LEX AI: REVISITING PRIVATE ORDERING BY DESIGN

Niva Elkin-Koren[†] *& Karni A. Chagal-Feferkorn*[††]

ABSTRACT

In his seminal paper from 1997, Professor Joel R. Reidenberg articulated a novel governance framework known as "Lex Informatica." Under the principles of Lex Informatica, norms are no longer shaped by leaders, legislators, or judges but rather by technological capabilities and design choices that grant users the flexibility to shape their own online experience based on their preferences. A quarter century later, a "second generation" of online governance systems has emerged, making use of artificial intelligence: "Lex AI."

The manner by which Lex AI stirs our behavior or reality (for example by filtering online content it deems inappropriate, advising a judge to refuse defendant's request for bail, or recommending a certain book and not others) is based on the aggregation of big data and on predictions of the optimal choice for each individual subject to Lex AI. Given its personalized nature, Lex AI may be perceived as a form of private ordering, one that focuses on the individual rather than on the collective, and—at least when its supports voluntary decision-making—grants individuals the ability to execute their own preferences and choices.

Yet, as we explore in this Article, Lex AI bypasses autonomous choice as it is often based on personalization that is conducted for the user and not by the user. As such, it does not neatly fit the definition of private ordering—the process of setting up of social norms by parties involved in the regulated activity.

As a form of public ordering, on the other hand, Lex AI may be viewed as a superior form of collective governance because it bases its decision on the efficient collection and analysis of granular information regarding actual preferences and behavior. As such, it could possibly address one of the major challenges associated with centralized governance: information failure due to limited and outdated data concerning individuals' actions and appetites.

As this Article shows, however, path dependency, coupled with the reduced opportunity to signal users' true preferences or to take part in the deliberation of the applicable norms, may render Lex AI a less efficient and less legitimate form of governance than public ordering.

We therefore argue that Lex AI is a *sui generis* type of governance—one which deserves scrutiny by regulators and policymakers. Naturally, the characteristics of Lex AI also offer significant governance advantages. Shaping Lex AI to enhance social welfare, however, may require a fresh way of thinking about these challenges and the public interventions that might address them.

DOI: https://doi.org/10.15779/Z38F47GV4B

† Professor, Tel-Aviv University Faculty of Law; and a Faculty Associate, Berkman Klein Center at Harvard University.

†† Scotiabank Postdoctoral Fellow at the AI + Society Initiative, University of Ottawa and the University of Ottawa Centre for Law, Technology and Society.

TABLE OF CONTENTS

I. INTRODUCTION

In his seminal paper from 1997, Professor Joel R. Reidenberg articulated a novel approach to governance, one in which information technology affordances and constraints steer human behavior.[1] This path breaking approach to governance has given rise to a proliferation of legal scholarship

1. Joel R. Reidenberg, *Lex Informatica: The Formulation of Information Policy Rules through Technology*, 76 TEX. L. REV. 553 (1998). In a similar vein, Lawrence Lessig has coined the term "code is law" to describe how algorithms govern human behavior alongside with the traditional forms of governance of law, social norms, and markets. LAWRENCE LESSIG, CODE: VERSION 2.0 (2006).

seeking to gain a better understanding of the role of technology in governing human behavior.[2]

Governance is a fuzzy concept, broadly referring to ordering processes that aim to steer and coordinate the behavior of social actors.[3] Different frameworks of governance entail different characteristics and hence introduce various advantages as well as potential concerns. Governance by law, for example, directs people's behavior by a set of explicit binding norms that define rights and duties—norms whose violation would result in legal sanctions.[4] Governance by law may take the form of top-down public ordering, where concepts of right and wrong are collectively determined by the government and are enforced by law (e.g., criminal law). Governance can also take the form of private ordering. Under private ordering, which is perceived by some as a more legitimate and more efficient form of governance than public ordering,[5] norms are crafted and voluntarily undertaken by the social agents to which they apply (e.g., contract law, which grants parties freedom to shape their desired agreement).[6] Markets, to take another example of governance frameworks, coordinate and shape the behavior of various economic actors through market mechanisms of supply and demand mediated by price.[7]

Coining the term "Lex Informatica,"[8] Reidenberg described yet another type of governance: governance through information technology. Under the

2. *See, e.g.*, Helen Nissenbaum, *From Preemption to Circumvention: If Technology Regulates, Why Do We Need Regulation (and Vice Versa)*, 26 BERKELEY TECH. L.J. (2011); JULIE E. COHEN, CONFIGURING THE NETWORKED SELF: LAW, CODE, AND THE PLAY OF EVERYDAY PRACTICE (2012); Deirdre K. Mulligan & Kenneth A. Bamberger, *Saving Governance-by-Design*, 106 CALIF. L. REV. 697 (2018).

3. Jeanette Hofmann, Christian Katzenbach & Kirsten Gollatz, *Between Coordination and Regulation: Finding the Governance in Internet Governance*, 19 NEW MEDIA & SOC'Y 1406 (2016).

4. *See* Lauren Edelman & Marc Galanter, *Law: The Socio-Legal Perspective*, *in* 13 INT'L ENCYC. SOC. & BEHAV. SCIS. 604–13 (James D. Wright ed., 2015).

5. *See infra* notes 9, 34–48 and accompanying text.

6. Victor P. Goldberg, *The Enforcement of Contracts and Private Ordering*, *in* HANDBOOK OF NEW INSTITUTIONAL ECONOMICS 491 (2008).

7. Michael J. Sandel, WHAT MONEY CAN'T BUY: THE MORAL LIMITS OF MARKETS 89–93 (2012); Ariel Porat, *Changing People's Preferences by the State and the Law*, 22 THEORETICAL INQUIRIES L. 215, 216–17 (2021).

8. Reidenberg, *supra* note 1, at 555. Information technology may shape behavior by creating affordances. For instance, digital platforms' design choices are shaping the way individual users engage with online content. Facebook's "like" and "share" features, for example, enable users to rank content posted by others, offering peer-based credibility to content, and, at the same time, triggering more engagement by posters of content. *See* Kyle Langvardt, *Regulating Habit Forming Technology*, 88 FORDHAM L. REV. 129 (2019) (criticizing the way platforms use such quantification features to hook users). The greatness of Lex

principles of Lex-Informatica, norms are no longer shaped by leaders, legislators, or judges but rather by technological capabilities and design choices that grant users the flexibility to shape their own online experience based on their preferences. Reidenberg, therefore, perceived information technology as an enabler of bottom-up, private ordering, whereby parties voluntarily undertake the norms that govern their behavior and thus express their choices.[9] For example, technology enabling different users to choose different content filters mitigated the tension between the one-size-fits-all norm dictated by governance by law and the diversity of speech norms upheld by users.[10]

The pace of technological development has been exponential,[11] and only a quarter of a century since Reidenberg's groundbreaking proposition of "Lex Informatica," a second generation of algorithms has emerged. Referred to as "artificial intelligence" or "machine learning" (hereafter "AI" or "ML"), the new generation of algorithms, which is capable of "crunching" enormous amounts of data, learning how to independently solve tasks, and reaching decisions,[12] has arguably led to a new form of governance. A form of governance we call "Lex AInformatica" (or "Lex AI" for short).[13]

Informatica, however, is that it allows individuals to use technological means in order to express and execute their own preferences. Yet, information technology can also be applied to restrict individuals' choice. Unlike governance by legal norms, ethics, or market-forces, individuals might be denied a priori of certain choices that would not be technologically feasible. Indeed, Lex Informatica might be used by governments, or by commercial entities, in manners that block certain behaviors using technological means and thus limiting choice altogether.

9. Reflecting a social order which relies on individuals' choice, Lex Informatica might be perceived as a more legitimate form of self-governance. Moreover, since individuals presumably possess better knowledge of their own wants and needs, governance by Lex Informatica was presumably more likely to enable choices that would efficiently maximize individuals' own utility functions (unless stated otherwise, the term "efficiency" is used in this paper in the context of utility maximization). As we discuss in what follows, Lex Informatica was indeed thought of by Reidenberg to be a digital enabler for the same legitimacy and efficiency that bottom-up private ordering could provide. For further discussion on public and private ordering, see *infra* notes 34–54 and accompanying text.

10. Although governments could enforce their local speech rules using technology (for example, blocking certain websites for users within their territory), other internet users could use the same technology to control, for themselves, what content to filter and what to allow. *See infra* notes 58–64 and accompanying text.

11. 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 (2013).

12. *See infra* notes 67–72 and accompanying text.

13. Although the term "Lex" in Latin means "Rule," JAMES MARWOOD, POCKET OXFORD LATIN DICTIONARY: LATIN-ENGLISH (2012), and is often used in the context of legal rule, this Article's use of it is not strictly limited to the legal context. In accordance with

This Article argues that Lex AI is a very different form of governance compared to Lex Informatica. It shows why Lex AI, which can be easily mistaken for a private ordering form of governance, is in fact closer in nature to public ordering. At the same time, we will show that Lex AI lacks some of the key characteristics at the basis of public ordering, rendering Lex AI a sue generis form of governance—one which is not necessarily inferior to other types of governance but whose unique characteristics ought to be fleshed out and carefully considered when making policy choices regarding Lex AI.

Before proceeding with this line of arguments, however, it is necessary to clarify how AI decision-making constitutes a form of governance. First, AI is used in the public sphere for governance purposes. Consider, for example, the algorithms that assist judges in the judicial process or those law enforcement agencies use to identify suspects.[14] But even mundane uses of AI that take in the private sphere are, in fact, a reflection of governance. For example, Netflix makes personalized recommendations to its users by comparing data collected on each of its subscriber's viewing history with the profiles of millions of others to predict each individual's watching preference or how likely they are to try new content.[15] Notably, by defining which content would become available to users, Netflix or other recommendation systems do not simply reflect preferences but may also practically govern public discourse, shape the construction of meaning, and influence political positions and normative perceptions of social actors.[16] Similarly, navigation apps such as Waze do not

its definition of "rule; principle; condition," the Article's discussion of "Lex AI" addresses governance by AI which includes, but is not limited to, governance by law.

14. Consider, for example, Correctional Offender Management Profiling for Alternative Sanctions (COMPAS), a decision support tool assisting judges to assess the risk of defendants' recidivism or Palantir, considered one of the most powerful (and controversial) law enforcement tools in the world. As the "all-seeing-stones" it was named after, Palantir collects personal data on anyone who might have even the slightest relation to the police's work identifying terrorists and criminals. *See* Anne Washington, *How to Argue with an Algorithm: Lessons from the COMPAS ProPublica Debate*, 17 COLO. TECH. L.J. 132 (2019); *see also* Caroline Haskins, *Scars, Tattoos, And License Plates: This Is What Palantir And The LAPD Know About You*, BUZZFEED NEWS (Sept. 29, 2020), https://www.buzzfeednews.com/article/carolinehaskins1/training-documents-palantir-lapd.

15. *See* HOW NETFLIX'S RECOMMENDATION SYSTEM WORKS, https://help.netflix.com/en/node/100639 (last visited Feb. 4, 2022).

16. Researchers have documented the effect of such systems on political views, including driving radicalization. *See* José van Dijck, *Facebook and the Engineering of Connectivity: A Multi-Layered Approach to Social Media Platforms*, 19 CONVERGENCE: INT'L J. RSCH. INTO NEW MEDIA TECHS. 141 (2013); Zeynep Tufekci, *YouTube, the Great Radicalizer*, N.Y. TIMES (Mar. 10, 2018), https://www.nytimes.com/2018/03/10/opinion/Sunday/youtube-politics-radical.html?searchResultPosition=2.

simply guide any single driver to her selected destination; they also coordinate multiple drivers, thus generating a certain type of social order. As further demonstrated below, the use of AI to support, supplement, or supplant human decision-making may create new norms and systematically direct the behavior of individuals.[17] In that sense, the use of AI introduces the novel governance framework: Lex-AI.

The literature on governance by AI often focuses on governance *of* AI. Scholars are exploring social and legal tools to render AI decision-making more compatible with principles of fairness, due process, and accountability.[18] This is especially so given the nature of AI systems, which are difficult to predict or explain.[19] Scholars have also focused on *who* is governing behavior by using AI,[20] raising concerns over the exercise of governing power by unelected private-sector entities (i.e., private governance).[21]

Nonetheless, missing from these discussions is an inquiry into *how* norms are generated and enforced through the proliferation of AI. How does Lex AI measure as a type of governance? Ultimately, to better govern AI and to fully

17. *See infra* notes 73–86 and accompanying text.

18. *See, e.g.*, Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. REV. 54 (2019) (discussing the role of the private sector in addressing issues of algorithmic bias, transparency, and accountability); David Freeman Engstrom & Daniel E. Ho, *Algorithmic Accountability in the Administrative State*, 37 YALE J. ON REGUL. 800 (2020) (proposing an accountability structure for the use of AI systems in the public sector); Danielle Citron & Frank Pasquale, *The Scored Society: Due Process for Automated Predictions*, 89 WASH. U. L. REV. 1, 1 (2014) (discussing "technological due process" as a means for oversight on algorithmic systems).

19. According to Frank Pasquale, we are now part of a "black box society"—one where hidden algorithms have enormous power to build, or destroy, numerous individual and collective aspects of our lives. *See generally* FRANK PASQUALE, THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION (2015). One of the significant challenges in that context is algorithms' opaque nature—their outcomes may often not yield a meaningful explanation as to how the system works or why it decided as it did. *See, e.g.*, Richard Warner & Robert H. Sloan, Making Artificial Intelligence Transparent: Fairness and the Problem of Proxy Variables (Feb. 16, 2021) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3764131; Maayan Perel & Niva Elkin-Koren, *Accountability in Algorithmic Copyright Enforcement*, 19 STAN. TECH. L. REV. 473 (2016).

20. *See, e.g.*, Ryan Calo & Danielle Citron, *The Automated Administrative State: A Crisis of Legitimacy*, 70 EMORY L.J. 797 (2021); *see also* Alicia Solow-Niederman, *Administering Artificial Intelligence*, 93 S. CAL. L. REV. 633 (2020) (addressing the power that AI has granted to the private market to de facto regulate human behavior without the proper means to ensure that private companies will "do the right thing" and protect important interests of the public; proposing a regulatory solution to curb the private sector's control and also the need to protect certain values that might be hindered as a result of this transition).

