

The Regulatory State in the Information Age

Julie E. Cohen*

This Article examines the regulatory state through the lens of evolving political economy, arguing that a significant reconstruction is now underway. The ongoing shift from an industrial mode of development to an informational one has created existential challenges for regulatory models and constructs developed in the context of the industrial economy. Contemporary contests over the substance of regulatory mandates and the shape of regulatory institutions are most usefully understood as moves within a larger struggle to chart a new direction for the regulatory state in the era of informational capitalism. A regulatory state optimized for the information economy must develop rubrics for responding to three problems that have confounded existing regulatory regimes: (1) platform power — the power to link facially separate markets and/or to constrain participation in markets by using technical protocols; (2) infoglut — unmanageably voluminous, mediated information flows that create information overload; and (3) systemic threat — nascent, probabilistically-defined harm to be realized at some point in the future. Additionally, it must develop institutions capable of exercising effective oversight of information-era activities. The information-era regulatory models that have begun to emerge are procedurally informal, mediated by networks of professional and technical expertise that define relevant standards, and financialized. Such models, however, also have tended to be both opaque to external observation and highly prone to capture. New institutional forms that might ensure their legal and political accountability have been slow to develop.

* Mark Cluster Mamolen Professor of Law and Technology, Georgetown Law. Thanks to Bill Buzbee, Dan Ernst, Michael Froomkin, Andrew Glickman, Lisa Heinzerling, Don Langevoort, Anne Joseph O’Connell, Paul Ohm, Eloise Pasachoff, David Vladeck, Lauren Willis, and participants in the *Constitution of Information* symposium for their very helpful comments, and to Ben Hain, Kile Marks and Sean Quinn for research assistance.

INTRODUCTION

Among U.S. legal scholars, there is fairly widespread consensus that administrative law is in crisis but substantially less agreement on the reason why. Perhaps unsurprisingly, administrative law scholars focus primarily on the disintegration of the legal process paradigm that has animated the regulatory state since its inception.¹ Meanwhile, scholars in a variety of other fields, including cyberlaw, telecommunications, information privacy, and finance, have argued that regulatory processes have failed to respond — and perhaps cannot in their nature respond adequately — to the regulatory problems created by information markets and networked information and communications technologies.²

This Article examines the regulatory state through the lens of evolving political economy, arguing that a significant reconstruction is now underway. The design of regulatory institutions reflects prevailing legal wisdom about fair and effective process, but it also responds — and indeed, is designed to respond — to problems created by prevailing modes of economic production and resulting alignments of economic and political power. The institutions that we now have were designed around the regulatory problems and competencies of an era in which industrialism was the principal mode of development. The ongoing shift from an industrial mode of development to an informational one,

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- 1 For good summaries, see Daniel A. Farber & Anne Joseph O'Connell, *The Lost World of Administrative Law*, 92 TEX. L. REV. 1137 (2014); Edward Rubin, *It's Time to Make the Administrative Procedure Act Administrative*, 89 CORNELL L. REV. 95 (2003); and William H. Simon, *The Organizational Premises of Administrative Law*, 78 LAW & CONTEMP. PROBS. 61 (2015); see also Kenneth A. Bamberger, *Regulation as Delegation: Private Firms, Decisionmaking, and Accountability in the Administrative State*, 56 DUKE L.J. 377 (2006).
 - 2 Particularly among scholars of financial law, the practical and political difficulties of regulating markets for products that are themselves purely informational have been the organizing problems for the last decade. See generally, e.g., Chris Brummer, *Disruptive Technology and Securities Regulation*, 84 FORDHAM L. REV. 977 (2015); Ronald J. Gilson & Reinier Kraakman, *Market Efficiency After the Financial Crisis: It's Still a Matter of Information Costs*, 100 VA. L. REV. 313 (2014); Henry T.C. Hu, *Disclosure Universes and Modes of Regulation: Banks, Innovation, and Divergent Regulatory Quests*, 31 YALE J. ON REG. 565 (2014). On the breakdown of regulatory models in information privacy and telecommunications, respectively, see generally Paul Ohm, *Broken Promises of Privacy: Responding to the Surprising Failure of Anonymization*, 57 UCLA L. REV. 1701 (2010); and Philip J. Weiser, *The Future of Internet Regulation*, 43 U.C. DAVIS L. REV. 529 (2009).

and to an informationalized way of understanding development's harms, has created existential challenges for regulatory models and constructs developed in the context of the industrial economy. Contemporary contests over the substance of regulatory mandates and the shape of regulatory institutions are most usefully understood as moves within a larger struggle to chart a new direction for the regulatory state in the era of informational capitalism.

