

INFORMATIONALISM BEYOND MANAGERIALISM

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I

INTRODUCTION

It is now commonplace to observe that digital platforms are both affecting and reshaping markets. The focus of this Article is not the anticompetitive *effects* of digital platforms upon the markets they enter. It instead focuses on digital platforms themselves *as* market mechanisms. Information—especially datafied information about people and their behavior—and information technologies have transformed how many markets function in the digital economy.¹ Markets have become market machines: highly engineered and computationally intensive market-like mechanisms that make up a key layer of technological infrastructure within digital platforms.²

The evolution of markets into market machines matters both normatively and legally. One normative implication of this transformation is that these market-like mechanisms have come unmoored from the foundational justifications for preferring to allocate key goods and services via markets instead of public alternatives.³ Putting aside whether such justifications were ever persuasive

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1. Julie E. Cohen & Ari Ezra Waldman, *Introduction: Framing Regulatory Managerialism as an Object of Study and Strategic Displacement*, 86 *LAW & CONTEMP. PROBS.*, no. 3, 2023, at i. *See also* JULIE E. COHEN, *BETWEEN TRUTH AND POWER: THE LEGAL CONSTRUCTIONS OF INFORMATION CAPITALISM* (2019); Salomé Viljoen et al., *Design Choices: Mechanism Design and Platform Capitalism*, *BIG DATA & SOC'Y*, July–Dec. 2021; Kean Birch, *There Are No Markets Anymore*, *TRANSNAT'L INST.*, 2023; Aaron Shapiro, *Dynamic Exploits: Calculative Asymmetries in the On-Demand Economy*, *NEW TECH., WORK, & EMPLOY.*, Feb. 2020, at 162–77; Marion Fourcade & Kieran Healy, *Seeing Like a Market*, 15 *SOCIO-ECON. REV.* 9 (2016); Katharina Pistor, *Rule by Data: The End of Markets?*, 83 *LAW & CONTEMP. PROBS.*, no. 2, 2020, at 101.

2. I use the term market machine roughly synonymously to how several other scholars use the terms 'platform' or 'digital platform.' However, market machine more precisely describes one particular internal layer and intellectual technology within digital platforms of interest to this analysis. Digital platforms are more than one technological infrastructure. They include interfaces that are designed to entice and encourage people into the market machine, can consist of a stack or inter-relation of several different market machines, and digital platforms also are legal entities: firms constituted legally and financially, that operate externally in reaction to competitors, customers, and nations.

3. Zoë Hitzig, *The Normative Gap: Mechanism Design and Ideal Theories of Justice*, 36 *ECON. & PHIL.* 407 (2020); Kiel Brennan-Marquez & Daniel Susser, *Privacy, Autonomy, and the Dissolution of Markets*, *KNIGHT FIRST AMEND. INST.* (Aug. 11, 2022), <https://knightcolumbia.org/content/privacy-autonomy-and-the-dissolution-of-markets> [<https://perma.cc/F63U-L733>]; Viljoen et al., *supra* note 1. *See also* PHILIP MIROWSKI & EDWARD NIK-KHAH, *The Ghosts of Hayek in Orthodox Microeconomics: Markets as Information Processors*, in *MARKETS* 31–70 (2019) [hereinafter MIROWSKI & NIK-KHAH, *The*

regarding markets, they ought not persuade us of the virtues of relegating allocation to market machines.⁴

The evolution also matters legally. It holds implications for regulatory managerialism, the regulatory paradigm that oversaw the evolution of markets into market machines, and for what might replace it. This paradigm incorporates both “ideologies about the nature of effective governance and assumptions about the universe of feasible institutional strategies and practices.”⁵ Regulatory managerialism holds up competitive efficiency and regulatory minimization as desirable and preeminent regulatory goals, and supplies the technocratic practices of assessment and oversight needed to achieve and enact these goals.⁶ While regulatory managerialism extends to regulatory domains beyond those directly concerned with production, the paradigm’s favorable disposition towards markets—and managed firms competing within them—for directing economic production and allocation affects how willing and able regulators (and courts) are to impose restrictions on market activity more broadly.⁷ Within this paradigm, it is the role of firms run by self-interested managerial elites to manage production, the role of such firms competing in markets to allocate goods and services, and the role of technocratic regulators to step in as necessary to correct this process when and where the market signals fuzz up. Other regulatory aims (like health, safety, provision for welfare, working conditions, and environmental protection) that undermine or restrict market production are to be undertaken only with caution and after considered study of their efficiency-eroding effects.⁸

Regulatory managerialism is the paradigm from which platforms are currently governed. It sets the terms of debate about *how* platforms go wrong, and what can and should be done to them in response. The market machines that operate beneath platforms’ hoods, however, expose conceptual incoherencies and pose practical regulatory challenges for regulatory managerialism. Many of the crises regulatory managerialism faces today arise due to the incapacity of this paradigm to index and address the harms generated from market machines and their information-intensive techniques.⁹

Ghosts of Hayek]; PHILIP MIROWSKI & EDWARD NIK-KHAH, *THE KNOWLEDGE WE HAVE LOST IN INFORMATION* (2017); PHILIP MIROWSKI & EDWARD NIK-KHAH, *DO ECONOMISTS MAKE MARKETS* 190–243 (2007) [hereinafter MIROWSKI & NIK-KHAH, *DO ECONOMISTS MAKE MARKETS*].

4. William Davies & Nicholas Gane, *Post-Neoliberalism? An Introduction*, 38 *THEORY, CULTURE & SOC’Y* 3 (2021) (making a similar argument where the authors explore how emergent features within neoliberalism “begin to weaken or transform key tenets of neoliberal reason and politics”).

5. COHEN, *supra* note 1, at 144. For an overview of regulatory managerialism generally, see Cohen & Waldman, *supra* note 1.

6. COHEN, *supra* note 1, at 144–45, 193–4; Frank Pasquale, *Power and Knowledge in Policy Evaluation: From Managing Budgets to Analyzing Scenarios*, 86 *LAW & CONTEMP. PROBS.*, no. 3, 2023, at 37, 39–40.

7. Pasquale, *supra* note 6, at 40.

8. For an extended discussion and critique of how this paradigm assesses such risk, see Pasquale, *supra* note 6. *Cf. also* William Boyd, *With Regard for Persons*, 86 *LAW & CONTEMP. PROBS.*, no. 3, 2023, at 95, 99 (“[T]his article outlines a series of interventions intended to recenter harm and regard for persons in health, safety, and environmental law.”).

9. Cohen & Waldman, *supra* note 1. *See generally* Christopher L. Peterson & Marshall Steinbaum,

Within this paradigm, the boldest set of proposed regulatory interventions aim at forcing market machines to regress, via regulatory and legal intervention, back into (proper) markets that can do their intended job: coordinating production in an allocatively efficient way. The regulatory directive goes something like this: to bring order back to market machines requires correctives to (re)impose market discipline onto these new market forms, thus (re)asserting the conditions and incentives needed for rational free agents to report their prices or preferences truthfully within these markets. This response marshals a typical set of regulatory managerialist practices. It includes, for example, proposals to address information asymmetries via a slate of information-forcing functions. Between firms, efforts to restore the market's information sharing role has led to a string of antitrust cases alleging improper informational practices, as well as calls for other forms of market discipline to externalize internalized markets¹⁰ or, more ambitiously, to impose common carrier requirements to quash perverse incentives that arise in the relationships between dominant and non-dominant firms.¹¹ Between companies and consumers, a similar impulse to restore a

Coercive Rideshare Practices: At the Intersection of Antitrust and Consumer Protection in the Gig Economy, 90 CHL. L. REV. 623 (2023) (detailing how coercive practices enabled by platform informational techniques in the rideshare industry raise both consumer protection and anticompetitive concerns); Jake Goldenfein & Lee McGuigan, *Managed Sovereigns: How Inconsistent Accounts of the Human Rationalize Platform Advertising*, 3 J. L. & POL. ECON. 425 (2023) (discussing how data protection law and consumer protection law try and fail to address the harms associated with platform advertising); Rory Van Loo & Nikita Aggarwal, *Amazon's Pricing Paradox*, HARV. J. L. TECH. (forthcoming 2023) (demonstrating how Amazon uses informational techniques, commonly regulated under consumer protection law, to manage its pricing strategies—this allows Amazon to maintain the perception of offering low prices while ensuring such low prices are difficult for consumers to access and find).

10. See Dina Srinivasan, *Why Google Dominates Advertising Markets*, 24 STAN. TECH. L. REV. (2020) (calling for insider trading and other securities regulations on ad markets). For antitrust cases, see Elettra Bietti, *Self-Regulating Platforms and Antitrust Justice*, 101 TEX. L. REV. 165, 170 n.21 (2023) (on the string of new antitrust lawsuits and competition law reforms being proposed). See also Complaint at 5–6, *New York v. Facebook, Inc.*, 549 F. Supp.3d 6 (D.D.C. 2021) (No. 1:20-cv-03589-JEB) (alleging that Facebook violated antitrust laws); Complaint at 1, *FTC v. Facebook, Inc.*, 581 F. Supp.3d 34 (D.D.C. 2022) (No. 1:20-cv-03590-CRC) (petitioning for relief against Facebook to “undo and prevent its anticompetitive conduct and unfair methods of competition”); *United States v. Google LLC*, Nos. 20-CV-3010 & 20-CV-3715, 2023 WL 4999901 (D.D.C. Aug. 4, 2023) (alleging that Google violated antitrust law); Complaint at 1, *Texas v. Google LLC*, (E.D. Tex. May 20, 2021) (No. 4:20-CV-957-SDJ), 2021 WL 2043184 (alleging that Google violated antitrust and deceptive trade practices laws); Complaint at 7–8, *Epic Games, Inc. v. Apple, Inc.*, 559 F. Supp. 3d 898 (N.D. Cal. 2021) (No. 4:20-cv-05640-YGR) (alleging that Apple engaged in unlawful anticompetitive conduct); Complaint at 1, *District of Columbia v. Amazon.com, Inc.*, (D.C. Super. Ct. 2021) (No. 2021 CA 001775 B) (alleging that Amazon violated antitrust law); Rebecca Klar, *Amazon Hit with Antitrust Lawsuit Alleging E-book Price Fixing*, THE HILL (Jan. 14, 2021), <https://thehill.com/policy/technology/534364-amazon-hit-with-class-action-lawsuit-alleging-e-book-price-fixing> [<https://perma.cc/G9NY-JW9L>] (reporting that a complaint was filed against Amazon for alleged anticompetitive agreements). For a more general look at the new swathe of antitrust cases in recent years, see Rachel Kraus, *A Running List of American Antitrust Lawsuits Against Google and Facebook*, MASHABLE (Dec. 17, 2020), <https://mashable.com/article/antitrust-lawsuits-facebook-google>.

11. See Council Regulation, 2022/1925, Digital Markets Act, 2022 O.J. (L. 265); *The Digital Services Act: Ensuring a Safe and Accountable Online Environment*, EUR. COMM'N, (last visited Sept. 13, 2023), <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital->

functioning sovereign consumer subject leads to proposals for increased transparency requirements and higher data protection standards meant to elicit gold standard consent, accompanied with reliance on internal regulatory management structures to comply with higher reporting and auditing compliance measures.¹²

I believe this would be taking the wrong, or rather, an incomplete, lesson from the proliferation and domination of market machines for two reasons. First, these regulatory responses misapprehend, and thus underestimate, the conceptual challenge market machines pose to regulatory managerialism's animating epistemologies. Lacking a proper diagnosis of the challenge at hand, the managerialist regulator is left poorly equipped to resolve it. Second, it misses the seed of an alternative regulatory practice contained within market machines. The right lesson, in my view, is not only to take stock of how inadequate our regulatory approaches have been to address the dangers and disruptions that come from digitalizing markets, but also to recognize the promise of information production and the vital, system-supporting role informationalism plays within digital settings. Rich data inputs and infrastructures, like those that currently sustain market machines—if developed in settings with different productive logics and more democratically determined goals—may offer one way around, past, or beyond managerialism as a prevailing regulatory paradigm.

Part II first provides an overview of the classic justifications for deferring to private markets to enact social allocation. It then sketches how informationalism, particularly the intense, systematic production and exploitation of behavioral data, both supports and subverts price signals in the context of digital platforms. The role information plays in supporting and subverting prices (or preference signals more broadly construed) is an important theoretical reason why platforms should be properly taxonomized not as markets, but as market machines: a

services-act-ensuring-safe-and-accountable-online-environment_en [https://perma.cc/64BC-PTTN]. See also K. Sabeel Rahman, *The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept*, 39 CARDOZO L. REV. 1621 (2018).

12. ARI E. WALDMAN, *INDUSTRY UNBOUND: THE INSIDE STORY OF PRIVACY, DATA, AND CORPORATE POWER* (2021); Margot Kaminski & Meg L. Jones, *An Americans' Guide to the GDPR*, 98 DENVER L. REV. 93 (2021) (detailing how the higher standards of EU data protection law involve both individual rights over data and imposing governance duties over data processors); Goldenfein & McGuigan, *supra* note 9, at 426 (discussing how the bargain between individuals who submit to tracking and profiling and the platforms that engage in these activities are considered legitimate so long as 1) their practices have been disclosed so that individuals can make informed choices, and 2) individuals are capable of giving informed consent).

It is worth emphasizing that platforms use market machines to manage their relationship with workers, too. Despite a robust scholarly literature and activist work calling attention to the particular risks workers face from work mediated via market machines, less regulatory attention has traditionally been paid to workers as distinct subjects and users of platforms. See generally Pauline T. Kim, *Manipulating Opportunity*, 106 VA. L. REV. 867 (2020) (arguing that concerns about online manipulation have focused on consumers and citizens but overlooked the risk that these techniques threaten equality, discussing this in the labor market context); Veena Dubal, *On Algorithmic Wage Discrimination*, 123 COLUM. L. REV. 1929 (studying how informational techniques are used to manage wages in ways workers find unsettling and demoralizing). See also *id.* at 1931 (noting that policy concerns over workers largely mirror those articulated for consumers).

descendant form of markets.

Part III explores the implications of this departure for regulatory managerialism. Regulatory managerialism is comprised of several practices designed to facilitate and steward market mechanisms and exists in close symbiotic relation to a marketized society. Thus, the disruption and transformation of markets also disrupts and displaces the regulatory approaches—the epistemologies and the practices—developed to sustain, promote, and govern via markets. Part III asks how we might move from this disjunction—not *back* to markets and regulatory managerialism—but forward to governance paradigms beyond markets and managerialism. It expands on some seeds of alternatives to be found within the informational infrastructures contained within market machines themselves.

Part IV develops these seeds further to consider how information infrastructures can play a foundational role in the project of decommodifying and democratizing necessary goods and services, and injecting greater social oversight over (and management of) key economic goals like expanding access to social care or facilitating a green transition. It also considers some prominent conceptual and legal roadblocks and pitfalls to making good on the post-managerial governance potential of information infrastructures.