21. *See* Kate Klonick, *The New Governors: The People, Rules, and Processes Governing Online Speech*, 131 HARV. L. REV. 1598 (2018).

understand its social implications, we must first ascertain what is *lost in translation* as we increasingly turn to AI in deciding legal matters that affect rights and duties. Does Lex AI govern behavior in the same way as Lex Informatica? Does it offer the same advantages? Does AI introduce any unique challenges as a subject of legal inquiry? What are the implications of deploying Lex AI so broadly in our daily lives?[22]

Using the public-private ordering dichotomy as a lens, our analysis demonstrates that Lex AI introduces a new type of governance: one that does not fit neatly under the public-private binary classification and does not necessarily reflect the key advantages or strengths associated with either of them. This is based on two sets of observations:

The first set of observations relates to the view of Lex AI as a type of private ordering. Lex AI facilitates personalization which, at first glance, might be perceived as introducing a superior form of private ordering.[23] Yet, although the customization offered by Lex Informatica is initiated *by* the user, reflecting their choice, personalization by Lex AI is conducted *for* the user by a centralized system. Lex AI recommendations are often based on an optimization function that also weighs considerations the individual does *not* choose, nor do Lex AI recommendations necessarily reflect users' best (predicted) interests. Lex AI may apply top-down decisions based on "big picture" considerations (such as managing congested traffic in the case of Waze) and on the assumption that, owing to its access to big data and analytical tools, "the system knows best."[24]

---

22. *See* Richard Susskind & Daniel Susskind, *Technology Will Replace Many Doctors, Lawyers, and Other Professionals*, HARVARD BUS. REV. (Oct. 11, 2016), https://hbr.org/2016/10/robots-will-replace-doctors-lawyers-and-other-professionals. For a forecast on the percentage of actions currently performed by human professionals that could be replaced by automation, see *Automation Potential and Wages for US Jobs*, MCKINSEY GLOB. INST. (Oct. 1, 2018), https://public.tableau.com/profile/mckinsey.analytics#!/vizhome/AutomationandUSjobs/Technicalpotentialforautomation.

23. *See infra* Section III.B.1. At first sight, Lex AI continues Lex Informatica's path of bottom-up, private ordering through technology. If Lex Informatica's novelty was its enabling of the customization of choices by individuals, Lex AI's contribution to the tailor-made governance scheme lies in enabling personalization. Personalization, which is made possible through personal data analytics, ostensibly enables more precise tailoring of services, products, and even legal norms to individual user profiles. Both frameworks therefore enable a departure from governance that applies a single norm to all and instead facilitate tailor-made governance for individuals rather than collectives.

24. Nizan G. Packin, *Consumer Finance and AI: The Death of Second Opinions?*, 22 N.Y.U. J. LEGIS. & PUB. POL'Y 101 (2019) (showing that consumers prefer the recommendations of algorithms over those of human experts).

Bypassing autonomous user choice, Lex AI may in fact look more like a distinct type of collective action mediated by algorithm rather than private ordering. The second set of observations thus relates to Lex AI's centralized governance, top-down nature. Lex-AI introduces a powerful means of collecting, accumulating, and analyzing massive amounts of data, as well as making predictions on people's preferences and needs. Utilizing fine-grained data on individuals' behavior, Lex AI can potentially develop and apply shared norms or even personally tailored norms more efficiently.[25] Arguably, these new capabilities may address one of the major challenges associated with centralized governance: information failure due to limited and outdated information concerning the actions and proclivities of each individual.[26]

As this Article elaborates, however, the ways in which Lex AI generates norms and shapes behaviors raise several concerns. One concern is path dependency: a certain choice or past behavior might be factored in by the system, repeatedly, even when it no longer reflects a user's current (and perhaps not even original) desire. Another concern is the lack of participation in crafting the norms.[27] Lex AI may not only shrink opportunities to signal users' true preferences but may also lessen the opportunity to take a deliberative part in the shaping of applicable norms.[28]

Lex AI entails various advantages and opportunities as a governance form.[29] At the same time, however, it lacks some of the major advantages of private ordering while it also suffers several limitations as a form of collective

25. *See* Ariel Porat & Lior Jacob Strahilevitz, *Personalizing Default Rules and Disclosure with Big Data*, 112 MICH. L. REV. 1417 (2014); Omri Ben-Shahar & Ariel Porat, *Personalizing Negligence Law*, 91 N.Y.U. L. REV. 627 (2016).

26. *See Information Failure*, INVESTOPEDIA, https://www.economicsonline.co.uk/Market_failures/Information_failure.html (last visited Aug. 3, 2021) ("[I]nformation failure exists when some, or all, of the participants in an economic exchange do not have perfect knowledge.").

27. In discussing a hypothetical "good despot"—an "all-seeing" ruler—philosopher John Stuart Mill advocates participation of citizens in shaping the norms which apply to them, to keep them engaged and committed to the common good. JOHN STUART MILL, CONSIDERATIONS ON REPRESENTATIVE GOVERNMENT 46 (Kitchener: Batoche Books, 2001) (1861) ("There is no difficulty in showing that the ideally best form of government is that in which the sovereignty, or supreme controlling power in the last resort, is vested in the entire aggregate of the community, every citizen not only having a voice in the exercise of that ultimate sovereignty, but being, at least occasionally, called on to take an actual part in the government by the personal discharge of some public function, local or general.").

28. Under the deliberative approach, the legitimacy of rulemaking depends on the meaningful participation in the shaping of norms by those who are affected by them. *See infra* notes 52–53 and accompanying text.

29. *See infra* notes 143–146, 154–156 and accompanying text.

action. Accordingly, Lex AI should be thought of as a sui generis type of governance, deserving of closer scrutiny by regulators and policymakers.[30]

The Article proceeds as follows: Part II will provide background context on Lex Informatica and its facilitation of private ordering. Part III will present Lex AI and analyze its similarities and differences compared to types of private ordering. Concluding that Lex AI cannot be fully described as reflecting users' choices, the discussion will then examine whether Lex AI may be perceived as a superior method for collective ordering. Lastly, Part IV will discuss the policy implications of Lex AI as a form of governance that does not fit neatly under the public-private ordering dichotomy. Achieving a desirable version of Lex AI, we argue, requires fresh thinking on the public intervention in governance by Lex AI aimed at promoting societal goals.

II. LEX INFORMATICA AS PRIVATE ORDERING

Like many legal scholars of his generation,[31] Reidenberg was puzzled by the challenges arising from the transnational environment the internet introduced. The World Wide Web's launch in the early 1990s and subsequent opening up of the internet to commercial traffic ultimately enabled billions of users to directly interact and exchange content across national borders, subjecting such interactions to national laws applying conflicting speech norms.[32] On a practical level, although certain content could be considered legitimate in the jurisdiction of the speaker, it may be considered illegitimate according to the national laws applied to the message's audience. On a more theoretical level, this new type of conflict of laws has challenged the legitimacy of public ordering. Although laws of sovereign governments simultaneously applied within national borders to those who consented to the norm (by participating in elections[33]) and to those the norm affects (as applied by sovereigns within national borders), the internet led to a disconnect between the two. For instance, the global nature of internet connectivity might expose users of one (more conservative) jurisdiction to the speech norms applied in

30. This Article does not attempt to propose regulatory solutions for AI-based governance. Nor does it center on the question of who ought to oversee regulation affecting the public good or the consequences of entrusting decision-making power to influential private platforms. It explores the implications of shifting from governance by the rule of law and the "if-then" algorithms featured in Lex Informatica to the governance of social relations by data-driven learning algorithms.

31. *See, e.g.*, David R. Johnson & David G. Post, *Law and Borders—the Rise of the Law in Cyberspace*, 48 STAN. L. REV. 1367 (1996).

32. *See* Reidenberg, *supra* note 1, at 557–560.

33. *See infra* notes 50–53 and accompanying text.

another (more liberal) jurisdiction. Reidenberg demonstrated how Lex Informatica could address such a challenge by enabling online private ordering using technological design. To provide background, this Part briefly introduces the distinction between public ordering and private ordering and then moves to discuss Reidenberg's private-ordering analysis of Lex Informatica.

A. THE LEGAL FRAMEWORKS OF GOVERNANCE

Private ordering, like public ordering, refers to how norms govern human behavior.[34] In both instances, norms regulate behavior by defining an outcome (sanction or reward) attached to the factual conditions defined by the norm. Both public and private ordering assume a form of social control in which behavior is governed by norms defining right and wrong.[35]

Public ordering refers to rulemaking processes the state designs (e.g., through legislature and regulators). Its norms reflect the outcome of collective action mechanisms that public institutions formulate and apply top-down.[36] Private ordering, by contrast, concerns bottom-up processes, where the parties are the ones who choose the norms that will govern their behavior.[37] Norms are not only selected by the parties themselves but are also shaped and formulated by them through decentralized processes. Private ordering includes some nonbinding norms (e.g., business practices or community social norms),

34. Jorge L. Contreras, *From Private Ordering to Public Law: The Legal Frameworks Governing Standards-Essential Patents*, 30 HARV. J.L. & TECH. 211, 213 (2017) ("The term 'private ordering' refers to the use of rules systems that private actors conceive, observe, and often enforce through extra-legal means."). As used in this Article, private ordering refers to bottom-up processes where norms are undertaken voluntarily by the parties to which the norms apply. But there are many definitions of private ordering. Some definitions emphasize the sharing of governmental regulatory authority with private actors. *See, e.g.*, Steven L. Schwarcz, *Private Ordering*, 97 NW. U. L. REV. 319, 319 (2002). Other definitions pertain to extra-legal norms. *See, e.g.*, Tehila Sagy, *What's So Private About Private Ordering?*, 45 L. & SOC'Y REV. 923 (2011) (providing an overview of private ordering by diamond sellers in New York City, in the kibbutz in Israel, and among ranch owners in California); Elizabeth Sepper, *Gays in the Moralized Marketplace*, 7 ALA. C.R. & C.L. L. REV. 129, 133–34 (2015) (discussing the "ideal" that private ordering would solve disputes over the Affordable Care Act's contraceptives mandate).

35. *See* Eric A. Posner, *Law, Economics, and Inefficient Norms*, 82 U. PA. L. REV. 1697, 1699 (1996). A norm can be understood as a rule that distinguishes desirable and undesirable behavior accompanied by a sanction or reward. Norms can be shaped based on tradition, the wills of a command system, or market powers—which, in general, reflect individuals' choices and constitute a manifestation of private ordering. *See* MICHAEL J. TREBILCOCK, THE LIMITS OF FREEDOM OF CONTRACT 1–2 (1993).

36. WILLIAM D. FERGUSON, THE POLITICAL ECONOMY OF COLLECTIVE ACTION, INEQUALITY, AND DEVELOPMENT 16–18 (2020).

37. ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 5-9 (1991).

in addition to some binding legal norms (e.g., those shaped by contracts and agreements rather than by a general law).[38] The common feature of all such norms is that the individuals to whom they apply craft and accept them.[39] Autonomous choice is thus the grounding principle of private ordering, reflecting its normative core.[40] As such, and assuming there are no market failures,[41] the Law and Economics approach generally perceives private ordering as superior to centralized regulatory regimes.[42]

Individuals are assumed to possess the most extensive information about their own preferences and how to execute them optimally[43] and are thus considered the best guardians of their own interests.[44] In other words, parties who enter a private exchange are assumed to have an informational advantage over regulatory agencies and legislators acting through collective decision-making processes. Central sovereigns, on the other hand, lack information on individuals' preferences and capabilities when making decisions on how people

38. ELINOR OSTORM, UNDERSTANDING INSTITUTIONAL DIVERSITY 19 (2005).

39. Private ordering may also refer to extralegal systems, where norms are being created and enforced outside the legal regime. *See* Lisa Bernstein, *Opting out of the Legal System: Extralegal Contractual Relations in the Diamond Industry*, 21 J. LEGAL STUD. 115 (1992); Robert Cooter, *Economic Theories of Legal Liability*, 5 J. ECON. PERSP. 11 (1991); Schwarcz, *supra* note 34, at 324.

40. HANOCH DAGAN & MICHAEL HELLER, THE CHOICE THEORY OF CONTRACT 41–43 (2017).

41. It is assumed that all parties enjoy complete information regarding the transaction, they act voluntarily, and there are no market failures such as monopolies, externalities, or information failures. The economic theory discusses five major market failures: monopolies, public goods, lack of information, externalities, and transaction costs. *See* MILTON FRIEDMAN, CAPITALISM AND FREEDOM 13 (1962) (arguing that "[t]he possibility of co-ordination through voluntary co-operation rests on the elementary—yet frequently denied—proposition that both parties to an economic transaction benefit from it, *provided the transaction is bi-laterally voluntary and informed*.").

42. *See* TREBILCOCK, *supra* note 35, at 10. For a detailed discussion on private ordering's economic advantages over centralized rulemaking, see Niva Elkin-Koren, *Copyrights in Cyberspace—Rights Without Laws?*, 73 CHI. KENT. L. REV. 1155, 1166–72 (1998).

43. Indeed, scholars of behavioral law and economics have demonstrated that individuals may suffer from biases, consequently advocating policies that would debias boundedly rational individuals and enable autonomous decisions. *See generally* Thomas S. Ulen, *Behavioral Law and Economics: Law, Policy, and Science*, 21 SUP. CT. ECON. REV. 5 (2014) (discussing whether deviations from the predictions of rational choice theory can indeed be corrected and, if so, whether it would be more efficiently achieved through education or through "choice architecture").

44. *See* TREBILCOCK, *supra* note 35, at 7 (arguing that, under the economic model, the fact that the contracting parties entered the transaction voluntarily guarantees that such a transaction actually reflects the optimal bargain that benefits them both, in which case, each of the contracting parties presumably knows what their preferences are and express these through their choices in the market).

ought to behave (or, from an economic point of view, what ought to be produced or consumed).[45] They also face coordination problems when attempting to achieve the desired social ordering (albeit, social ordering shaped using insufficient information).[46] Lacking the relevant information regarding the impact of norms on each of the parties affected by each rule, central sovereigns are therefore less likely to generate *efficient* rules. Relatedly, private ordering can also increase efficiency by reducing the risk of vulnerability to public-choice distortions,[47] as well as by lowering transaction costs associated with collecting information about public preferences.[48]

Compared to private ordering, centralized rulemaking processes would likely be much less successful in guaranteeing that the potential costs and benefits associated with the norm will be accurately determined.

The autonomous choice manifested in private ordering also offers moral justification for the enforcement of norms. First, while top-down regulation often takes a one-size-fits-all approach, private ordering leaves room for more diversity and exploration and is therefore capable of tailoring arrangements to changing circumstances and personal tastes. Second, liberal principles justify governmental use of coercive power when all the norm affects are allowed to participate in its creation.[49] Legitimate governance must therefore reflect the "consent of the governed," namely those who are subject to a particular rule and those who are affected by the conduct that is the subject of such a rule.[50]

---

45. *See id.* at 1–2.

46. *See id.*

47. Centralized rulemaking institutions lack the relevant information regarding the impact of rules on all parties affected and, therefore, are unlikely to generate efficient rules. Whereas a decentralized decision-making process guarantees that parties would internalize the impact of the norm on their utility, a centralized process cannot guarantee that all potential benefits and losses will be accurately observed and reflected in the rule.

48. The exercise of choice presumably guarantees that parties would internalize the impact of the norm on their utility. Thus, the voluntary exchange by informed parties reduces the chances of mistakenly assessing public preferences and, consequently, setting the rule inaccurately. *See* Avery Katz, *Taking Private Ordering Seriously*, 144 U. PA. L. REV. 1745 (1996).

