, due process, fairness, human and civil rights, and democratic self-government. However, others prefer a thinner conception of the rule of law, warning that the tendency towards a "promiscuous"

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[91] In this sense, the critic would say that legal futurism is still "stamped with the birth marks of the old [legal] system from whose womb it emerged." KARL MARX, *Critique of the Gotha Program*, *in* THE MARX-ENGELS READER 525, 529 (Robert C. Tucker ed., 2d ed. 1978).

[92] *See* Jeremy Waldron, *Is the Rule of Law an Essentially Contested Concept (in Florida)?*, 21 L. & PHIL. 137, 138-40 (2002); Paul P. Craig, *Formal and Substantive Conceptions of the Rule of Law: An Analytical Framework*, PUB. L. 467 (1997).

[93] BRIAN Z. TAMANAHA, ON THE RULE OF LAW: HISTORY, POLITICS, THEORY 3 (2004).

interpretation of the term to include a laundry list of other ideals would deprive it of any useful function.[94]

Political philosopher Henry Richardson has written about the relationship between the rule of law and the deeper reservoir of liberal values. He espouses a thin, but still substantial, conception of the rule of law, while also registering the difficulty of completely severing any connection between the rule of law, on the one hand, and legitimacy, popular democracy, and freedom, on the other:

> On certain conceptions of legality, the rule of law and democracy are inherently connected, perhaps because legality is thought of as intimately tied to legitimacy, and legitimacy, in turn, depends on democracy. As I will be using the term "rule of law," however, the question of the relation between the rule of law and democracy is more open than this. While the legitimacy of laws does depend on democracy, there is a thinner understanding of the rule of law that does not carry with it all of the commitment of legitimate legality. This narrower, traditional interpretation of the rule of law may be summed up under three headings: generality, predictability, and regular process.[95]

Even if the rule of law lacks the deep normative power of democratic self-government, it nevertheless "bears an obvious connection with the ideal of freedom and the way it puts all lawmaking under a burden of legitimation."[96] After all, a "basic respect for their freedom demands that citizens be able to discern [the laws], that they be able to take them into account in planning their activities, and that they not be imposed arbitrarily."[97]

Thus, we see that, for Richardson, even the thin conception puts lawmaking under a burden of legitimation to protect against arbitrary government power. This Article largely follows Richardson's lead in opting for a modest conception of the rule of law, while also remaining cognizant of the unavoidable linkages between the rule of law and legitimate liberal government. It will focus in particular on the two core pillars of the rule of law: *predictability* and *universality* (or generality). These two

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[94] JOSEPH RAZ, THE AUTHORITY OF LAW: ESSAYS ON LAW AND MORALITY 211 (1979). John Rawls also inclined towards this narrow formulation. For Rawls, the rule of law is only one of many settings that give institutional form to the deeper principle of equal liberty, the first (in both sequence and importance) of his two foundational principles of a just society. *See* JOHN RAWLS, A THEORY OF JUSTICE 52-53, 179-80 (rev. ed. 1999).

[95] HENRY S. RICHARDSON, DEMOCRATIC AUTONOMY: PUBLIC REASONING ABOUT THE ENDS OF POLICY 216 (2002).

[96] *Id.* at 217.

[97] *Id.*

principles reciprocally reinforce one another[98] in their shared project to limit arbitrary government impingement of freedom.[99]

In summary, the rule of law contributes a significant degree of legitimation to modern liberal government, but that contribution is specific to the rule of law and is analytically distinct from contributions made by other liberal values—including, for example, democratic self-government, civil and political rights, and popular sovereignty. Accordingly, as discussed in greater detail later, if the Singulatim software would end up attenuating the rule of law, the legal system would lose the legitimating effects the rule of law provides, requiring it to lean on those other sources of legitimation for support.[100]

B. A Prefatory Note on the Rule of Law's Treatment of Arbitrariness and Discretion

Thus far, the discussion has linked the rule of law to the problem of arbitrary government power, but omitted any mention of the problem of "legal discretion." This omission is perhaps surprising, since A.V. Dicey, the first legal theorist to formally elaborate the notion of the rule of law, posited a fundamental antithesis between the rule of law and discretion.[101] According to Dicey, where there was discretion, there was room for arbitrariness, and the rule of law could not be said to obtain.

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[98] For instance, a law that is general but not predictable—as with, for example, the infamous Nazi statute providing for punishment of anyone who "performs an act which is deserving of punishment according to the healthy racial feeling"—cannot be consonant with the rule of law. *See* FRANZ NEUMANN, BEHEMOTH: THE STRUCTURE AND PRACTICE OF NATIONAL SOCIALISM: 1933-1944 442 (2d ed. 1944). Conversely, a law that is predictable but not general—as with, for example, a law barring from public office any person who has appeared on the membership rolls of a certain disfavored political organization—would suffer a similar fate. Frequently, both principles animate core liberal-constitutional rules, such as the prohibition on retroactive legislation. Straightforwardly, the prohibition fosters law's predictability. But it also promotes law's universality, inasmuch as a retroactive law is objectionable in part because it applies exclusively to a definite subset of the citizenry—those who have committed the conduct the new law prohibits.

[99] *See, e.g.,* Jeffrey Jowell, *The Rule of Law*, *in* THE CHANGING CONSTITUTION 13, 21-22 (Jeffrey Jowell et al eds., 8th ed. 2015) (listing "certainty" and "equality" as core requirements of the rule of law); Stephen Holmes, *Lineages of the Rule of Law*, *in* DEMOCRACY AND THE RULE OF LAW 19, 19 (José María Maravall & Adam Przeworski eds., 2003) [hereinafter DRL] (referring to "equality" but in substance meaning what is intended by "universality" and "generality" here); LON L. FULLER, THE MORALITY OF LAW 210 (1960) (emphasizing "the twin principles of generality and of faithful adherence by government to its own declared rules").

[100] If one is inclined to accept a more "promiscuous" definition of the rule of law, this statement is implicit in the definition, although one might fail to take account of the dynamic discussed here concerning the narrower definition of the rule of law.

[101] *See* A.V. DICEY, INTRODUCTION TO THE STUDY OF THE LAW OF THE CONSTITUTION 110 (8th ed. 1915) ("[W]herever there is discretion there is room for arbitrariness, and that in a republic no less than under a monarchy discretionary authority on the part of the government must mean insecurity for legal freedom on the part of its subjects."); *see also* TAMANAHA, *supra* note 93, at 67.

We have seen how the futurists claim that the legal singularity will *eliminate* the discretion problem from the legal system altogether. Indeed, much of the drive to predictive legal analytics draws energy from a desire to minimize discretion on the part of lawmakers and lawyers.[102] When framing the issue in terms of discretion, the futurists frequently use the familiar standards-rules dichotomy, touting their newfound abilities to "turn standards into rules" and thereby eliminate the quantum of brute discretion that the former inevitably entail.[103] A legal system without discretion used to be, at most, a formalistic thought experiment.[104] Now, at least for the futurists, it is a commonplace.

In a world before predictive legal analytics (let alone something like the Singulatim software), it made sense for lawyers to collapse the notions of discretion and arbitrariness.[105] In Dicey's estimation, discretion on the part of government officials was *necessarily* arbitrariness.[106] For him, arbitrariness was a human problem; it was always possible to identify the government actors who were acting arbitrarily. The paradigm of arbitrary government was monarchy, which inevitably entailed, following Tom Paine, "arbitrary power *in an individual person*; in the exercise of which, himself, and not the res publica, is the object."[107] This sense is captured by the rule of law maxim that we are subject to a "government of laws, and not of men."[108]

Arbitrariness is a difficult concept to specify in the abstract, although any conception of non-arbitrary power would seem to require that laws serve the welfare or respond to the worldview of the public.[109] Paine again is relevant: the kernel of non-arbitrariness is that the laws are directed in the interest of the res publica, and not the king—or anyone, or anything, else.[110] And so too is Locke,

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[103] *See, e.g.*, Benjamin Alarie, *Turning Standards into Rules—Part 5: Weighing the Factors in Capital Gains vs. Ordinary Income Decisions*, BLOOMBERG DAILY TAX REPORT, Jan. 14, 2019, https://news.bloombergtax.com/daily-tax-report/insight-turning-standards-into-rules-part-5-weighing-the-factors-in-capital-gains-vs-ordinary-income-decisions.

[104] *See* Richard B. Stewart, *The Reformation of American Administrative Law*, 88 HARV. L. REV. 1667, 1675-76 (1975) (discussing the "transmission belt" theory of administrative law, according to which the agency automatically implements legislative directives with no room for discretion); Woodrow Wilson, *The Study of Administration*, 2 POL. SCI. Q. 197, 214 (1887) (analogizing implementing authorities to a cook to whom the housekeeper has delegated the task of "manag[ing] the fires and the ovens").

[105] To be sure, a more modern view of governmental discretion does not see discretion as inimical to the rule of law, but rather seeks to require discretion to be exercised within the scope of legality. *See* Jowell, *supra* note 99, at 20-21.

[106] *See supra* note 101 and accompanying text.

[107] THOMAS PAINE, RIGHTS OF MAN (1791), *reprinted in* THE COLLECTED WRITINGS OF THOMAS PAINE 243, 369 (Philip S. Foner ed., 1945) (1792) (emphasis added).

[108] E.g., Marbury v. Madison, 5 U.S. (1 Cranch) 137, 163 (1803).

[109] *See, e.g.*, PHILIP PETTIT, REPUBLICANISM: A THEORY OF FREEDOM AND GOVERNMENT 56 (1997); RAZ, *supra* note 94, at 220 ("Since it is wrong to use public powers for private ends, any such use is in itself an instance of arbitrary use of power.").

[110] *See supra* text accompanying note 107.

who wrote that non-arbitrary legislation was always "designed *for* no other end ultimately but *the good of the People*."[111] To be sure, political pluralists, civic republicans, and deliberative democrats surely will disagree about the proper way to produce and enforce laws, but they all can agree, *pace* public choice theorists and autocrats, that laws are arbitrary if they are not enacted in the public's interest.

On the other hand, if the Singulatim software abstracts the legal system away from human discretion altogether, is there still an arbitrariness problem for the rule of law to fix?[112] While reducing human discretion seems a necessary part of any legal system administered by *persons*, does its importance fade, if it does not disappear altogether, in a legal system governed by *algorithms*? Is human discretion a problem in and of itself that, if counteracted, simply disappears? Or is it an epiphenomenal sign of a deeper problem that legal subjects have not consented to the design of the rules that bind them—that the legal rules do not depend for the existence on the welfare of the res publica? And if that is the case, wouldn't the Singulatim software set this arbitrary machine on auto-pilot?