II

FROM MARKETS TO MARKET MACHINES

This Part discusses the classic justifications for deferring social allocation to private market activity, and why these justifications cannot be extended to market machines. The intense informationalism of market machines can subvert—even replace—the price signals on which market exchanges rely. At the same time, behavioralist tuning facilitated by market machines challenges the epistemological foundations of both markets and regulatory managerialism.

A. Markets And Prices

The 1970s saw the convergence of two powerful justifications of the political and intellectual movement to devolve allocation of key goods and services—previously allocated by the state or under greater direct state supervision and regulatory controls—to the forces of private market exchange.¹³

The first justification is consequentialist and asserts a claim about *market efficiency*. Market coordination ought to be prioritized and used wherever

13. To be clear, it is not this Article's contention that private market exchange does not similarly require extensive and active regulatory management and maintenance. As several scholars point out, this did not so much entail *less* regulation and regulatory oversight, as a *different* regulatory approach, ideology and set of practices and techniques. See QUINN SLOBODIAN, *GLOBALISTS: THE END OF EMPIRE AND THE BIRTH OF NEOLIBERALISM* (2018); Corinne Blalock, *Neoliberalism and the Crisis of Legal Theory*, 77 *LAW & CONTEMP. PROBS.*, no. 2, 2015, at 71; Britton-Purdy et al., *Building a Law and Political Economy Framework: Beyond the 20th Century Synthesis*, 129 *YALE L. J.* 1784, 1786–832 (2020); WENDY BROWN, *UNDOING THE DEMOS: NEOLIBERALISM'S STEALTH REVOLUTION* (2015).

possible, not for any inherent or fundamental reason, but simply because it has proven to be maximally efficient at achieving socially optimal allocative results.¹⁴ The second justification is deontic and asserts a claim about *market freedom*. On this account, markets and market coordination ought to be prioritized over state allocation, not because private markets happen to produce more efficient social outcomes, but because the alternative—public provision—is an illegitimate overreach of state power that violates individual rights.¹⁵ Markets comprise the legitimate sphere—or one of them—wherein people may consent to and impose obligations on one another.

These two justifications are, obviously, philosophically highly distinct.¹⁶ However, the two tend to be bundled together as fellow travelers in popular defenses of private market allocation.¹⁷ Indeed, even canonical figures associated with these distinct justifications occasionally indulged in the alternative account. Friedrich von Hayek famously defended markets based on their superior information-processing power, which is an essential aspect of the market efficiency claim.¹⁸ But he advanced arguments supportive of—and grounded in—the market freedom claim too. Defending the superior coordination capacity of

14. This account was famously popularized in the mid-20th century by Milton Friedman. But it was (perhaps equally famously) first articulated by F.A. Hayek in the 1940s in response to socialist economists working on economic planning in the absence of privately produced prices to mediate exchange and allocate inputs for production. The historical debate between F.A. Hayek and Ludwig von Mises (the Austrian School) and Cl. . re Tisch, Abba Lerner, Maurice Dobb, Oskar Lange, Fred Taylor and Henry Douglas Dickinson (who took the position that socialist planning was both feasible and, in some cases, superior to capitalist market allocation) came to be known as the ‘socialist calculation debate’.

15. Robert Nozick provides the canonical deontological defense of the minimal (libertarian) state. Nozick actually directed much of his attention in *Anarchy, State, and Utopia* to developing a case against the individualist anarchist assertion that individual rights preclude *any* legitimate state function. See Eric Mack, *Robert Nozick’s Political Philosophy*, STAN. ENCYCLOPEDIA PHIL. ARCHIVE (2022), <https://plato.stanford.edu/archives/sum2022/entries/nozick-political/> [https://perma.cc/95TM-53Z4] (“Nozick’s encounter with Rothbard and Rothbard’s rights-based critique of the state—including the minimal state—lead Nozick to the project of formulating a rights-based libertarianism that would vindicate the minimal state.” (internal citations omitted)).

Thus, the primary aim of the piece was to vindicate a minimal state. However, as he notes, a “noteworthy” implication of this conclusion is that the welfare state is impermissible; the state “may not use its coercive apparatus for the purpose of getting some citizens to aid others.” ROBERT NOZICK, *ANARCHY, STATE, AND UTOPIA* xix (1974).

16. NOZICK, *supra* note 15, at xix. As Eric Mack notes in the Stanford Encyclopedia entry on Nozick, Goldberg and the economists said to influence his conversion to libertarianism (including Hayek and Milton Friedman) were “not at all friends of natural rights theory.” Mack, *supra* note 15.

17. Indeed, today market neutrality claims are so closely associated with market efficiency claims as to be almost substitutable. The theory associating the two is something like: the market is neutral *because* it is efficient. On this account, efficiency is unimpeachable and value neutral. It’s simply what allows us to increase the size of the pie, prior to any divergent political goals we may have regarding how we ought to divide the pie.

It is worth keeping in mind however, that Nozick is not a consequentialist, and to him one cannot disambiguate assessment of how a thing was produced from how that thing ought to be distributed. His account of market neutrality is much stronger than the one raised above: the market is neutral because it does not inquire into why we engage in activity, or which activities we choose to engage in, or make demands over how the resources that result from such activity ought to be shared.

18. See F.A. Hayek, *Socialist Calculation: The Competitive ‘Solution’*, LONDON SCH. ECON. & POL. SCI. (1940).

markets he wrote, “Nobody has as yet succeeded in designing an alternative system [in] . . . which the individual can choose his own pursuits and consequently freely use his own knowledge and skill.”¹⁹ In *Anarchy, State, and Utopia*, Robert Nozick occasionally asserts classically consequentialist attributes of market allocation when favorably distinguishing it from public alternatives.²⁰ Evidence suggests that one upshot of this bundling is that marketization has led to large and growing distributive inequality.²¹ Arguments for regulatory design and policy intervention grounded in market efficiency terms are typically accompanied by codas noting that relative efficiency gains can—even should—be redistributed after the fact; though such arguments tend to remain facially neutral regarding the (political) question of how distribution should occur.²² Comparatively little attention has been paid to this second step by proponents of the market efficiency claim, even though distributing relative gains is vital to the claim of *overall* efficiency gain.²³ Moreover, the political potency of the market freedom claim limits the normative justifications and blunts the political will to enact the degree of redistribution that is, in theory, justified under the market efficiency claim.

While market efficiency and market freedom offer distinct justifications for preferring market allocation over its alternatives, information-as-price plays an important common role in favorably distinguishing markets in both accounts. Information about an item’s true value to buyer and seller, communicated via expressed price, is necessary for its free and voluntary exchange between the two parties. Relatedly, truthful price expression is necessary to determine which allocation of that item between the two is more efficient overall. Thus, the closer an agent’s stated price gets to being a neutral, true information signal of its value to that agent, the more conducive price is to its role in either account above. In the consequentialist account, information-as-price allows the efficiency math of

19. F.A. Hayek, *The Use of Knowledge in Society*, 34 AM. ECON. REV. 519–30 (1945).

20. NOZICK, *supra* note 15, at 163–64 (1974) (“Compare the manner in which the market is neutral among people’s desires, as it reflects and transmits widely scattered information via prices, and coordinates persons’ activities.”).

21. THOMAS PIKETTY, CAPITAL AND IDEOLOGY, 20–21 (2019). *See also id* at 1 (detailing the role of market relations, undergirded by property and entrepreneurship, as key to the justificatory narrative for enduring distributive inequality); Dani Rodrik et al., *Economics After Neoliberalism*, BOS. REV. (Feb. 27, 2019), <https://www.bostonreview.net/forum/suresh-naidu-dani-rodrik-gabriel-zucman-economics-after-neoliberalism/> [<https://perma.cc/MP8U-2PYH>] (linking the “astonishing inequality” of contemporary life with “market fundamentalism”).

22. Relatedly, the market efficiency claim tends to favor the view that any distributive agenda happen post-hoc, via the tax system. *See* Louis Kaplow & Steven Shavell, *Why the Legal System is Less Efficient Than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667, 674–75 (1994) (arguing that nontax distribution will generally result in efficiency losses); David A. Weisbach, *Should Legal Rules Be Used to Redistribute Income?*, 70 U. CHI. L. REV. 439, 446–47 (2003) (arguing against use of redistributive nontax legal rules).

23. Lee Anne Fennell & Richard H. McAdams, *The Distributive Deficit in Law and Economics*, 100 MINN. L. REV. 1051, 1065–69, 1069 n.56 (2016) (criticizing law and economics generally for failing to take distributive concerns into account in nontax decision-making). For a good example of work that pays attention to the both the significance of tax and transfer for distributing relative gains in the classic market efficiency account, and the political shortcomings of relying solely on such policies, see Zach Liscow, *Redistribution for Realists* 107 IOWA L. REV. 495 (2022).

market exchange to cash out. In the deontic account, information-as-price is both a necessary input to—and itself enacts—the expressive autonomy of agents as they freely set their acceptable terms of exchange and obligation. Information-as-price can also play a privacy-protective role, minimizing the invasiveness of processes to allocate resources or welfare by obtaining all the information it needs through a scattered, decentralized, and distributionally agnostic information signal.²⁴

Importantly, in both accounts, prices are superior information signals because, when neutral, they are information-efficient. Prices are neutral when they communicate true information regarding people's desires; and, in doing so, prices allow for coordination around widely scattered information more easily and with less information required than the intensive, iterative, individual, and collective informational demands of state distributional patterning.²⁵

B. Market Machines And Information

The problem is that things work rather differently inside the market machine. A market machine is a system that is designed to solve an allocative matching problem, usually occurring at scale. Google's ad auction, Lyft's ride matching platform, and X's newsfeed all solve such problems: matching digital ad space to advertisers, ride seekers to ride providers, and feed scrollers to content, respectively. What distinguishes market machines from more passive techniques of market matching (for example, a community billboard, or a newspaper 'wanted' section) is that they are dynamic and feedback sensitive. Market machines gather and use behavioral information in a constant recursive loop. They use information gleaned from closely observing actors within the market machine (and beyond) to constantly tweak the conditions of exchange, and then in turn, iteratively observe and test how these tweaked conditions change agent behavior. This, along with the scale and speed at which market machines engage in matching, is what makes them computationally intensive to design and run.

Market machines use the information they glean to engage in dynamic pricing and other dynamic strategies: constantly tweaking who is matched to what, how options are presented, in what order, and at what rate.²⁶ The overall aim is to

24. Distributional agnosticism and the privacy protective role of decentralized price setting is particularly important within the deontic account.

25. Recapping and re-litigating the primary points of price theory is beyond what this short section can properly do. Suffice it to say that truthful preference expression (often but not always as a price) is a primary objective of mechanism design, the economic discipline behind the design of market machines. In other market settings, exchange between buyers and sellers will occur within the set bounded by the reservation price of buyers and the reservation price of sellers. In a fully efficient market, this set will converge to a single point.

26. Dynamic pricing in market machines operates somewhat differently from how pricing occurs in other kinds of auction settings, like the classic stock exchange, or more typical auctions sites like eBay or Poshmark. In the typical multiparty auction, buyers offer a price they are willing to accept, or sellers offer a price they are willing to pay. Clearing occurs whenever these two parties agree. In market machines, even where sellers expressly communicate a reserve price, as they do in Google's ad exchange AdX, the clearing price is set by the mechanism designer, although the exact process by how each platform sets

match buyers and sellers, or viewers and content. In the buyer seller setting, this is facilitated by supplying a price either set or suggested by the platform—based on past observation and other informational inputs—for a given item. This is how platforms like Uber, Lyft, and Amazon delivery,²⁷ facilitate exchange, and how the ad exchanges of Google and Meta operate. Alternatively, market machines use information to facilitate matching not via price but via inferred or predicted preference. This is how the feeds of X, Facebook, and Instagram facilitate matching between content (and ads) and viewers, and how streaming services like Netflix and Hulu offer up shows and movies to subscribers.

What price to set, or which tweets, posts, ads, movies or products to serve up in what order, is a puzzle that market machines use predictions to solve. These predictions are (at least partially) the function of thousands of instances of behavioral data gleaned about past iterative matches between buyers and sellers, or viewers and content, across a variety of conditions. Relevant information includes a specific agent's past behavior under recorded settings, that of similar agents in similar situations, as well as the actions of simulated agents in model transactions. These matching operations involve billions of simultaneous exchanges occurring at speed. All this occurs in a highly engineered market setting, carefully designed and constantly updating, to satisfy some set goal. Example goals include maximizing views or time spent on the platform, or increasing the rate of conversion between ad placement and ad engagement.

It is these mechanisms that do the technical work of facilitating exchange or matching across preferences in digital platforms. Market machines preserve the disciplinary form, language, and techniques of markets and are developed by market designers.²⁸ Indeed, market machines represent the cutting edge of game-theoretic research on designing mechanisms to direct individual choices toward some defined social welfare goal.²⁹ But as will be argued below, they depart in conceptually and normatively significant ways from markets as classically conceived.

To distill some takeaways from the above, market machines operationalize

these prices is a closely-held secret and highly contested among outside commentators. A question of particular relevance here, is whether the clearing price is just a function of all the present bids, roughly akin to a general second-price auction (which would impose on the winner the price at or marginally above that of the second-highest bidder), or whether the auction designer uses information, especially past information about bids, to generate unique per-buyer reserve prices, as is alleged by the State of Texas in *Texas v. Google, LLC*. *Texas v. Google LLC*, No. 4:20-CV-957-SDJ, 2021 WL 2043184 (E.D. Tex. May 20, 2021).

27. By Amazon delivery, I mean the system by which Amazon allocates delivery trips to its fleet of contractors who deliver Amazon packages from warehouses to their destination.

28. The contradiction between platform market mechanisms and market ideals is not just a matter of bad implementation. Instead, such contradictions arise from tensions that have been present throughout the history and development of market mechanisms and mechanism design. See MIROWSKI & NIK-KHAH, *The Ghosts of Hayek*, *supra* note 3 (2017); MIROWSKI & NIK-KHAH, *DO ECONOMISTS MAKE MARKETS*, *supra* note 3, at 190–243; Viljoen et al., *supra* note 1.