Those are large claims, and so some table-setting observations on the relationship between industrialism and informationalism are in order. My intent is not to suggest that regulation of industrial-era processes and markets is no longer important or that the corresponding regulatory constructs are necessarily obsolete. Institutional changes are slow and piecemeal, and shifts in political economy can span decades or even centuries. More generally, the relationship between industrialism and informationalism is not sequential, but rather cumulative, and the emergence of informationalism as a mode of economic development is powerfully shaped by its articulation within capitalist modes of production.³

In referring to the shift from industrialism to informationalism, then, I do not mean to make rapturous (or apocalyptic) pronouncements about the end of industry. I do mean to indicate two kinds of fundamental transformations. First is a movement away from an economy oriented principally toward manufacturing and related activities toward one oriented principally toward the production, accumulation and processing of information. In an information economy, the mass model of production that emerged in the industrial era is itself increasingly redirected toward development of intellectual and informational goods and services, production and distribution of consumer information technologies, and ownership of service-delivery enterprises.⁴ Second is a transformation in the conduct of even traditional industrial activity. In an information economy, information technology assumes an increasingly prominent role in the control of industrial production and in the management of all kinds of enterprises.⁵

Legal institutions play important roles in those changes, and not as fixed, Archimedean points around which modes of economic development shift and cohere. They are arenas in which interested parties struggle to define what constitutes "normal" economic activity and what qualifies as actual or potential harm, and they are also artifacts whose form and function are not preordained.

3 See 1 MANUEL CASTELLS, *THE INFORMATION AGE: THE RISE OF THE NETWORK SOCIETY* 14-18 (1996); DAN SCHILLER, *HOW TO THINK ABOUT INFORMATION* 3-35 (2007).

4 See generally DANIEL BELL, *THE COMING OF POST-INDUSTRIAL SOCIETY: A VENTURE IN SOCIAL FORECASTING* (1973); SCHILLER, *supra* note 3.

5 See generally JAMES R. BENIGER, *THE CONTROL REVOLUTION: TECHNOLOGICAL AND ECONOMIC ORIGINS OF THE INFORMATION SOCIETY* (1986).

Consider the following example: In September 2015, the public learned that European automotive giant Volkswagen had designed the emissions-control software for its diesel engines to comply with prescribed emissions limits only when the software detected that a vehicle was being subjected to emissions testing. At all other times, the software employed a “defeat device” to disable emissions-control functionality, resulting in emissions that vastly exceeded applicable regulatory limits. The scandal resulted in the resignation of Volkswagen’s CEO, a precipitous drop in the company’s stock value, and a wave of fines and recalls spanning three continents.⁶

The Volkswagen scandal neatly encapsulates the tensions and contradictions in the shift to informationalism described above. From one perspective, the automobile industry is a paradigmatic industrial-era formation. In fact, computer software resides at the core of the modern automobile and regulates nearly everything about its performance. Modern regimes of emissions regulation, meanwhile, are themselves the product of an information-era realignment in societal understanding of the harms flowing from economic development. That realignment began in the mid-twentieth century with the recognition of toxic torts and systemic environmental degradation and continued in the 1980s and 1990s as new methods of financial trading and new derivative financial instruments introduced unprecedented volatility into financial markets.⁷ Even so, the story of the defeat device revealed a regulatory apparatus pushed beyond its capabilities.