49. *See generally* JOHN RAWLS, POLITICAL LIBERALISM (1993); Ronald Dworkin, *What is Equality? Part 1*, 10 PHIL. & PUB. AFF. 185 (1981); Ronald Dworkin, *What is Equality? Part 2*, 10 PHIL. & PUB. AFF. 283 (1981); Ronald Dworkin, *What is Equality? Part 3*, 73 IOWA L. REV. 1 (1987).

50. *See, e.g.*, THE DECLARATION OF INDEPENDENCE (U.S. 1776) ("Governments are instituted among Men, deriving their just powers from the consent of the governed . . . it is the Right of the People . . . to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness."); THOMAS HOBBES, LEVIATHAN (1651) (asserting that the source of political legitimacy is the sovereign's ability to protect those who have consented to obey); Stephen Holmes, *Precommitment and The Paradox of Democracy*, *in* PASSIONS AND CONSTRAINT:

Under the liberal view of democracy, such consent could be acquired through participation in voting. Legitimacy would thus stem from the aggregated will of the constituents as reflected in election results, as long as voting rights are provided equally.[51] Under the deliberative approach, it would take more than the right to participate in the collective decision-making processes to establish legitimacy.[52] The deliberative approach demands the opportunity to meaningfully participate in the deliberative processes that generate norms.[53] Under private ordering, individuals not only give their consent to the shaping of norms but also actively participate in creating them.

The distinction between public and private was often instrumental in giving deference to private-ordering regimes and keeping governmental intervention to the bare minimum, given the advantages of private ordering in terms of legitimacy and efficiency.[54] As Lex AI introduces new practices that affect individual will and reflect individual and collective choices (as discussed in Part III), it may challenge some of the fundamental tenets underlying liberal ideologies.

B. LEX INFORMATICA AND THE ADVANTAGES OF PRIVATE ORDERING

Lex Informatica offered a conceptual framework for articulating design as a type of private ordering. Reidenberg analogized Lex Informatica to the "Lex Mercatoria" of the Middle Ages. Lex Mercatoria, or the "Law of the Merchant," was a body of customs and practices merchants developed in the thirteenth century to overcome the lack of a unified legal regime among traders coming from different jurisdictions.[55] Voluntarily developing a legal framework of their own, merchants were able to gain legal certainty and fairness in an otherwise lawless world.[56] In other words, Lex Mercatoria was a

---

ON THE THEORY OF LIBERAL DEMOCRACY 134–77 (1995) (analyzing the foundational assumption that nations' legality rest on the consent of the governed and how it reconciles with a constitutional convention).

51. Jurgen Habermas, *Three Normative Models of Democracy*, 1 CONSTELLATIONS: INT'L J. CRITICAL & DEMOCRATIC THEORY 1, 3 (1994).

52. *See* José Luis Martí, *Pluralism and Consensus in Deliberative Democracy*, 20 CRITICAL REV. INT'L SOC. & POL. PHIL. 556, 558–59 (2017).

53. *See* Stephen M. Feldman, *The Persistence of Power and the Struggle for Dialogic Standards in Postmodern Constitutional Jurisprudence: Michelman, Habermas, and Civic Republicanism*, 81 GEO. L.J. 2243, 2245 (1993); *see also* Bernard Manin, *On Legitimacy and Deliberation*, 15 POL. THEORY 338, 352 (Elly Stein & Jayne Mansbridge trans., 1987).

54. *See, e.g.*, Schwarcz, *supra* note 34, at 320–21; Lisa Bernstein, *Private Commercial Law*, *in* 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 108 (Peter Newman ed., 1998).

55. Reidenberg, *supra* note 1, at 553–554.

56. *See generally* HOBBES, *supra* note 50.

classic example of private ordering where private entities or individuals—not the sovereign—voluntarily shaped and enforced norms.[57]

Nearly half a millennium later, internet users subject to multiple national rules face the same challenges as the merchants of the Middle Ages. Similar to Lex Mercatoria, the ground rules that govern the internet and many of the interactions occurring throughout the Web are not set by a national ruler or its public institutions. Rather, Reidenberg observed a new governance framework, which he dubbed "Lex Informatica." For Lex Informatica, norms were no longer shaped by leaders, legislators, or judges but rather by technological capabilities and system-design choices that granted users the flexibility to shape their online experience based on their personal preferences.

One prime example Reidenberg analyzed to demonstrate this point was Platforms for Internet Content Selection (PICS), a technical solution that facilitated selective blocking of access to information. PICS, which is no longer used, was a standard for labeling content on the internet that enabled users to instigate automated blocking of websites based on their preferences. Its various components started with the labeling of content by third parties. Here, the system was neutral with respect to the terms used in rating labels; it merely offered a standardized format for rating materials available on the internet.[58] Such ratings could relate to aspects such as violence, nudity, or adult language;[59] and, for each dimension, it could assign any number of values (e.g., nudity 1–10). Ratings could be based on self-labeling by the content-provider or by third parties such as the Internet Content Rating Association[60] or a software-blocking provider running its own rating service.[61]

A second component of PICS was a system that automatically detected the rated content and enabled the access blocking. Such rule-based algorithms could be embedded in browsers[62] or in stand-alone blocking software. The

57. Reidenberg, *supra* note 1, at 553–554.

58. This labeling system has been discontinued by the Family Online Safety Institute's board of directors. See ICRA, Fam. Online Safety Inst., http://www.icra.org/ (last visited Feb. 2, 2022).

59. Jonathan Weinberg, *Rating the Net*, 19 HASTINGS COMMC'N & ENT. L.J. 453, 457 (1997).

60. *About ICRA*, Internet Content Rating Ass'n, https://itp.cdn.icann.org/en/files/registry-agreements/net/about-icra-05jan07-en.pdf (last visited Jul. 25, 2021).

61. Weinberg, *supra* note 59, at 455. Weinberg warned that "[p]eople whose image of the net is mediated through blocking software will miss out on worthwhile speech through deliberate exclusion, through inaccuracies in labeling inherent to the filtering process, and through the restriction of unrated sites." *Id.* Weinberg compares the different rating strategies of blocking software Cyber Patrol, Specs for Kids, and CYBERSitter. *Id.* at 458.

62. Reidenberg, *supra* note 1, at 559–560.

filters using the PICS specifications were provided as a readymade blocking software that predefined the type of content to be blocked using a filter (e.g., violence with a rating higher than 3); or, alternatively, it offered users a choice to customize their filters based on their preferences (e.g., nudity 0 and violence 5).[63]

The rule-based technology at the heart of PICS allowed users to select the setting that suited them best from a menu of predetermined options. Although PICs could be used "top-down" by the sovereign,[64] it was also a tool that enabled individuals to shape their online environment as they saw fit. Individuals could, for example, choose a specific label (or combination of labels) that indicated the content they wished not to see and use PICS to block it from their screens. As a result, individuals "got what they wanted": content that was offensive to some could be voluntarily blocked by them while others' wish to continue watching it was respected. In this way, Lex Informatica facilitated customization, flexibility, and multiplicity of norms, resulting in more efficient and more legitimate outcomes.

Reidenberg thus saw the great potential of technological solutions, such as PICS, in enabling the customization and self-enforcement of norms by extra-legal tools. PICS, he argued, allowed individuals to choose their own filtering rules and, at the same time, enabled automated transborder enforcement of norms by content providers without requiring any law enforcement efforts.[65]

Internet Explorer 3 was one of the early web browsers to offer support for PICS.]

63. *See* Paul Resnick & James Miller, *PICS: Internet Access Controls Without Censorship*, 39 Commc'ns ACM 87 (1996), https://doi.org/10.1145/236156.236175.

64. Reidenberg also demonstrated how Lex Informatica was an "extra-legal instrument" that could enable governments to overcome the jurisdictional challenges posed by a global network. He explained that the law applied a single standard regarding blocking, one that was often different across jurisdictions. Although in the United States the First Amendment would prevent the government from any interference in free speech, in China the law would allow the government to restrict speech of various types. In the United States, in particular, enabling pluralism is the underlying principle of the liberal view of free expression, and the constitutional shield from governmental intervention is designed to ensure sufficient space for such private expression of speech norms. By enabling technological customization through technological solutions such as PICS, Lex Informatica allows governments to create artificial online zones or online jurisdictions where the geographical jurisdiction's rules are respected. Reidenberg, *supra* note 1, at 557–60.

65. *See id.* at 560 ("The structure of PICS allows several different content-evaluation standards to be applied to the same information on a web site and different viewers to use different filter criteria . . . . This technology provides individual choice of filtering rules, yet it still offers automatic enforcement . . . . Third-party rating labels may be distributed through a server that is separate from the labelled documents. Thus, the document authors and web sites where the documents are posted need not cooperate with law enforcement efforts.").

III. LEX AI AS A FORM OF GOVERNANCE

A. HOW AI CAN BECOME A FORM OF GOVERNANCE

As this Article explores in depth, AI as a form of governance introduces several unique traits that warrant careful consideration. To better understand them and how AI can be used for governance purposes, this Section reviews how AI systems works.

AI systems use algorithms and data to identify patterns and make predictions. Despite the multitude of conceptualizations proposed for the term "AI"—or perhaps because of it—there is no consensus over its definition.[66] AI is generally used to broadly describe different types of techniques. A general common denominator of AI systems could be their ability to replace human beings in performing actions that typically require human cognitive skills.[67] When further deconstructed, the ability to replace humans may focus on the systems' ability to act in a manner that is not preprogrammed and to adapt their actions to the changing environment.[68] Machine Learning (ML) techniques, among others, enable systems to learn how to perform a certain task[69] by training on vast volumes of data. Once trained, these systems enter

66. Ryan Calo, *Artificial Intelligence Policy: A Primer and Roadmap*, 51 U.C. DAVIS L. REV. 399, 404 (2017) (arguing that "[t]here is no straightforward, consensus definition of artificial intelligence"); Bryan Casey & Mark Lemley, *You Might Be a Robot*, 105 CORNELL L. REV. 287, 294 (2019) (arguing that "[t]here is something exceptional about robots and AI that make them exceptionally difficult to define").

67. *Id.* at 404 (explaining that "AI is best understood as a set of techniques aimed at approximating some aspect of human or animal cognition using machines").

68. *See, e.g.*, *Annex to the Resolution: Recommendations as to the Content of the Proposal Requested*, EUR. PARL. DOC. P8_TA(2017)0051, ¶ AB, http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P8-TA-2017-0051&language=EN&ring=A8-2017 ("A common European definition for smart autonomous robots should be established, where appropriate including definitions of its subcategories, taking into consideration the following characteristics: the capacity to acquire autonomy through sensors and/or by exchanging data with its environment (inter-connectivity) and the analysis of those data; . . . ."); ANNONI ALESSANDRO, PETER BENCZUR, PAOLO BERTOLDI, BLAGOJ DELIPETREV, GIUDITTA DE PRATO, CLAUDIO FEIJOO, ENRIQUE FERNANDEZ MACIAS, EMILIA GUTIERREZ, MARIA IGLESIAS PORTELA, HENRIK JUNKLEWITZ, MONTSERRAT LOPEZ COBO, BERTIN MARTENS, SUSANA FIGUEIREDO DO NASCIMENTO, STEFANO NATIVI, ALEXANDRE POLVORA, JOSE IGNACIO SANCHEZ MARTIN, SONGUL TOLAN, ILKKA TUOMI & LUCIA VESNIC ALUJEVIC, ARTIFICIAL INTELLIGENCE: A EUROPEAN PERSPECTIVE 8 (Max Craglia ed., 2018).

69. In the past, there were attempts to develop AI systems with "general human intelligence," referred to as "strong AI." Recent years' focus, however, has been on developing AI systems capable of replacing humans in concrete tasks or narrow domains ("Narrow-AI"), or on systems capable of accomplishing several tasks in various domains ("Artificial General Intelligence"). *See* Stan Franklin, *History, Motivation and Core Themes*, *in* THE CAMBRIDGE

an organic process of continual learning that relies on a recursive feedback loop. AI systems that are deployed in governing human behavior eventually attain the capacity to analyze individual personal data by drawing on their prior learnings to make predictions about individuals' preferences,[70] the risk these individuals may pose,[71] or the opportunities associated with them.[72]

Similar to Lex Informatica, AI decision-making could be perceived as a form of governance in terms of how it generates norms, shapes practices, and coordinates the behavior of social actors.[73] This broad view of governance is not limited to command-and-control by state agencies but rather covers a whole range of regulatory interventions by various social actors. As a governance tool, governments and the private sector alike can use Lex AI. In the public sphere, AI systems are used in various contexts such as smart cities,[74] welfare benefits, education, and immigration.[75] In the criminal justice realm, algorithms are often deployed as decision-support systems that assist the police in identifying potential suspects, sometimes even before a crime has been

HANDBOOK OF ARTIFICIAL INTELLIGENCE 15, 15 (Keith Frankish & William M. Ramsey eds., 2014).

70. For some nontrivial examples, see Daniel Faggella, *AI in Taste and Art – The Current State of Machine Learning for Understanding Preferences*, EMERJ (Jan. 29, 2019), https://emerj.com/editorial-opinion/ai-taste-art-current-state-machine-learning-understanding-preferences/; Kyle Wiggers, *AI Predicts Office Workers' Room Temperature Preferences*, VENTUREBEAT (Mar. 22, 2019), https://venturebeat.com/2019/03/22/ai-predicts-office-workers-room-temperature-preferences/.

71. Be it the risk to society, the risk of activating insurance coverage, or, for example, the risk of dying. *See* Carolyn McKay, *Predicting Risk in Criminal Procedure: Actuarial Tools, Algorithms, AI and Judicial Decision-Making*, 32 CURRENT ISSUES IN CRIM. JUST. 22 (2019); Joachim Frick & Iris M. Barsan, *InsurTech - Opportunities and Legal Challenges for the Insurance Industry*, REVUE TRIMESTRIELLE DE DROIT FINANCIER 56 (2020); Mohammad Pourhomayoun & Mahdi Shakibi, *Predicting mortality risk in patients with COVID-19 using machine learning to help medical decision-making*, SMART HEALTH, Apr. 2021, at 1.

72. Etinder Singh & Jyoti Doval, *Artificial Intelligence and HR: Remarkable Opportunities, Hesitant Partners*, 4 PROCS. NAT'L HR CONF. ON HUM. RES. MGMT. PRACS. & TRENDS 97 (2019), https://ssrn.com/abstract=3553448.

73. David Levi-Faur, *Regulation & Regulatory Governance*, *in* HANDBOOK ON THE POLITICS OF REGULATION 1–20 (2011).

74. The term "smart cities" refer to cities that are monitored by ubiquitous computer systems and, at the same time, are driven by innovation and entrepreneurship. Rob Kitchin, *The Real-Time City? Big Data and Smart Urbanism*, 79 GEOJOURNAL 1, 1 (2014), https://ssrn.com/abstract=2289141.