In other words, if the futurist response to the discretion problem is to imagine an algorithmic function that abstracts away from the human element of the law, have we solved the problem, or have we created an equally vexing, if not bigger, problem? Our answers to these questions will depend on how we conceptualize arbitrariness as a problem that the rule of law counteracts. Whether or not we remain in the world of Paine and Dicey, where the threat of arbitrary rule takes the form of a disconnect between the human government actors and the res publica, or whether we should update our concepts to accommodate the possibility of arbitrary algorithmic rule, is a question that runs throughout the Article.

How we view this relationship between discretion and arbitrariness will determine how concerned we should be about the potential normative ramifications of the algorithmizing of the legal system. Most obviously, those inclined to conceive of arbitrariness as a human problem will be disinclined to worry about these implications. For them, eliminating arbitrary human discretion is an unalloyed good. Conversely, those who consider the real problem with arbitrariness to be the lack of connection between the res publica and the laws that govern it will view the Singulatim software with skepticism, if not horror. Specifically, they will worry that the futuristic emphasis on the elimination of discretion might disguise an

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[111] LOCKE, TREATISES ON GOVERNMENT, *supra* note 7, at 363 (Second Treatise, § 142); *see also* JOHN LOCKE, *A Third Letter for Toleration*, *in* LOCKE ON TOLERATION 123, 142 (Richard Vernon ed, 2010) ("The power that is in the civil sovereign is the force of all the subjects of the commonwealth, which supposing it sufficient for other ends, than the preserving the members of the commonwealth in peace from injury and violence: yet if those who gave him that power, limited the application of it to that sole end, no opinion of any other benefits attainable by it can authorize him to use it otherwise.").

[112] A similar dynamic characterizes the relation between discretion and separation of powers. The separation of powers is implicit in the idea of general, abstract laws because the application of general, abstract laws must not be in the hands of those who

algorithmic institutionalization of arbitrariness in the form of a legal system disconnected from legal subjects. For them, a de-personalized arbitrariness is just as much to fear as a personalized human arbitrariness. In the end, the question is whether the rules (and algorithms) that govern have been promulgated in their interest, with their consent, and perhaps even with their input.

If we do believe the problem is arbitrariness and not human discretion as such, then we should be concerned about the Singulatim software's effects on the normative legitimating force of the rule of law. After all, the purpose of the rule of law is to protect against arbitrary government. The following two Sections will suggest that the Program undermines the rule of law by abandoning the commitment to universality and privileging a thin, weak conception of predictability committed to efficiency over a more robust, strong conception committed to non-arbitrariness.

This discussion concerning the possibility of replacing human discretion with algorithmic certainty allows us to foreground the Article's main argument: namely, that solving the problem of human discretion by enhancing the predictability of the legal system has the twofold consequence of (1) creating a new problem in the form of possibly arbitrary rule by algorithm and (2) sapping the rule of law construct of the normative force to combat that new problem. In the process, it also brings us back to the ambiguous relationship between the rule of law and self-government, discussed earlier in reference to Richardson's formulation of the rule of law.[113] For those who remain troubled by the prospect of a non-democratic rule of algorithmic law, notwithstanding its elimination of the *human* discretion problem, the Singulatim software would seem to heighten the need to look for forms of legitimation beyond the rule of law.[114]

## C. The Legal Singularity and the Predictability Principle

A basic tenet of any formulation of the rule of law is that a liberal legal system must be roughly predictable. This is the *predictability principle* of the rule of law. The rule of law's predictability principle is taken up first here because it is the *raison d'être* of the entire predictive analytics revolution. The central promise of the legal futurists is that predictive legal analytics will make the legal system more predictable, finally solving the twin problems of uncertainty and discretion that plague legal systems.

The predictability principle requires that a liberal legal system must provide its legal subjects with guidance about how the law applies to them and their affairs. In so doing, the principle limits the ability of governments to exercise discretion arbitrarily. Moreover, the law's predictability also fosters an environment in which legal subjects are able to form expectations and plan their future affairs, as well as

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[113] *See supra* Section III.A.
[114] *See supra* text accompanying note 100.

make credible and binding commitments to one another. Nevertheless, the predictability principle's virtue of non-arbitrariness should be distinguished from the virtue of the expectations-promotion.

### 1. Weak-Form Predictability versus Strong-Form Predictability

The idea that there exists an association between the rule of law and predictability traces its origins to the birth of liberalism as a political philosophy. The cornerstone of political liberalism is the social contract idea that the government's authority derives from the consent of the governed.[115] For Locke, the social contract was the embodiment of the consent of the governed to form a polity with authority to promulgate legislative decrees. Nevertheless, that consent did not extend to unjust, unnatural legislation that unduly limited liberty.[116] Most relevant for present purposes, Locke believed further that predictability was a necessary condition of any such legislation: "whoever has the legislative or supreme power of any commonwealth, is bound to govern by established standing laws, promulgated and known to the people, and not by extemporary decrees."[117]

But why did the threat of unpredictable and "extemporary" legal decrees so offend Locke? And why did he maintain that the laws must be "known to the people"? To clarify these questions, it is helpful to distinguish two perspectives on the importance of a predictable legal system. First, a ***strong form*** of the predictability principle maintains that the law must be predictable to limit the arbitrary exercise of government power. Because the core idea of liberalism is that people consent to surrendering their natural freedoms only for the purpose of protecting their freedoms in greater measure, we can think of the strong form as a cornerstone of the entire liberal project.[118] Locke himself espoused this strong form theory, believing that predictable rules would circumscribe arbitrary power:

> freedom of men under government is, to have a standing rule to live
> by, common to every one of that society, and made by the legislative
> power erected in it; a liberty to follow my own will in all things,

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[115] *See* JOHN RAWLS, POLITICAL LIBERALISM 24 (1993) (noting that "the principle of political legitimacy" requires that the "basic structure [of government] and its policies are to be justifiable to all citizens"); THOMAS NAGEL, EQUALITY AND PARTIALITY 33 (1991) ("The task of discovering the conditions of [political] legitimacy is traditionally conceived as that of finding a way to justify a political system to everyone who is required to live under it."); Jeremy Waldron, *Theoretical Foundations of Liberalism*, 37 PHIL. Q. 127, 140 (1987) ("The thesis that I want to say is *fundamentally* liberal is this: a social and political order is illegitimate unless it is rooted in the consent of all those who have to live under it; the consent or agreement of these people is a condition of its being morally permissible to enforce.")

[116] *See* LOCKE, TREATISES ON GOVERNMENT, *supra* note 7, at 358-59 (Second Treatise § 136).

[117] *Id.* at 353 (Second Treatise § 131).

[118] *See id.* §§ 57, 135; PATRICK J. DENEEN, WHY LIBERALISM FAILED 48-49 (2018).

> where the rule prescribes not; and not to be subject to the inconstant, uncertain, unknown, arbitrary will of another man.[119]

For Locke, all collective power exists only for the good of the society, and as such its exercise "ought not to be arbitrary and at [the] pleasure" of the rulers. Predictable laws not only let people know their duties and their liberties, they also ensure that the rulers avoid the temptation to employ collective power in service of purposes of which the public would not approve:

> [A]ll the power the government has, being only for the good of the society . . . it ought to be exercised by established and promulgated laws; that both the people may know their duty, and be safe and secure within the limits of the law; and the rulers too *kept within their bounds, and not be tempted, by the power they have in their hands, to employ it to such purposes, and by such measures, as they would not have known, and own not willingly.*[120]

In this manner, law's predictability is a procedural transparency device that restricts the government from enacting arbitrary legal rules to which the polity did not and would not consent. To appreciate the importance of predictability of a legal system, it is necessary to consider the citizenry's ongoing consent to, and opinion of, that system. It is not just that the laws must be discernible; they also must be comprehensible, intelligible, and amenable, at least in theory, to contestation. The authorities must "own willingly" their exercise of governmental authority, making it possible for the citizenry to demand reasoned explanations for incursions in their otherwise natural rights to liberty.

Predictability, then, is in practice a precondition of the people's informed consent— which, in turn, is the touchstone of a free people not subject to arbitrary rule. Moreover, the reserve power of the people to revolt, so familiar to the experience of American political theory, lurks in the shadows as a vagrant threat that disciplines the government in the exercise of its delegated powers.[121]

John Rawls invoked this Lockean, strong-form association of legal predictability with liberty, arguing that the purpose of law is to "organize social behavior by providing a basis for legitimate expectations,"[122] so as to make the "boundaries of our liberty" more certain.[123] A predictable legal order therefore protects our liberties from arbitrary intrusions and can be distinguished from, as Rawls would

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[119] LOCKE, TREATISES ON GOVERNMENT, *supra* note 7, at 84 (Second Treatise, § 22).

[120] *Id.* at 360 (Second Treatise § 137) (emphasis added).

[121] *See* RICHARD ASHCRAFT, REVOLUTIONARY POLITICS AND LOCKE'S TWO TREATISES OF GOVERNMENT (1986); LOCKE, TREATISES ON GOVERNMENT, *supra* note 7, at 406-28 (concluding chapter of Second Treatise devoted to "dissolution of the government").

[122] RAWLS, *supra* note 94, at 209.

[123] *Id.* at 210.

put it, a "collection of particular orders designed to advance the interests of a dictator or the ideals of a benevolent despot."[124] When we say we are a "government of laws, and not of men,"[125] or when we, following Madison, emphasize the urgency of the need to oblige the government to "control itself,"[126] we are invoking this strong form of the predictability principle and its Lockean objective of non-arbitrary government power.

As a counterpoint to the strong-form conception of the predictability principle as antidote to arbitrariness in government, a ***weak form*** of the predictability principle maintains simply that the law must be predictable so that legal subjects can form expectations. It must allow citizens to form expectations about how the law will affect them.[127] For weak-form theorists, the rule of law requires laws to be predictable so that law absorbs uncertainty.[128]

Writing a half-century before Locke published his *Second Treatise*, Hobbes, the classical expositor of the weak form, approached the issue of predictability from the perspective of social order. He wrote that governments could only ensure peace—or, in his words, "prevent brawls from arising"—if they were to:

> make some common rules for all men, and *to declare them publicly*, by which every man may know what may be called his, what another's, what just, what unjust, what honest, what dishonest, what good, what evil, that is summarily, what is to be done, what to be avoided in our common course of life.[129]

In Hobbesian government, legal subjects promise obedience to an absolute authority in order to preserve themselves from the violent chaos of nature. The absolute sovereign then commands with the force of law and legal subjects respond with mechanistic automaticity.[130]

The consent to obey, the formulation of legal rules, and the public declaration of those rules all serve the purpose of maintaining a government that is effective at guaranteeing social order. In this way, Hobbesian rule of law, buttressed by predictability, provides a sort of equilibrium manual for society.[131] Whereas Locke's overriding preoccupation was securing natural rights of liberty and limiting

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[124] *Id.* at 208.