The striking success of Volkswagen’s defeat device — which escaped detection for six years and ultimately was discovered not by regulators but by independent researchers — illustrates a large and troubling mismatch between regulatory goals and regulatory methods. Traditionally, emissions regulators have been concerned with setting and enforcing performance targets, not with conducting software audits. The now-undeniable need to move into the software audit business in turn raises unfamiliar methodological and procedural problems. If regulation of automotive emissions — and thousands of other activities ranging from loan pricing to derivatives trading to gene therapy to insurance risk pooling to electronic voting — is to be effective, policymakers

6 See Coral Davenport & Jack Ewing, *VW Is Said to Cheat on Diesel Emissions; U.S. to Order Big Recall*, N.Y. TIMES, Sept. 19, 2015, at A1; Melissa Eddy, *Volkswagen to Recall 8.5 Million Vehicles in Europe*, N.Y. TIMES, Oct. 16, 2015, at B1; Choe Sang-Hun, *South Korea Fines VW and Orders Recall Over Emissions Scandal*, N.Y. TIMES, Nov. 27, 2015, at B3.

7 See generally RACHEL CARSON, *SILENT SPRING* (1962); WALTER B. WRISTON, *RISK AND OTHER FOUR-LETTER WORDS* 135 (1986) (“The fact is that banking is a branch of the information business.”).

must devise ways of enabling regulators to evaluate algorithmically-embedded controls that may themselves have been designed to detect and evade oversight.

The Volkswagen scandal also illustrates the pervasive institutional influence of economic power — and shows that influence operating on levels that are both political and ideological. In the weeks after the news broke, press coverage documented Volkswagen's systematic efforts to stave off more intrusive regulation in the European Union and probed its close ties with the private European emissions testing laboratories that act as regulatory surrogates.⁸ Such efforts and ties are not unusual, however. Scholars and policymakers have long recognized that regulated industries are intensely interested in matters of regulatory capacity and institutional design. More noteworthy are Volkswagen's apparent justifications for designing and installing the defeat device: it was deemed necessary to enable improved engine performance, which in turn enabled Volkswagen to maintain and burnish its glowing reputation as an innovator in the field of automotive design.⁹ Also noteworthy is European regulators' choice to devolve primary responsibility for emissions testing to private entities that certify compliance. The themes of innovative flexibility and privatized oversight resonate powerfully with a well-known, neoliberal antiregulatory narrative that has gained increasing traction as the shift to informationalism has gathered speed. For the last several decades, advocacy emanating from Wall Street and Silicon Valley has pushed for deregulation and devolution of governance to the private sector, invoking asserted imperatives relating not only to market liberty but also and more fundamentally to innovation and economic growth. The particular formulations advanced often are more accurately characterized as capital's imperatives, and yet the intertwined themes of liberty, innovation, and growth have proved extraordinarily powerful in structuring public debate about regulatory goals and methods.

Part I begins to unravel the challenge of information-era regulation by identifying three important areas of disconnect between information-era activities and industrial-era regulatory constructs.¹⁰ Generally speaking,

8 See Danny Hakim & Graham Bowley, *VW Scandal Exposes Cozy Ties in Europe's New Car Tests*, N.Y. TIMES, Oct. 15, 2015, at B1; Andrew Higgins, *Volkswagen Scandal Highlights European Stalling on New Emissions Tests*, N.Y. TIMES, Sept. 29, 2015, at B1.

9 See Davenport & Ewing, *supra* note 6; *Volkswagen Group to Reduce CO2 Emissions to 95 g/km by 2020*, VOLKSWAGEN (Mar. 4, 2013), http://www.volkswagenag.com/content/vwcorp/info_center/en/news/2013/03/CO2.html; see also Craig Smith, *The Problem with Those Who Cheat*, FIN. TIMES, Oct. 11, 2015, <http://www.ft.com/cms/s/2/32689e6c-6c3e-11e5-8171-ba1968cf791a.html>.