75. *See* Robert Brauneis & Ellen P. Goodman, *Algorithmic Transparency for the Smart City*, 20 Yale J.L. & Tech. 103 (2018); David Freeman Engstrom, Daniel E. Ho, Catherine M. Sharkey & Mariano-Florentino Cuéllar, Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies (2020), https://www-cdn.law.stanford.edu/wp-content/uploads/2020/02/ACUS-AI-Report.pdf.

committed (predictive policing),[76] or a judge in determining the potential risks of offenders in sentencing and release decisions.[77] The determinations of judicial and semi-judicial decisions regarding social welfare benefits,[78] fraud detection,[79] counterfeit products,[80] and copyright infringement, for instance, are becoming increasingly automated using AI systems.[81] Indeed, as acknowledged by many scholars and policymakers, AI holds great potential for enhancing the administrative state's governance efficiency.[82]

As discussed in Section II.B, Lex AI might also shape norms when used by private entities. Content moderation is one example: ML systems installed in social media platforms' upload filters detect illicit speech, such as hate speech, terrorist propaganda, and copyright infringements.[83] In this context, Lex AI defines the scope of permissible speech by creating speech affordances—that is, determining which content remains available and which content is removed. Through its technical definitions of particular features and their respective weights, Lex AI effectively defines whether a certain piece of content, be it image, text, or video, would be classified as illegitimate speech that is subject to removal. Once content is tagged as hate speech or terrorist

76. Palantir, for example, assists the police in identifying potential terrorists and criminals. *See supra* note 14.

77. COMPAS, for example, is a decision-support tool assisting judges to assess the risk of defendants' recidivism. *See supra* note 14.

78. *See, e.g.*, Alexandra Chouldechova, Diana Benavides-Prado, Oleksandr Fialko & Rhema Vaithianathan, *A Case Study of Algorithm-Assisted Decision Making in Child Maltreatment Hotline Screening Decisions*, 81 Procs. Machine Learning Rsch. 1, 1 (2018).

79. *See* MEREDITH WHITTAKER, KATE CRAWFORD, ROEL DOBBE, GENEVIEVE FRIED, ELIZABETH KAZIUNAS, VAROON MATHUR, SARAH MYERS WEST, RASHIDA RICHARDSON, JASON SCHULTZ & OSCAR SCHWARTZ, AI NOW REPORT 2018 10 (2018). For instance, U.S. federal agencies such as the Securities and Exchange Commission and the Internal Revenue Service are using AI to detect fraud activities. *See* ENGSTROM ET AL., *supra* note 75, at 22.

80. *See Project Zero leverages the combined strengths of Amazon and brands to drive counterfeits to zero*, AMAZON, https://brandservices.amazon.com/projectzero (last visited Feb. 2, 2022).

81. *See YouTube Operations Guide: Using Content ID*, YOUTUBE HELP, https://support.google.com/youtube/answer/3244015?hl=en (last visited Feb. 2, 2022).

82. For instance, a major report commissioned by the Administrative Conference of the United States argues that AI promises to transform how government agencies do their work, "reduce the cost of core governance functions, improve the quality of decisions, and unleash the power of administrative data, thereby making government performance more efficient and effective." ENGSTROM ET AL., *supra* note 75, at 6.

83. KIRSTEN GOLLATZ, FELIX BEER & CHRISTIAN KATZENBACH, THE TURN TO ARTIFICIAL INTELLIGENCE IN GOVERNING COMMUNICATION ONLINE, HUMBOLDT INST. INTERNET & SOC'Y (2018),https://www.hiig.de/wp-content/uploads/2018/09/Workshop-Report-2018-Turn-to-AI.pdf.

propaganda it may not only become unavailable but also be considered illegitimate.[84]

In that sense, AI makes decisions that shape users' behaviors and the public discourse in two ways. First, and unlike Lex Informatica, it does not merely enforce a human-made decision on what constitutes legitimate content. It actually reaches this decision (or shapes this norm) on its own. Second, as further discussed in Part III, the recursive nature of the AI decision-making process might lead to scenarios where an AI's decision on a specific content's legitimacy will later expand to other types of content as well. If, for example, the system decided to classify content *A* as illegitimate and content *B* is similar to content *A*, then the decision regarding content *A*, be it justifiable or not, increases the chances of content B also being removed (followed by content *C* and *D* and *E*, etc.). Another example reflecting Lex AI's role as a governance system used in the private sector is Waze, a crowd-sourced navigation app owned by Google. Waze recommends the fastest driving route between two points by integrating users' inputs, tracking their location, and aggregating and processing their self-reports on traffic conditions. To do this, Waze has to calculate the behavior of all drivers who are using the app. Consider, for instance, a traffic jam that requires drivers to be redirected to alternative routes. If all drivers using the app were directed to take the shortest route, it would likely also become congested, and the app would no longer serve the best interest of any of its users. Therefore, theoretically, once all drivers are using Waze, it may need to reach a social optimum for all, even if that runs contrary to the optimum for a single driver. This puts an app in an interesting position. While market pressures may require it to maximize its utility for each individual user (as, otherwise, they might switch to a rival, assuming there is market competition), it would perform better if it maximized its overall utility for *all* users—in effect, assuming the perspective of a traffic controller. In this capacity, it would be *governing* the traffic.

Another manifestation—or, more accurately, consequence—of Lex AI as a governance tool is that it may cause externalities. Maximizing utility for drivers using Waze, for instance, may produce externalities for nonusers of the app. If, for example, Waze diverts the traffic from the jammed freeway to some quiet residential streets, it may negatively affect the wellbeing of those residents, including residents who do not use Waze. To reflect the *common good*,

84. Niva Elkin-Koren & Maayan Perel, *Democratic Contestation by Design: Speech Governance by AI and How to Fix It*, Fla. St. U.L. Rev. (forthcoming 2023)..

the app would also have to take their interests into account when managing traffic patterns and volumes.[85]

Finally, Lex AI could work in collaboration with governments. For instance, Waze could be used to assist in enforcing the law (e.g., speeding limits) by blocking some routes for security or safety purposes (e.g., wildfires in Los Angeles[86]). Police might also use this app, for example, in order to determine where it is needed to direct the traffic.

All in all, Lex AI introduces a new type of governance that facilitates an adaptive and dynamic decision-making process for governing behavior in both the public and private spheres. The next Section discusses whether Lex AI's distinct governance features satisfy the common assumptions regarding private ordering.

B. LEX AI AS PRIVATE ORDERING

1. Personalization as an Enabler of Private Ordering

A major feature of Lex AI that characterizes how it governs behavior is its unparalleled capability to enable personalization.[87] Personalization is made possible through personal data analytics, which enable services to be tailored to particular users' profiles. For example, in the context of content filtering, an AI content-moderation system might learn the ages of a household's children based on data harvested from the parents' social media or other types of information records;[88] the AI will automatically select the level of filtering. Filtering could be based on how parents with similar profiles have filtered content for children of similar ages. From such data, the system can then

85. *See* Oren Dori, *What Happens When Waze Becomes Israel's Traffic Cop*, HAARETZ (Nov. 2, 2017), https://www.haaretz.com/israel-news/what-happens-when-waze-becomes-israels-traffic-cop-1.5462367 (arguing that Waze could turn a side street into a freeway and that it prioritizes individual users over the common good).

86. Alasdair Wilkins, *How Do Navigation Apps Handle the Los Angeles Wildfires? We Asked Waze*, INVERSE (Aug 12, 2017), https://www.inverse.com/article/39232-california-fires-navigation-app-waze.

87. Today's internet is breathtakingly personalized and equipped with armies of algorithms fed by unimaginably vast data archives curating the digital world to feed us individualized streams of content designed to maximize our responsiveness, engagement, content production and other monetizable behaviors. Kalev Leetaru, *Could Personalized Content Moderation Be The Future Of Healthy Social Media?*, FORBES (July 28, 2019), https://www.forbes.com/sites/kalevleetaru/2019/07/28/could-personalized-content-moderation-be-the-future-of-healthy-social-media/?sh=1dba08e64b53.

88. *See* Adi Robertson, *A Facebook patent would use your family photos to target ads: But it can already figure out a lot of details without them*, THE VERGE (Nov. 15, 2018), https://www.theverge.com/2018/11/15/8096724/facebook-photo-family-demographics-data-mining-patent-application.

recommend, or de facto execute, the filtering instructions it deems most appropriate for the family.

Among other areas, AI-driven personalized decision-making may pertain to goods and services. For instance, an AI system could personalize a music app's music suggestions based on past listening habits; or, for a dating app, it could personalize dating matches to fulfill each user's specific characteristics and preferences; and it could tailor a language course to a student's particular learning capabilities.[89] Netflix, for instance, is able to tailor its offerings to particular users based on their previous views rather than broadcasting "standard" content to a wide audience. Google search is another classic example of AI-tailored search results based on user search history.[90] The collection of data and data analytics also allow suppliers to personalize the price of products and services advertised to consumers.[91] Personalized AI decision-making may also pertain to legal rights. For instance, data collected by firms on the risk level of individuals could be used to complete an incomplete contract according to the individual's assessed level of risk.[92]

The personalization capability that enables the tailoring of private-sector services to individuals may have a similar effect in the public sphere. Lex AI introduces unprecedented opportunities for personalizing the enforcement and even formulation of norms that govern behavior. In recent years, a growing number of scholars have pointed out the advantages and challenges personalized laws introduce.[93] Such systems deployed in legal settings could

89. *See, e.g.*, *Listening is everything*, https://www.spotify.com/us/ (last visited Feb. 2, 2022) (music); *Find the people you've crossed paths with*, https://www.happn.com/en/ (last visited Feb. 2, 2022) (dating); DUOLINGO, https://www.duolingo.com/ (last visited Feb. 2, 2022) (language learning).

90. TARLETON GILLESPIE, CUSTODIANS OF THE INTERNET 195 (2018).

91. *See* Pascale Chapdelaine, *Algorithmic Personalized Pricing*, 17 N.Y.U. J.L. & BUS.1 7-10, 15 (2020). A practice which has raised some concerns is price discrimination. Interestingly, though, while price discrimination of that sort is used by suppliers to maximize their profits, it could also be advantageous to certain users who gain access to products and services that would otherwise be offered to them in prices they cannot afford.

92. *See* Omri Ben-Shahar & Ariel Porat, *Personalizing Mandatory Rules in Contract Law*, 86 U. CHI. L. REV. 255, 274–76 (2019) (discussing how information on individuals' needs and traits could lead to more desirable, personalized contract provisions). Note that the introduction of personalized law may carry different implications depending on the context in which it is implemented. For instance, the use of data for personalized law in the context of private ordering (e.g., completing incomplete contracts) may align with the interests of the contracting parties seeking to maximize information for their risk allocation. On the other hand, applying personalized law in cases involving negligence or criminal liability may invoke disparity of interests and thereby raise different policy considerations.

93. *See, e.g.*, Porat & Jacob Strahilevitz, *supra* note 25; Ben-Shahar & Porat, *supra* note 25.

utilize fine-grained data on individuals to develop and apply personally tailored legal norms.[94]

For instance, real-time data-collection on individuals' habits, such as driving patterns, could be used to craft personalized speeding limits for each driver, derived from their driving abilities as well as risks they pose.[95] Rather than setting a single speed limit that applies to all drivers, speed limits might be personally tailored to individual road-users, based on their experience, driving history, or real-time road conditions. Privileged parking permits, as currently offered to disabled persons, could be issued to individuals based on relevant temporary or permanent health conditions or family circumstances (e.g., driving young children). Such tailored norms could be embedded in the digital infrastructure (e.g., autonomous cars, smart parking facilities, and roads) and individually applied in real time by enabling parking, issuing a ticket, or even slowing down a speeding car, for instance.[96] Although not without challenges and concerns,[97] personalized laws may also increase efficiency in law enforcement by reducing the under- or over-inclusive risk-avoidance mechanisms and reducing institutionalized discrimination.[98]

Personalization capabilities take customization a step further. Consider, for instance, Reidenberg's Lex Informatica, according to which customizations afforded individuals the flexibility to decide whether to be subject to a certain

94. *See* Ben-Shahar & Porat, *supra* note 25, at 634–36.

95. *See id.* at 630–31

96. *See, e.g.*, Anthony J. Casey & Anthony Niblett, *The Death of Rules and Standards*, 92 IND. L. J. 1401, 1401 (2015) (discussing the concept of "microdirective," where machines will provide individuals with instructions on how to comply with the law in a tailored manner which factors the specific circumstance and context). For instance, a sensor in a car will register data and send it over the internet to an algorithm, which will analyze the information, combine it with other sources of relevant data, and determine whether the driver violated legal limits. A digital system could then potentially issue a fine or even remotely disable a car after issuing a warning.

97. Personalized law may undermine important values, raising considerable concerns regarding privacy, equality under the law, and civil liberties. *See, e.g.*, SHOSHANA ZUBOFF, THE AGE OF SURVEILLANCE CAPITALISM 238 (2019); Julia Angwin, Jeff Larson, Surya Mattu & Lauren Kirchner, *Machine Bias*, PROPUBLICA (May 23, 2016), https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing; *Big Data: A Tool for Inclusion or Exclusion* (Jan. 6, 2016), https://www.ftc.gov/reports/big-data-tool-inclusion-or-exclusion-understanding-issues-ftc-report; Karen Li Xan Wong & Amy Shields Dobson, *We're Just Data: Exploring China's Social Credit System in Relation to Digital Platform Ratings Cultures in Westernised Democracies*, 4 GLOB. MEDIA & CHINA 220 (2019); DANIEL SOLOVE, NOTHING TO HIDE: THE FALSE TRADEOFF BETWEEN PRIVACY AND SECURITY (2011).

98. Porat & Strahilevitz, *supra* note 25; Ben-Shahar & Porat, *supra* note 25; *see also* Jane Bambauer, *Other People's Papers*, 94 TEX. L. REV. 205 (2015). For the purpose of this article, we do not challenge the assumption that personalized law can make legal enforcement more efficient or question the desirability of increased and more efficient law enforcement.

norm (e.g., blocked violent content) and to shape the norm according to their specific requirements. For example, parents of young children could apply a screening mechanism to block R-rated or PG-13 content and also deactivate screening at a particular time according to their children's usual bedtime. Parents of older children could choose to block R-rated content only and enable viewing blocked content later at night when the children are asleep. Adults with no small children could ignore the blocking system altogether.

Taking advantage of personalization, Lex AI provides an opportunity to tailor norms and outcomes more precisely to each individual's profile. In its decision-making process, for example, Lex AI may consider information that individuals were unaware of, did not remember, or did not realize was important. For instance, an AI medical diagnosis application may account for data it measured on a patient's quality of sleep. Similarly, if the application had access to the patient's medical history, it could note the fact that when the patient was a child their parents had reported that they were allergic to a certain substance—a fact that the patient never knew or perhaps forgot. Moreover, because Lex AI "knows" relevant data on other individuals, in aggregating the data, it may reach conclusions that are highly relevant to the individual in question. For example, an AI application may identify, based on the experiences of other users, that people with a particular occupation suffering from a certain condition are at greater risk if treated with a specific medication.