[125] E.g., Marbury v. Madison, 5 U.S. (1 Cranch) 137, 163 (1803).

[126] *See* THE FEDERALIST NO. 51, at 372 (James Madison) (2004).

[127] Indeed, these expectations are expectations about normative expectations, as Luhmann has argued.

[128] *See* JÜRGEN HABERMAS, LEGITIMATION CRISIS 99 (Thomas McCarthy trans., 1975) (noting how legal positivists, as weak-form theorists, see law's function as uncertainty absorption).

[129] THOMAS HOBBES, DE CIVE, OR THE CITIZEN 74 (Sterling P. Lamprecht ed., 1949) (1647) (emphasis added).

[130] *See* THOMAS HOBBES, LEVIATHAN 389 (Richard Tuck ed., 1996) (1651).

[131] José María Maravall & Adam Przeworski, *Introduction*, *in* DRL, *supra* note 99, at 1, 5.

arbitrariness on the part of a regrettably necessary government, Hobbes's focus was on the social stability that only an absolute sovereign could secure.[132]

The legal-political philosophy of Friedrich Hayek is a modern variation on the weak-form theme. Really, Hayek should be thought of as an inverted Hobbesian. Hobbes famously viewed the natural state of human relations to be characterized by violence and discord; the state and political life saved mankind from itself. Hayek, in sharp contrast, viewed these institutions with hostility, associating them with central planning and Stalinism. In his estimation, human societies, left to their own devices, evolve towards forms of cooperation for mutual advantage; social order therefore emerges from voluntary, cooperative interactions.[133]

Nevertheless, Hayek echoes Hobbes when he writes that "government in all its actions is bound by rules fixed and announced beforehand—rules which make it possible to foresee with fair certainty how the authority will use its coercive power in given circumstances, and to plan one's individual affairs on the basis of this knowledge."[134] A closer look reveals that Hayek's conception of the role of law in the emergent social order is peculiar, particularly in the way he distinguishes the rule of law from the rule of legislation. For him, law is historically and conceptually antecedent to the state and its legislative power.[135] Law consists of the set of norms and rules that happen to facilitate the types of coordination that emerge among members of society. Hence the rule of law is present where the key constitutive fibers holding a society together—which, again, are analytically distinct from and, in fact, prior to, any legislation or judicial pronouncement—are respected and enforced.

For Hayek, the cooperative institutions that hold society together are those, like rules of property and contract, that facilitate mutual advantage-seeking economic advantage. Consequently, Hayek's conception of liberty and freedom is a thin one, shrunken to the idea that government would not interfere with individual *economic* freedoms.[136] Arbitrariness in the exercise of government power consists only of

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[132] While Hobbes believed that liberty and social stability depended entirely on a sovereign state with the power to make binding decisions, at times he acknowledges, without fully developing his analysis, that natural law also requires spheres of liberty into which the state cannot intrude. *See, e.g.*, HOBBES, *supra* note 130, at [__] ("If a sovereign command a man, though justly condemned, to kill, wound, or maim himself; or not to resist those that assault him; or to abstain from the use of food, air, medicine, or any other thing without which he cannot live; yet hath that man the liberty to disobey."); HOBBES, *supra* note 129, at [__] ("That which is prohibited by the divine Law, cannot bee permitted by the civill, neither can that which is commanded by the divine Law, be prohibited by the civill.").

[133] *See* Eric Mack, *Friedrich Hayek on the Nature of Social Order and Law*, *in* POLITICAL PHILOSOPHY IN THE TWENTIETH CENTURY: AUTHORS AND ARGUMENTS 129, 138-40 (Catherine H. Zuckert ed., 2011).

[134] FRIEDRICH A. HAYEK, THE ROAD TO SERFDOM 54 (1944) (emphasis added).

[135] *See* Mack, *supra* note 133, at 138.

[136] In this respect, it is doubly thin: not only is it purely negative and not positive, but it is also concerned exclusively with market transactions and not with rights of political participation or other, non-market intrusions of coercive power.

interference with the market pricing mechanism.[137] Economic freedom produces a spontaneous social order, which he referred to as *catallaxy*, "brought about by the mutual adjustment of many individual economies in a market."[138] Thus, a minimalist rule of law principle guarantees the basic framework within which markets can aggregate individual knowledge to produce collective, social order.[139] Here, Hayek followed his mentor Ludwig von Mises, who believed that social order would emerge not from central planning but from a "consumers' democracy" in which price signals, produced in conditions of competition, would align productive activity to satisfy human desires.[140]

This reductionist position, which entails a thin conceptualization of freedom and non-arbitrary government, is presumably what made it possible for Hayek to applaud Pinochet as a "liberal dictator"[141] and to affirm that "you can have economic freedom without political freedom, but you cannot have political freedom without economic freedom."[142] In these authors, the rule of law becomes "law and order," which is revealed to entail a twofold connotation: on the one hand, as a catallactic economic-social *order* that emerges from a shrunken, formalized system of predictable *law*; and on the other hand, its common understanding as a message

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[137] *See* FRIEDRICH A. HAYEK, THE CONSTITUTION OF LIBERTY 227-28 (1960) (defining as "arbitrary" government power any action that interferes with the market price mechanism).

[138] FRIEDRICH A. HAYEK, LAW, LEGISLATION, AND LIBERTY: A NEW STATEMENT OF THE LIBERAL PRINCIPLES OF JUSTICE AND POLITICAL ECONOMY 108-09 (1982).

[139] *See* CHRISTINE SYPNOWICH, THE CONCEPT OF SOCIALIST LAW 62-63 (1990).

[140] *See* LUDWIG VON MISES, SOCIALISM: AN ECONOMIC AND SOCIOLOGICAL ANALYSIS 21, 443 (Jacques Kahane trans., 1951) (1922). It bears mention that von Mises, like Hayek, ultimately embraced fascism, noting in the aftermath of the Italian fascists marching on Rome, that "[i]t cannot be denied that Fascism and similar movements aiming at the establishment of dictatorships are full of the best intentions and that their intervention has, for the moment, saved European civilization. The merit that Fascism has thereby won for itself will live on eternally in history." LUDWIG VON MISES, LIBERALISM: IN THE CLASSICAL TRADITION 51 (3d ed., Ralph Raico trans., 1985) (1927). Resolving the question whether the relationship between the Austrians and fascism was one of convenience resulting from their mutual opposition to socialism, or whether there is a historical relationship between classical liberalism and fascism, need not be taken up here. For those interested in exploring the latter possibility, see HERBERT MARCUSE, *The Struggle Against Liberalism in the Totalitarian View of the State*, *in* NEGATIONS: ESSAYS IN CRITICAL THEORY 1, 5-12 (Jeremy J. Shapiro trans., 1968).

[141] John M. Geddes, *New Vogue for Critic of Keynes*, N.Y. TIMES (May 7, 1979), at D1, D7 (interviewing Hayek). A possible contemporary example of the liberal dictatorship model is Bolsonaro's Brazil, where a government with autocratic inclinations embraces both the legacy of military dictatorship and liberal economic policies. *See* Anthony Boadle, *Chile's 'Chicago Boys,' a Model for Brazil Now?*, REUTERS, Jan. 4, 2019, https://www.reuters.com/article/us-brazil-politics-chicagoboys-explainer/explainer-chiles-chicago-boys-a-model-for-brazil-now-idUSKCN1OY1OU.

[142] Geddes, *supra* note, at D7; *see also* EDMUND FAWCETT, LIBERALISM: THE LIFE OF AN IDEA 324-25 (2018) ("Hayek stressed that liberalism neither required nor opposed democracy. Liberalism's foes were totalitarianism and central control of life. Democracy's foe was autocracy, which was compatible with liberty."). Milton Friedman largely shared this perspective. *See* MILTON FRIEDMAN, CAPITALISM AND FREEDOM 10 (1962) ("History suggests only that capitalism is a necessary condition for political freedom. Clearly it is not a sufficient condition. . . . It is therefore clearly possible to have economic arrangements that are fundamentally capitalist and political arrangements that are not free.").

of support for (or at least indifference about) coercive police states, like Chile's dictatorship, that nevertheless purport to guarantee economic freedoms.[143]

But weak-form theorists are hardly all Hayekians, with their ambiguous relationships with arbitrary dictatorial rule. For instance, the legal positivist Joseph Raz, another weak-form theorist, considers the rule of law to refer to the attribute of a legal system that makes it "capable of guiding the behavior of its subjects."[144] In other words, the rule of law is present whenever the law is predictable, full stop. Raz, while ultimately espousing a weak-form version of the predictability principle, acknowledges upfront that the rule of law was no guarantee of non-arbitrary governmental force and power. While law's predictability might occasion a general tendency to non-arbitrariness on the part of governmental officials, Raz believes that "many forms of arbitrary rule are compatible with the rule of law."[145] Here, he is imagining a government akin to Hayek's "liberal dictatorship"—a regime in which the ruler promulgates rules "based on whim or self-interest, etc., without offending against the rule of law."[146] A predictable legal system largely in conformity with the rule of law might, holding all else equal, increase freedom and dignity, but, as Raz points out, "other things are rarely equal."[147]

Instead, Raz describes the rule of law as an "instrumental" and "subservient" idea with "no more than prima facie force."[148] In this respect, it is comparable to a sharp knife. The knife's sharpness is neither inherently good nor evil, and can be used with equal effectiveness to slice a mango or frighten a robbery victim. Raz continues in terms that echo Hobbes's emphasis on the importance of the rule of law as a guarantee of social order:

> Regarding the rule of law as the inherent or specific virtue of law is a result of an instrumental conception of law. The law is not just a fact of life. It is a form of social organization which should be used properly and for the proper ends. It is a tool in the hands of men differing from many others in being versatile and capable of being

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[143] Foucault makes this point in his late lectures on liberalism. MICHEL FOUCAULT, THE BIRTH OF BIOPOLITICS: LECTURES AT THE COLLÈGE DE FRANCE 1978-1979 174 (Graham Burchell trans., Michel Senellart et al. eds., 2008).

[144] RAZ, *supra* note 94, at 214. In a later essay, Raz moves in the direction of a strong-form formulation. *See* JOSEPH RAZ, *The Politics of the Rule of Law*, *in* ETHICS IN THE PUBLIC DOMAIN: ESSAYS IN THE MORALITY OF LAW AND POLITICS 370, 377 (1995) ("In curtailing arbitrary power, and in securing a well-ordered society, subject to accountable, principled government, lies the value of the rule of law."). Nevertheless, he is careful to specify that the essay's argument is confined to the narrow context of Britain, or jurisdictions with political-legal cultures. *See id.* at 370. He acknowledges that such a specification in effect presupposes democratic participation in government, due process during bureaucratic encounters, and a strong and independent judiciary. *See id.* at 376-77.