29. See generally Viljoen et al., *supra* note 1 (discussing the prominence of algorithmic mechanism design in platform design and among the research agendas of Nobel Prize winning economists of the past several years).

specific forms of exchange and value production that have two features of particular interest. First, they use data about people and their behavior as a valuable, even essential input and tool.³⁰ Market machines are designed around the superior exploitation of information as part of a general platform strategy of competitive advantage: better—or at any rate, more—data leads to better models to predict, and strategies to manage, human behavior. The result is a better—or at any rate, a more profitable—platform.³¹ Second, they are highly engineered environments. The parameters of exchange are constantly being tuned via iterative, real-time feedback from these information signals, leading to dynamic and constantly changing conditions of exchange and allocation.³²

C. Netflix and Uber: Two Examples

To make this a bit more concrete, let's consider two simple examples. First, Netflix's auto play feature. The company conducted extensive A/B testing to determine whether auto play increased viewer hours spent on the platform and, if so, how quickly to queue up the next episode. It found that auto play did meaningfully increase viewer time and that ten seconds was the optimal speed at which to start playing the new episode—initially. When the streaming platform rolled out auto play as the default setting and viewers got used to the feature, the company continued conducting A/B testing on the optimal queue time. The company found that as viewers got used to the feature, it could keep modifying the queue time to adjust for new expectations and keep increasing viewer hours.³³

30. See, e.g., Jathan Sadowski, *When Data Is Capital: Datafication, Accumulation, and Extraction*, 6 *BIG DATA & SOC'Y* 1, 1 (2019) (“This paper builds on three broad insights[:] . . . (1) data is valuable and value-creating[,] . . . (2) data collection has a pervasive, powerful influence over how businesses and governments behave[,] . . . and (3) data systems are rife with relations of inequity, extraction, and exploitation.”); Kean Birch et al., *Data as Asset? The Measurement, Governance, and Valuation of Digital Personal Data by Big Tech*, 8 *BIG DATA & SOC'Y* 1, 1 (2021) (elaborating on how data monopolists measure, govern, and account for the value of data); Cecilia Rikap, *From Global Value Chains to Corporate Production and Innovation Systems: Exploring the Rise of Intellectual Monopoly Capitalism*, 7 *AREA DEV. & POL'Y* 2, 147–61 (2021) (discussing the impact of the centrality of data in trends of concentrated global capital accumulation).

31. Bill Schmarzo, *THE ECONOMICS OF DATA, ANALYTICS, AND DIGITAL TRANSFORMATION* 105–24 (2020); Douglas B. Laney, *INFONOMICS* 11–26, 85–89 (Heather Pemberton Levy ed., 2018); *A Deluge of Data Is Giving Rise to a New Economy*, *THE ECONOMIST* (Feb. 20, 2020), <https://www.economist.com/special-report/2020/02/20/a-deluge-of-data-is-giving-rise-to-a-new-economy> [<https://perma.cc/4FR7-EZFU>]. See also Cohen & Waldman, *supra* note 1, at i, ii (“[I]nformation and information technologies have become both principal inputs to and outputs of economic production and principal mechanisms for control and oversight of economic production.”); Ceelia Rikap, *Capitalism as Usual?*, 139 *NEW LEFT REV.* 145, 150–52 (2023) (explaining how intellectual monopolies, like Google, are reinforced through data collecting, since “[e]xclusive access to harvested data grants intellectual monopolies a continuous advantage at the expense of their competitors”); Aaron Shapiro, *Platform Sabotage*, 16 *J. CULTURAL ECON.* 203, 4–5 (2023) (contending that gig work platforms use informational inputs not (only) to create speculative valuation, but also to strategically assert inefficiencies within and beyond the market encounters they broker).

32. See generally COHEN, *supra* note 1; Viljoen et al., *supra* note 1; Shapiro, *supra* note 1; Goldenfein & McGuigan, *supra* note 9, at 425.

33. rsweeney21, *HACKER NEWS* (July 30, 2019), <https://news.ycombinator.com/item?id=20566514> [<https://perma.cc/SH6D-CUU4>] (“I’m the dev that built Netflix’s autoplay of the next episode. . . .

Second, drawing on ethnographic work on wage-price discrimination by Veena Dubal, consider how Uber allocates rides to drivers.³⁴ The company's ride-matching platform collects and uses detailed information about riders and drivers to set prices and to allocate rides. Priced rides are a complex, and constantly-updating, function of supply and demand, driver and rider features (location, time, reputation), and company incentives.³⁵ This informationally-intense dynamism allows Uber to set different wages for different workers, either to pay them as little as they are willing to accept (i.e. engage in first degree wage discrimination), or to tune price, akin to tuning auto play time in the Netflix example, in order to incentivize desired driver behavior.³⁶ For example, by experimenting with dynamic price setting, Uber has found that it can "prod drivers into working longer and harder—and sometimes at hours and locations that are less lucrative for them."³⁷

In the case of Netflix, information techniques are used to tune a non-priced 'exchange' between a viewer and content (i.e. a viewer choosing to view additional content). Here, Netflix is using iterative experimentation and information gleaned from the viewer to illicit a desired behavior from them—namely, longer watching time. While there is no 'price' being tuned here with which to charge Netflix with price discrimination, the platform is iteratively tracking and using information gleaned from each exchange to engage in further experimentation and constant tweaking of the conditions in which viewership occurs.

1. The Standard Market Efficiency Account

Let's now turn to the standard market efficiency account given of these example exchanges from within the regulatory managerialist paradigm. On this account, the use of behavioral information within market machines fine-tunes the *conditions of exchange* that comprise the mechanism. This mechanism, for many platforms, *is* their product. So, Netflix is merely using behavioral data from its viewers to improve its product—people are spending more time on its platform because they truly prefer binge watching to stopping after an episode or two. Yes,

Autoplay massively increased hours watched. I can't remember the exact numbers, but it was by far the biggest increase in the hours watched KPI of any feature we ever tested. . . . As part of the autoplay test, we tested how long the countdown should be between episodes. 5 seconds, 10 seconds or 15 seconds. 10 seconds caused the biggest increase in hours watched. We thought that it gave people time to digest what they had just watched, but wasn't too fast (5 seconds) where it became jarring. Interestingly, Netflix recently changed the countdown between episodes to 5 seconds. That means they tested it out and found that people watch more if with a shorter countdown. This didn't use to be the case. Netflix user have become conditioned to expect autoplay. So yes, Netflix wants you to spend more hours watching Netflix and the product team is scientifically engineering the product to make it more addictive. But . . . the product team at Doritos does the same thing.").

34. Dubal, *supra* note 12, at 1961–76.

35. *Id.* at 6.

36. *Id.*

37. *Id.* at 16 (quoting Noam Scheiber, *How Uber Uses Psychological Tricks to Push Its Drivers' Buttons*, N.Y. TIMES (Apr. 2, 2017), <https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html> [<https://perma.cc/8ARQ-T4XW>]).

it experimented on its viewers, but not to change *them*, only to change the *platform* serving up episodes to better align with their (pre-existing) preferences.

On this view, there is some pre-existing, theoretical set of platform arrangements under which a viewer truly does want to spend additional time watching Netflix instead of, say, reading the *New York Review of Books*, or preparing a more elaborate dinner. By using behavioral information from its subscribers to test and find those conditions, Netflix is merely tuning its platform to reflect that set of mutually desired arrangements.

Normatively speaking, this might not strike a reader as distinct from other techniques of surplus extraction. Netflix is doing what it can to get more out of its relationship with the viewer. Here, instead of a higher price, it's simply more of a desired viewer behavior (longer watching time). Thus, the viewer has reallocated 'surplus' time or attention she could be spending differently to Netflix instead. This is fine; good even. Netflix is responding to market incentives to provide the viewer with a better product. And there is some theoretical limit to this surplus allocation, beyond which no set of platform arrangements will increase her viewing time. Any tweaking and experimentation Netflix engages in up to that limit is, from a market efficiency perspective, not a problem. And insofar as the viewer is being nudged in ways or to a degree we might consider an impermissible trespass on her agency for independent (i.e. non-efficiency) reasons, the stakes of such nudging seem low here.

The story with Uber is broadly similar. The platform is merely using behavioral data from drivers to find and then create the proper incentives. True, it experiments on drivers to do so, but not to trick or game them for its own sake —merely to figure out the reserve price at which drivers' goals become aligned with the platform's goal of serving the optimal set of potential riders. Again, this isn't done to manipulate or unduly act on *drivers*, it is simply what is needed to obtain the right conditions for the *platform*; to better align worker payment preferences with platform service goals.

Where the stories may diverge is in the normative stakes of the same informational techniques being transposed from (non-priced) viewership to a wage exchange. From a (labor) market efficiency perspective, the platform securing all the surplus value from drivers may not be a problem. However, wages, as a distinct class of price, may not warrant the same legal and normative agnosticism regarding systematic platform surplus extraction given long-standing commitments to wage controls (for example, minimum wages, overtime rules),³⁸ the imbrication of race and sex with labor market power, and the practical reality that wages are how most people must secure the essential means of their survival.

2. The Behavioralist Account

An alternative account casts these as examples of behavioral tuning or

38. See Dubal, *supra* note 12, at 1935 n.17 ("Wage controls in the form of minimum wage and overtime laws, on the other hand, have been contested but culturally naturalized as a necessary (or at least, accepted) part of economic regulation.").

conditioning. On this account, Netflix is using behavioral data from its viewers to modify their behavior—to train them, via a dynamically changing environment tuned over time, to spend more and more time streaming films and shows, as opposed to engaging in other life activities that are less lucrative for Netflix (but, the intuition goes, more meaningful to the would-be viewer). Here, the charge is that Netflix is experimenting on viewers to impose its will; to change viewer behavior in service of Netflix’s own goal, namely maximizing viewer time on its platform.³⁹ Like a cuckoo’s egg, Netflix’s experimentation results in a moral sleight of hand: slipping the platform’s ends in place of the viewer’s own. Now again, in the case of Netflix, even if morally suspect will-substitution is occurring, this may strike one as normatively insignificant or minimal. Perhaps the viewer becomes lazier or less informed, or perhaps it affects the quality of her dinner.

But in other settings, the same technological capacities of market machines may give rise to significant normative concern. In the case of Uber, for example, drivers report initial high pay, drawing them into working on the platform. They may take out a loan on a new car and/or quit other jobs. This initial high pay period is replaced with unpredictable swings of disappointment and reward. Drivers note uneven, and unpredictable relationships between the hours they work and the pay they earn, which they compare to “gambling” and “trickery.”⁴⁰ The random patterning of incentives—providing a high payout just as drivers begin to feel hopeless—operates on what one driver calls “casino mechanics,” a good ride coming along just when its needed to keep drivers “in the loop a little longer.”⁴¹

On the behaviorist account, Uber’s informational techniques don’t simply allocate rides and set prices. These dynamic systems are designed to *condition* drivers to work at the times, locations, speed, and wage that most benefits Uber, as opposed to engaging in other activities less conducive to Uber’s goal of having a large supply of drivers at the ready.⁴² The result, on this account, is a system

39. Several scholars have noted the behaviorist roots of agent tuning. See, e.g., SHOSHANNA ZUBOFF, *THE AGE OF SURVEILLANCE CAPITALISM* 67–70, 361–63, 379–81 (2019) (drawing connections between the extractive practices of surveillance and the transformation of preferences, linking practices of algorithmic agent tuning to work of prominent behaviorist B.F. Skinner); S.M. AMADAE, *RATIONALIZING CAPITALIST DEMOCRACY: THE COLD WAR ORIGINS OF RATIONAL CHOICE LIBERALISM* 1–23 (2003) (linking origins of rational choice theory to cold war era preoccupations of behaviorism and totalitarianism); EVAN SELINGER & BRETT M. FRISCHMANN, *RE-ENGINEERING HUMANITY* 7–28, 51–59 (2018) (warning of the capacity of digital platforms to engineer conditions of manipulation and unfreedom. Automated systems marshal behaviorist feedback loops that undermine the capacity of agents to engage in independent preference and will formation, precisely noting the departure of inquiry from eliciting an agent’s truthful expression to engineering an agent maximally beneficial for the goals of the dynamic system).

40. On worker gamification as behavioral tuning, see Dubal *supra* note 12, at 1970, 1972 (reporting conversations where drivers feel tricked into to working longer hours over time to earn the same amount that they earned early in their career, or indeed, to earn less). As Dubal notes, Uber chief economist Jonathan Hall and co-authors confirmed that at a certain point, drivers get decreasing returns from working longer hours. *Id.* at 1970.

41. *Id.* at 1975.

42. On the large supply of drivers see, Dubal, *supra* note 12, at 1965 (“Taylor’s system of scientific

that systematically undermines worker autonomy and workers' ability to predict and consent to their working conditions.

The behaviorist concern over agent manipulation grounds some of the most pressing critiques that policymakers and scholars lodge against digital platforms. A growing body of work argues that behavioral information inputs are used not to merely predict and understand agent behavior (and then change the market mechanism in response), but to modulate, i.e. shape and control, agent actions within it.⁴³ In other words, behavioral information⁴⁴ is not neutral: it doesn't merely facilitate an exchange; it empowers one party to the exchange at the expense of the other. Information confers a form of control that can be used in myriad ways, but, in commercial settings, often takes the form of highly managed pricing techniques.⁴⁵ Behaviorist concerns about control draw from a long literature of information as a foundational basis of social power.⁴⁶

Importantly, the operative normative concern behind the behaviorist account is *not* (merely) quantitative—that by managing price, and possibly engaging in first degree price discrimination, firms are taking more than their fair share. The primary behaviorist qualm is a *qualitative* concern—information is not merely assisting with prediction of preference, it is constituting and conferring power to shape what is preferred (and placing that power into the hands of whomever manages the market machine). Profit extraction might be the motivation and result for doing so, and may be a derivative harm, but it is not

management relied on an assumption that no longer remains true under informational capitalism: that labor overhead is directly proportional to time spent laboring. Today, facilitated by independent contractor status, algorithmic wage discrimination turns the basic logic of scientific management on its head. Instead of using data and automation technologies to increase productivity by enabling workers to work more efficiently in a shorter period (to decrease labor overhead), on-demand companies like Uber and Amazon use data extracted from labor, along with insights from behavioral science, to engineer systems in which workers are *less productive* (they perform the same amount of work over longer hours) and receive lower wages, *thereby maintaining a large labor supply while simultaneously keeping labor overhead low.*" (second emphasis added)).

43. See generally Fourcade & Healy, *supra* note 2; Shapiro, *supra* note 1; Goldenfein & McGuigan, *supra* note 9; SELINGER & FRISCHMANN, *supra* note 39; Pascal D. König, *Dissecting the Algorithmic Leviathan: On the Socio-Political Anatomy of Algorithmic Governance*, 33 PHIL. & TECH. 467 (2020). For an interesting and rare public example of how effectively agent simulation techniques can be used, see Lisa P. Argyle et al., *Out of One, Many: Using Language Models to Simulate Human Samples*, 31 POL. ANALYSIS 337, 337 (2023) (proposing and exploring the use of language models as effective proxies for specific human sub-populations in social science research).

44. At least as currently cultivated and channeled, in asymmetric data flows. However, some of the strongest accounts of behavioral information as social control argue that the act of producing behavioral information itself, regardless of legal institutional design in how it is shared and used, has an inherent (authoritarian) politics. See generally Brennan-Marquez & Susser, *supra* note 3 (arguing that despite the capitalistic environment that personal data is collected in, the way the personal data is collected undermines freedom).

45. For an excellent and detailed account of social data (i.e. data about people) and its use as a medium of control in markets, see Pistor, *supra* note 1.

46. See, e.g., SARAH E. IGO, *THE KNOWN CITIZEN: A HISTORY OF PRIVACY IN MODERN AMERICA* (2018); DAN SCHILLER, *HOW TO THINK ABOUT INFORMATION* (2007); OSCAR GANDY, *THE PANOPTIC SORT* 29 (2000); JAMES BENINGER, *THE CONTROL REVOLUTION: TECHNOLOGICAL AND ECONOMIC ORIGINS OF THE INFORMATION SOCIETY* (1986); MICHEL FOUCAULT, *DISCIPLINE AND PUNISH: THE BIRTH OF THE PRISON* (1975).

itself the primary violation.