In sum, Lex AI presents the opportunity to personalize choices tailored to each individual—in both the private and public spheres. Would it therefore be accurate to argue that, like its predecessor Lex Informatica, Lex AI is a manifestation of private ordering enabling more legitimate and efficient outcomes by reaching the most informed decisions about each individual? As we demonstrate in the next Section, such a conclusion should be taken with a grain of salt.

In theory, private ordering is more likely to maximize the efficiency and legitimacy of norms, provided that it reflects the individual's choice.[99] This theory rests on several assumptions: first, the individual has substantial knowledge of the mechanisms or solutions subject to the individual's choice; second, the individual may personally choose from among these options; and third, the individual's choice expresses their true preferences. We argue that Lex AI, as currently deployed, structures the decision-making process in a manner that renders these three assumptions debatable.

99. Notably, and as further discussed in Section III.C.2, an individual's choices may not always reflect their best interests or the best way to achieve their preferences.

2. Does AI Enable Informed Decision-Making?

The theory that private ordering facilitates efficient and legitimate norms further assumes that, when making their decisions, individuals have sufficient information on potential alternatives and can thus base their choice on more than guesswork or pure luck. In other words, this theory assumes that, armed with information on the different options, individuals are able to estimate the potential outcomes or implications of each alternative and reach a decision that maximizes their interests.[100]

Granted, parties to private ordering often lack *full* information on all the relevant aspects pertaining to the norms they shape or the commitments they undertake. In fact, the very essence of contracts is about allocating risk among the parties in the face of unforeseeable circumstances.[101] Yet, even if the exact outcome of the contract is unknown at the time of signing it, the parties know what the outcome would look like given a certain set of circumstances. For example, although the parties cannot know if a hurricane will hit the construction site that is the subject of the contract, they know what the consequences of choosing a certain contract provision over another would be if a hurricane were indeed to strike.

Similarly, the "if-then" structure of Lex Informatica also enabled individuals to make informed choices based on full or partial information about options and a view of the options' consequences. For example, a PICS user choosing to filter violent content could conceive in advance what qualified as violent content based on predetermined labeling criteria (e.g., violent scenes involving excessive blood). The PICS user might then conceive that *if* they chose to filter violent content, *then* the PICS algorithm would block content depicting bloody scenes. In other words, when choosing whether to filter certain content, the individual had a clear vision of what their choice would entail. Moreover, choices made at a certain moment in time are generally likely to continue yielding the same results in a subsequent future, at least until a change in the design of the system occurred. Violent content, for example, would remain classified as such until the entity in charge of the classification made an active decision to change it.

100. Elkin-Koren, *supra* note 42, at 1181. ("Also, from a political perspective, if users are not aware of the implications of their choices, their choices cannot reflect the exercise of an autonomous will.").

101. *See* Deepankar Sharma & Priya Bhatnagar, Risk Allocation & Subsequent Legal Issues in Construction Contracts (Feb. 28, 2014) (unpublished manuscript), https://ssrn.com/abstract=2403045.

Under the principles of Lex AI, by contrast, the individual's knowledge of potential alternatives and their ability to rely on those alternatives continued applicability are very limited. To illustrate this point, consider a scenario in which, as with contracts and Lex Informatica, the individual is *aware of* and *involved in* setting the norms.[102] Under a contract, a party can choose to block violent content and define "violent" as they please.[103] Under Lex Informatica, a party can use technological means to do the same by relying on pre-determined classifications of "violent" content. In Lex AI, however, a user of an AI-based filtering system that seeks to block violent content would not be able to predict in advance what the end result of their decision to block violent content would be. This is due to several reasons. First, users may not realize in real time that the system does not necessarily serve their own best interests—whether because it promotes the system operators' own interests[104] or because of an explore-and-exploit trade-off typical of learning models.[105] Further, even if the system's goals are well-known, users might still lack information on expected outcomes: although the science of prediction and probabilities was introduced as a way to increase certainty—including legal certainty[106]—AI outcomes cannot, in fact, be accurately predicted, even by their own creators,

102. The level of user engagement in AI decision-making can be conceptualized as a spectrum. On one side are those systems where the uses thereof are not only involuntary but also do not require active input by the user (e.g., systems such as COMPAS that assist judges in criminal cases). Next, there are AI systems that the user may choose whether to use or not but have no active effect on their selections (e.g., Netflix, where users are not asked for an active input on their desires). Waze is an example of a system closer to the other side of the spectrum, where users can not only choose whether to use the system in the first place but can also convey their desires in a manner that would affect the system's consequences (e.g., by requesting that Waze direct them via the shortest rather than the quickest route or direct them through a scenic rather than the shortest route).

103. Granted, a failure to properly define terms would result in leaving such definitions to the interpretation and discretion of a judge. Under such a scenario, the norm would no longer be shaped by the parties but rather by the court in a manner involving both ex ante and ex post input. But, if the provisions are carefully drafted, parties to a contract have full or at least much information on what the agreement into which they have entered entails.

104. *See* Michal S. Gal, *Algorithmic Challenges to Autonomous Choice*, 25 MICH. TELECOMM. & TECH. L. REV. 59, 83 (2018).

105. *See infra* notes 135, 162–163 and accompanying text.

106. Probabilistic tools may assist in assessing the likelihood of potential occurrences or behaviors, or for a more specific example, in assessing the impact of sanctions. *See* Mike Ananny, *Probably Speech, Maybe Free: Toward a Probabilistic Understanding of Online Expression and Platform Governance*, KNIGHT FIRST AMENDMENT INST. (Aug. 21, 2019), https://knightcolumbia.org/content/probably-speech-maybe-free-toward-a-probabilistic-understanding-of-online-expression-and-platform-governance.

let alone by users.[107] One explanation lies in humans' limited cognitive ability to process the magnitude of information processed by AI.[108]

Another explanation is that users not only lack information on the system's expected decision, they also lack information on the data the system uses to reach such decisions.[109] Users do not necessarily know what type of data the system collects, which sources it collects from, and what specific information is collected in each and every case.[110] The more limited the information available to users on the data fed into the system or inferred by the system, the less able they are to estimate the results yielded by the system under any of their potential choices.[111]

Moreover, the information that the system uses to make its decisions is constantly changing. Content once classified as "violent" could subsequently be classified as "nonviolent," or vice versa, based on new or transformed

107. *See* Gal, *supra* note 104, at 63; *see* Karni Chagal-Feferkorn, *The Reasonable Algorithm*, 1 U. ILL. J.L. TECH. & POL'Y 111, 133–35 (2018).

108. *See Artificial Intelligence Singles Out Neurons Faster Than a Human Can*, SCI. DAILY (Apr. 12, 2019), https://www.sciencedaily.com/releases/2019/04/190412150628.htm (describing an algorithm that can identify and segment neurons in minutes, a task that could take a trained human researcher twenty-four hours of nonstop work). For a general discussion of the superior abilities of AI systems compared to humans in the decision-making process, see Karni Chagal-Feferkorn, *How Can I Tell If My Algorithm Was Reasonable*, 27 MICH. TECH. L. REV. 213 (2021).

109. *See* Carey Shenkman, Dhanaraj Thakur & Emma Llansó, *Do You See What I See?: Capabilities and Limits of Automated Multimedia Content Analysis*, CTR. FOR DEMOCRACY & TECH. (May 20, 2021), https://cdt.org/insights/do-you-see-what-i-see-capabilities-and-limits-of-automated-multimedia-content-analysis/ (arguing that despite research efforts to promote the comprehensibility of ML tools, the technical steps describing how ML systems make decisions or weigh various features may involve billions of interrelated parameters of which humans cannot conceive).

110. To take the example of content moderation, even if a user who wishes to upload a video to YouTube knows the system is searching for similarities between her video and a dataset of protected works, she would not necessarily know what kind of information is relevant to the system. The system could be looking for information pertaining only to the work itself, whether profiles of others who are similar or related to the user as friends or family members have uploaded infringing materials in the past, or, if the system also collects information on the uploader's past behavior, prior incidents of uploads with suspected similarities to protected works. The user would also not necessarily know the source of information—whether, for example, prior incidents that may indicate a past of copyright infringement are considered only based on data from YouTube alone or from other platforms as well. Moreover, even if aware of the type and sources of information relevant to the system's decision, the user will likely not know the specific content harvested from these various sources.

111. Moreover, users lack information not only on the data collected but also on the weight assigned by the system to any particular piece of data.

information that may not pertain to the content itself.[112] For example, the system may account for new types of the user's (or other users') habits, or it could consider recent literature on the harmful effects of online content when classifying what content should fall under the classification of "violent"—all in a manner not foreseeable to the user.

Lastly, AI decision-making's feedback loop mechanism, through which its previous decisions are fed back into its decision-making process, renders its outcomes less foreseeable and may thus potentially influence subsequent decisions.[113] In fact, AI decision-making can generate and shape norms all on its own, rendering them even less foreseeable.[114]

Lex AI decisions may not announce an explicit norm ex ante (e.g., that any content depicting a weapon is forbidden), but it may instead seek to optimize a certain objective function (e.g., by removing all terrorism-related content based on known hashes[115]). The norm itself (e.g., the definition of illicit materials) may change depending on the system's learning—for instance, whether it has practiced the removal of similar materials. This may result in rapidly and independently evolving norms.

Consider, for instance, personal-health applications that involve tracking behavior, predicting a certain health risk, and simultaneously regulating the behavior to reduce that risk. As insurance companies determine premiums based on risk, apps that monitor driving patterns may help reduce auto

112. *See* Katharine Trendacosta, *Unfiltered: How YouTube's Content ID Discourages Fair Use and Dictates What We See Online*, ELEC. FRONTIER FOUND. (Dec. 10, 2020), https://www.eff.org/wp/unfiltered-how-youtubes-content-id-discourages-fair-use-and-dictates-what-we-see-online.

113. *See* Masoud Mansoury, Human Abdollahpouri, Mykola Pechenizkiy, Bamshad Mobasher & Robin Burke, *Feedback Loop and Bias Amplification in Recommender Systems*, 29 PROCS. ACM INT'L CONF. ON INFO. & KNOWLEDGE MGMT. 2145 (2020), https://arxiv.org/pdf/2007.13019.pdf; *see also infra* notes 138, 162–163 and accompanying text.

114. *See* Elkin-Koren & Perel, *supra* note 84 ("Note that governing speech by AI does not merely apply existing norms, thereby simply reflecting existing values and trade-offs. AI systems also generate new norms, which are implicit in the speech affordances generated by the system. Once content is tagged as hate speech or terrorist propaganda, it may not only become unavailable but also be considered illegitimate. Thus, AI systems which seek to identify hate speech, may also carry a regulatory consequence: shaping users' behavior by distinguishing between legitimate and illegitimate expression (where only the latter are removed).").

115. Hashing is the practice of translating a potentially long input into a short hash value. Claudio Buttice, *Hashing*, TECHOPEDIA (Apr. 27, 2021), https://www.techopedia.com/definition/14316/hashing-cybersecurity. For example, hashing could constitute translating twenty seconds of an R-rated film to the hashes "#violence," "#foul language," and other hashes.

insurance costs, just as apps designed to track sports or fitness activity—commonly available on devices like Fitbit or Apple Watch—may help reduce life insurance costs.[116] Assume, for example, that the insurer offers a premium reduction to those who exercise at the highest level—say, the top ten percent. As more members take up regular exercise, the level of activity required from each member to reach the top ten percent rises. Based on the reasons detailed above, the user's choices that instruct a Lex AI are not only based on very little information to begin with but they also result in ever-changing outputs that even the system's creators cannot predict. Unlike parties to a contract defining what content shall be blocked or Lex Informatica users choosing what content to block based on predefined labels, users under Lex AI will often not be able to predict the outcome of their choices.[117] That is, will a certain piece of content be blocked or not if a choice is made to filter violent content? Users under Lex AI are making less-informed choices and cannot know what in fact those choices would entail.

3. Does Lex AI Even Let Users Choose?

Not only are choices under Lex AI generally less informed than those pertaining to other types of private ordering, but even the very ability to choose is impaired.[118]

116. Regulation normally set clear norms and design incentives linked to compliance. It regulates behavior by applying negative consequences (e.g., sanctions) for non-compliance, and sometimes positive incentives to encourage compliance (e.g., bonuses, safe harbor, tax cuts, savings in interest rates). When regulation is attached to behavior, incentives would apply ex post but encourage rational players to shape their behavior accordingly. Lex AI may be designed to predict behavior which has never occurred, thereby facilitating the prevention of behavior before it is executed. Sanctions and awards may be distributed based on the potential that a particular behavior will take place. Examples include a preventative arrest of a suspicious tourist at the airport, the recruitment or promotion of an employee based on their past performance, or performance in other spheres.

117. *See supra* notes 103–114 and accompanying text.

118. A preliminary question is that of the choice of whether to be subject to the system in the first place. This dimension does not concern the manner in which the AI decision-making process operates, and it is therefore only anecdotal for our discussion. Often, however, this element of choice is lacking with respect to AI systems. This is because the use of various AI systems is not left to individual discretion. For example, COMPAS is deployed in the United States' criminal justice system without the individual's voluntary agreement to be subject to the system's decision-making. Furthermore, even in contexts where the individual does have the choice *not* to be subject to AI decision-making, these systems are often used to make decisions of high importance—for example, in the context of housing, credit, health, or human resources. In these important contexts, refusing to be subject to the AI system could be to the individual's detriment. Consider, for example, a user applying for a job in a market where jobs are scarce, but the hiring process is only enabled through algorithmic decision-

"Choice" involves the ability to choose between different alternatives in a manner that would affect the outcome. For example, a user choosing to filter "violent," but not "obscene," content is theoretically making their own choices.

Arguably, Lex AI weakens the ability of users to make such autonomous choices. This is due to the particular way Lex AI creates what Richard Thaler and Cass Sunstein call a "choice architecture."[119] Drawing on studies in cognitive psychology and behavioral economics, Thaler and Sunstein highlighted the surrounding context's significance for shaping people's choices. They argued that, by altering a choice architecture, policymakers could overcome citizens' bounded rationality, "nudging" them towards the "right" decision in a noncoercive way. "Nudges," according to Sunstein, are "interventions that steer people in particular directions but that also allow them to go their own way."[120]

Advocates of nudging argue that it is justifiable for the purpose of improving public welfare. Its appeal lies in the fact that it ostensibly involves no coercion, preserving freedom of choice.[121] Yet, although nudging—algorithmically or otherwise—is not coercive, it undoubtedly affects human choices, whether by shaping individual preference or by prompting people to choose the alternatives that presumably best reflect their preferences.[122] When users are presented with certain alternatives and not others, they are evidently more likely to choose from among the ones presented. For instance, the entire Search Engine Optimization (SEO) industry revolves around the fact that users are likely to select the options presented to them first.[123]

---

making. Having chosen to subject herself to the AI process, it could be argued that any algorithmic decision does not reflect her true choice.