[145] RAZ, *supra* note 94, at 219.

[146] *Id.*

[147] *Id.*

[148] *Id.* at 226-29.

> used for a large variety of proper purposes . . . . Like other
> instruments, the law has a specific virtue which is morally neutral in
> being neutral as to the end to which the instrument is put. It is the
> virtue of efficiency; the virtue of the instrument as an instrument.[149]

We could make law as predictable as possible, but Raz expects that we should frequently prefer a "lesser degree of conformity" to the rule of law in order to use the legal system to promote other social goals. Indeed, he continues, "sacrificing too many social goals on the altar of the rule of law may make the law barren and empty."[150] He might have added that the law might, in the process, compromise its claim to normative validity. So, whereas Hayek embraces weak-form predictability despite its possible side effects, Raz warns against those side effects and the danger of an uncritical embrace of the rule of law in the first place.[151]

Thus, we can individuate two related, but distinct, animating perspectives concerning predictability and the rule of law.[152] Simplifying only somewhat, strong-form theorists pose the question *Does the legal system protect against arbitrary government power and thereby promote liberty?*, while weak-form

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[149] *Id.* at 226.

[150] *Id.* at 229.

[151] Other important weak-form theorists include Raz's mentor H.L.A. Hart and Justice Antonin Scalia. Each emphasized law's ability to set expectations and provide for certainty concerning the conflicts and disputes that inevitably arise in modern life. Hart, the great legal positivist, conceived of his rule of recognition concept, the linchpin of his entire positivist jurisprudence, as a "remedy for the uncertainty" pervading a modern legal system comprised of indeterminate and potentially conflicting rules. H.L.A. HART, THE CONCEPT OF LAW 94 (2d ed. 1994). Rules of recognition were "procedures for settling doubts"; indeed, they were the "*proper* way of disposing of doubts." *Id.* at 93-95. Justice Scalia, a more contemporary and applied standard-bearer of this positivist tradition, advocated for his textualist method of statutory interpretation on the grounds that it provided for predictability: "textualism will provide greater certainty in the law, and hence greater predictability and greater respect for the rule of law." ANTONIN SCALIA & BRYAN A. GARNER, READING LAW: THE INTERPRETATION OF LEGAL TEXTS xxviii-xxix (2012); Antonin Scalia, *The Rule of Law as a Law of Rules*, U. CHI. L. REV. 1175, 1179 (1989) ("[U]ncertainty has been regarded as incompatible with the Rule of Law.").

[152] The distinction between the strong form and the weak form of the predictability principle is a conceptual tool rather than an empirical observation. While their differences as ideal types are apparent, the weak form and the strong form frequently coexist in a wide array of legal regimes, and the strong-form usually (but not necessarily) includes the weak-form. The below passage from Locke's *Second Treatise* captures the two sides of the predictability coin:

> [A]ll the power the government has, being only for the good of the society, as it ought
> not to be arbitrary and at pleasure, so it ought to be exercised by established and
> promulgated laws; that both the people may know their duty, and be safe and secure
> within the limits of the law; and the rulers too kept within their bounds, and not be
> tempted, by the power they have in their hands, to employ it to such purposes, and by
> such measures, as they would not have known, and own not willingly.

LOCKE, *supra* note 116, § 137. Hence, governmental power is only legitimate if it is not "arbitrary and at [the] pleasure" of the rulers—only where the rulers are "kept within their bounds." The solution is for government to "establish and promulgate laws," which, in turn, also allows citizens to "know their duty, and be safe and secure within the limits of the law." *Id.*

theorists  ask *Does the legal system promote and maintain social order?* Both perspectives assign a vital role to the predictability of law in answering these related, but ultimately distinct, questions.

### 2.  *U.S. Constitutional Law and Strong-Form Predictability*

Existing U.S. constitutional law doctrine is informed by the strong form of the predictability principle, and remains entirely indifferent to the weak form. Our local constitutional expressions of the predictability principle include the Contract Clause, the Ex Post Facto Clause, and the Due Process Clause. State constitutions include similar provisions.[153]

Legislation and regulation constantly change the expectations for businesses, individuals, and families in ways that offend the weak-form predictability principle without perturbing the constitutional order. For example, the Contract Clause probably would prohibit a state legislature from declaring a previously binding supply contract between a producer of a dangerous fertilizer and a factory farm to be unenforceable in that state's courts.[154] Nevertheless, it probably would not prevent that state's courts from announcing a new rule pursuant to which courts would refuse to enforce the contract on public policy grounds.[155]

More fundamentally, it would not prevent that same state government from eviscerating the economic logic of that transaction by banning the fertilizer altogether in an exercise of its legislative police powers.[156] Neither would the Ex Post Facto Clause, which only applies to criminal legislation.[157] The Due Process Clause is even less likely than the Contract Clause to impede such legislation. Under the Due Process Clause, the weak form predictability principle imposes no meaningful constraint on the legislature whatsoever.[158] Instead, the strong form predictability principle emerges as the only limiting principle, restricting the

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[153] *See* FULLER, *supra* note 99, at 51-52.

[154] Because the Contracts Clause only applies to state governments, it would not, however, prohibit the federal government from passing the same law. *See* Pension Benefit Guaranty Corp. v. R. A. Gray & Co., 467 U.S. 717, 732 n.9 (1984) ("It could not justifiably be claimed that the Contract Clause applies, either by its own terms or by convincing historical evidence, to actions of the National Government.").

[155] *See* Richard A. Epstein, *Toward a Revitalization of the Contract Clause*, 51 U. CHI. L. REV. 703, 749 (1984).

[156] *See, e.g.*, Energy Reserves Grp. v. Kansas P. & L. Co., 459 U.S. 400, 410 (1983) ("Although the language of the Contract Clause is facially absolute, its prohibition must be accommodated to the inherent police power of the State to safeguard the vital interests of its people.").

[157] *See* Calder v. Bull, 3 U.S. 386, 393 (1798).

[158] The relatively recent development of a "regulatory takings" jurisprudence requires insertion of the "meaningful" qualification. That body of law imposes theoretic constitutional limitations on the ability of governments to take *even non-arbitrary actions* in the limited circumstances where such actions "deprive a property owner of all economically beneficial use of that property," Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1018 (1992), or "impose severe retroactive liability on a limited class of parties that could not have anticipated the liability, and the extent of that liability is substantially disproportionate to the parties' experience," Eastern Enters. v. Apfel, 524 U.S. 498, 528-29 (1998).

legislature from acting in an *arbitrary* manner.[159] That is, the legislature can unravel expectations, however justifiably predicted, so long as an aggrieved plaintiff cannot establish that the legislature acted arbitrarily in doing so—which brings us back to the strong form.

### 3. Strong-Form Predictability Is Normative; Weak-Form Predictability Is Not

The strong form perspective is oriented toward liberty and counteracts the exercise of arbitrary governmental power, whereas the weak form perspective sees law in instrumental terms and has an ambiguous relationship to liberty. To better appreciate the distinction between these two perspectives, consider the following contrasting examples of hypothetical legal regimes.

A legal regime comprised of periodically published compendia of properly noticed directives reflecting the whims of a dictator would be both entirely arbitrary and entirely predictable.[160] Such a regime—we could call it Hayek's "liberal dictatorship"[161]—would satisfy the weak form condition, but not the strong form condition. It would also plainly contravene most robust conceptions of a liberal government. From the strong-form perspective, such a regime would perhaps qualify as rule *by* law (or "law and order"), but certainly not as rule *of* law.[162]

Conversely, a regime in which legislation is unanimously perceived to be non-arbitrary, but which occasionally alters some legal subjects' expectations in non-trivial ways, would satisfy the strong form condition, but not the weak form condition. Moreover, few would hesitate to describe such a strong form predictable regime as basically liberal, notwithstanding the occasional predictability shortfalls. Clearly, the liberal rule of law draws normative force from the strong form, but not the weak form. It is therefore not surprising that the normative force of the strong-form of the rule of law's predictability principle, deriving as it does from liberty interests, influences U.S. constitutional law doctrine.[163]

By contrast, the weak-form principle is functional and instrumental, and not normative. For Hobbes, the desideratum is neither Lockean liberty nor any other normatively oriented political values such as human dignity, emancipation, or equality, but social order—ensuring that legal subjects act in a manner that is consistent with the sovereign's will. In fact, the normative force of the weak form

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[159] *See* Usery v. Turner Elkhorn Mining Co., 428 U.S. 1, 15 (1976) ("It is by now well established that legislative acts adjusting the burdens and benefits of economic life come to the Court with a presumption of constitutionality, and that the burden is on one complaining of a due process violation to establish that the legislature has acted in an arbitrary and irrational way.").

[160] Arbitrary here is used to refer to laws that are crafted to promote any purpose not ostensibly in the interest of the subjects of those laws. *See supra* text accompanying notes 109-111.

[161] *See supra* note 137 and accompanying text.

[162] *See* Mark Tushnet, *Rule by Law or Rule of Law?*, 22 ASIA PAC. L. REV. 79 (2014); RULE BY LAW: THE POLITICS OF COURTS IN AUTHORITARIAN REGIMES (Tom Ginsburg & Tamir Moustafa eds., 2008).

[163] *See supra* Part III.C.2.

predictability principle is *always* derivative of some other principle. If it is obeisance to the sovereign for Hobbes, it could just as easily be utilitarianism, market formation, clean air, or religious virtue for another theorist. Following Raz, the key point is that weak-form predictability sees the legal system *as an instrument* that, if it is to achieve any normative force, must borrow it from somewhere else.

Weak-form predictability may lack the normative force of its strong-form counterpart, but that is not to say that it is less important. As mentioned earlier, Hayek attributed the possibility of social order, in part, to the legal system's fixing of predictable rules. Another great modern theorist of weak-form predictability was Max Weber, himself much more of a Hobbesian than a Lockean liberal.[164] Weber chronicled the important functional, instrumental role that a predictable legal system played in modern societies. He described how modern capitalist enterprises, "with their fixed capital and precise calculation, are much too vulnerable to irrationalities in law and administration." As such, the legal system must become "an apparatus . . . . whose functioning is by and large calculable and predictable."[165] Modern capitalism had a need "not only of the technical means of production, but of a *calculable legal system*"; without such a system, "no rational enterprise under individual initiative, with fixed capital and *certainty of calculation*" would be possible.[166]

For Weber, the rule of law was nothing more than a system of weak-form, probabilistic prediction. Specifically, the legal system provided for "social order" by "externally guarantee[ing] the probability that physical or psychological coercion will be applied by a staff of people in order to bring about compliance or avenge violation."[167] Weber thus offered an account of the *sociological* importance of the weak form of the predictability principle to one particular type of society— namely, the modern, capital-intensive, bureaucratic, rationalized, and audaciously productive industrial capitalism that prevailed in the early twentieth century. In

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[164] On Weber's ambiguous relationship with liberalism, see WILLIAM E. SCHEUERMAN, BETWEEN THE NORM AND THE EXCEPTION: THE FRANKFURT SCHOOL AND THE RULE OF LAW 16-20 (1994).