III

REGULATORY MANAGERIALISM AND THE PROBLEM OF MARKET MACHINES

If the behaviorist account is right about what is occurring within market machines, this marks a notable departure from justifications for markets laid out above. The intense informationalism of market machines, when or if directed at agent modification, threatens the virtues of markets as classically defended from social alternatives. It undermines entrenched notions of how agents do—and ought to—act in a market. Empirically, it is no longer obviously the case that price-mediated-exchange offers clear efficiency gains as an informational clearinghouse between consumer demand and producer supply. Alongside the canonical defense of market prices as the most information-efficient way to communicate preference, Nozick favorably compares the elegant and neutral price signal of the market with the intense informational demands on socialist citizens.⁴⁷ And yet within market machines agents are similarly subject to intense informational oversight as a condition of dynamic and personalized price setting and preference prediction.

Normatively, it is similarly not the case—if it ever was—that regulators ought to defer to markets because of their autonomy-enhancing capabilities, given the autonomy-eroding concerns over market machines. Hayek stresses the virtue of markets as a structure in which to exercise free choice and was particularly attentive to the ways that extensive government control under socialism would produce “a psychological change” in its citizens and work to undermine and displace liberty as a political ideal and a disposition to authority.⁴⁸ And yet market machines like Uber’s ride-hailing platform and Amazon’s delivery system employ psychological tools of gamification and unpredictable rewards to undermine worker autonomy.

To be upfront, this Article does not aim to defend a position on whether or which of these accounts is truthful or accurate. Instead, it argues that these two accounts exist in fundamental tension with one another. This is a problem for our current regulatory paradigm, insofar as that paradigm is tasked with parsing a distinction between (acceptable) market efficiency-enhancing strategies and (unacceptable) behavioral manipulation strategies. Managing this dual task within market machines, where the same behaviors and strategies are deployed to both ends, often simultaneously, poses a serious challenge to the basic regulatory approach.

47. See NOZICK, *supra* note 15, at 163–64 (“Compare the manner in which the market is neutral among people’s desires, as it reflects and transmits widely scattered information via prices, and coordinates persons’ activities.”).

48. FRIEDRICH AUGUST HAYEK, *THE ROAD TO SERFDOM: TEXT AND DOCUMENTS* 48 (Bruce Caldwell ed., Definitive ed., Univ. of Chi. Press 2007) (1944).

A. The Problem of Market Machines

From this fundamental tension, and in keeping with the focus of this Symposium on thinking beyond our current regulatory paradigm, I'd like to make two contentions regarding the examples above and these competing accounts. First, that the critical role behavioral information plays market machines marks a key conceptual departure from markets as classically conceived. This claim is taken up in greater detail below. Second, the epistemological resources and regulatory tools of regulatory managerialism are not equipped to respond to this conceptual shift, and the challenges it poses for managing and furthering both the goals of market efficiency and guarding against the harms of agent manipulation raised by the two accounts above. There are of course several proposed and enacted reforms to respond to the economic and social disruption market machines have caused. But, I argue, these reforms face serious challenges rooted in the methods and epistemologies of the prevailing regulatory paradigm. This argument is taken up in further detail in Part III.B.

Let's start with information. What is distinctive about the market machines of today is not the basic insight that information confers power, but rather the greatly enhanced technological capacities to cultivate and deploy informational power at scale and in instantaneous and personalized ways, and the general competitive pressure businesses face to do so.⁴⁹

Market machines are deeply informational; firms operating market machines scour the internet and organize their digital interfaces to soak up as many informational signals as possible. Directly or indirectly, prices are the object of intense informational engineering within market machines. Thus informational inputs in the market machine, as is detailed in the examples above, are *not* neutral conveyance of a price. Instead, the cultivation and deployment of information serves as an active precursor, precondition, and setter of price. Rich informational flows transverse the pricing and non-pricing interplay of agents within market machines. Information flows feed into and express sometimes as prices and signals of non-priced exchange, and sometimes, even simultaneously, as the conditions and ecosystems in which interactions between agents occur. Thus, information prefigures and sustains price; like aspen tree nested in and among dense fungal networks, price and other preference signals are conditioned and recursively acted on by constantly updating informational flows.

From the technical perspective of the market machine, it becomes almost nonsensical to think of an independent, separate agent "coming to" the market to express her (priced) preference. Instead, she is a subject nested within the environment of the market machine, a set of variables and statistical observations

49. Sadowski, *supra* note 30, at 1 ("This paper builds on three broad insights[:] . . . (1) data is valuable and value-creating[,] . . . (2) data collection has a pervasive, powerful influence over how businesses and governments behave[,] . . . and (3) data systems are rife with relations of inequity, extraction, and exploitation."); Nick Couldry & Ulises A. Mejias, *Data Colonialism: Rethinking Big Data's Relation to the Contemporary Subject*, 20 TELEVISION & NEWS MEDIA 336 (2018); See generally MANUEL CASTELLS, THE RISE OF THE NETWORK SOCIETY (1996).

not unlike the other variables that together feed into the systems function, and all of which are tuned in dynamic relation with the digital environs of the market machine.

One result of this technical entanglement is that the same informational techniques can simultaneously provoke competition, consumer protection, privacy and data protection, and—in the gig economy context—labor and employment scrutiny. For instance, van Loo and Aggarwal note that Amazon’s ability to both seemingly wield monopoly power and formally offer low price (and thus offer an enduring puzzle for antitrust scholars and regulators) does not pay sufficient attention to the informational techniques Amazon uses to foster conditions of “consumer misperception” that make finding (and acting on) these low prices quite difficult in practice.⁵⁰ Peterson and Steinbaum similarly note how informational practices provoke simultaneous issues in the ride sharing context, detailing data practices by companies that arguably raise antitrust, consumer protection, and labor and employment issues.⁵¹

The claim that market machines enmesh agents and their environment in deeply informationalized networks that prefigure both price and other conditions of exchange does not imply any normative diagnosis. Whether this state of affairs is considered good or bad, on efficiency or autonomy grounds, will depend on one’s evaluation of a particular market machine, its actions, and their effects. The practical issue facing regulators today is that regulatory attempts to intervene on market machines must satisfy two goals: free rational agents, exercising choice within efficient markets.

B. Managed Separation Between Agent and Market (Machine)

This leads to the second contention. The epistemological resources and regulatory tools of regulatory managerialism cannot adequately meet the challenges (and opportunities) of market machines. Existing approaches fall short both conceptually, regarding the role information is playing, and normatively, regarding what—or under what conditions—might make the use of these strategies a problem. The result is not just an impossible regulatory task, but also a failure to grasp the promise of informationalism, under different circumstances, to move past existing regulatory approaches. But first, let’s consider what prevailing regulatory diagnoses make of market machines.

1. Existing and proposed reforms

Regulators and lawmakers are not immune to these concerns, and the social and economic disruption caused by market machines have not escaped regulatory attention. But the standard set of responses to these concerns under regulatory managerialism relies on efforts to identify, restore and maintain a kind of managed separation between the platform and the agents within them, predominantly through a series of forced information-sharing prescriptions. This

50. Van Loo & Aggarwal, *supra* note 9, at 14–22.

51. Peterson & Steinbaum, *supra* note 9, at 646.

approach responds to the contradictions of market machines with proposals to make them behave more market-like.

For instance, Dina Srinivasan argues that unlike the administrators of financial electronic trading exchanges, Google benefits from superior information access that comes from being both the administrator and participant of the exchange.⁵² Thus, she argues, we ought to impose on ad platforms the same conditions of fair access to data and speed imposed in financial markets. Some antitrust cases go further, calling for the breakup of companies like Alphabet and Meta, separating out the advertising exchange businesses from those hosting content on which such ads appear, or for such services to be regulated as utilities.⁵³ Joseph Stiglitz argues that the information-intensive practice of tuning and setting personalized prices (and thus extract more consumer surplus) itself threatens market conditions of competition.⁵⁴ In his view, this practice violates the conditions of market discipline imposed when all potential buyers face the same (known) prices; when everyone faces the same price, then marginal benefits equal marginal costs for all consumers and producers. Thus, Stiglitz argues, personalized price-setting practices rewards companies that are best at exploitation—that is, extracting surplus—not those that are best at satisfying customers.⁵⁵ In response, he argues for increased information sharing, to reduce the anti-competitive effects of data hoarding.⁵⁶

Indeed in the European Union, the Digital Markets Act (DMA) and the Digital Services Act (DSA) both seek to reimpose market discipline onto market machines through information-forcing measures. For instance, the DMA identifies platforms having “a significant impact on the international market” as gatekeepers and subjects them to additional regulatory requirements, including rules against favoring its own products and services over those of competitor-consumers that use its services to access customers.⁵⁷

52. Srinivasan, *supra* note 10, at 68. *See generally* Complaint at 1, *Texas v. Google LLC*, No. 4:20-CV-957-SDJ, 2021 WL 2043184, at *1 (E.D. Tex. May 20, 2021) (alleging that Google violated antitrust and deceptive trade practices laws).

53. *See generally* Elettra Bietti, *Structuring Digital Platform Markets: Antitrust and Utilities' Convergence*, 2024 UNIV. ILL. L. REV. (forthcoming 2024) (manuscript at 2) (“The question is not whether to break-up or regulate Big Tech, it is what forms of competition, innovation and choice a digital society needs as it transforms.”); Nikolas Guggenberger, *Essential Platforms*, 24 STAN. TECH. L. REV. 55 (2021); MAURICE STUCKE, *BREAKING AWAY: HOW TO REGAIN CONTROL OVER OUR DATA, PRIVACY, AND AUTONOMY* (2022).

54. *See* Interview by Julia Angwin with Joseph E. Stiglitz, in *THE MARKUP* (June 25, 2022), <https://themarkup.org/newsletter/hello-world/how-ai-could-undermine-an-efficient-market-economy> [<https://perma.cc/AHW2-HB5W>] (“[Y]ou may remember from your elementary economics courses that marginal benefits should equal marginal costs for all consumers and producers, and that is ensured when everyone pays the same price. Now, AI is used to price discriminate, meaning different people pay different prices, which undermines the foundations of the efficiency of the market economy.”).

55. *Id.*

56. *See* Anton Korinek et al., *Technological Progress, Artificial Intelligence, and Inclusive Growth* 39 (Int'l Monetary Fund Working Paper No. 21/166, 2021) (noting that “the EU has put forward proposals to require data sharing, with the goal of preventing accretion of monopoly power by monopolizing data”).

57. *See* Council Regulation, 2022/1925, art. 3, Digital Markets Act, 2022 O.J. (L. 265) 1, 2 (“An undertaking shall be designated as a gatekeeper if . . . it has a significant impact on the internal market . . .

These responses directly target the informational techniques of market machines, and the way such information is used to empower one party at the expense of another. In *Texas v. Google*, for instance, the State alleges that Google abused its position as both market designer and participant: inducing advertisers to bid their true value only to override pre-set price floors and use advertisers' true bids against them, by secretly generating unique and custom per-buyer floors based on what buyers had bid in the past.⁵⁸ If true, then the solution of separating Google's content hosting services from its ad exchange business—and operating the latter more akin to an electronic trade exchange—would 'regress' Google ad-auction market machine back into a market, in which agents like advertisers and content hosts (i.e. Google) are disentangled from the market setting in which they transact. The common carrier or gatekeeper model proposed in Europe is more ambitious in terms of the remedy it imposes on these markets, but it too, operates on a theory of principled separation for "gatekeeper" platforms between their role as market provider and market actor.

Consumer and data protection approaches similarly focus on ways to separate 'true' agent actions from market incentives, and to empower informed agent choice. Data subject rights over information are premised on the notion of informational self-determination. Such rights aim to empower an agent to set the conditions for digital self-authorship within platform settings, by conferring on her (formally at least) the power to set the terms of how her data is collected and used. The bedrock of privacy and data protection laws are the requirements that consumers receive notice of what data will be collected about them and how it will be used (a transparency requirement), and consent to such collection.⁵⁹ Informed *a priori* consent serves a separating and gatekeeping function, the moment a free agent agrees to cross the threshold and enter a digital platform.⁶⁰

Consent is one important data subject right, but agents have others. The California Consumer Privacy Act (arguably the most ambitious data protection law in the United States), for example, empowers the agent with several additional rights.⁶¹ These include rights to disclosure upon demand of the

. An undertaking shall be presumed to [have a significant impact] . . . where it achieves an annual Union turnover equal to or above EUR 7,5 billion in each of the last three financial years, or where its average market capitalisation [sic] or its equivalent fair market value amounted to at least EUR 75 billion in the last financial year, and it provides the same core platform service in at least three Member States.”). See also Council Regulation, 2022/1925, art. 5, Digital Markets Act, 2022 O.J. (L. 265) 9 (“The gatekeeper shall provide each advertiser to which it supplies online advertising services, or third parties authorised [sic] by advertisers, upon the advertiser’s request, with information on a daily basis free of charge, concerning each advertisement placed by the advertiser, regarding: (a) the price and fees paid by that advertiser, including any deductions and surcharges, for each of the relevant online advertising services provided by the gatekeeper, (b) the remuneration received by the publisher, including any deductions and surcharges, subject to the publisher’s consent; and (c) the metrics on which each of the prices, fees and remunerations are calculated.”).

58. Complaint at ¶ 180, *Texas v. Google LLC*, No. 4:20-CV-957-SDJ, 2021 WL 4146613 (E.D. Tex. Aug. 4, 2021).

59. Goldenfein & McGuigan, *supra* note 9, at 434.

60. *Id.* at 435.

61. CAL. CIV. CODE §§ 1798.100–1798.199 (West 2023).

categories and purposes of information a business has collected about her,⁶² deletion of data (although there are many exceptions to this right),⁶³ to opt-out of sale or sharing of data,⁶⁴ to correct inaccurate information,⁶⁵ and to limit use and disclosure of sensitive personal information.⁶⁶ Together, such rights aim to re-empower the agent to set the terms of her digital selfhood, limiting any unwilling or unwitting informational entanglement with her digital environs by shoring up the boundary between the two.⁶⁷

Consumer regulations, building on behavioral economic insights about the psychological limits to rational choices, translate into rules that distinguish between slow (i.e., rational) and fast (i.e., irrational) thinking. This account acknowledges that once inside a market machine, an agent is vulnerable to being nudged and gamed in ways that circumvent or short-circuit her capacity to make rational choices. In response, some reforms seek to limit the techniques used to engineer “‘sham choice’,” such as prescriptions against dark patterns.⁶⁸ Others impose greater information-forcing requirements on platforms regarding what kinds of informational techniques agents can expect, so that consumers, exercising their rational faculties, can know what they are getting into *before* being subjected to behavioral techniques.⁶⁹ Thus, reforms draw on theories of bounded rationality to disentangle digital environment and agent, both by placing limits on what kinds of agent-undermining engineering are allowed inside a market machine and by shifting consequential decision-making to settings in which the agent is presumed to have command of her rational faculties.