10 This Article focuses solely on economic regulation. It does not directly consider taxation, government benefits, or policing and national security, although the

industrial-era regulatory mandates rely on concepts of market power and market distortion that presume well-defined industries and ascertainable markets and choices and/or posit discrete harms amenable to targeted regulatory responses. The ongoing shift to an information economy has disrupted traditional approaches to defining both markets and harms, making it more difficult to articulate compelling accounts of what precisely should trigger compliance obligations, enforcement actions, and other forms of regulatory oversight. A regulatory state optimized for the information economy must develop rubrics for responding effectively to three problems that have confounded existing regulatory regimes. First, it must develop an analytically sound conception of *platform power* — the power to link facially separate markets and/or to constrain participation in markets by using technical protocols. Second, it must devise effective strategies for counteracting *infoglut* — unmanageably voluminous, mediated information flows that create information overload. Third, it must develop coherent and publicly accountable methods for identifying, describing, and responding to *systemic threats* — nascent, probabilistically-defined harms to be realized at some point in the future.

Part II explores the connections between information-era regulatory problems and ongoing changes in the design of regulatory institutions. As is now widely recognized, much current regulatory activity follows nontraditional institutional models. Such activity may blend policymaking and enforcement, involve public-private partnerships in rulemaking and standard setting, and/or enlist expert auditors in evaluating compliance. Nontraditional regulatory models are particularly prominent in areas such as privacy, telecommunications, health, food and drug regulation, and finance, all of which are information-intensive. This is (or should be) unsurprising. As we have just seen, auditing a compliance algorithm to detect embedded cheats is a different and more difficult task than simply assessing engine outputs. Similarly, auditing a credit rating algorithm, interrogating the health implications of a new food additive, or evaluating the competitive implications of a dominant software firm's acquisition of an information aggregator is a different and more difficult task than evaluating a proposed merger between two grocery chains or inspecting a factory assembly line. As Part II explains, the information-era regulatory models that have begun to emerge are procedurally informal, mediated by networks of professional and technical expertise that define relevant standards,

analysis it offers resonates with important work now being done in the last of those domains. See Barry Friedman & Maria Ponomarenko, *Democratic Policing*, 90 N.Y.U. L. REV. 1827 (2015); Christopher Slobogin, *Panvasive Surveillance, Political Process Theory, and the Nondelegation Doctrine*, 102 GEO. L.J. 1721 (2014).

and financialized. Theoretically, at least some of those attributes may make the new models better suited to address the information-era problems described in Part I. In reality, institutional disruption has provided new points of entry for power. Emerging, nontraditional regulatory models have tended to be both opaque to external observation and highly prone to capture. New institutional forms that might ensure their legal and political accountability have been slow to develop.

I. THE LOGIC OF REGULATORY CONSTRUCTS

Generally speaking, economic regulation in the era of industrial capitalism has had two principal concerns: facilitating the emergence and preservation of market structures that enable fair competition and preventing harms to the public health and safety. Where market structure is concerned, U.S. regulators and legal thinkers are accustomed to defining impermissible results in terms of concepts like market power, discrimination, and deception — benchmarks that are relatively easy to assess when markets are distinctly ascertainable, goods have fixed properties, and information about consumers is limited. In the interlinked markets constituted by contemporary information processing practices, none of those things is true. Markets are fluid and interconnected, information services sit within complex media ecologies, and networked platforms and infrastructures create complex interdependencies and path dependencies. With respect to harms, information technologies have given scientists and policymakers tools for conceptualizing and modeling systemic threats. At the same time, however, the displacement of preventive regulation into the realm of models and predictions complicates, and unavoidably politicizes, the task of addressing those threats.

A. From Market Power to Platform Power

A core concern of economic regulation is identifying the circumstances in which economic power requires oversight. Power in markets for goods or services can translate into predatory pricing or barriers to competitive entry, while power embedded in the structure of particular distribution channels or relationships can facilitate other types of inefficient or normatively undesirable behavior. Markets for information-related goods and services introduce bewildering new variations on these themes. Understanding economic power and its abuses in the era of informational capitalism requires discussions about the new patterns of intermediation and disintermediation that information platforms enable, and about the complexity and opacity of information-related goods and services.

Some regulatory schemes are concerned with the illegal acquisition and maintenance of market power. This group includes most notably the antitrust laws but also other, more specific regimes. For example, the Federal Trade Commission (FTC)'s unfair and deceptive acts and practices (UDAAP) authority is defined by reference to practices that create structural power imbalances in consumer markets under the Commission's jurisdiction.¹¹ Both antitrust authority and UDAAP authority presume the ability to define markets in the first instance, and both also presume the ability to isolate discrete practices (in antitrust thinking, typically higher prices) that harm consumers in direct and observable ways. Finally, they traditionally have presumed that the ability to tie separate markets together is both rare and suspect.