[165] 3 MAX WEBER, ECONOMY AND SOCIETY: AN OUTLINE OF INTERPRETIVE SOCIOLOGY 1394 (Guenther Roth & Claus Wittich eds., Ephraim Fischoff trans., 1968) [hereinafter WEBER, ECONOMY AND SOCIETY].

[166] MAX WEBER, THE PROTESTANT ETHIC AND THE SPIRIT OF CAPITALISM 25 (Talcott Parsons trans., 1930) (emphasis added); *see also* Duncan Kennedy, *Legal Formality*, 2 J. LEG. STUD. 351, 374 (1973) ("[T]he elimination of uncertainty about what the state will do means that by advance planning private parties can adjust their conduct so as to turn favorable intervention to maximum favorable effect, while minimizing the occasions of adverse intervention."); C.B. MACPHERSON, THE POLITICAL THEORY OF POSSESSIVE INDIVIDUALISM 57-59 (1962) (arguing that the "mainspring" of a "possessive market society" is a predictable system of laws that enables market actors to "calculate their most profitable courses and . . . employ their labor, skills and resources as that calculation dictates"); FRANZ NEUMANN, THE DEMOCRATIC AND AUTHORITARIAN STATE 167-68 (1957) ("The primary task of the state [in a "competitive society"] is the creation of a legal order which will secure the fulfillment of contractual obligations; the expectation that contractual obligations will be performed must be made calculable. This calculability can be attained only if the laws are general in structure . . . .").

[167] 1 WEBER, ECONOMY AND SOCIETY, *supra* note 165, at 34.

Razian terms, Weber theorized that the rule of law served *as the enabling instrument* of a historical mode of economic production. Viewed in this broader socio-economic context, weak-form predictability appears formidable indeed, and its strength derives in part from its flexibility.[168] But therein lies the rub; weak-form predictability can be an instrument for any number of ends, none of which has any *necessary* connection to liberty and non-arbitrariness.

In summary, when considering the important predictability principle of the rule of law, we should distinguish between a strong form of the principle and a weak form of the principle. The former takes aim at arbitrary power and has august normative roots in Lockean liberal political theory. On the other hand, the latter, while perhaps equally important as a feature of the social world, lacks any normative pretensions and represents instead an incidental, functional attribute of the legal order that accommodates and promotes ends that are supplied externally. It will struggle to summon the normative strength to muster a counter-argument in the face of an arbitrary rule of law that, while predictable, amounts to what Habermas labeled a "voluntarism of pure enactment."[169]

### 4. A Brief Excursus: The Singulatim Software as Belated Fulfillment of the Legal Realist Project

To understand the implications of the strong form and weak form of the predictability principle for today's predictive legal analytics revolution, it is helpful to situate the Singulatim software in the context of the American "legal realist" project. The legal realists require special attention here because today's futurists should be thought of as carrying forward the once-moribund project of yesterday's realists. Without acknowledging it expressly, they are purporting to resuscitate legal realism using the tools of predictive legal analytics.

In the early- to mid-twentieth century, the legal realists depicted the legal system as a regime that was shot through with unacknowledged arbitrariness, but which nevertheless remained largely predictable. In other words, they advanced the theory that the legal system might be susceptible to predictive analysis, but only in the weak form. They remained conspicuously disinterested in questions concerning the source of law's normative force, content to posit instead the empirical reality of law as a social phenomenon.

Justice Oliver Wendell Holmes, the great proto-realist, believed that legal doctrine was nothing more than "systematized prediction."[170] Unlike the strong-form

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[168] Political theorist Paul Starr cites this enabling, cooperation-inducing aspect of predictability as a source of liberalism's positive power—its ability to accomplish, with government's leadership or assistance, otherwise daunting tasks. *See* STARR, *supra* note 85, at 21.

[169] HABERMAS, *supra* note 82, at 38.

[170] Oliver Wendell Holmes, *The Path of the Law,* 10 HARV. L. REV. 457, 458 (1897).

liberals, though, his vision of a predictable legal system was shrunken and stripped of any normative foundation of liberty and non-arbitrariness.[171]According to Holmes, we could begin to understand the law only if we put ourselves in the shoes of a "bad man" who "cares only for the material consequences [that] knowledge [of the law] enables him to predict."[172] Holmes's bad man "does not care two straws for . . . axioms or deductions," but "he does want to know what the Massachusetts or English courts are likely to do in fact."[173] Holmes would go on to famously announce that "[t]he prophecies of what courts will do in fact, and nothing more pretentious, are what I mean by the law."[174]

Several decades later, Karl Llewellyn carried the Holmesian project forward, broadening the basic insight to apply not only to judges but any other officials acting to quell disputes, such as administrators and legislators. Llewellyn regarded the law as the discipline of discerning the "regularity which makes possible prediction of what [legal] officials are about to do tomorrow."[175] Other realists expressed the same basic idea.[176]

The legal realists, like Weber, attributed a functional role to the rule of law, although they focused less on law as a necessary condition for capitalism, and more on law as a sort of anticipatory social emollient.[177] With the realists, we see the inner operations of the Hobbesian weak-form predictability at work, anticipating how legal rules apply consequences in order to preemptively "prevent brawles."

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[171] In this respect, he was more like Weber, a contemporary with whose work Holmes remained unfamiliar. *See* A. Javier Trevino, *The Influence of Sociology on American Jurisprudence: From Oliver Wendell Holmes to Critical Legal Studies*, 18 MID-AM. REV. SOC. 23, 24 (1994). However, in distinction to Weber, Holmes the judge unsurprisingly had a jurisprudential, rather than a sociological and historical, focus.

[172] Holmes, *supra* note 170, at 459.

[173] *Id.* at 460-61.

[174] *Id.* at 461.

[175] KARL N. LLEWELLYN, THE BRAMBLE BUSH: ON OUR LAW AND ITS STUDY 13 (3d ed. 1960).

[176] Jerome Frank, following Holmes, claimed that the law was simply probable guesses as to the future decisions of judges. *See* JEROME FRANK, LAW AND THE MODERN MIND 50 (Anchor Books ed. 1963). William Wheeler Cook was perhaps the most transparent about law as weak-form prediction:

As lawyers we are interested in knowing how certain officials of society—judges, legislators, and others—have behaved in the past, in order that we may make a prediction of their probable behavior in the future. Our statements of the 'law' . . . are therefore 'true' if they accurately and as simply as possible describe the past behavior and predict the future behavior of these societal agents. . . . 'Right,' 'duty,' and other names for legal relations are therefore not names of objects or entities which have an existence apart from the behavior of officials in question, but merely terms by means of which we describe to each other what prophecies we make as to the probable occurrence of a certain sequence of events—the behavior of officials.

William Wheeler Cook, *The Logical and Legal Bases of the Conflict of Laws*, 33 YALE L.J. 457, 475-76 (1924).

[177] LLEWELLYN , *supra* note 175, at 22 ("[Law] ceases to be merely a regulation of actual disputes and becomes a regulation, and if all goes well, an anticipation and prevention, of potential disputes vastly greater in number than the actual.").

Legal realism saw law as a social science without any privileged normative perch. It invited the naïve doctrinaires to investigate and uncover that disguised "something else," beyond the rules, that is "at work helping the doctrine out."[178] The aim of the realists was to demystify the rigid formalisms and conceptual apparatuses that operated as the "basic myth" of the legal system, the "stubborn illusion" that the law could banish arbitrariness and discretion.[179] They sought to interrogate the "hidden regularities that lie below the doctrinal surface," frequently using empirical social science.[180] Their mission was to master weak-form predictability, and they implicitly rejected strong-form predictability as yet another of example of the "transcendental nonsense" stultifying law as it really existed—that is, as an irreducibly social, and frequently arbitrary, process.[181]

Nevertheless, by the end of World War II, much of the vigor of legal realism appeared to have been sapped. Thurman Arnold pronounced around this time that the critical methods of the realists had revealed themselves not to be "sustaining food for a stable civilization."[182] But why not? Perhaps such a fate awaits all critical projects, even those, like legal realism, whose acts of negation are fundamentally an invitation at reinvention and reconceptualization.[183] Or perhaps there is some factor that makes law, an inherently normative discipline, especially resistant to critical projects.[184]

To be clear, Arnold did not claim that realism was rejected as invalid, or that realism did not exercise an enduring influence over legal theory throughout the twentieth century. At the time he made his observation, the other two pillars of mid-twentieth century jurisprudence—legal positivism and the legal process school—were responding directly to legal realism, seeking to recover law's normative equilibrium from the blows inflicted by realism.[185] Today, all American lawyers are intellectual descendants of Holmes's preference of description over

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[178] KARL N. LLEWELLYN, JURISPRUDENCE: REALISM IN THEORY AND PRACTICE 135 (1962).

[179] I borrow both phrases here from Jerome Frank. *See* FRANK, *supra* note 176, at 3, 14

[180] Anthony Kronman, *Jurisprudential Responses to Legal Realism*, 73 CORNELL L. REV. 335, 337 (1988).

[181] Felix S. Cohen, *Transcendental Nonsense and the Function Approach*, 35 COLUM. L. REV. 809 (1935).

[182] Thurman Arnold, *Judge Jerome Frank*, 24 U. CHI. L. REV. 633, 635 (1957).

[183] *See* Seyla Benhabib, *Modernity and the Aporias of Critical Theory*, 49 TELOS 38, 44 (1981); ROGER COTTERRELL, LAW'S COMMUNITY: LEGAL THEORY IN SOCIOLOGICAL PERSPECTIVE 207-08 (1997).

[184] After all, a similar fate would await the critical legal studies program of the 1980s and 1990s. *See* ROBERTO MANGABEIRA UNGER, THE CRITICAL LEGAL STUDIES MOVEMENT: ANOTHER TIME, A GREATER TASK 15 (2015).