Again, regulators may have separate (non-efficiency) concerns about what is done to agents once inside market machines that guide some regulatory interventions. For example, concerns about addiction or depression in young users as a result of methods of engineered incentive compatibility are grounded

62. CAL. CIV. CODE § 1798.110 (West 2023).

63. CAL. CIV. CODE § 1798.105 (West 2023). Exceptions are listed in § 1798.105(d).

64. CAL. CIV. CODE § 1798.120 (West 2023).

65. CAL. CIV. CODE § 1798.106 (West 2023).

66. CAL. CIV. CODE § 1798.121 (West 2023).

67. The goal is nicely described by Goldenfein and McGuigan, *supra* note 9, at 436 (“Informational self-determination thus became the legal concept by which an individual is entitled to control the representation of themselves circulating in the outside world. The individual was defined as narrator of their own identity, and data subject rights became tools for reconciling a digital identity controlled by others with an individual’s understanding of themselves. In the computational context, this dimension of data protection works to return “‘control’” over a digital identity to the non-digital human, tasked with exercising autonomous and self-determining decision-making over how they are represented in data.”).

68. See generally Fed. Trade Comm’n, *Enforcement Policy Statement Regarding Negative Option Marketing* (2021), https://www.ftc.gov/system/files/documents/public_statements/1598063/negative_option_policy_statement-10-22-2021-tobureau.pdf [<https://perma.cc/SC53-UDQD>] (warning companies against deploying dark patterns that trick or trap consumers into subscription services, and putting companies on notice that they face risk of legal action if their sign-up process does not provide clear, up-front information, obtain informed consent, and make cancellation easy).

69. Both stronger disclosure standards regarding how clear and specific companies must be in their privacy policies, and higher standards for informed consent aim to equip a would-be consumer with the facts she needs about the informational terms of an arrangement prior to entering into it.

in the special care afforded children; concerns about the danger of such methods being readily repurposed by repressive regimes appeal to the virtues of liberal democracy.⁷⁰ These reforms, however, must be argued for on their individual grounds as carve-outs from the general rule of permissibility towards intense informationalism—as long as the agent enters the market machine willingly and knows the terms of doing so.

2. Conceptual challenge of existing approaches

Thus, existing approaches to regulating market machines operate on a kind of conditional truce between the two accounts of Part II: the informational practices of market machines to engineer incentive alignment is permissible—and even encouraged—as a form of socially beneficial innovation up to and unless it begins to bleed over into impermissible forms of agent manipulation. Impermissibility is determined either procedurally, if proper consent was not given or requisite disclosures not made; or substantively, based on several separate substantive limitations imposed on the design and uses of informational techniques, such as proscriptions on dark patterns, or use of certain psychological techniques on minor users.

The general regulatory paradigm outlined above thus remains well within the boundaries of regulatory managerialism. The task is to allow all the good things market machines have to offer. To this end, from the regulator’s standpoint, platforms are generally assumed merely to be using behavioral information to better understand and predict what agents most prefer. What is owed to agents is clear knowledge of what they are getting into when they enter the market machine, in the form of clear terms and conditions and clear indications of consent.

The other half of the task is to disallow any harmful uses of these presumptively- good techniques. These uses are classified as harmful if they constitute impermissible agent manipulation, to condition, tune, or modulate the agent, and that may result in either or both anticompetitive harm or harm to consumers or workers. But this task becomes difficult (if not impossible and even conceptually absurd) inside the market machine. Platforms are self-interested market actors. They are allowed to have selfish goals and pursue them, as are they encouraged to figure out the conditions and settings that make the product they’re providing (e.g., a gig or TV show) into whatever version of it the people they’re selling it to (e.g., a prospective driver or a viewer) will buy. Indeed, this is what it means to have a market responsive to, and thus providing, *what people want*.

It is here—at the stage of discerning “what consumers want”—that the

70. On children, see Press Release, Fed. Trade Comm’n, FTC Proposes Blanket Prohibition Preventing Facebook from Monetizing Youth Data (May 3, 2023), <https://www.ftc.gov/news-events/news/press-releases/2023/05/ftc-proposes-blanket-prohibition-preventing-facebook-monetizing-youth-data> [<https://perma.cc/RC4U-FPV8>]. On illiberal regimes, see Jean Tirole, *Digital Dystopia*, 111 AM. ECON. REV. 2007 (2021) (showing how the same nudging techniques that can promote prosocial behavior can also allow entities, particularly autocratic regimes, to exercise social control).

problem for the managerial regulator arises. The issue, and the charge of those concerned about manipulation, is that giving people what they *truly* want is fine, but manipulating people into wanting (or thinking they want, or saying they want) what the mechanism designer wants is wrongful.⁷¹ However, the informational techniques used to simultaneously tune both market machine and agents within it are not only constantly updating conditions to optimize expressed preference but; also incapable of distinguishing between these two conditions for expressed preference. Agent preference simply *is* the observed behavior, regardless of how intensely engineered such behavior may be. Inside the boundaries of this method, it becomes impossible to interrogate whether the observed signals derive from permissible or impermissible agent manipulation. Given these two accounts result might plausibly result in the same observed behavior, it becomes difficult, or perhaps impossible, to distinguish an instance in which information inputs have resulted in an improvement in the exchange conditions or a successful modulation of agent behavior. Put differently, these two accounts become impossible to distinguish within the market machine's environs because tuning the agent's *behavior* and tuning the *environment* in which the agent *expresses* her behavior amount to the same thing. This makes the regulatory task of managed separation—drawing the line between acting on the agent and acting on the market—extremely difficult, if not impossible.

Of course, two objections can be raised here. First, agent tuning may well be happening, but there are insufficient empirical grounds to believe it is as powerful or effective as this account suggests. Thus, both the empirical claim regarding the extent and depth of agent modification and the normative significance of its occurrence may be overstated. This empirical charge, if true, reduces the tension facing the regulator needing to reconcile the behaviorist concerns with the classical economic account. Because this argument is not primarily concerned with the empirical bases of the two accounts it engages, the empirical evidence marshalled above—in the examples, the literature regarding 'the widespread use of informational techniques in commercial settings, and the growing scholarly and regulatory concern regarding the effects of these techniques—will have to stand for a response to this objection.

Second, the managerial regulator might fairly object that they are not ignorant of the problem posed here; behavioral economic insights allow them to mitigate the effects of this collapse between observed and true preference inside the market machine. This provides further reason to distinguish moments where an agent is engaged in fast and slow thinking and ensure that agents are only subject to preference-engineering to which they have rationally consented. But

71. Of course, all but the staunchest libertarians would concede that people's tastes and sense of self are developed in relation with others, and some basic amount of making one's case to consumers in this dynamic of self-construction is widely regarded as acceptable. Disagreement about where to draw the line of acceptable practice is one of degree. But clearly at least some boundaries against manipulation are necessary to the account of market efficiency and market freedom: a preference expression must at least be roughly 'true' for its satisfaction to lead to overall welfare maximization, and an agent must be at least roughly free in coming to her choice for her market actions to be autonomy-enhancing.

this is only a partial objection. At best, it can improve the threshold conditions governing the decision to subject oneself to a market machine, but it cannot account for several material decisions or regulatory issues that follow. First, it does not resolve the challenges of discerning true agent choice regarding dynamically updating conditions, like Netflix's ever shortening auto play, or drivers' diminishing and unpredictable wages for rides. True, an agent can be informed in advance that settings will change, but personalization, complexity of factors that go into dynamic preference prediction, and technological advances over time all limit the efficacy of this response to re-impose managed separation between the (rational-thinking) agent and the market settings to which she is subjected. Relatedly, disclosure and informed consent *ex ante* cannot secure the same free and informed conditions for the choice to exit *ex post*.

In practice, greater regulatory sensitivity to the psychological foibles of consumers inside the market machine just relocates regulators closer to the "behaviorist account" side on the spectrum of acceptable practices. This would, ideally, lead to an expanded set of substantive limitations placed on informational techniques designed to condition and tune agents. What it does not do is change the basic tenets of regulatory management. Regulators would still be tasked with managing the tension between efficiency-enhancing improvements to a market and autonomy-eroding (and also perhaps efficiency-undermining) agent manipulation. Each substantive limitation will need to be carved out from the general presumption of permissiveness by regulators making an empirical and/or normative case for why law must deviate from the prevailing presumption of an agent's observed preference being her true preference.

Under this approach, each potential prohibition against certain behavioral techniques, in particular settings or under certain conditions, will need to proceed on the merits *sui generis*. If successful, the resulting limitation will charge regulators with parsing fine-grained technical distinctions in informational techniques which itself quickly becomes difficult, if not nonsensical. For instance, such an approach may find that it is permissible to suggest dieting services based on past purchase and browsing history, but wrongful to do so based on knowledge of a past eating disorder. Or that it is permissible to act on knowledge of the professions and educational attainments of close friends and relatives to set a credit score, but wrongful to do so based on knowledge of the agent's status as a member of a racial minority.

To distill the essential arguments above, the threat of excessive agent manipulation undermines both the efficiency and freedom bases for market allocation. Indeed, this is why excessive forms of agent manipulation are guarded against under existing and proposed regulatory interventions. However, practically speaking, existing regulatory frameworks are extremely poorly equipped, if not conceptually incapable, of managing the salient economic and social effects of market machines. One result is the prevalence of market machine

systems slipping the traces of regulatory managerialist controls.⁷²

C. Price Signals in Market Management (Broader Regulatory Implications)

As others in this Symposium describe in greater detail, regulatory managerialism entails two broad approaches. First, it incorporates private management techniques into public agencies. This includes intellectual techniques like cost benefit analysis, but also encompasses broader projects of commodification, which provide public goods and services via demand-side interventions in the market.⁷³ While cost benefit analysis sets the terms of worthwhile or permissible government activity, commodified provision reflects a general preference to provide for public welfare using private markets. Second, regulatory managerialism exports the business of public oversight into the corporate realm and incorporates corporate practices, favoring the self-management of private companies via internal procedural controls, periodic audits, and regular reporting requirements over more direct and substantive forms of oversight.⁷⁴

My focus here is on those managerial practices occurring on the spectrum of market governance: managing the conditions of private market activity and enacting public welfare policies via private markets.⁷⁵ Here, regulators in the managerial paradigm are centrally preoccupied with information quality and incentives needed for markets to achieve their desired functions. This includes whether consumers have enough information, are given the right conditions in which to express preference information, and enjoy sufficient competition in the market to act on such information. It also focuses regulatory scrutiny on whether intermediaries, like broker dealers or auction hosts, have the right incentives to respond to consumer information signals.

Concerns over information perversion breed regulatory responses to restore and smooth truthful information transmission. Sometimes facilitating truthful information results in demand-side practices. Empowering consumers to shop the market can better signal and reward consumer preference. This includes interventions to lower barriers to exit in private markets, such as data portability schemes, or interventions to allocate social goods that—as theorized—better align with personal preference, such as public housing or school choice vouchers.

72. Examples include the management of inflammatory misinformation through source notifications, attempts to dislodge the pervasive informationalist manipulations of ad exchanges through antitrust enforcement, and efforts to curb the manipulation of users via data flows through higher standards of consent and enhanced back-end rights of user access.

73. See generally Frank Pasquale, *Cost-Benefit Analysis at a Crossroads: A Symposium on the Future of Quantitative Policy Evaluation*, LAW & POL. ECON. PROJECT (Sept. 27, 2021), <https://lpeproject.org/blog/cost-benefit-analysis-at-a-crossroads-the-future-of-quantitative-policy-evaluation/> [https://perma.cc/BTE5-K8JW]; ELIZABETH POPP BERMAN, THINKING LIKE AN ECONOMIST: HOW EFFICIENCY REPLACED EQUALITY IN U.S. PUBLIC POLICY (2022).

74. See generally WALDMAN, *supra* note 12.

75. For what Nicholas Gane refers to as the “neoliberal marketization of the state,” see Nicholas Gane, *The Governmentalities of Neoliberalism: Panopticism, Post-Panopticism and Beyond*, 60 SOCIO. REV. 611, 611 (2012).

A related set of market management practices draw on techniques like debt financing to funnel public funding via consumers into private markets in key social services. Higher education funded through federal loans operate this way, for example, as do federal home ownership programs that insure home mortgages. Such extensive regulatory efforts might not read as first and foremost policies of information facilitation. They are more accurately described as social welfare programs designed with a particular informational theory in mind. It is socially desirable to facilitate home ownership and higher education, for instance, but consumers are not generally in a position to pay the large initial costs of these investments—while the government is. And yet, consumers *are* in the best informational position to choose what kind of home or education they prefer. So, instead of government providing the wrong—that is, less preferred—kinds of housing projects or higher education via direct provision or supply-side investment, it creates debt programs to finance consumers, who can then act on the superior information they possess to enact their preferences in the marketplaces for homes and higher education.

Still other market regulatory practices aim to address asymmetry of information by encouraging or mandating information sharing across the exchange relation. Practices like agency reporting requirements, transparency reports, and requiring informed consent from consumers reflect this theory of improved information.

At root, the regulatory focus from a demand-side perspective on information, incentives, and sufficient competition is about managing the inevitable gaps that arise between a person or entity's willingness to pay (WTP) and ability to pay (ATP) in the market.⁷⁶ On this account, structural asymmetries of information in the marketplace or perverse incentives can warp the behavior of actors in the exchange relation and lead to too much or insufficient demand. These asymmetries gum up or add static to the price information signal and its ability to do the work of seamless, efficient allocation of resources. The managerial practices aimed at governing via market activity are therefore preoccupied with how to prevent, manage, and minimize these gaps.

Such practices reflect and reinforce the essential role prices play in distinguishing the market from its alternatives.⁷⁷ In the market efficiency account, prices serve as an all-important information signal for economic coordination: mess with the signal and unintended—and efficiency-destroying—effects ripple through the dynamic and complex ecosystem of actors who respond to that signal. Although there are, of course, normative assumptions underpinning this account,⁷⁸ it is the resulting empirical efficiency claim that

76. Even direct demand-side benefit programs like vouchers and loan programs can be cast as ways to address skews in the price mechanism resulting from high income inequality that leaves several consumers who are willing to pay unable to pay.

77. Nicholas Gane, *supra* note 75. See generally SLOBODIAN, *supra* note 13; Blalock, *supra* note 13; Britton-Purdy et al., *supra* note 13 (discussing the construction of markets in law).

78. Hedonic utilitarianism being predominant.

grants prices special status. If conditions of the market are correct, prices will act as neutral and seamless transmitters of human action and desire, allowing us to iteratively exchange our way to maximally efficient production.

In the market freedom account, prices reflect the terms of free association and expression—one genus of terms and conditions we encounter as we expand and contract our baseline set of rights through the process of Lockean self-authorship. Cast in the role of consumers, prices allow us to decide for ourselves, on our own behalf, when to take it and when to leave it. Cast in the role of producers, prices allow us to decide for ourselves, on our own behalf, what requests on our time and knowledge are worth our while.