119. RICHARD THALER & CASS SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS 6, 81 (2008).

120. Cass Sunstein, *The Ethics of Nudging*, 32 YALE J. REGUL. 413, 417 (2015) ("To qualify as a nudge, an intervention must not impose significant material incentives (including disincentives). A subsidy is not a nudge; a tax is not a nudge; a fine or a jail sentence is not a nudge. To count as such, a nudge must fully preserve freedom of choice. If an intervention imposes significant material costs on choosers, it might of course be justified, but it is not a nudge.").

121. *See generally* Ayala Arad & Ariel Rubinstein, *The People's Perspective on Libertarian-Paternalistic Policies*, 61 J. L. & ECON. 311 (2018).

122. *See* Anne van Aaken, *Judge the Nudge: In Search of the Legal Limits of Paternalistic Nudging in the EU* 1620 (Univ. of St. Gallen L. Sch., Working Paper No. 2015-01, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2563296.

123. *See, e.g.*, Madhu Bala & Deepak Verma, *A Critical Review of Digital Marketing*, 8 INT'L J. MGMT., IT & ENG'G ENG'G 321, 329 (2018) (reviewing current marketing trends and related consumer motives, including the use of SEO).

Arguably, the output of AI systems presents users with different levels of choice.[124] At one end of the spectrum, some AI systems may reach decisions and execute them on behalf of the user without requesting their approval or input.[125] At the other end of the spectrum are systems that present all possible options to the user and prompt them to make their own choice—including, for example, Google search.[126] Located in the middle of the spectrum are systems that rank some of the alternatives and let the user choose among them. Lex AI influences users' choices, steering them in directions it deems preferable whether the system presents but one option and asks the user to approve it, narrows the list of alternatives to several options to choose from, or merely selects the order in which all alternatives appear.[127]

Moreover, the ability to tailor choice selections to particular individuals based on their past behavior renders individuals more vulnerable to influence. Karen Yeung has argued that ML recommendation systems—what she calls decision-guidance processes[128]—enable a "hypernudge," which shapes individual decision-making to serve the interests of the hypernudge's operators. In that sense, AI systems regulate behavior by circumventing rational choice and using mechanisms to influence people's behavior behind their backs. Indeed, studies show that users might be less capable of deviating

124. Users of Waze, for example, are both free not to use the app in the first place and free to ignore its directions. In that sense, Lex AI is often a mere "nudge" that respects freedom of choice and simply incentivizes users to follow its suggestions. Daniel M. Hausman & Brynn Welch, *Debate: To Nudge or Not to Nudge*, 18 J. POL. PHIL. 123, 135 (2010); Luc Bovens, *The Ethics of Nudge*, *in* PREFERENCE CHANGE 207, 216 (Till Grüne-Yanoff & Sven Ove Hansson eds., 2009); Riccardo Rebonato, *A Critical Assessment of Libertarian Paternalism*, 37 J. CONSUMER POL'Y 357 (2014); Jeremy Waldron, *It's All for Your Own Good*, THE N.Y. REV. (Oct. 9, 2014), https://www.nybooks.com/articles/2014/10/09/cass-sunstein-its-all-your-own-good/.

125. *See* Gal, *supra* note 104, at 69.

126. *See id.*

127. Users' choices might be shaped by the alternatives presented to the user as opposed to the ones the system omits, as users tend to limit their choice only to the visible alternatives. The order of the options presented too can stir users' choices in a certain direction, as users tend to choose among the alternatives presented first. *See* Michael R. Baye, Babur De los Santos & Matthijs R. Wildenbeest, *Search Engine Optimization: What Drives Organic Traffic to Retail Sites*?, 25 J. ECON. & MGMT. STRATEGY 6 (2016) (quantifying the effect of a search result rank on the number of clicks).

128. *See* Karen Yeung, *"Hypernudge": Big Data as a Mode of Regulation by Design*, 20 INFO., COMM'N & SOC'Y 118, 121 (2017). Yeung distinguishes between automated decision-making and decision-guidance processes that "seek to *direct or guide* the individual's decision-making processes in ways identified by the underlying software algorithm as 'optimal', by offering 'suggestions' intended to prompt the user to make decisions preferred by the choice architect . . . ." *See id.*

from recommendations made by ML recommendation systems.[129] Consequently, even if the decision is made by the user and not by the system, it does not necessarily reflect a neutral, uninfluenced choice.[130]

4. Do Lex AI's Choices Reflect Users' Preferences?

Despite the limited information available to users to facilitate informed choice and the limited nature of the choice itself, one could argue that, as long as the system—through its advanced personalization capabilities—executes users' true preferences, then the efficiency and perhaps the legitimacy obtained through private ordering will be achieved.[131]

Yet, the assumption that personalized decisions Lex AI make reflect users' *true preferences* is dubious. First, Lex AI is deployed by various stakeholders motivated by various interests, including commercial and political interests. Even among those systems that purport to reflect users' preferences as their primary objective may, in practice, maximize other goals. Consider, for example, Scatter Lab's Science of Love app, which was purportedly designed to promote individuals' preferences by educating them on the level of affection their partner feels for them based on AI analyses of the text messages exchanged between couples. In fact, the goal of the system was to scrape private text messages for use in ML training.[132]

Second, even assuming there exist AI systems whose sole goal is to maximize users' preferences,[133] there are several reasons why this goal may not

129. For instance, a recent study showed that consumers tend to favor an algorithm's advice over human experts, even after poor performance of their investment. *See* Packin, *supra* note 24, at 344**.**

130. Recent studies on the nudge theory show that, although free choice is theoretically possible when encountering a nudge, the human brain is in many cases simply unable to process the possibilities and consequences associated with the options not "nudged" toward, in fact leaving the user no free choice. *See* Thaler & Sunstein, *supra* note 119, at 94–96.

131. Imagine, for example, that a person finds and takes possession of another person's private diary, where all the wishes of the author are described. If the finder of the diary executes the writer's wishes, then—at least in terms of efficiency and provided that the author's preference has not changed over time—their execution would enjoy the same efficiency as if executed by the writer herself. Since the writer did not make a choice to execute her preferences, it of course does not reflect the autonomy and free choice celebrated in private ordering. It could be argued, however, that subjecting a person to her own preferences is more legitimate than subjecting her to norms that do not reflect her preferences.

132. *See* Katyanna Quach, *Science of Love App Turns to Hate for Machine-Learning Startup in Korea After Careless Whispers of Data*, THE REGISTER (Feb. 15, 2021), https://www.theregister.com/2021/02/15/in_brief_ai/.

133. Note that such systems would still need to deviate from maximizing preferences for the sake of learning and improving, as discussed below in Section III.C.

be achievable. For example, the limitations of algorithmic capabilities mean that, presently, AI systems lack the ability to understand many human nuances or make decisions that require intuition or empathy.[134] A dating app, for example, may accurately analyze a user's preferences for certain looks based on geometrical symmetries or other quantifiable parameters, but it will not necessarily recognize "fuzzy" traits such as charisma or other nonconcrete features that will result in a human "click."

Other reasons for AI systems' failure to maximize users preferences stem from the algorithmic decision-making process itself. After all, a single user's preference is but a prediction. AI systems do not presume to know what a single individual truly wishes. Rather, they use information on the individual's prior behavior and choices, coupled with information on what other users did or chose in the past, to *estimate* what the individual's current preference.[135] It has been argued, for instance, that "Facebook is not giving the user what the user wants—Facebook is giving the user what it thinks a demographic stereotype wants."[136]

---

134. Referring to human decision-makers and contrasting them with AI systems, Professor Joshua Davis writes, "We neither know precisely what we are measuring when we say we want to maximize pleasure nor do we know how to measure it. Of course, human beings too must face these difficulties. But, in doing so, we have resources that UAI does not. We can assess what objectives are worth pursuing. We have intuitions about what is just or fair in particular circumstances. We can empathize with other living beings, imagining what their experiences might be and how they might rank them. We rely on these and other capacities to come to moral conclusions, however imperfect." Joshua P. Davis, *AI, Ethics, and Law: A Possible Way Forward*, *in* ARTIFICIAL INTELLIGENCE AND PRIVATE LAW: GLOBAL PERSPECTIVES (Larry Di Matteo ed., forthcoming 2022)*; see also* Michal S. Gal & Niva Elkin-Koren, *Algorithmic Consumers*, 30 HARV. J. L. & TECH. 309, 323 (2017) ("The algorithmic choice may not always accurately reflect consumers' preferences. . . . One reason is inherent limitations of computer coding. For instance, algorithms might not (as of yet) be able to recognize and relate to certain nuances that humans intuitively understand. While such nuances might not be important in many transactions, they could be essential in others. Accordingly, most of us would probably not want an algorithm to automatically choose our partner in business or in life, and possibly not our wedding ring.").

135. If, for example, a user's viewing history, demographic parameters, and social interactions are similar to a group of other users, and many of these users have downloaded a new TV series and rated it highly, then the AI system will likely assume that the underlying user would also like the show and recommend it to her. The problem is that the system only *predicts* that the underlying user, like her peers, would enjoy the series. The prediction is not in any way based on the user's *true* preferences, only on *presumed* ones, which are deducted from the preferences of others.

136. Don Owens, *Facebook Engages in Online Segregation and Redlining Through Discriminatory Advertising System, Lawyers' Committee Argues*, LAWYERS' COMM. FOR C.R. UNDER L. (July 10, 2020), https://www.lawyerscommittee.org/lawyers-committee-confronts-facebooks-attempts-to-dismiss-digital-redlining-lawsuit-against-its-housing-advertisements/ (quoting

Reliance on past choices ignores the dynamic nature of choosing and might perpetuate preferences that are no longer valid. This is especially true given AI systems' path-dependency (further discussed in Section III.C), whereby an algorithm's recursive feedback loop might perpetuate outdated choices and lead to results that no longer reflect the user's preference, if they ever did.[137] Relatedly, a user's preference to try something new—which does not correspond to their previous patterns of choices—will likely not be picked up by the system.[138]

The net result is that, even if accurate predictions can be made by drawing on an individual's preferences to indicate those of another—which is not always the case—then the choices or outcomes the system generates for an individual are constantly subject to change based on others' preferences. A user wishing to watch a comedy, for example, will be offered a variety of comedies based on other users' preferences that the system deems similar to that user. If multiple users decide to block a certain comedy for reasons that could be entirely unrelated to our user's preferences, then the system will stop offering that comedy to our user, even though *their* preferences have not changed, only those of others.

Coupled with the "nudging" effect of algorithms discussed in Section III.B.3, which might cause the user to not actively look for content that the system does not offer them, Lex AI thus might steer individuals toward choosing among alternatives that reflect the preferences of others and not their own; and this occurs in a manner that could be perpetuated by AI systems' path-dependent nature. In other words, Lex AI ought not be mistaken as necessarily reflecting users' preferences. Rather, as further discussed below, in many cases it may be *shaping* those preferences.

David Brody, counsel and senior fellow for privacy and technology at the Lawyers' Committee). Brody argued further that "[r]edlining is discriminatory and unjust whether it takes place online or offline and we must not allow corporations to blame technology for harmful decisions made by CEOs." *Id.*

137. To take an intuitive example, consider a Netflix viewer who watched a horror movie despite disliking the genre. If, on their next viewing, the user is presented with a selection of "movies you might like," all of which are horror movies, the user may be tempted to select one of the options, despite their distaste—whether due to laziness, curiosity, etc. In that sense, Lex AI shapes norms and behaviors. But, since the process of Lex AI is recursive, the user's additional selection of a horror movie will render the system even more confident that it correctly classified the user as a horror-movie enthusiast. The system will then continue to offer these types of movies when the viewer next returns to Netflix.

138. *See, e.g.*, Owens, *supra* note 136 ("Facebook profiles its users on the basis of their protected characteristics and then provides different services to these users and excludes them from economic opportunities, like financial services, based on those same characteristics.").

C. LEX AI AS A CENTRALIZED GOVERNANCE MODEL

1. Beyond Individual Choice

Rulemaking processes under private ordering are decentralized by their very nature as they are grounded in the exercise of choice among those who craft the norms. As demonstrated in Section III.B, Lex AI does not accurately reflect users' choices. Instead, it reflects the outcome of a centralized decision-making process.

Indeed, Lex AI is often deployed to coordinate different social actors' behavior, as with recommendation systems or the management of traffic, health, or law enforcement in smart cities.[139] Such coordination may involve not only collecting information on people's preferences, but also determining trade-offs between actors' conflicting interests and giving priority to some over others.

In *Considerations on Representative Government*, philosopher John Stuart Mill provocatively questioned the desirability of a "good despot"—an "all-seeing" ruler, exercising "superhuman mental activity," and fully informed of the entire affairs of a "mentally passive people."[140] Although he emphasized the advantages of a good despot, Mill was skeptical of the feasibility of such a figure, suggesting that good despots would in practice be unlikely to consider all affected interests.[141] According to Mill, each individual is the "only safe guardian of his own rights and interests," and therefore, once excluded from decisions pertaining to her interests, these interests might be overlooked. Consequently, supreme control over power should be "vested in the entire aggregate of the community."[142]

---

139. *See, e.g.*, Tibi Puiu, *AI Traffic Management Could Finally Declog Urban Roads*, ZME SCI. (Feb. 26, 2021), https://www.zmescience.com/science/news-science/ai-traffic-management-could-finally-declog-urban-roads/; Da-Young Kang, Kyung-Jae Cho, Oyeon Kwon, Joon-Myoung Kwon, Ki-Hyun Jeon, Hyunho Park, Yeha Lee, Jinksik Park & Byung-Hee Oh, *Artificial Intelligence Algorithm to Predict the Need for Critical Care in Prehospital Emergency Medical Services*, 28 SCANDINAVIAN J. TRAUMA RESUSCITATION & EMERGENCY MED. 17 (2020), https://sjtrem.biomedcentral.com/articles/10.1186/s13049-020-0713-4; CHRISTOPHER KIRWAN & FU ZHIYONG, SMART CITIES AND ARTIFICIAL INTELLIGENCE: CONVERGENT SYSTEMS FOR PLANNING, DESIGN, AND OPERATIONS (2020).

140. Mill, *supra* note 27, at 46 ("He must be at all times informed correctly, in considerable detail, of the conduct and working of every branch of administration, in every district of the country, and must be able, in the twenty-four hours per day, which are all that is granted to a king as to the humblest laborer, to give an effective share of attention and superintendence to all parts of this vast field . . . . What should we then have? One man of superhuman mental activity managing the entire affairs of a mentally passive people.").