[185] More recently, Habermas's later work is devoted to exploring this very phenomenon, which he discusses as the immanent "facticity-validity tension" in contemporary legal systems. HABERMAS, *supra* note 82, at 38-41. What explains how law enjoys a special validity claim sufficient to legitimate, without recourse to force, the imposition of all manner of duties and restrictions? How it does so even in a desacralized, differentiated, pluralistic society?

prescription.[186] Nevertheless, the stickiness of normativity in the law is equally obvious. Lawyers might tell their clients "This is what the judge *will do*," but they tell the judge "This is what you *should do*, your honor." The normative validity of law persists, notwithstanding the accompanying residuum of discretion on the part of government officials, and lawyers understand that legal practice entails something more than weak-form prediction. But this appeal to normativity is required, in part, because the realists failed to provide clear indications for how to eliminate legal uncertainty. They failed to demonstrate that legal practice could be *nothing more than applied weak-form prediction*.

Today's legal futurism makes the legal realist project ripe and relevant again. The tantalizing possibility dancing in the eyes of the futurists is the fulfilment of the realist project. If the realists failed to discover the predictive keys to unlock the secrets of the legal machine through meticulous social scientific research, perhaps the legal futurists of today, with the Singulatim software and similar tools, can cut the key more precisely through the use of better data and algorithmic learning.

5. *How the Legal Singularity Would Compromise the Strong-Form Predictability Principle—and with It, the Rule of Law*

The legal singularity could undermine the normative force of the predictability principle on two counts.

The legal futurists, like the legal realists of yesterday, have jettisoned any commitment to strong-form predictability and the values of liberty and non-arbitrariness it promotes. Consequently, they have shed the normative ballast of the rule of law and sail on new and choppy waters. But whereas the realists, who were equally excited about predictive inquiry, were fundamentally engaged in a radically *critical* project, defining themselves in distinction to the normative consensus of their times in order to overcome it and imagine a richer account of law, the legal futurists justify their project in terms of a rather vulgar logic of optimization and rationalization.[187] They frequently write in term of "efficiencies," "streamlining," and "cost-reduction," with little regard for the normative fallout of their project.

Of course, there is nothing intrinsically objectionable about optimization—who would object to getting better answers to legal questions at less cost? Still, most futurists remain troublingly silent concerning how, whether, and in what form the

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[186] *See* Jack M. Balkin, 6 CALIF. L. REV. CIRCUIT 45, 46 (2015). We even observe this preference in first-year law school curricula, which almost invariably require students to compose memoranda predicting what judges will do, and almost never require students to create prescriptive norms by drafting contracts or legislation.

[187] *See* William H. Simon, *Optimization and Its Discontents in Regulatory Design: Bank Regulation as an Example*, 4 REG. & GOV. 3, 4-5 (2009) (describing a reductionist "vulgar optimization" approach to management and governance that privileges cost minimization at the expense of concerns about reliability of dynamic and complex systems).

legal system will survive if it is reduced to the mere art of weak-form prediction. Instead, the futurists approach the legal system as a ready-formed thing[188] that they would like to understand better and, ultimately, to make susceptible to predictive analysis. Law is an empirical fact, not a social process. In Habermasian terms, they seek to achieve hitherto unimaginable insight into the facticity of law, with little regard for the legitimacy of law.[189]

All this is to raise the possibility of arbitrary algorithmic rule. For instance, if law is just weak-form prediction, will the legal system be able to summon the rule of law principle to mount a normative challenge to a Hayekian "liberal dictatorship" in algorithmic form? If a normatively grounded rule of law principle can no longer play a role in that effort, must we look to other sources of legitimation outside of the law to resist arbitrary algorithmic rule—such as democracy, fairness, rationality, or even revolution?

Furthermore, what will happen if stripping the rule of law down to weak-form prediction, and consequently losing much of law's normative force, operates to produce cascading complexities in the legal system that frustrate the very efforts on the part of the Singulatim software to predict what the law is? In other words, are we taking for granted embedded, structural checks and balances in the legal system that repel arbitrary government, but which only work in an environment where law's legitimacy is largely a taken-for-granted fact? And if we remove that condition, is the system even susceptible to prediction? The futurists leave these questions unresolved—indeed, unexamined and unacknowledged.

If we return to the earlier discussion concerning the relationship between the rule of law and the problem of government discretion,[190] we can better appreciate these problems. We have already seen how the legal singularity will banish human discretion from the legal system altogether. However, we have also seen how that result will only satisfy those for whom arbitrariness in government is only a matter of human error. But even if we imagine a post-singularity world where human governmental actors no longer wield discretion to apply governmental power over others, is there some deeper normative kernel of non-arbitrariness that we would prefer to nevertheless survive?

If we conceive of arbitrary government to include algorithmic governance, then the same problems remain. Excellent work currently being done to document specifically the ways in which predictive legal analytic technologies are being deployed in an existing system of social relations, focusing attention on who is

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[188] Their approach is fundamentally positivist in that it *posits* the legal system as it is as an object of scientific inquiry.
[189] *See supra* text accompanying note 82 (discussing Habermas's distinction between the "facticity" (positive empirical validity) of law and the legitimacy of law).
[190] *See supra* Part III.B.

writing algorithms and to what ends.[191] The human actors exercising discretion might be gradually disappearing, but on their way out they are shaping the institutional and computational environment out of which the legal singularity will emerge. Further, the condition of computational irreducibility—which, again, will entail autonomous black-boxing of the entire legal system—might prevent legal subjects from understanding the *why* behind the predictive judgment about the law. The power of strong-form, Lockean predictability is that it operates as a procedural transparency mechanism, forcing the government to make its exercise of coercive power not just discernible, but also comprehensible and amenable to demands for justification and possible contestations.[192] If the legal singularity results in an opaque, but predictive legal system that never makes itself susceptible to critique and revision by legal subjects, it will fall well short of that standard.

Instead, a shrunken weak-form predictability will be powerless to counteract governmental arbitrariness. The German legal and political theorist Otto Kirchheimer, writing at the outset of World War II, describes the legal order of National Socialism in terms that resonate with the description of weak-form predictability presented here:

> In short, the idea of technical rationality which underlies the new governmental organization actually finds its nearest approximation in a *perfectly running, though complicated, piece of machinery. Nobody save the owners is entitled to question the meaningfulness of the services which the machine performs*: the engineers who actually operate it have to content themselves with producing immediate reactions to the owners' changing commands. They may be ordered to change some technical processes and to attain some variations in output. *The purport of the results achieved lies beyond this kind of rationality*, which is aimed only at the certainty that every order will produce an exactly calculable reaction.[193]

To be clear, the argument here is certainly not that the path of predictive legal analytics leads to totalitarianism. Still, the totalitarian experience of the twentieth century provides a limiting case study for the complete disintegration of the rule of law. Legal theorists wishing to reckon with the implications of rule by algorithmic arbitrariness would do well to review the deep engagement of post-World War II legal theory with the disintegration of the rule of law at the hands of totalitarian

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[191] *See, e.g.*, VIRGINIA EUBANKS, AUTOMATING INEQUALITY: HOW HIGH-TECH TOOLS PROFILE, POLICE, AND PUNISH THE POOR (2018); SAFIYA UMOJA NOBLE, ALGORITHMS OF OPPRESSION: HOW SEARCH ENGINES REINFORCE RACISM (2018).

[192] *See supra* text accompanying notes 120-121.

[193] OTTO KIRCHHEIMER, *Legal Order of National Socialism*, *in* POLITICS, LAW AND SOCIAL CHANGE: SELECTED ESSAYS OF OTTO KIRCHHEIMER 101 (Frederic S. Burin & Kurt L. Shell eds., 1969) (essay published in 1941) (emphasis added).

regimes.[194] Bearing in mind the hypothetical nature of the thought experiment motivating this Article, these sources are not just fair game, but they are important reference points.

### D.  The Legal Singularity and the Universality Principle

A core pillar of the rule of law is that the law must be universal; it must apply generally to all. The rule of law's *universality principle*, just like the strong-form of the predictability principle, promotes the liberal legal order's commitment to avoiding arbitrary exercises of government power. And just as the Singulatim software sacrifices much of the rule of law's normative force by privileging weak-form predictability at the expense of a deeper commitment to non-arbitrary government, it concedes further normative force by both exposing and aggravating the extent to which law falls short of achieving the universality principle.

#### 1.  The Universality Principle

Liberals insist that law's normative legitimacy depends in part on its *universality*—its general applicability to all persons. The idea of equality is a conceptual cognate, although equality is a broader term than universality in some respects. Laws apply generally, and are therefore universal in this sense, if they are consistent with the condition that is sometimes referred to as procedural equality or formal equality. Defined this way, the concept is relieved of the weightier burden of satisfying objectives relating to substantive equality.

As with predictability, the association of the rule of law with general application and universality traces back to early liberal thought. For example, Locke considered universality to be a precondition of any lawful legislation, requiring in his *Second Treatise* that laws not "be varied in particular cases, but to have one rule for rich and poor, for the favorite at court, and the country man at plough."[195] In another passage, Locke noted that laws in a liberal, constitutional order should be "common to every one of that society."[196]

Nearly a century later, Blackstone made the same point, describing law in the following terms:[197]

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[194] *See* William E. Scheuerman *Introduction*, *in* THE RULE OF LAW UNDER SIEGE: SELECTED ESSAYS OF FRANZ L. NEUMANN AND OTTO KIRCHHEIMER 1, 2 (1996) ("Whereas many contemporary radical legal scholars suggest that we should welcome [the undermining of the rule of law], Neumann and Kirchheimer powerfully argue that we very much need to acknowledge its ambivalent and in many ways truly worrisome implications.").

[195] LOCKE, TREATISES ON GOVERNMENT, *supra* note 7, at 363 (Second Treatise, § 142).

[196] *See supra* note 119 and accompanying text.

[197] In this quoted passage, Blackstone discusses "municipal law," a category that applies not only to what we would recognize today as local government law, but also "to any one state or nation, which is governed by the same laws and customs." *See* 1 WILLIAM BLACKSTONE, COMMENTARIES *44.

> [F]irst, it is a rule; not a transient sudden order from a superior, to or concerning a particular person; but something permanent, uniform and universal. Therefore a particular act of the legislature to confiscate the goods of Titius, or to attaint him of high treason, does not enter into the idea of a municipal law; for the operation of this act is spent upon Titius only, and has no relation to the community in general; it is rather a sentence than a law. But an act to declare that the crime of which Titius is accused shall be deemed high treason; this has permanency, uniformity, and universality, and therefore is properly a rule.[198]

Hence, the rule of law is present where a legal system has "one rule for rich and poor" and directs itself to the "community in general" in terms that are "uniform" and "universal."