In both accounts, prices are superior information signals because they are neutral *and* efficient: they “reflect and transmit” true information regarding people’s desires and, in doing so, allow for coordination around widely scattered information far more easily than the intensive, iterative, individual, and collective informational demands of non-market alternatives.⁷⁹

But these practices of gap management fall apart in market machines. Informational input signals within a market machine are not neutral transmissions, but objects of extensive and systematic tuning.⁸⁰ Agents in market machines cannot be taken as expressing preferences when their behavior may just as plausibly reflect intensive, iterative, and ongoing modulation. If this expressive function of an agent cannot be counted on, demand-side interventions that focus on addressing the price signal gap only add risk adding grist to the mill of value extraction and wealth concentration.

Existing regulatory agendas aim to correct the contradictions of market machines using the intellectual toolkit and practices of regulatory managerialism. Proponents of this response hope to (re)assert the conditions needed for true expressed preferences between agents to coordinate and allocate goods and thus (re)impose market discipline onto these digital markets.

But the contradictions of market machines present an opportunity as much as a challenge. These contradictions contain the seeds of publicized alternatives to private governance and its managerial toolkit. On this view, the question is not how we might move from contradiction *back* to markets and the regulatory task of managing them, but rather how post-managerial informationalism might facilitate broader goals of decommodification and democratization.

Simply put, if we are interested in mining the contradictions of market machines for paradigms beyond regulatory managerialism, we should think twice before throwing the informational baby out with the managerial bathwater. The

79. NOZICK, *supra* note 15, at 163–64.

80. For an in-depth study of how platforms manage and tune agent behavior in the labor context, see Dubal, *supra* note 12. For reporting on how such tuning affects pricing setting in the real estate market, see Heather Vogell, *Rent Going Up? One Company’s Algorithm Could Be Why.*, PROPUBLICA (Oct. 15, 2022, 5:00 AM), <https://www.propublica.org/article/yieldstar-rent-increase-realpage-rent> [<https://perma.cc/Z2UF-447Y>] (“I think [the algorithm’s] driving it, quite honestly,” answered Andrew Bowen, another RealPage executive. “As a property manager, very few of us would be willing to actually raise rents double digits within a single month by doing it manually.”).

data infrastructures growing up around and between prices within market machines, like fungal networks around aspen roots, offer an alternative means of organizing production and prioritizing allocation. This alternative could displace both the current forms and practices that comprise regulatory oversight of private activity, and the market ordering such practices are tasked with overseeing—for such forms of welfare or production where such alternatives might be particularly attractive.

IV

POST-MANAGERIAL INFORMATIONALISM

Long-held consensus around regulatory ideology and practice have grown unsettled over the past several years. On both the left and the right, political and intellectual agendas for what comes after neoliberalism (and its regulatory paradigms) have emerged.⁸¹ On the left, this has prompted a slate of agendas for a new industrial policy—and debates over the intellectual traditions that ought to guide such policy, and the practical questions of what such policies ought to properly aim for and entail.⁸² The specifics of new left industrial policy are debated and range considerably. However, proposals for a “designer economy”, “productivism,” “supply-side progressivism”, or alternatives that emphasize the importance of social care alongside investments in production, generally all entail

81. Yakov Feygin & Nils Gilman, *The Designer Economy*, NOEMA (Jan. 19, 2023) <https://www.noemamag.com/the-designer-economy/> (arguing recent policies to intentionally shape markets represent a transformational “reframing of the relationship between the state and economy” that the authors dub a “Designer Economy”); Ezra Klein, *The Economic Mistake the Left is Finally Confronting*, N.Y. TIMES (Sept. 19, 2021), available at <https://www.nytimes.com/2021/09/19/opinion/supply-side-progressivism.html> (denoting the new willingness of progressives to directly create “the goods and services they want everyone to have” rather than “giving people money or a moneylike voucher they can use to buy something they need” a “supply side-progressivism”); Dani Rodrik, *The New Productivism Paradigm?*, PROJECT SYNDICATE (Jul. 5, 2022), available at <https://www.project-syndicate.org/commentary/new-productivism-economic-policy-paradigm-by-dani-rodrik-2022-07> (noting a “transition away from neoliberalism” as the overriding economic paradigm and suggesting a new consensus may be emerging around “productivism”: a greater role for government (and greater skepticism of markets) in cultivating productive economic opportunities across the economy, particularly via supply-side measures). See generally William Davies and Nicholas Gane, *Post-neoliberalism? An Introduction*, 38 THEORY, CULTURE & SOCIETY, 3 (2021); Melinda Cooper, *The Alt-Right: Neoliberalism, Libertarianism and the Fascist Temptation*, 38 THEORY, CULTURE & SOCIETY, 29 (2021); Jamie Peck, Nik Theodore, & Neil Brenner, *Postneoliberalism and its Malcontents*, 41 ANTIPODE 94 (2010).

82. On the role of economics in post-neoliberal left policy, see, for example, Dani Rodrik, Suresh Naidu & Gabriel Zucman, *Economics After Neoliberalism*, BOSTON REVIEW (Feb. 27, 2019) <https://www.bostonreview.net/forum/suresh-naidu-dani-rodrik-gabriel-zucman-economics-after-neoliberalism/> (arguing that contemporary economics can play a positive role in more inclusive social policy, and indeed offers powerful empirical evidence in its favor). For critical responses, see, for example, Marshall Steinbaum, *Empiricism Alone Won't Save Us*, BOSTON REV. (March 26, 2019), available at https://www.bostonreview.net/forum_response/marshall-steinbaum-empiricism-wont-save-us/; Corey Robin, *Uninstalling Hayek*, BOSTON REV. (March 26, 2019), available at https://www.bostonreview.net/forum_response/corey-robin-search-new-public-philosophy/; Debra Satz, *Markets Are Political*, BOSTON REV. (March 26, 2019), https://www.bostonreview.net/forum_response/debra-satz-markets-are-political/. These debates are not just intellectual. In 2023, the Office for Information and Regulatory Affairs (OIRA), updated its influential circular A-4 on the practice of cost-benefit analysis. Others in this symposium consider the role of cost-benefit analysis under regulatory managerialism. See Pasquale, *supra* note 6; Boyd, *supra* note 8.

some increased state investment and provision (of either investment, direct production, and/or expanded public social services) and, relatedly, a greater role for deliberate and alternative forms of democratic planning in lieu of private markets.⁸³

As the prior sections show, the information technologies of digital platforms present marked challenges to the prevailing paradigm of regulation. Yet informationalism may also play a supporting role as a practice and a tool to enact new policy and regulatory ambitions that lie outside the regulatory managerialist paradigm. Indeed, to the extent left proposals for a new industrial policy share a greater commitment to democratic oversight of economic activity, they may all entail informational mechanisms necessary to coordinate that oversight, manage the logistical challenges of indexing preference and need, and direct investments and allocation in response to democratically set priorities. In other words, wherever and however proposals envision a greater role for planning and participation, they implicitly set an agenda for a democratically designed informational systems to enact those roles.

To be clear, this is not meant to suggest that the informational infrastructures of our current digital platforms lie outside or beyond the managerial paradigm. These systems are designed with specific goals in mind and cannot simply or easily be repurposed to different ends. Most data flows that feed into and sustain market machines today are not democratically governed but designed to serve the priorities set by the small number of managers in charge of them—priorities that often, as discussed above, empower and enrich such managers at the expense of others. Intense informationalism is thus compatible with private ordering and managerialist oversight. However, informationalism is not wholly reducible to these modes of oversight—and indeed, informational infrastructures designed not for profit creation but to direct resources or allocate services may be an essential component of any plan to decommodify a good or service, or expand democratic participation and standing in economic life. It is in this sense that informationalist infrastructures can evolve from the private platforms of today into a key post-managerial regulatory practice and tool. While today, most informational systems used in (private platform) economic planning serve to facilitate and extend markets, informational systems as tools of democratic planning and coordination can serve to decommodify and replace markets. This would mark a conceptual break with the epistemology and underlying justifications of regulatory managerialism.

83. See Feygin & Gilman, *supra* note 81, Klein, *supra* note 81, and Rodrik, *supra* note 81 respectively, on “designer economy”, “supply-side progressivism” and “productivism.” For one criticism of left alternatives to neoliberalism, see Amy Kapczynski, *What’s Beyond “Beyond Neoliberalism?”*, LPE BLOG (Jan. 9, 2023) <https://lpeproject.org/blog/whats-beyond-beyond-neoliberalism/> (arguing that supply-side progressivism and productivism both undervalue the importance of services, particularly care work, that fall outside definitions of ‘production’ and stressing the importance of social care and climate crisis to post-neoliberal left political agendas). See also, Interview by Evgeny Morozov and Ekaitz Cancela with Amy Kapczynski, in THE SYLLABUS: SPOTLIGHT, available at <https://www.the-syllabus.com/ts-spotlight/post-neoliberal-moment/conversation/amy-kapczynski>.

Before the argument proceeds further, a cautionary note against technosolutionism is worth making upfront. New technical governance mechanisms, like those explored below, can only assist, enable, or improve projects of decommodification. Robust, affirmative, and public legal rights to social data infrastructures can create the intellectual and legal *capacity* for such programs. They can provide the technical means of enacting a political commitment and a specific policy. They *cannot* stand in for, replace, or provide the political will required to obtain such a policy or provide a silver bullet for a desired social transformation. Technical architectures cannot stand in for the governance institutions required to decommodify key goods and services, re-embed relations of production, and extend democratic governance. However, this Part does argue that robust, affirmative, and public legal rights to develop social data infrastructures will be necessary, or at least very helpful, in enacting such goals.

A. From Tuning Price to Replacing Price

Robust information systems, subject to robust affirmative rights and public ordering, can serve as a key governing mechanism within a post-managerial paradigm. For example, consider a pharmaceutical company that produces a chronic pain medication. Interested in reaching potential customers, it purchases—via a health data intermediary—access to detailed data about me. The data show that, from my search history and health tracking device, I periodically experience bouts of significant pain. The company then uses this information to engage in first degree price discrimination (FDPD) against me. Or consider a similar company selling insulin that gains access via a data sharing partnership with my pharmacy to my smart blood sugar tracker and learns that I have a particularly challenging time managing my blood sugar without insulin.⁸⁴ This company also uses this behavioral data to engage in FDPD against me.

The practice of FDPD is perfectly compatible with the animating theories of market action underlying regulatory managerialism. Indeed, FDPD likely would be allowed under managerial oversight, presuming that in both scenarios, I must first have obtained a prescription to be able to purchase either drug. Assuming I have information about how much these drugs are worth to me, if I am still willing to pay the FDPD price, there is nothing objectionable about either exchange. What might preoccupy managerialist regulators is how to set boundaries on what either company can *do* with this knowledge. They can use their knowledge to set prices, but not use it to sync advertisement of—or worse, access to—their drug to informational signals that predict when I am in acute pain. This use would almost certainly interfere with my ability to determine whether their price is in fact worth

84. While this example is stylized, recent revelations over several online therapy providers selling patient data to advertisers suggest its basic soundness. See *Better Help, Inc., In the Matter of*, FED. TRADE COMM’N (July 14, 2023), <https://www.ftc.gov/legal-library/browse/cases-proceedings/2023169-betterhelp-inc-matter> [<https://perma.cc/RB57-D38G>] (“The Federal Trade Commission has issued a proposed order to settle charges that online counseling service BetterHelp revealed consumers’ sensitive data with third parties such as Facebook and Snapchat for advertising after promising to keep such data private.”).

it to me—taking advantage of any excess ATP above my hypothetically rational assessment of my WTP. As discussed above, within a market machine, the parsing of these permissible and impermissible uses of information is a Sisyphean task. How would I distinguish—conceptually and legally—between my assessment of worth during periods of pain and relative comfort? Is the instantaneous provision of medicine when I am in most pain not actually more effective and responsive to relative preference? Yet the same kind of informational input that either company might use to tune the price or modulate my WTP could just as easily be used under a different kind of social arrangement—for example, universal healthcare—to *replace* the price mechanism altogether. If my physician has access to behavioral data from my blood sugar tracker showing I am having trouble managing my sugar levels, she might send in a script for insulin and reach out to let me know it’s available for me to pick up. This price-replacement scenario might resolve any lingering irrational unease over the FDPD scenario, and it resolves the impossibility of parsing the fine-grained distinction between permissible FDPD and wrongful manipulation facing the managerial regulator. It also responds to separate concerns about FDPD in the healthcare context to which the claim that it doesn’t undermine intra-party allocative efficiency is not responsive. Like in the wage context, we may think patients having a stable and secure sense of how they can obtain medication should they need it is desirable, independent from the effects dynamic pricing might have on efficiency of the money-for-medicine exchange.

Considering the regulatory use of detailed health information in this way marks a departure from regulating within the managerial paradigm. Gone is the preoccupation of ensuring prices are not set in ways that skew the WTP to ATP signal, hobbled by the reliance on agent-expressed preference via stores of value. This, in turn, suggests that whether informationalism indicates an acceleration or replacement of managerial tendencies depends, at least in part, on conditions of data governance: how data infrastructures are governed, how data is collected, by whom, with what goal in mind, and subject to what kinds of affirmative rights.⁸⁵ It also demands attention to what kinds of entities are empowered to generate or access what kinds of social information. Yet, achieving this affirmative data governance agenda requires that both privacy advocates and state regulators think of social data and its governance rather differently than they do today.

B. Social Data Infrastructure as Public Governance

Expanding rights to social data production can empower labor, decommodify housing and healthcare, and expand social ownership and democratic control over more aspects of social and economic life.⁸⁶

85. See Salomé Viljoen, *A Relational Theory of Data Governance*, 131 YALE L.J. 573, 586 (2021) (describing the stakes and the status quo of data governance).

86. For information regarding expanding rights of workers to access information used in price setting, see Dubal, *supra* note 12, and, BRISHEN ROGERS, *DATA AND DEMOCRACY AT WORK* (2023). See generally Hetan Shah, *Use Our Personal Data for the Common Good*, 556 NATURE 7 (2018); Roberta

Information already plays an essential input in public governance. But under current paradigms, public data has played a more limited role in the planning, allocating, and coordinating function of allocation. Commentators debate whether we have moved into a new era of supply-side progressivism,⁸⁷ new industrial policy,⁸⁸ or a designer economy.⁸⁹ But key to any of these calls for a revitalized role for the state in more directly managing economic production and welfare provision is a more robust role for the informational signals needed to take up that agenda. In other words, any efforts to reclaim certain core industrial or social care functions from market coordination will continue to need a regulatory paradigm that is intensely informational.⁹⁰ What ought to distinguish such a regulatory agent is not the significance informational infrastructures will

Fischli, *Data-owning Democracy: Citizen Empowerment Through Data Ownership*, EUR. J. POL. THEORY (July 19, 2022), <https://doi.org/10.1177/14748851221110316> [<https://perma.cc/TUC5-BJTS>]; Thomas M. Hanna et al., *A Common Platform: Reimagining Data and Platforms*, COMMONWEALTH (Dec. 2, 2020), <https://www.common-wealth.org/publications/a-common-platform-reimagining-data-and-platforms> [<https://perma.cc/59SX-YQCP>]; MATHEW LAURENCE & ADRIENNE BUTLER, OWNING THE FUTURE: POWER AND PROPERTY IN AN AGE OF CRISIS (2022). For more extensive defenses of the role of data infrastructures in decommodification, see, for example, Seth Ackerman, *The Red and the Black*, JACOBIN (Dec. 12, 2012), <https://jacobin.com/2012/12/the-red-and-the-black> [<https://perma.cc/VV2R-U2Q4>], and MICHAL ROZWORSKI & LEIGH PHILLIPS, THE PEOPLE'S REPUBLIC OF WALMART (2019).