141. *Id.*

142. *Id.*

Arguably, Lex AI could bridge this gap. It introduces a superior form of collective governance because it bases its decision on the efficient collection and analysis of granular information regarding actual preferences and behavior. As such, it could possibly address one of the major challenges associated with centralized governance: information failure due to limited and outdated information on the actions and appetites of each individual.[143] Coupled with more robust data collection and data analytics capabilities, Lex AI can enable the calculated balancing of various interests under complex scenarios. Lex AI thus offers a mechanism for coordinating the behavior of social actors, which is superior, at least in certain respects, to democratic government.[144] Indeed, Lex AI advocates point to its potential to reduce "the cost of core governance functions, improve the quality of decisions, and unleash the power of administrative data, thereby making government performance more efficient and effective."[145] Arguably, Lex AI could more effectively reach decisions based on a collective good, in a manner that takes more relevant data into account. And, by factoring in information on each individual, it could offer de facto participation in shaping norms.

Moreover, by utilizing fine-grained data on individuals' behavior, Lex AI can potentially develop and apply shared or personally tailored norms more efficiently.[146] Like other personally tailored treatments (e.g., medical care, nutrition, etc.), AI capabilities may personalize collective action such that each individual would be subject to different norms or rules based on their personal information. Preferences, capabilities, past behavior, or other parameters will be accounted for by the system in a manner that could be more desirable to individuals and enhance efficiency.[147]

In this way, Lex AI could be viewed as a centralized system of governance that facilitates decentralized coordination of social actors. But what would be the guiding principles of such coordination? Coordination by markets, for instance, presumably signals consumers' preferences by price as determined

143. *See supra* note 26.

144. Kevin Werbach, *Panopticon Reborn: Social Credit as Regulation for the Algorithmic Age*, 2022 UNIV. ILL. L. REV. (forthcoming 2022).

145. ENGSTROM ET AL., *supra* note 75. In this context, a more nuanced discussion is necessary. Karen Yeung, for instance, highlights the advantages of outcome-based public policy and data-driven public management. *See* Karen Yeung, *Algorithmic Regulation: A Critical Interrogation*, 12 REGUL. & GOVERNANCE 505, 509–11 (2017); Kenneth A. Bamberger, *Technologies of Compliance: Risk and Regulation in a Digital Age*, 88 TEX. L. REV. 669 (2010).

146. *See* Porat & Strahilevitz, *supra* note 25, at 1440–41; Ben-Shahar & Porat, *supra* note 25 at 679–80.

147. *See* Porat & Strahilevitz, *supra* note 25, at 1450–53.

through the market mechanism of supply and demand, and politics in liberal democracies ostensibly reflects the aggregated will of the governed through voting.

The signaling of preferences under Lex AI, however, is very limited in nature. First, even when the system does not make selections itself but leaves room for users' input, the nudging effect calls into question whether users' input truly reflects their own preferences. Second, as elaborated below, the choices offered to users are path dependent, perpetuating past choices regardless of the users' current preferences.[148] Thus, users' choices under Lex AI provide an unreliable signal for how users would have wanted norms to be shaped, how conflicting interests ought to be resolved, and how different values are to be prioritized.

If Lex AI does not necessarily reflect users' choices while also shaping users' behavior, what goals does the system promote and how are those goals being determined? As we elaborate next, we believe the way Lex AI determines individuals' best interests and the common good raises critical concerns about the decision-making method—one that is (a) path-dependent and based on an optimization function, and (b) fails to provide space for deliberating upon trade-offs.

2. How Does Lex AI Decide Users' Best Interests?

In the absence of real choice manifested through Lex AI, how does Lex AI determine what is best for any individual user? And, more generally, when used to coordinate behavior, how does it determine what is best for all users?

One obvious answer is that Lex AI is designed to serve the goals and interests of those who deploy it. Indeed, many commentators, scholars, and policymakers have warned that governments could use AI systems to perform governmental tasks in opaque or unfair manners.[149] Despite its apparent potential advantages, Lex AI governance raises serious concerns regarding privacy, equality under the law, and civil liberties.[150]

Others have warned that private actors, especially tech giants such as Google or Facebook, are basically governing human behavior with AI without

148. *See infra* notes 135, 162–163 and accompanying text.

149. *See, e.g.*, Danielle Citron, *Technological Due Process*, 85 WASH. U. L. REV. 1249 (2008); PASQUALE, *supra* note 19; Carrie B. Sanders & James Sheptycki, *Policing, Crime and 'Big Data': Towards a Critique of the Moral Economy of Stochastic Governance*, 68 CRIME, L. & SOC. CHANGE 1, 7–9 (2017).

150. *See supra* note 97.

any accountability.[151] For instance, digital platforms operating in multi-sided markets profit from selling user attention and user data to advertisers.[152] AI content moderation thus aims to attract more users to the platform and keep existing users engaged for longer periods of time in order to generate more revenues for the platform.[153]

Yet, putting aside the practical question of the interests and motivations of the entities governing through Lex AI, AI *could* theoretically be configured to steer behavior toward what is perceived to be in users' best interest.[154] In fact, given AI's unique features, Lex AI arguably makes choices for users that fit their needs better than the choices users would have made on their own. This is due to, among other things, the vast amount of data that AI systems can analyze and the correlations they can reach that are beyond the capabilities of the human mind.[155] Similarly, AI systems do not suffer from human limitations, such as a reduced capacity for decision-making when handling an abundance of choice.[156] Can the predictive model of Lex AI thus enable AI to also determine for its users what their best interests *should* be? In other words, can Lex AI "derive an 'ought' from an 'is'"?[157]

There are many reasons why the answer is "no." These reasons pertain both to Lex AI's decision-making process and the manner in which it is used. Two sets of reasons stand out. One, more general set of reasons, arises from the shift to automated decision-making processes and is grounded on the

151. *See, e.g.*, Ryan Calo, *Digital Market Manipulation*, 82 GEO. WASH. L. REV. 995 (2014).

152. *See generally* DAVID S. EVANS & RICHARD SCHMALENSEE, MATCHMAKERS: THE NEW ECONOMICS OF MULTISIDED PLATFORMS (2016) (exploring the business strategies of "matchmakers," platforms who connect members for certain purposes, but whose business model focuses not on the services or products sold to the group through the platform but rather on the pool of members itself); David S. Evans, *Attention Platforms, the Value of Content, and Public Policy*, 54 REV. INDUS. ORG. 775, 777–78 (2019) (describing the basic economics of attention platforms).

153. *See* GILLESPIE, *supra* note 90, at 40–44 (describing how platforms curate content tailored to draw users, who pay with their attention to advertising); *see generally* TIM WU, THE ATTENTION MERCHANTS: THE EPIC SCRAMBLE TO GET INSIDE OUR HEADS (2016) (describing the rise of a new industry, one of users' attention, and explaining how it is used to drive purchase decisions).

154. For instance, system operators could tweak newsfeed or content recommendation algorithms so that radical and potentially damaging—albeit not illegal—content is pushed down the list of rankings. This would render it more likely that most users would never even see such content.

155. Sunstein, for instance, argues that such a paternalistic approach might be justified when applied in order to correct a behavioral bias or a systematic mistake, in which case it may actually promote people's autonomy. *See* Sunstein, *supra* note 120, at 437–38.

156. *See* Gal, *supra* note 104, at 72; *see also* Chagal-Feferkorn, *supra* note 107, at 144.

157. Joshua P. Davis, *Legality, Morality, Duality*, 1 UTAH L. REV. 55 (2014).

assumption that it is possible to define a person's "best interest" in the absence of an active choice. Defining a person's "best interest" can be based on various parameters and values. Even if Lex AI can accurately signal people's own preference, this may not necessarily indicate their best interest. For instance, individuals may act against their best interests due to favoring short-term preferences (e.g., by eating junk food) over long-term benefits (e.g., eating healthy).[158] People may also misinterpret their choices' true value[159] or the measures they need to take to maximize their preferences.[160] Moreover, decisions regarding "best interests" may entail open-ended questions involving contradicting interests and values and requiring judgment that may not be reduced to numerical ranking. In such cases, Lex AI may simply not be up for the task.[161]

Another set of reasons why Lex AI might fail to maximize users' best interest arises from core features that characterize machine learning systems: one reason is associated with the way ML involves learning from past instances (i.e., *path-dependency*) and other reasons have to do with the process by which the system generates its decisions (i.e., *optimization function* and *exploration-exploitation trade-offs*).

a) Path-dependency

As discussed in Section III.B, Lex AI reaches its decisions based on, among other things, information on users' past behavior. The correlation between past actions and best interests, however, is dubious. As noted, since individuals often act against their own best interests, relying on data that reflects past behavior may lead to undesired outcomes.[162] This is exacerbated by AI

158. Anne van Aaken, *Judge the Nudge: In Search of the Legal Limits of Paternalistic Nudging in the EU*, *in* NUDGING AND THE LAW, A EUROPEAN PERSPECTIVE 89–91 (Alberto Alemanno & Anne Lise Sibony eds., 2015). For a discussion on cases where people's preferences are not in line with the public interest and when the state ought to attempt to change such preferences see Porat, *supra* note 7.

159. Oren Bar-Gill, *Algorithmic Price Discrimination: When Demand Is a Function of Both Preferences and (Mis)Perceptions*, 86 U. CHI. L. REV. 217, 244–45 (2018).

160. van Aaken, *supra* note 158, at 89–91.

161. For example, what constitutes an individual's best interest may vary with different moral frameworks when choosing between alternatives. One choice may be predicted to produce a certain gain for the individual; a different choice may produce a greater gain to the individual but involve a white lie; or an utterly different choice may produce the greatest gain but to a third person. AI systems, which lack humans' moral sense, may try to erroneously synthesize different frameworks and reach meaningless results. *See* Joshua P. Davis, *AI, Ethics, and Law: A Possible Way Forward*, *in* ARTIFICIAL INTELLIGENCE AND PRIVATE LAW: GLOBAL PERSPECTIVES (forthcoming, 2022).

162. *See* van Aaken, *supra* note 158, at 89–91.

decision-making's recursive nature, which factors in previous predictions made by the system through its feedback-loop mechanism. Thus, the system might not only perpetuate less favorable choices, but it could also be shape by and create them. For instance, if the system once mistakenly predicted that the user was interested in racist content and, despite a lack of interest and due to the nudging effect, the user clicked through to the racist content, the system might forever offer the user similar content, potentially intensifying the consumption of more radical content.[163]

b) Optimization function

AI systems are tasked with reaching the best available predictions, which are determined based on the optimization of a predefined objective function.[164] The optimization function of a driverless vehicle, for example, may strive to maximize objectives such as safety, driving comfort, and speed—with the latter constrained by law. At the same time, it may endeavor to minimize fuel consumption and other environmental externalities.[165] Often, the different values may not reconcile or may even be contradictory to each other.[166] The system's designer determines which values to try to minimize or maximize and how much weight to attach to each of them.

Importantly, the decision of how to shape the optimization function and which values would affect it is reserved for the operators, or designers, of the system. The system's users are generally not part of the process for determining optimization criteria. Therefore, the users cannot affect a central element of how Lex AI norms are shaped. This may carry important implications for Lex Ai's legitimacy. Although users' data provide an input into the decision-making process, the outcome of the process would be determined

163. This is in fact claimed to have been the case with respect to YouTube, whose algorithms allegedly presented alt-right content to non-alt-right viewers and, due to the system's recursive nature, have continued to "feed" users such content. Users who were shown this content took active part in alt-right movements and were reportedly "brainwashed" by YouTube. *See* Kevin Roose, *The Making of a YouTube Radical*, N.Y. TIMES (June 8, 2019), https://www.nytimes.com/interactive/2019/06/08/technology/youtube-radical.html.

164. *See* David Lehr & Paul Ohm, P*laying with the Data: What Legal Scholars Should Learn About Machine Learning*, 51 U.C. DAVIS L. REV. 653 (2017); OPTIMIZATION TECHNIQUES FOR PROBLEM SOLVING IN UNCERTAINTY (Surafel Luleseged Tilahun & Jean Medard T. Ngnotchouye eds., 2018).

165. *See* YUMING GE, XIAOMAN LIU, LIBO TANG & DARRELL M. WEST, CTR. FOR TECH. INNOVATION AT BROOKINGS, SMART TRANSPORTATION IN CHINA AND THE UNITED STATES (2017).

166. Increasing speed, for example, might come at the expense of consuming more energy and causing more damage to the environment. Additional safety measures may come at the expense of driver comfort.

based on the optimization criteria the system and its operators adopt. Lex AI's outcome could hardly be said to reflect users' choice simply because their data was used as an input.[167]

c) Exploration—Exploitation Tradeoffs

Another reason that the optimization function, which mathematically defines the system's goal, may not be fully aligned with each user's best interests is that systems often factor in operational requirements. Such considerations of the common good may sometimes result in sacrificing certain users. Consider, for example, a traffic jam which requires Waze to redirect drivers to alternative roads. Hypothetically, if the app directs all drivers to the shortest route, that route may become congested, and the app would no longer serve the best interest of any of its users. Therefore, when all drivers are using Waze, Waze has to reach a social optimum for all drivers, even if it runs contrary to the optimum for any single driver.

AI systems' operational constraints may present another prioritization of the common good at the expense of the best interests of individual users. AI systems maintain a known tradeoff. On the one hand, the system is programmed to exploit information already acquired and presently available in order to reach the optimal choice. On the other hand, the system needs to gather new information and learn about new alternatives that could prove favorable to the best presently available options.[168] In other words, in order to improve its ability to offer better choices, the system must explore new options, despite the fact that these new options may lead to suboptimal outcomes for certain users. To better serve its users, a restaurant recommendation system, for example, will need to obtain reviews on establishments that were not recently visited. Thus, although the system may

167. Moreover, and as discussed earlier, although centralized AI systems account for the users' best interests or preferences, the systems might actually be used to optimize additional objectives. Matching algorithms—such as those matching consumers with delivery services or vacation rentals—may consider users' desires and needs, but the system would still strive to maximize their operators' profitability. To reach optimal allocation of rentals, for example, the system may recommend less attractive rentals to the users whose profiles indicate they would agree to such options, while leaving the better rentals only for users the system identifies as picky.

168. *See* Gal Bahar, Omer Ben-Porat, Kevin Leyton-Brown & Moshe Tennenholtz, *Fiduciary Bandits*, 37 PROCS. INT'L CONF. ON MACHINE LEARNING 518, 518 (2020), http://proceedings.mlr.press/v119/bahar20a/bahar20a.pdf [hereinafter *Fiduciary Bandits*]; Gal Bahar, Omer Ben-Porat, Kevin Leyton-Brown & Moshe Tennenholtz, *Learning under Invariable Bayesian Safety* (Arxiv, Working Paper No. 2006.04497, 2020), https://arxiv.org/abs/2006.04497.

generally aim to recommend restaurants to its users that are known to match their profile, occasionally, in order to learn and improve, the system may choose to steer users in the direction of choices whose utility value for the individual user is unknown.[169] By directing users to explore alternatives whose utility is unknown, the system is "intentionally providing . . . sub-optimal recommendations" to some of its users.[170]

3. The Decline of the Deliberative Space

Returning to Mill's critique of the "good despot," Mill did not merely focus on the feasibility of accumulating and processing sufficient information to enable efficient governance. Mill also argued that such a governance structure lacks the sort of participatory component essential—not only for the sake of efficiency—but also for moral justifiability.[171] Consequently, even if Lex AI were capable of generating full and accurate data on public needs and preferences and could accurately calculate the overall public good, Mill's critique suggests that lacking a participatory dimension would render it morally inferior.