Rousseau was the greatest expositor of the importance of universality to the rule of law. Rousseau insisted that "the object of the laws is always general," and added that:

> the law considers subjects collectively, and actions as abstract, never a man as an individual nor a particular action. Thus the law may indeed decree that there shall be privileges, but cannot confer them on any person by name . . . . [I]n a word, no function which has reference to an individual object appertains to the legislative power.[199]

In this way, the law "unites universality of the will with universality of the object."[200] Here, "universality of will" refers to Rousseau's notion of the "general will" embodied in his idea of social contract, but the relevant part of the passage for present purposes is his notion of law's "universality of object." The law can only embody the general will if it is directed to the general public. Otherwise, the government's laws amount only to "iniquitous decrees with no end in view other than private interest[,] falsely passed under the name of Laws."[201] In those circumstances, the legal system is better characterized—much like the state of affairs described by the weak-form predictability principle—as rule *by* law, not rule *of* law.[202]

This Rousseauian conception of the universality principle underlies twentieth century accounts of the rule of law as well. For his part, Rawls believed that a core

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[198] *Id.* (emphasis added).
[199] JEAN-JACQUES ROUSSEAU, THE SOCIAL CONTRACT AND OTHER LATE POLITICAL WRITINGS 69 (Victor Gourevitch trans., 1997) (G. D. H. Cole trans. 1st ed. 1782).
[200] *Id.*
[201] *Id.* at 125.
[202] *See supra* text accompanying note 162.

constituent of the rule of law was that a legal system's statutes "be general both in statement and intent."[203] Hayek distinguished laws from mere commands on account of their "generality and abstractness."[204] The former are "general abstract rules laid down irrespective of their application to us."[205] In its ideal form, Hayekian law would consist of a "'once-and-for-all' command that is directed to unknown people and that is abstracted from all particular circumstances of time and place and refers only to such condition as may occur anywhere and at any time."[206] But Hayek is not satisfied with a mere definition; he connects generality-universality to freedom, arguing that by following the generally applicable law "we are not subject to another man's will and are therefore free."[207] The universality of law becomes its guarantee against arbitrariness and its guarantee of freedom:

> It is because the lawgiver does not know the particular cases to which his rules will apply, and it is because the judge who applies them has no choice in drawing the conclusions that follow from the existing body of rules and the particular facts of the case, that it can be said that laws and not men rule. Because the rule is laid down in ignorance of the particular case and no man's will decides the coercion used to enforce it, the law is not arbitrary. This, however, is true only if by "law" we mean the general rules that apply equally to everybody. This generality is probably the most important aspect of that attribute of law which we have called its "abstractness." As *a true law should not name any particulars*, so it should especially not single out any specific persons or group of persons.[208]

Hayek's vision of the law can only make sense as some ideal type. A legal system that makes no distinction among situations, abstracted from all particular circumstances of time and place, would be impossible to conceive.[209]

There are two ways of interpreting Hayek here. First, we could read him as setting an impossibly high burden for any government action. Such an interpretation would

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[203] RAWLS, *supra* note 94, at 209.

[204] FRIEDRICH A. HAYEK, THE CONSTITUTION OF LIBERTY 218 (1960).

[205] *Id.* at 153-54.

[206] *Id.* at 218.

[207] *Id.* at 154.

[208] *Id.* at 220-21 (emphasis added).

[209] *See* Henry S. Richardson, *Administrative Policy-making: Rule of Law or Bureaucracy?*, *in* RECRAFTING THE RULE OF LAW: THE LIMITS OF LEGAL ORDER 309, 313-14 (David Dyzenhaus ed., 1999) (describing Hayek's formulation, interpreted literally, as an "absurdity"). Ever the pragmatist, Holmes acknowledged as much when he observed that "a generalization is empty so far as it is general. Its value depends on the number of particulars which it calls up to the speaker and the hearer." Oliver Wendell Holmes, *Law in Science and Science in Law*, 7 HARV. L. REV. 443, 461 (1899); *see also* JEREMY WALDRON, LIBERAL RIGHTS 323-24 (1993) (observing that a person applying a general rule "needs that particular knowledge about specific objects as well as his general knowledge about the types of actions that are and are not permitted").

foreclose virtually all government interference with market mechanisms, a result that Hayek would have undoubtedly welcomed.[210] This interpretation would expose an immanent contradiction in the universality principle itself, necessitating a retreat to an extreme libertarianism that banishes altogether the universal legal categories on which Rousseau, Blackstone, and even Locke heavily rely. A second interpretation would hold that the universality principle only bans singling out specific individuals (or perhaps classes of individuals) for disparate treatment. Thus, it would violate the rule of law to promulgate a rule requiring that "Sophie must pay a 1% tax on the appraised value of her home" because such a law would single out Sophie, but it would be unobjectionable for the rule to say "Anyone who owns a home must pay an annual 1% tax on the appraised value of such home" even though the law plainly "names particulars"—i.e., homeowners like Sophie. The latter interpretation appears more consonant with liberal rule of law theory more broadly, especially as articulated by Locke and Rousseau.

Our local express constitutional expressions of the universality principle are the Equal Protection Clause and the Bill of Attainder Clause. The universality principle also restricts the ability of government to single out religious groups for disparate treatment under the Free Exercise Clause. It also motivates the Madisonian system of checks and balances, which protects against targeted, faction-fomented oppression of minorities and individuals.[211] The Separation of Powers prevents the legislature from passing draconian laws that are expected to be executed and applied to others but not to them.[212] The principle also animates state constitutional prohibitions on "special legislation" or "private laws."[213]

Even if we reject the extreme libertarian formulation of the universality principle, we must nevertheless acknowledge—in response to Locke, Blackstone, and Rousseau—that a society can still participate in the liberal rule of law even if that society does not treat *all* citizens equally. Rousseau recognized the tension between his normative conception of universal law arising from the general will and the empirical reality of the interest group power dynamics at play in government.[214]

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[210] *See supra* text accompanying notes 133-143 (describing how Hayek viewed any government interference with market pricing mechanisms as arbitrary).

[211] *See* Michael C. Dorf & Charles F. Sabel, *A Constitution of Democratic Experimentalism*, 98 COLUM. L. REV. 267, 276 (1998) (attributing the system of checks and balances to the Madisonian belief that "it is better to make a few good laws arduously than to make many laws easily, some almost certainly bad"); JERRY L. MASHAW, GREED, CHAOS, AND GOVERNANCE: USING PUBLIC CHOICE TO IMPROVE PUBLIC LAW 4-6 (1997).

[212] *See* THE FEDERALIST NO. 47, at 344 (James Madison) (2004); MONTESQUIEU, THE SPIRIT OF LAWS 157 (Anne M. Cohler et al., eds. & trans., 1989) (T. Nugent trans. 1st ed. 1750) ("When legislative power is united with executive power in a single person . . . there is no liberty, because one can fear that the same monarch or senate that makes tyrannical laws will execute them tyrannically.").

[213] *See* FULLER, *supra* note 99, at 47 n.4.

[214] *See* ROUSSEAU, *supra* note 199, at 125 (describing how, even in liberal states, the "basest interest brazenly assumes the sacred name of public good" while the "general will grows mute"); JEAN-JACQUES ROUSSEAU, ÉMILE, OR EDUCATION 197-98 (Barbara Foxley trans., 1911) (decrying the "vain and

Here, positive political theory directs our attention to the manifold ways in which well-organized and well-resourced interests wield disproportionate influence over government action. The universality principle must tilt, at least a little, in the wind of interest politics, or otherwise risk irrelevance as a description of actual liberal societies.[215] Thus, universality is to be approximated rather than fulfilled, and the degree to which a legal system can credibly describe itself as being consistent with the rule of law depends on the measure by which it approximates this universality ideal.

The implicit bedrock of the universality principle is that the differences among legal subjects are outweighed by what they—"we" or, better still, "We" who are the "community in general"—have in common. The rule of law requires that government must direct its action generally and in the interest of the polity. The government must restrain itself from the natural inclination to favor its members or associated classes or sectors of the society.

2. *How the Legal Singularity Would Compromise the Universality Principle—and with It, the Rule of Law*

As with the predictability principle, the legal singularity could undercut the universality principle in two ways. First, by cementing algorithmically any existing inequalities in the application of law, it might unveil systemic, if not structural, divergences between law's universalistic self-description and its empirical realities. Second, and even more fundamentally, the arrival of the legal singularity would announce the dissolution of the basic categories from which the universality of law achieves its normative force. Specifically, the basic epistemology of data analytics can only make sense of pulverized, atomistic bits of data, which undermines the status of—indeed, arguably makes unintelligible—universal groupings of legal subjects.

First, the singularity might unveil the extent to which law falls short of the universality principle, thereby undercutting claims that law's legitimacy draws normative force from it. Consider that the Singulatim software would allow tailored formulations of legal problems and legal answers tailored to individual users. If it turns out that embedded inequalities in the practical application of written laws abound, then they would be cemented into the Singulatim software's algorithmic structure, much like an algorithm for picking beauty contestants recently revealed

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chimerical equality of right" in liberal states in light of the "inevitable" reality that the "universal spirit of the laws of every country is always to take the part of the strong against the weak").

[215] *See* Holmes, *supra* note 99, at 22 ("Even the most advanced *Rechtsstaat* remains to some extent a *Doppelstaat*.").

itself to prefer whiteness,[216] or a healthcare algorithm using healthcare expenditures as a proxy for health directed resources away from black patients and towards white patients on the grounds that the former used fewer medical resources—a circumstance attributable entirely to their relative lack of access to care.[217]

For instance, the Singulatim software might tell us that a black victim of overzealous police pursuit should expect dismissal of a civil rights lawsuit that an otherwise identically situated white victim could successfully pursue. Or that an Ivy League graduate from Connecticut turns out to have a greater empirical entitlement to a banking charter than an otherwise identically situated public university graduate from Montana. Or that persons with bona fide psychological disabilities should expect less solicitous treatment from courts deciding ADA cases than plaintiffs with much less debilitating physical conditions. Or that otherwise objectionable authoritarian policies are made less susceptible to effective judicial restraint if they are accompanied by pro forma language announcing the policies. Or that criminal sentence imprisonment terms are partially a function of the extent to which defendant first names are perceived to be traditional. Or that it is possible to predict the likelihood of success on the merits on one's employment discrimination claim by inputting one's race, income tax bracket, 401(k) balance, zip code, and last name into the Singulatim software. Or, more troubling still, that company management tracks the same parameters for use in setting ceilings for maximal workplace discrimination.

The Singulatim software could churn out similar insights with respect to enforcement patterns. Thus, for instance, we might discover that the likelihood that one suffers Fourth Amendment violations depends more on one's zip code, or even voting precinct, than on one's conduct.

Before the Singulatim software, these questions would amount to empirical inquiries for social scientists that might or might not attract interest from legal authorities. However, the Singulatim software, which invites us to imagine a legal system on auto-pilot, would seemingly entrench these patterns as structural facts to which we must resign ourselves, rather than empirically-revealed biases we might endeavor to fix.