87. See Ezra Klein, *The Economic Mistake the Left Is Finally Confronting*, N.Y. TIMES (Sept. 19, 2021), <https://www.nytimes.com/2021/09/19/opinion/supply-side-progressivism.html> [<https://perma.cc/VQ4M-JUNN>] (“Supply-side progressivism shouldn’t just fix the problems of the present; it should hasten the advances of the future.”); Miles Kimball, *Supply-Side Progressivism – Ezra Klein*, CONFESSIONS OF A SUPPLY SIDE LIBERAL (Jan. 20, 2022), <https://blog.supplysideliberal.com/post/2022/1/20/ezra-klein-supply-side-progressivism> [<https://perma.cc/UZB4-3QNY>] (responding to Klein, *supra*, and discussing the “realistic potential” for supply-side progressivism).

88. See Laura Tyson & Lenny Mendonca, *America’s New Era of Industrial Policy*, PROJECT SYNDICATE (Jan. 2, 2023), <https://www.project-syndicate.org/commentary/biden-industrial-policy-renewables-semiconductors-good-jobs-by-laura-tyson-and-lenny-mendonca-2023-01> [<https://perma.cc/4XXP-K6BS>] (“A new breed of industrial policy is taking hold in the United States.”); John Cassidy, *Joe Biden’s Innovative Attempt to Reshape the American Economy*, THE NEW YORKER (Feb. 7, 2023), <https://www.newyorker.com/news/our-columnists/joe-bidens-innovative-attempt-to-reshape-the-american-economy> [] (discussing the views for and against President Joe Biden’s “ambitious and complicated” industrial policy); Aurelia Glass & Karla Walter, *How Biden’s American-Style Industrial Policy Will Create Quality Jobs*, CTR. FOR AM. PROGRESS (Oct. 27, 2022), <https://www.americanprogress.org/article/how-bidens-american-style-industrial-policy-will-create-quality-jobs/> [<https://perma.cc/8CFR-NVEU>] (predicting that the economic policy signed into law by the Biden-Harris administration will lead to growth in high-paying jobs); *Joe Biden’s Industrial Policy is Big, Bold, and Fraught with Difficulty*, THE ECONOMIST (Sept. 13, 2022), <https://www.economist.com/united-states/2022/09/13/joe-bidens-industrial-policy-is-big-bold-and-fraught-with-difficulty> [<https://perma.cc/9PWF-8A9S>] (outlining the difficulties associated with America’s new industrial policy).

89. See Yakov Feygin & Nils Gilman, *The Designer Economy*, NOEMA MAG. (Jan. 19, 2023), <https://www.noemamag.com/the-designer-economy/> [<https://perma.cc/HE96-CNFF>] (“[T]oday, policymakers from across the political spectrum are embracing a more active role for the federal government in directly configuring the ‘real economy’ — wages, employment and investment. . . . Let’s call it the ‘Designer Economy.’”).

90. Hannah Bloch-Wehba, *A Public Technology Option*, LAW & CONTEMP. PROBS., no. 3, 2023, at 223.

play in signaling needs and allocating goods and services. Rather, the purposes that inform how such informational flows are designed and the actors they empower—both within public agencies and in the public— keep such agencies accountable to public goals.

1. The Case of VistA

In 1977, a cohort of software engineers and medical providers at the Veterans Administration (VA), often working at night or in their spare time, began to develop a system to take advantage of personal computers to improve medical care for veterans.⁹¹ The goal was to help doctors at the VA organize patient notes, prescription histories, and various diagnostic results. Additionally, they could share their experiences electronically with other providers.

The resulting system, called VistA, was beloved by providers and decades ahead of its time. A public-spirited innovation, developed not with profit but patient care in mind, VistA was put to use in one of the largest fully public healthcare systems in the world.⁹² VistA worked by keeping VA-employed technologists embedded throughout hospitals in the VA system, where they could consult as issues arose and take advice on features that would make the system better. Engineers and providers worked closely and continuously to keep the system uniformly available throughout the VA network, which was intuitive for physicians and patients to use and responsive to emerging needs.

VistA was both pioneering and popular with patients, providers, and health economists looking to develop similar systems.⁹³ For decades, VistA was widely preferred to commercial alternatives.⁹⁴ Indeed, as the Affordable Care Act was being crafted in 2009, some saw VistA as a model to develop an integrated public American medical records system akin to those in France, Germany, and the United Kingdom and proposed opening the system up to every doctor in

91. My example of VistA draws heavily on Arthur Allen's excellent in-depth reporting. See Arthur Allen, *A 40-Year 'Conspiracy' at the VA*, POLITICO (Mar. 19, 2017), <https://www.politico.com/agenda/story/2017/03/vista-computer-history-va-conspiracy-000367> [<https://perma.cc/6EA4-2ABG>] (reporting on the history of the Veterans Information Systems and Technology Architecture (VistA) from its birth in 1977 through its continued use today).

92. See PHILLIP LONGMAN, *BEST CARE ANYWHERE: WHY VA HEALTH CARE WOULD WORK BETTER FOR EVERYONE* 34–43 (Tanya Grove ed., 3d ed. 2012) (“The only function VistA can’t do as well as its private-sector counterparts, at least without adding some code, is tracking patient billing. Instead, because of its origins, its focus is on patient care.”); Allen, *supra* note 91 (“[The VA] serves about 9 million veterans at 167 hospitals and 1,700 sites of care.”).

93. Allen, *supra* note 91 (noting that VistA was exported as the template for medical data systems in Finland, Germany, Jordan, India, Australia, Nigeria and Japan).

94. “As recently as [August 2016], a Medscape survey of 15,000 physicians found that the VA system, called VistA, ranked as the most usable and useful medical records system, above hundreds of other commercial versions marketed by . . . tech companies.” *Id.* This is not so surprising given the starkly different design of the VA’s product compared to commercial alternatives. Tom Munnecke said, in 1982, “Every one of their systems is totally dependent on a specific vendor, incompatible with every other system they have developed. . . . Every one of our systems is vendor-independent and compatible with every other of our systems.” *Id.* As Allen notes, Munnecke’s observations about competing products in the 1980s “sounds . . . familiar to [users] of current, commercial HER systems.” *Id.*

America.⁹⁵

Unfortunately, VistA's development and adoption coincided with the heyday of a regulatory attitude set against projects like it. A 2005 study found that the VA could save \$345 million a year replacing VistA with a consolidated central IT office. In 2006, the same year VistA won the prestigious Harvard Business School's Innovation in American Government Award, VistA's budget essentially disappeared. Hundreds of VistA experts left for the private sector, taking their knowledge of the system with them. The collaborative dynamic between doctors and developers that had sustained the project—and set it apart—was gone. Congressman Steve Buyer, a Republican from Indiana, called VistA's defenders “gargoyles that defend bureaucracy and the old way of doing business.”⁹⁶ The new way involved fatal reorganizations in the name of efficiency. One former official admitted that “[m]odern management techniques killed [VistA],”⁹⁷ and further noted, “We always wondered whether it was a plot to help the private vendors. But whether it was or not, it had that effect.”⁹⁸ After Rep. Buyer left Congress in 2011, he became a lobbyist for health information technology and veterans' affairs issues with McKesson, a large government contractor and producer of commercial electronic health records.⁹ By July of 2017, when then-secretary of the VA Dave Shulkin called for a transition to a new commercial system, the cost of the switch was estimated to be \$16 billion.

2. Informationalism After Modern Management

The story of VistA's rise and fall is instructive in two ways. First, it offers a textbook example of regulatory managerialism in action. Second, it offers a glimpse of the promise of informational management systems to disrupt and displace this approach. Put simply, post-managerial informationalism can provide an agenda and set of practices by which the story of VistA is told in reverse, in the healthcare sector and elsewhere.

VistA demonstrates the power of informational systems, designed from their beginning with a specific public service in mind, to improve the provision of public goods and services. Such information infrastructures can amplify the comparative strengths of decommodified services, since well-designed information systems are part of how such services are coordinated and designed directly to measure and provide quality service, instead of for competitive fragmentation, commercial secrecy, and imperatives to demonstrate return on investment (ROI) that pervade commercial service provision. High quality data infrastructures, like VistA once was, can thus play an essential role in managing decommodified and (re)democratized goods and services.

Informationalism is not a goal in and of itself. Instead, it can be a key regulatory enabler or amplifier of other public-spirited projects. To better

95. *Id.*

96. *Id.*

97. *Id.* See also Pasquale, *supra* note 6; Boyd, *supra* note 8.

98. Allen, *supra* note 91.

understand the proper way to think of the role of informationalism beyond managerialism, let us stick with healthcare as our example. Expanding public access to healthcare itself is, of course, not an informational agenda. But managing and regulating decommodified healthcare will require publicly managed information architectures to replace much of the work for which we currently rely on private outsourcing, regressive and punitive price mechanisms, and the distant, privatized regulatory oversight of these activities.⁹⁹

Such infrastructures, designed with greater public input and under clear mandates to work for the public benefit, can yield other favorable results. Because such systems do not rely on commercial secrecy, they are more amenable to forms of integration and public accountability that benefit regulators, researchers, and citizens. For example, the electronic records system of the United Kingdom's National Health Service (NHS) informs and is integrated with its national outcomes framework, which monitors national-level outcomes of the U.K. healthcare system across a range of disease indicators.¹⁰⁰ This creates an annual overview of the entire U.K. healthcare system's performance, which the NHS uses to set priorities and funding agendas. It provides the NHS with a detailed snapshot of the state of U.K. health, which the NHS can use to improve its services, tweak issues in how providers and other services are allocated or rewarded, and plan around shifts in patterns of morbidity. Summary data on the system's performance is made available to the public, and patient-level data is held in a common universal database that all NHS providers have access to, providing seamless continuity of care.¹⁰¹ Both the integrated patient records

99. Americans experience high numbers of catastrophic health care costs—costs defined by the WHO as amounting to “more than 40% of a person's income after food and housing costs.” Kristen Kendrick, *Despite ACA Coverage Gains, Millions Still Suffer ‘Catastrophic’ Health Care Costs*, NPR (Nov. 12, 2020), <https://www.npr.org/sections/health-shots/2020/11/12/934146128/despite-aca-coverage-gains-millions-still-suffer-catastrophic-health-care-costs> [https://perma.cc/TLN5-QEC6]. A 2020 study found that, despite improvements following from the ACA, roughly eleven-million Americans experienced catastrophic health expenses. *Id.* See also Charles Liu et al., *Catastrophic Health Expenditures Across Insurance Types and Incomes Before and After the Patient Protection and Affordable Care Act*, JAMA NETWORK OPEN (Sept. 24, 2020), <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2770949> [https://perma.cc/AN29-K9G6] (“ACA implementation was associated with 2 million fewer US adults with catastrophic expenditures each year. . . . However, improvements were not observed . . . among the privately insured, who represent an increasing share of those experiencing catastrophic expenditures.”).

100. March 2022 national statistics are available online. *NHS Outcomes Framework Indicators – March 2022 release*, NHS DIGITAL (Mar. 17, 2022), <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-outcomes-framework/march-2022> [https://perma.cc/T3JV-QC7H].

101. Regional performance metrics are also publicly available, overall and by specialty area. *Id.* Prospective patients, freed from the constraints of price, can consider the performance scores of obstetricians on the outcomes framework and compare hospitals in the area across a range of factors. The benefits of such easily available metrics for healthcare are notable. For comparison by region on performance, see *Quality and Outcomes Framework (QOF) 2021–22*, NHS DIGITAL <https://app.powerbi.com/view?r=eyJrIjoiYWY1Y2VkZTEtMTlhMi00ZGZkLTgxYWUeNTU3NGM1ZGE3OTI0IiwidCI6IjUwZjYwNzFmLWJiZmUtNDAxYS04ODAzLTY3Mzc0OGU2MjllMiIsImMiOjhh9> [https://perma.cc/82XR-LFJP]. For a comparison by specialty area, like obstetrics, for example, see the *National Maternity Dashboard*, NHS DIGITAL (Nov. 23, 2023)

system and the uniform longitudinal collection of health outcomes are vital to the management of decommodified healthcare services.

Robust, well developed social data infrastructures are a means of governance that might also displace or supplement those of market managerialism in areas beyond patient care. More generally, social informational governance in lieu of private markets is attractive where prices have proven problematic—either practically or normatively—but where there is still a strong societal interest in meeting needs fairly and efficiently.¹⁰² Social data, like in the NHS example above, can provide high quality insights into and predictions of social behavioral patterns. This can help public agencies plan directly around medium-term and long-term priorities in ensuring quality public services without needing to outsource surveys or reports from private consultants. It is also a step towards empowering public agencies to engage in direct service provision. For example, a consortium of U.S. cities formed the Open Mobility Foundation (OMF) to serve as a common platform and data consortium for understanding mobility data. Cities can use this data to understand exiting transit flows, enabling them to manage traffic, inform housing and other development priorities, and even create high quality plans for more accessible and climate friendly public transit services in the medium-term to long-term.¹⁰³ Data consortia like the Open

<https://app.powerbi.com/view?r=eyJrIjoiaOTg1YTgzNWQtNTM1NS00YmE0LWEzNTktMWQ3ZTRlNWm5ZmUyIiwidCI6IjM3YzYzMTNGIyLTg1YjAtNDdmNS1iMjIyLTA3YjQ4ZDc3NGVIMyJ9> [https://perma.cc/XV7P-CMUF]. Potential viewers can see key features on each service area (which are called Trusts) and compare measures across different providers. For more on the role of the Maternity Services Dashboard, see *Maternity Services Dashboard*, NHS DIGITAL, <https://digital.nhs.uk/data-and-information/data-collections-and-data-sets/data-sets/maternity-services-data-set/maternity-services-dashboard> [https://perma.cc/6NL4-ET6S]. Compare the obfuscation around bad outcomes, aggressive recruitment tactics, high costs, and fraud in private equity owned U.S. hospice care. See Ava Kofman, *Endgame: How the Visionary Hospice Movement Became a For-Profit Hustle*, PROPUBLICA (Nov. 28, 2022), <https://www.propublica.org/article/hospice-healthcare-aseracare-medicare> [https://perma.cc/GN3F-PF65] (“Once a hospice is up and running, oversight is scarce. Regulations require surveyors to inspect hospice operations once every three years, even though complaints about quality of care are widespread. A government review of inspection reports from 2012 to 2016 found that the majority of all hospices had serious deficiencies, such as failures to train staff, manage pain and treat bedsores. Still, regulators rarely punish bad actors. Between 2014 and 2017, according to the Government Accountability Office, only 19 of the more than 4,000 U.S. hospices were cut off from Medicare funding.”) For more on adverse outcomes at medical facilities taken over by private equity, see Andrew Gregory, *Private Equity Ownership of Health Services can Worsen Care, Review Says*, THE GUARDIAN, (July 19, 2023), <https://www.theguardian.com/business/2023/jul/19/private-equity-ownership-of-health-services-care-review-higher-costs> [https://perma.cc/6KX3-5RJR]. Over half of hospice facilities are now owned by private equity. Katrina Vanden Heuvel, *The Private Equity Takeover of Hospice Care*, THE NATION, (July 7, 2023), <https://www.thenation.com/article/politics/healthcare-medicare-illness-privatization/> [https://perma.cc/CWU4-RLE9].