The democratic ideal of self-governance assumes access to information and the right to free and informed deliberation so that citizens may individually express their autonomy and collectively decide their common destiny.[172] Participation in crafting social norms takes different shapes and forms, ranging from directly voting by referendum on policy initiatives to electing representatives that would promote a particular governmental agenda to participating in public discourse and influencing the formation of norms. According to a "participatory theory of governance," wide participation in public discourse is a vehicle for enabling self-governance and constructing

169. The same is true for Waze. While the system's objective is to minimize user's travel time, it might nevertheless recommend routes which are not necessarily the fastest, to obtain real-time information on them. In other words and with respect to routes that Waze lacks up to date information on (and thus does not know if are the fastest or not), Waze may need to direct drivers to these routes despite potentially causing drivers longer travel time than necessary.

170. *Fiduciary Bandits*, *supra* note 168, at 1.

171. MILL, *supra* note 27, at 68 ("Still more salutary is the moral part of the instruction afforded by the participation of the private citizen . . . From these accumulated considerations it is evident that the only government which can fully satisfy all the exigencies of the social state is one in which the whole people participate; that any participation, even in the smallest public function, is useful; that the participation should everywhere be as great as the general degree of improvement of the community will allow; and that nothing less can be ultimately desirable than the admission of all to a share in the sovereign power of the state").

172. Ellen P. Goodman, *Digital Information Fidelity and Friction*, KNIGHT FIRST AMENDMENT INST. (2020), https://knightcolumbia.org/content/digital-fidelity-and-friction.

democratic legitimacy.[173] In other words, in democracies, the aggregated will of the people is reflected in government by their participation—specifically, by electing the ruler and, more generally, by participating in the discursive formation of collective norms to which individuals will be subject. The governance of Lex AI does not reflect active participation. Although it could be argued that the collection of user preferences and the usage of their aggregation to shape personalized norms is a form of passive participation, such participation does not reflect individuals' choices and potentially not even their true preferences, as discussed in Section III.B. Moreover, the outcomes of Lex AI cannot signal the aggregated will of users, as explained in Section III.C.2.

Furthermore, the mechanisms available for public participation in a democratic setting involve an explicit articulation of norms and underlying values that enable public discussions and oversight. Participation in political debates, accordingly to Mill's political theory, could strengthen citizens' bond to the community and may expand their conception of the common good beyond the narrow lens of their private affairs.[174]

The deliberation over these norms and values is also possible in other venues. The law, for example, resolves tensions between contradictory interests through various layers of conflict resolution that enable deliberation and negotiation of norms through multiple social institutions.[175]

Naturally, Lex AI also involves trade-offs between conflicting interests and values. But it fails to provide similar space for deliberating upon those trade-offs. Unlike governance by social or legal norms—which shape behavior by conveying information on right and wrong, often followed by a sanction or reward[176]—Lex AI shapes behavior without resorting to the communicative

173. *See generally* Robert Post, *Reconciling Theory and Doctrine in First Amendment Jurisprudence*, 88 CALIF. L. REV. 2355 (2000).

174. Citizen participation, Mill argues, has an educational value that could transform the participating citizens. A participating citizen "is called upon, while so engaged, to weigh interests not his own; to be guided, in case of conflicting claims, by another rule than his private partialities; to apply, at every turn, principles and maxims which have for their reason of existence the general good . . . . He is made to feel himself one of the public, and whatever is for their benefit to be for his benefit." MILL, *supra* note 27, at 68; *see also* Alex Zakaras, *John Stuart Mill, Individuality, and Participatory Democracy*, *in* J.S. MILL'S POLITICAL THOUGHT: A BICENTENNIAL REASSESSMENT 200, 207–10 (Nadia Urbinati & Alex Zakaras eds., 2007).

175. *See* Elkin-Koren & Perel, *supra* note 84.

176. *See* Katz, *supra* note 48, at 1749 ("Norms and rules, whether publicly or privately created, embody and convey information. They cannot be followed unless information is transmitted regarding their substantive content; they cannot be enforced unless information is

nature of norms. Norms fashioned by AI systems would be shaped over time, depending on the system design as well as the type of data fed into the system through its continual use. Such processes do not explicitly involve any value-based choices, and they are often not transparent but hidden behind a veil of technical details. Consequently, they do not facilitate the development of new conceptions of values and trade-offs in an intelligible manner.[177]

Furthermore, changes to the norms might be implicit in the system's learning and may not necessarily reflect any desirable social optimum or social choice. This way in which changes to norms occur does not facilitate deliberation over values and the trade-offs involved in such decision-making processes. Consider, for instance, the governance of speech. Legal norms shape speech through explicit rules and principles by offering a definition of what speech is and the limitations to which it is subject.[178] In Lex AI, by contrast, predictions on whether a particular speech act should be deemed illicit are not the result of conscious deliberation on underlying free speech principles but instead may depend on many dynamic variables: whether the content has triggered a computational threshold; whether similar content has triggered the system before; whether third parties have flagged the content or similar content; who flagged the content; and how often any of these things have occurred.[179] Shifting from governing speech by law to governing speech by Lex AI lacks an essential social decision-making mechanism for developing, contesting, and socially negotiating speech norms.[180] Lex AI also fails to reveal not only the trade-offs but also the procedures by which such tradeoffs between conflicting interests are decided.

All in all, the absence of discursive dimension in Lex AI decision-making processes weakens its legitimacy as a form of collective self-governance.

---

transmitted regarding who has obeyed them, who has violated them, and who is to impose any associated punishment or reward.").

177. In their book, Frischmann and Selinger refer to the following quote by Baruch Spinoza: "Experience teaches us no less clearly than reason, that men believe themselves free, simply because they are conscious of their actions, and unconscious of the causes whereby those actions are determined." BRETT FRISCHMANN & EVAN SELINGER, RE-ENGINEERING HUMANITY 222 (2018). According to Frischmann and Selinger, "[t]hough not the conventional interpretation, Spinoza also might be read to suggest that what we are conscious of shapes what we believe and blinds us to the hidden complexities of multiple interdependent causes and contingencies that dramatically shape—and in that more limited sense determine—our beliefs, desires, and actions." *Id.*

178. *See* Elkin-Koren & Perel, *supra* note 84.

179. *See id.*

180. *See id.*

IV. LEX AI AS A *SUI GENERIS* ORDERING SYSTEM: LEGAL IMPLICATIONS

The distinction between public and private ordering is significant in several policymaking contexts. For example, the U.S. Constitution restrains the use of governmental power (i.e., state power), but it generally does not apply to private ordering by private actors.[181] Policy interventions such as ensuring that norms reflect the parties' autonomous choice are prevalent and necessary when private and not public ordering is concerned.

The Article, however, has demonstrated that Lex AI introduces a new type of governance, one which neither fits neatly under the public ordering nor private ordering classifications. As demonstrated by our analysis, Lex AI can hardly be viewed as a bottom-up process whereby norms are crafted and undertaken by the stakeholders to which they apply. Its predictions are based on a centralized decision-making process that aggregates personalized data to predict outcomes for individuals based on its optimization function. Bypassing autonomous choice by users, Lex AI may look more like a distinctive type of collective action mediated by algorithms rather than self-governance. As a result, although overcoming informational barriers by offering efficient means to manage, organize, and analyze data, Lex AI introduces serious challenges to personal choice and does not entertain the legitimacy of private ordering.

At the same time, however, Lex AI cannot be viewed as strictly top-down governance. Lex AI is not tightly controlled by those who designed it or deployed it. It shapes behavior by data-driven statistical predictions. Consequently, multiple sources of data shape its output (i.e., predictions) and adaptive learning function. Therefore, they are more distributed, more dynamic, and less predictable than command-and-control governance.

All in all, Lex AI introduces a sui generis governance which is neither purely centralized nor distributed. This observation may carry several implications for policymakers seeking to define the scope of regulatory intervention in Lex AI and the appropriate measures of intervention.

First, focusing on Lex AI's private ordering affordances assures that user choices accurately reflect their true preference. This Article has shown that Lex AI does not provide a reliable signaling of people's preferences and choices. The way preferences are inferred and the recursive process by which Lex AI shapes norms and behavior may result in predictions that fail to reflect

181. For instance, freedom of expression as a constitutional right ensures that many governmental attempts to restrict speech would be subject to strict scrutiny under the First Amendment.

individuals' true preferences and may generate inefficiencies. Since private ordering presumes that the parties know best for themselves, public intervention seeks to verify that parties' choices are informed by setting disclosure obligations or prohibiting misleading practices.[182] Under Lex AI, where parties' preferences are recursively inferred, other measures might be necessary to assure parties' ability to make choices that reflect their true preferences. For example, a periodic report may be sent to Lex AI users, detailing their various classifications in the system (e.g., fans of horror movies, having an *X* percent aversion to certain types of violence, people who care much about the watching habits of their peers, etc.) and allowing them to opt out of classifications they believe are incorrect or otherwise undesirable. Another option would be to have the system flag for the user past choices or behaviors that had a larger than average impact on the system's recursive decision-making process with respect to the specific user, and ask the user to provide input on how the system should weigh this information.

Second, public policy measures related to public ordering considerations may be adjusted to account for the fact that the decisions are being made by Lex AI's rule. Unlike governance by legal norms which conveys information on right and wrong (often followed by a sanction or reward),[183] Lex AI shapes behavior without resorting to the communicative nature of norms. Unlike governance through legal norms or rule-based code, Lex AI cannot be analyzed once, ex ante, for extracting the values, choices, and trade-offs it embeds. Its adaptive function is driven by data, which renders this type of governance inherently dynamic. Moreover, as norms embedded in the system are opaque and nondiscursive, this governance form fails to facilitate explicit deliberation on social norms. The decline of a discursive dimension, which is essential for determining the societal values that inform public policy, may require policymakers to consider new types of interventions to enable more public deliberation over the trade-offs embedded in Lex AI design. For example, when AI systems driven by common good considerations perform the explore and exploit trade-off, regulation can assure an equal distribution of the "explore" alternative among users.

Third, Lex AI decisions may require public policy to treat Lex AI as an ecosystem. The behaviors and interactions between various types of (sometimes unidentified) entities shape Lex AI decisions. Each affects the adaptive learning of the centralized system and, consequently, the decisions the system generate. Treating Lex AI as a data ecosystem rather than a rule-

182. *See, e.g.*, Shmuel I. Becher & Oren Bar-Gill, *Consumer Protection*, *in* THE ECONOMIC APPROACH TO LAW (Uriel Procaccia ed., 2012).

183. *See* Katz, *supra* note 48, at 1749.

based design would assist in focusing attention on the interaction between the different actors when considering legal tools to mitigate potential harms the system generates. For instance, if policymakers seek to limit certain harms Lex AI causes, they should bear in mind that code alone does not necessarily determine the outcomes they wish to mitigate. Policymakers should consider that such outcomes result from data originated from various sources. This could be an accumulated effect of crowds of users or data tweaked by strategic players such as governments, adversary nongovernmental entities, or competing corporate players.

Consider the vulnerability of algorithmic content moderation systems on social media to misuse by strategic players. Governments, for instance, may seek to slow down the spread of certain content on social media platforms[184] by filing removal requests using social media notice and take down procedures.[185] Due to the recursive feedback loop, content subsequently flagged as illicit is likely to be fed back into the model so that it will be detected the next time the system runs, and it thus may impact not simply current removal decisions but also future removals of similar content. Consequently, the systematic issuing of removal requests may affect the technical definitions of what is considered illicit content and may tilt the AI based filters towards governmental perception of what counts as illegal.[186]

184. In the United Kingdom, for instance, the Counter-Terrorism Internet Referral Unit (CTIRU) identifies content that breaches the terms of service of social media platforms and requests that they remove the content on a voluntary basis. Established in 2010 by the Association of Chief Police Officers (ACPO) (a nongovernmental body later replaced by the National Police Chiefs' Council (NPCC) (also a private company which coordinates antiterrorist efforts)) and run by the police, this initiative acts to remove terrorist material from digital platforms. CTIRU focuses on UK-based materials but also compiles lists of URLs for material hosted outside the United Kingdom for the relevant service providers to block. *Counter-Terrorism Internet Referral Unit*, OPEN RIGHTS GRP., https://wiki.openrightsgroup.org/wiki/Counter-Terrorism_Internet_Referral_Unit (last visited Feb. 2, 2022). Similarly, in Israel the Cyber Unit at the State Attorney's Office deployed a comprehensive and elaborate enforcement of speech regulation through digital platforms. The unit systematically files removal requests with digital platforms, targeting allegedly illegal content, such as postings that instigate violence against judges or other public servants, threats against minors, or materials inciting terrorism. *About the Cyber Unit*, GOV.IL (Nov. 5, 2021), https://www.gov.il/en/departments/general/cyber-about.

185. Requests are made based on the platforms' own content moderation policy, as reflected in its Terms of Use (ToU), community standards or community guidelines. Platforms generally exercise discretion over whether such content violates their ToU and decide which actions to take regarding such content.

186. This vulnerability of the platform's content moderation systems to strategic flagging by governments, is demonstrated by Chinese government use of YouTube's rules to silence human rights activists. YouTube recently removed an activist channel that collected and

This perspective may highlight the potential of particular data to cause harm in ways which were unintended and unpredictable by the original designer or by those who deploy the system. Critically, however, treating Lex AI as an ecosystem where design and deployment decisions pertaining to the system might be affected by different stakeholders should not be understood as a vehicle for shielding different stakeholders from liability for their design choices—including those concerning which data to collect and models to deploy. A better understanding of the interactions between stakeholders may assist in tailoring better regulatory and legal measures that will respond to the big picture and not target only a small subset of potential concern.

V. CONCLUSION

A further inquiry into the way Lex AI governs may carry important implications for assessing its potential efficiency and determining the scope of its legitimacy. Lacking some key features of private ordering—like informed, voluntary, and self-imposed choice on the one hand, while on the other hand, also lacking explicit and coherent procedures for deciding societal best interest—Lex AI could be thought of as a sui generis type of governance. This, we argue, requires fresh thinking on the role of law and on the scope and type of possible legal intervention in relation to Lex AI.

published video testimonies from family members of people imprisoned in China's internment camps in Xinjiang. The channel was removed following mass flagging campaigns the Chinese and Kazakh governments allegedly orchestrated. Supporters were instructed to follow a video explaining how to flag the videos en masse in order to force YouTube to take them down. Eileen Guo, *How YouTube's Rules are Used to Silence Human Rights Activists*, MIT TECH. REV. (June 24, 2021), https://www.technologyreview.com/2021/06/24/1027048/youtube-xinjiang-censorship-human-rights-atajurt/.