Of course, these are all hypothetical Singulatim insights. They are intended only as possible examples of how the Singulatim software *might* reveal divergences between law's claim to universality and its actual operative distinctions. Still, any systemic divergences from the universality principle would threaten to belie and

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[216] *See* Sam Levin, *A Beauty Contest Was Judged by AI and the Robots Didn't Like Dark Skin*, GUARDIAN (Sept. 8, 2016), https://www.theguardian.com/technology/2016/sep/08/artificial-intelligence-beauty-contest-doesnt-like-black-people.

[217] *See* Ziad Obermeyer et al., *Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations*, 366 SCI. 447 (2019).

demystify once and for all the idea of equal justice before the law. It would confirm with final empirical validity what had previously amounted only to a political rallying cry: that the legal system applies differently to different people.

Having said that, lawyers should only worry about this problem if it turns out that the law is in fact systematically unequal in its application. If, on the other hand, the legal singularity does not turn out to cement systemic abuse of classes of citizens—about which both Marx and Madison warned—then there is no need to fear the algorithmic installation of arbitrary inequality in the law.

Nevertheless, the legal singularity would inflict a second, and more mortal, wound to the normative pretensions of a rule of law partly predicated on the universality principle. To situate this deeper dilemma, consider the following description of a latent tension in the self-description of the legal systems of modern liberal societies. As discussed at length earlier, liberal legal systems insist that a central attribute of the rule of law is to foster predictability. On the other hand, they insist that the normativity of law derives in large part from its *universality*—its general applicability to all persons. There is something peculiar about saying that the normative force of law depends on *general* and *universal* applicability, all the while emphasizing how important it is for the law to foster predictive judgments about how it will apply to *particular* persons and cases.

The tension is obscured in the ordinary course by the unstated epistemological assumption that it is simply impossible to predict with certainty the outcome of any particular legal matter. Hence the familiar care with which lawyers couch their conclusions in legal memoranda and opinion letters, cabining them delicately to a hypothetical, formalistic scenario that cannot, in fact, exist: "assuming these facts alone," "we have only reviewed these materials," "a court would likely," and so forth. Similarly, the concept of the burden of proof, so important to the law, always carries a qualified grammar. The law never requires *certainty* in its determinations, instead requiring fact finders to make determinations by, e.g., a "preponderance of evidence." By using these devices, the legal system implicitly acknowledges its indeterminacy and disguises the universality-particularity tension. The Singulatim software thought experiment allows us to remove that epistemological assumption, and to imagine a legal system scrubbed of messy uncertainties.

Earlier, Part II explained how predictive analytics was not merely a new technological tool, but also an expression of a new way that society produces and understands knowledge. François Ewald summarizes the distinctiveness of this new epistemology in a way that exposes the latent tension referred to here:

> Knowledge, in the world of data, is produced based on a twofold requirement which, in other configurations, would appear contradictory: on the one hand, we must gather the greatest amount of data (data that only exists *en masse*), the more the better; and on

the other hand, they are treated one to one, without trying to erase their differences by integrating them into categories. It is a type of resolutely nominalist knowledge, which bans the universal. . . . This tension is permanent in the epistemology of data.[218]

Notwithstanding the massive *aggregation* of data, predictive analytics obeys a logic of *differentiation*:

> The data is . . . a very powerful tool for analysis . . . and each element of data must be treated for itself in its relations with others, as something unique, according to a logic of differentiation. . . . The isolated individual is not singular, every element is treated in relation to other elements. And the more elements, the more opportunities to identify its uniqueness, and therefore also to anticipate future behavior within a set. The largest mass goes along with the greatest differentiation.[219]

Ewald identifies some obvious threats posed by this new epistemology of differentiated data, including social stigmas, discrimination in employment, and differential access to insurance and healthcare.[220] The destabilizing effects of these phenomena on existing legal doctrines are already the subject of study.

But Ewald digs even deeper, warning that the new data epistemology might also destabilize our ideas about universal rights:

> [These threats] could introduce the idea that we are all so different that there would be little sense in aligning us, in identifying us all in such general categories as "Man" or "Humanity." Do our differences outweigh what we have in common? For example, doesn't genetics teach us that our fates are no longer common in so far as we do not run the same risks? The threat here is not eugenics (it is not about selecting some as better than others), it is about the coherence of concepts like "human rights."[221]

One of the key themes of social theory for the past quarter century has been the so-called "death of the social"—the diminishing socio-political relevance of the social insurance, social security, social work, social policy, and social welfare concepts by which twentieth century government justified, explained, and measured itself.[222]

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[218] Ewald, *supra* note 35, at 84-85.

[219] *Id.*

[220] *See id.* at 89.

[221] *Id.*

[222] *See, e.g.*, NICHOLAS GANE, THE FUTURE OF SOCIAL THEORY 178-79 (2004); Nikolas Rose, *The Death of the Social?: Re-figuring the Territory of Government*, 25 ECON. & SOC'Y 327 (1996); *but cf.* MITCHELL DEAN, GOVERNMENTALITY: POWER AND RULE IN MODERN SOCIETY 175-203 (2010) (arguing that the social has not died but is instead simply in the process of being "reconfigured").

Ewald is implicitly invoking that literature; in fact, he expressly contrasts the epistemology of data with the epistemology of social insurance. Still, it is significant that his illustrative example of the epistemological shift (universal human rights) is drawn not from insurance, but from an attribute of the *legal* system that has always been at the core of the *rule of law*. The data epistemology threatens the legal system with a special injury because the legal system, concerned as it is with individual rights, has for the most part operated without threat of disruption from the "death of the social." The analytics revolution and Big Data hypercharges the movement away from the social, accelerating past even the individual subjects to focus instead on their subatomic constituents.

At this point, the implications for the rule of law are apparent. The problem is not so much that the legal system is exposed as not abiding by the universality principle because it discriminates among races, classes, or factions, but rather that this new epistemology—on which the Singulatim software depends, and the ultimate expression of which is the legal singularity—requires an atomistic pulverization of groups in general, including the citizenry, the polity, the "We the People," Blackstone's "community in general," and so forth. The result is a perverse type of equality that promises only that the law would apply differently to each of us.

In those circumstances, the formerly latent tension holding together the rule of law and the universality principle would explode, destroying any normative force the latter was thought to impart to the former. To adopt the terminology in which legal futurism is often celebrated, the tension, no longer suppressed, would then *disrupt* the very foundations of the rule of law.

As with the weak-form of the predictability principle, the potential demise of law's universality gives rise to the specter of autocratic rule *by* law. Franz Neumann, one of Europe's greatest postwar political theorists, discussed this danger in *Behemoth*, his magisterial analysis of Nazi ideology, politics, and law.[223] To him, the liberal rule of law entailed, above all else, an embrace of the universality principle, which he referred to as the "general character of law" and "equality before the law."[224] His discussion reads as a response to Hayek's treatment of the universality principle, emphasizing liberty as something above and beyond the ability to engage in free competition in the market:

> Equality before the law is merely formal or negative, to be sure, but it does contain a minimum guarantee of freedom and must not be discarded. Both functions of the generality of law, calculability of the economic system and guarantee of a minimum of freedom and equality, are equally important; not the first alone, as the theories of

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[223] To be sure, Neumann's ultimate conclusion was that Nazi Germany was not governed by any system that could be described as law. *See* NEUMANN, *supra* note 98, at 467.
[224] *Id.* at 441.

the totalitarian state maintain. If one accepts their view that the generality of law is nothing more than a way of satisfying the needs of free competition, then the conclusion is inevitable that the substitution of organized state capitalism for free competition requires the substitution of the command of the Leader or the general principle for the general law, the independent judiciary, and the separation of powers.[225]

Importantly, however, Neumann follows Hayek as regards the fundamentally negative, or "formal," character of the universal rule of law. Despite his radical political bona fides,[226] his conception of the rule of law does not entail a positive commitment to achieve any particular system of social relations.[227] Nevertheless, in the wake of the war, Neumann, a dyed-in-wool prewar Marxist, trumpets the importance of negative liberty and the rule of law in terms of individual freedom and autonomy: "[T]he limited, formal, and negative generality of law under liberalism not only permits capitalist predictability, but also guarantees a minimum of freedom . . . ."[228] So emphatic was Neumann's association of the rule of law with freedom that, in his last book, he describes the rule of law as possessing a fundamentally "moral" character that "transcends" any of its other functional roles.[229]

The danger, all too real for Neumann and his contemporaries, was that an autocratic or totalitarian regime might use the revelation of the incompleteness of the liberal rule of law not to better achieve universal law, but to eliminate whatever normative force that the rule of law retains. Indeed, in Neumann's own time, Carl Schmitt, the "crown jurist of the Third Reich,"[230] helped provide justification for authoritarian government by pointing out the inability of liberalism to live up to its ideals in modern industrial societies.[231] Will the acknowledgement that the legal singularity might destabilize the liberal rule of law give rise to calls to reinforce the legitimacy of the liberal legal order by other means,[232] or to a Schmittian "realism" or

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[225] *Id.* at 444-45.

[226] Neumann was affiliated with the post-Marxist Frankfurt Institute for Social Research and was considered by many of his Frankfurt associates to harbor more traditional Marxist views. *See* MARTIN JAY, THE DIALECTICAL IMAGINATION: A HISTORY OF THE FRANKFURT SCHOOL AND THE INSTITUTE OF SOCIAL RESEARCH, 1923-1950 145 (rev. ed. 1996). Neumann's pre-war writings argued in favor of a "social rule of law" that transcended the inherent limitations of bourgeois liberal conceptions of the rule of law, adequate to promote autonomous political and social life in mass industrial democracies. *See, e.g.,* Franz Neumann, *The Social Significance of the Basic Laws in the Weimar Constitution*, 10 J. ECON. & SOC'Y 329 (1981) (originally published in 1930).

[227] In this respect, Neumann would agree with Richardson and Raz. *See supra* Part III.A.

[228] NEUMANN, *supra* note 98, at 451; *see also* Scheuerman, *supra* note 194, at 16.

[229] *See* NEUMANN, *supra* note 166, at 170.

[230] Charles E. Frye, *Carl Schmitt's Concept of the Political*, 28 J. POL. 818, 818 (1966).

[231] *See* RENATO CRISTI, CARL SCHMITT AND AUTHORITARIAN LIBERALISM: STRONG STATE, FREE ECONOMY (1999); NEUMANN, *supra* note 98, at 42-45.

[232] *See supra* text accompanying note 100.

"decisionism" that resolves or resigns itself to fill the vacuum left by the rule of law with something more arbitrary—or more sinister?

**IV.     Conclusion**