102. First, there are cases where pricing itself might be viewed as wrongful, but we still may want to allocate a scarce good fairly and efficiently (kidneys). Second, there are areas where pricing is particularly distortionary. Markets in healthcare suffer from pervasive issues of information asymmetry, moral hazard, and at times, extreme cases of price insensitivity. Price insensitivity can exacerbate inequality of service provision on the basis of wealth (for example, hospice care, education). In part because price insensitivity is an indication that the good being provided is essential.

103. *The Future of Mobility*, OPEN MOBILITY FOUNDATION (2023), <https://www.openmobilityfoundation.org> [https://perma.cc/M6AY-45MR].

Environmental Data Project empower communities and citizen scientists to pool reliable local climate data to contribute to knowledge on national and local climate disruption trends, set local priorities to plan around them, and counter fossil fuel industry narratives.¹⁰⁴

Social data infrastructures can play an essential role in goals to decommodify key goods and services and democratize governance over other regulatory ends too, including those that may result in forms of expanded collective control beyond direct government management. Fostering high quality public data can also support institutional designs that shift power towards community control. Consider recent efforts to impose city-wide community benefit agreements (CBAs) to ensure development plans work for, not against, communities.¹⁰⁵ Comprehensive CBAs call for more direct control and monitoring of investments and production in the covered area. Such agreements become far more powerful and easier to enforce if the community group tasked with overseeing the agreement could easily track investment and procurement in the city via data on permitting, deed registry, and detailed housing.

3. Overcoming The Hurdle of Current Thinking in Law

The problem is that realizing the decommodifying and democratizing regulatory potential of social data infrastructures requires that we think about the datafication of social life rather differently than we do now.

Take, for example, Mobility Data Specification (MDS), Los Angeles's scooter trip data collection scheme managed in partnership with OMF. Los Angeles uses MDS to impose a licensing scheme on e-scooter companies that includes, among other things, enforcing compliance with the Americans with Disabilities Act and implementing equitable scooter distribution across socioeconomically diverse neighborhoods. MDS prompted litigation by the ACLU to shut the program down for constitutional privacy violations.¹⁰⁶ The ACLU's complaint decried the agency's desire to "experiment" with scooter trip data, which it argued had been acquired in violation of the Fourth Amendment.¹⁰⁷

Should the ACLU's appeal be successful at the Ninth Circuit, companies like Lime and Uber will still be able to collect and exploit user-generated trip data. In fact, their right to do so without interference from government oversight will only have been strengthened. But Los Angeles's transit agencies will be constitutionally barred from accessing such data without a warrant. In other

104. OPEN ENVIRONMENTAL DATA PROJECT, <https://www.openenvironmentaldata.org> [<https://perma.cc/67AU-UKPV>].

105. K. Sabeel Rahman & Jocelyn Simonson, *The Institutional Design of Community Control*, 108 CAL. L. REV. 679, 714–19 (2020) (discussing the role that CBAs—"contracts that commit developers to particular benchmarks and mandates"—play in shifting control from large developers to the local community, citing the Oakland Army Base and post-bankruptcy Detroit as two examples).

106. Complaint at 2, *Sanchez v. L.A. Dep't of Transp.*, No. 2:20CV05044, 2021 WL 1220690 (C.D. Cal. Feb. 23, 2021), *appeal filed*, No. 21-55285 (9th Cir. May 25, 2021) ("The Constitution prohibits LADOT from experimenting with the rights of its constituents. The Fourth Amendment strictly limits the warrantless collection of vehicular location information.").

107. *Id.*

words, this account of what is troubling or potentially dangerous about datafying the scooter trips of Angelenos does not reduce the amount of sensitive data available to be used for good or bad. If anything, it leaves the robust private market in location data better off. Moreover, it hamstring the municipal transit agencies' capacity to claim some public use rights in these social data flows, decommmodify transportation services, and ensure private transit providers' compliance with public safety, equity, and accessibility goals.

In my view, the theory underlying the ACLU's case regarding what makes the datafication of social life potentially concerning is deeply flawed.¹⁰⁸ The ACLU's complaint is full of examples of the kinds of illicit, intimate knowledge that might be gleaned about a scooter rider from MDS data, should a sufficiently motivated employee of the Los Angeles Department of Transportation seek to link that dataset—which does not collect information about the identity of riders, unlike e-scooter companies—with a few others. Implicit in these examples is the view that the mere apprehension of a subject by the state, the act of being rendered legible itself, is both wrongful and a constitutional violation.

I share what I take to be the ACLU's deeper view: that social data flows can become a powerful medium of governance and are a potent potential form of social control. But this is exactly what makes social data flows a promising mode of post-managerial oversight that might supplant current marketized forms. Our regulatory theory regarding social data production cannot start and end with the observation that behavioral information represents a form of power. Nor does it serve longer-term goals of decommmodification—and the democratizing reclamation of spheres of life from market control—to decry the existence of this form of power as *prima facie* wrongful.

This view does not help us interrogate whether and under what conditions the *exercise* of such power might be legitimate or not.¹⁰⁹ Once we move past the mere observation of social data's governing potential, we can consider the conditions needed to make the exercise of such power sufficiently transparent, accountable, and democratic.

Such conditions need not be cut wholly from new cloth. First, and most importantly, we ought to advocate and defend a far greater, not fewer, number of public interests over and against private claims of right to social data.¹¹⁰

108. See generally Salomé Viljoen, *Privacy Puzzles: From Privacy to Data Governance* (2023) (unpublished manuscript) (on file with author); Viljoen, *supra* note 85, at 606 n.90 (explaining that collecting faceprints online without an individual's knowledge limits that individual's ability to control her biometrics).

109. See generally Julie E. Cohen, *Doughnut Privacy: A Preliminary Thought Experiment*, in *BEING HUMAN IN THE DIGITAL WORLD* (2023) (Cambridge Univ. Press, forthcoming), <https://ssrn.com/abstract=4374954> [<https://perma.cc/5RMJ-H5T9>] (“This chapter explores the implications of the ‘doughnut’ model of sustainable economic development for efforts to strike the appropriate balance between surveillance and privacy.”).

110. Viljoen, *supra* note 85, at 644–53 (making the conceptual and normative case for many legal interests in data not reducing to private legal rights); Salomé Viljoen, *Data as Property?*, *PHENOMENAL WORLD* (Oct. 16, 2020), <https://phenomenalworld.org/analysis/data-as-property> [<https://perma.cc/9LVM-G42P>]; Jorge L. Contreras, *The False Promise of Health Data Ownership*, 94

Examples of such efforts include expanding data access to gig platform workers via licensing schemes, as proposed by Frank Pasquale and others.¹¹¹ Expanding access can also take the form of greater claims by public research communities over privately held data, such as that of social media companies, to both better study the potential harm arising from such companies and use it to study other issues of public value.¹¹² It may take the form of remittance; as the law currently manages other intangible assets, we can impose time limits on how long private entities may enjoy private usage of data assets before turning them over to stewardship entities (for instance, libraries or the data repositories already maintained by many universities) to sift through, delete information overly sensitive and of little social value, and steward the rest for public use.

We cannot access the collective governance potential of informational flows—nor regulate against the exploitation of such potential by private actors—if private claims of right in such data are granted constitutional protection. Social data is a vital source of public value—or rather, it has the potential to be. However, accessing this public value is foreclosed if private rights to data exploitation become encased in strong individual data rights.

Second, we can build on existing legal efforts to expand public knowledge facilitation, curation, and expertise. Examples of public success like VistA should be amplified and replicated where possible. One recent example is the Food and Drug Administration Amendments Act of 2007 (FDAAA). FDAAA supplemented existing legislation regulating the FDA. It expanded FDA authority to mandate certain high-level data sharing from regulated drugs and devices, develop competency and proof of concept, and foster an ecosystem of civil society and researcher groups who made use of such data. This success was built on to develop more fine-grained and extensive data sharing programs, subject to tiered access control and managed by the National Institutes of Health (NIH) and private consortia universities.¹¹³ Another telling example is the latest

N.Y.U. L. REV. 624, 658–59 (2019) (arguing against property rights in health data as foreclosing many public benefits from access to health data); Mary Fan, *The Right to Benefit From Big Data as a Public Resource*, 96 N.Y.U. L. REV. 1438, 1469–77 (2021) (proposing a right of access to pooled personal data for public purposes); Aziz Z. Huq, *The Public Trust in Data*, 110 GEO. L.J. 333 (2021) (arguing for public trusts in privately-held data).

111. See generally Frank Pasquale, *Licensure as Data Governance*, KNIGHT FIRST AMEND. INST. (Sept. 28, 2021), <https://knightcolumbia.org/content/licensure-as-data-governance> [<https://perma.cc/EX9E-DPYR>]; Dubal, *supra* note 12 (discussing the impact that data extraction and processing have on the workplace, such as privacy and wages); ROGERS, *supra* note 86 (discussing the impact of surveillance and related technologies as remote work grows in popularity).

112. See Christopher J. Morten & Amy Kapczynski, *The Big Data Regulator, Rebooted: Why and How the FDA Can and Should Disclose Confidential Data on Prescription Drugs*, 109 CAL. L. REV. 493, 557 (2021) (“Congress has already acted recently to expand access to certain health data by mandating that the FDA publish approval packages.”); Jathan Sadowski et al., *Everyone Should Decide How Their Digital Data Are Used—Not Just Tech Companies*, 595 NATURE 169, 170 (2021) (“What we face is not simply limited access to proprietary data, but fundamental questions regarding the entire pipeline of how those data arise and where they go.”). See generally Christopher J. Morten et al., *Researcher Access to Social Media Data: Lessons from Clinical Trial Data Sharing*, 38 BERKELEY TECH. L.J. (forthcoming 2024).

113. See generally Morten et al., *supra* note 112.

federal overhaul of disaster planning data, which combines extensive cross-agency coordination and sharing with robust protocols to minimize redundant data generation, including time-bound linking between data sets when needed for timely responses.¹¹⁴ Finally, legislative efforts like the Evidence Act of 2018, which streamlined cross-agency data sharing, can be built out to cover private data sources alongside public ones.¹¹⁵ As agencies build up their competency in acting as coordinators and clearinghouses for public and private sources of social data, their willingness and ability to use such data to inform policy and planning can grow.

Third, we can achieve the legitimate aims of privacy protection through robust public purpose restrictions enforced via both legal and technical controls. Much of what makes informational flows useful as regulatory mechanisms does not implicate individual-level uses of social data. Thus, many regulatory uses of information flows ought to be legally constrained to using information only for “statistical purposes” as defined by Title XIII of the United States Code.¹¹⁶ Of course, certain agencies, such as the FTC or EPA, might also want to retain ability to single out individual actors for enforcement actions, though the standards for such enforcement should be clearly defined and delimited. Such controls not only better index how privacy interests in information are actually implicated, but also provide a terrain for substantive restrictions on data use to be debated and enacted.¹¹⁷

Finally, we ought to widely adopt and apply provisions, like those included in the Fourth Amendment Is Not for Sale Act, that cordons off data sharing among government agencies from use by law enforcement or national security agencies.¹¹⁸ Such firewalls between welfare provision and enforcement are critical to ensuring the inclusion and safety of those best positioned to benefit from decommodified provision. They are also crucial to establishing the trust required to engender sufficient participation in informational flows to generate high quality informational systems.

V

CONCLUSION

Information facilitation and management occupies a central role in both market functioning and the managerialist practices designed to facilitate and

114. See *Reports and Data*, FEMA, (Apr. 21, 2023) <https://www.fema.gov/about/reports-and-data> [<https://perma.cc/2R8V-K7FS>].

115. See TOWARD A 21ST CENTURY NATIONAL DATA INFRASTRUCTURE: MOBILIZING INFORMATION FOR THE COMMON GOOD, NAT’L ACADS. SCIS., ENG’G & MED. 109–34 (Robert M. Groves et al. eds., 2022) (explaining that “collaboration across the public and private sectors will be an important vehicle for the evolution of the infrastructure”).

116. 13 U.S.C. §§ 8, 9.

117. See Viljoen, *supra* note 85, at 641–43 (explaining that datafication can cause social inequality).

118. Fourth Amendment Is Not for Sale Act, S. 1265, 117th Cong. (2021). I do want to note, however, that I do not endorse the provisions in this bill that would prevent government agencies from requesting privately held data.

smooth such functioning. As discussed in Part II, the market machine mechanisms deployed in digital platforms both vex and challenge these practices, exposing contradictions between digital markets and the grounding theories that justify market deference. Yet this contradiction presents not only a regulatory challenge, but an opportunity to consider how informationalism beyond managerialism may be put toward a different regulatory approach and help to realize a different set of allocative goals and governing institutions.

But, as discussed in Part III, the intense informationalism of existing managerial techniques presents both challenges and opportunities. The contradictions of existing regulatory approaches can not only prompt attempt to move *back* to markets and regulatory managerialism—but also open pathways *towards* governance paradigms beyond markets and managerialism. And we can find the seeds of possible alternatives within the intensely informational infrastructures contained within market machine

The informational inputs that sustain market machines, if transposed into settings with different productive logics and more democratically determined goals, may also offer a way around or past managerialism in our regulatory practices. Under current conditions, informationalist practices extract social data for predictive value to help digital platform companies tune prices to their benefit. Yet, under different conditions, similar kinds of social data flows—produced in less extractive conditions—may replace the very price mechanisms they are currently used to skew to the benefit of platforms and the detriment of users. Indeed, non-priced information signals will play an important role in efforts to replace market mechanisms with more democratic alternatives.

As discussed in Part IV, publicly managed data infrastructures can facilitate the decommodification of key goods and services, and provide the means to democratize governance over other regulatory ends. Expanding rights to social data production can empower labor, decommodify housing and healthcare, and expand social ownership and democratic control over more aspects of social and economic life. Fostering high quality public data can also support institutional designs that shift power towards community control.

This is not to dismiss the deep affinities that exist between informationalism and managerialism today. Instead, the aim is to consider where such affinities pull apart and what regulatory endeavors might amplify that discontinuity. The ask is simply to not equate informationalist forms of managerialism for all informationalism, particularly given the necessity of high-quality informational flows for non-marketized governance over a variety of regulatory goals.