Networked information markets disrupt conventional understandings of market power and market harm. An early iteration of the conceptual difficulties posed by networked markets was the antitrust litigation against Microsoft Corporation for bundling the Internet Explorer browser with its operating system. Microsoft's software licenses with its original equipment manufacturers (OEMs) required that personal computers be shipped with Internet Explorer preinstalled.¹² Competing browser manufacturers argued that given Microsoft's undisputed dominance in the personal computing market, that requirement created unfair barriers to entry. From the standpoint of antitrust doctrine formulated for the industrial era, however, the market for browsers was unusual. To begin with, it was hard to discover a price advantage that accrued to Microsoft because the leading competitors offered their software free of charge. Moreover, Microsoft also asserted copyrights in its operating system and browser software, and traditions of rightholder control over licensing afforded a powerful countervailing narrative to competitors' complaints. Finally, and importantly, although Microsoft's licenses prohibited OEMs from removing Internet Explorer and its desktop icons, the licenses did not prohibit either OEMs or consumers from installing and using competing browsers.¹³ In the traditional language of antitrust law, they were vertical restrictions rather than horizontal restrictions, and therefore less suspect.

As those who built and prosecuted the Microsoft case recognized, however, platform markets and platform-based media ecologies can create powerful

11 See 15 U.S.C. § 45(n):

The Commission shall have no authority . . . to declare unlawful an act or practice on the grounds that such an act or practice is unfair unless the act or practice causes or is likely to cause substantial injury to consumers which is not reasonably avoidable by consumers themselves and not outweighed by countervailing benefits to consumers or to competition.

12 See *United States v. Microsoft Corp.*, 253 F.3d 34, 45 (D.C. Cir. 2001).

13 See *id.* at 64.

path-dependencies. Although Microsoft did not prohibit OEMs or consumers from using competing browsers, it carefully crafted installation pathways to steer them toward Internet Explorer. That design decision effectively restricted both user choice and competitive entry.¹⁴ In today's mobile computing markets, Google, Facebook, and Apple have built integrated systems that offer users a wide variety of information services under one brand, and that simultaneously enable comprehensive control over advertising markets and over the collection of user personal information. Most of those services are available to consumers at no direct financial cost, but that does not make them costless. Loss of control over personal information creates a variety of near-term and longer-term risks that are difficult to understand and value.¹⁵ Online retailer Amazon.com has expanded into seemingly every conceivable consumer market, and has become embroiled in highly publicized disputes with various book publishers regarding its asserted attempts to dictate terms of sale.¹⁶ The doctrinal landscape has grown still more complicated with the addition of counterclaims about trade secrecy and free speech interests in the operation of search algorithms.¹⁷

The antitrust understanding of these and related issues is still rudimentary. So, for example, although the government ultimately obtained a judgment against Microsoft requiring it to unbundle its licensed products, the judgment issued ten years after the complaint had been filed, and the proceedings lumbered to their conclusion without the benefit of a coherent framework for determining harm.¹⁸ While the litigation was underway, the Department

14 See *id.*; Robert J. Levinson, R. Craig Romaine & Steven C. Salop, *The Flawed Fragmentation Critique of Structural Remedies in the Microsoft Case*, 46 ANTITRUST BULL. 135 (2001).

15 Alessandro Acquisti, Curtis Taylor & Liad Wagman, *The Economics of Privacy* (Working Paper, 2016), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2580411.

16 See Melissa Eddy, *German Publishers Seek Amazon Inquiry*, N.Y. TIMES, June 25, 2014, at B2; David Streitfeld, *Accusing Amazon of Antitrust Violations, Authors and Booksellers Demand Inquiry*, N.Y. TIMES, July 14, 2015, at B1.

17 See, e.g., *Viacom Int'l Inc. v. Youtube Inc.*, 253 F.R.D. 256 (S.D.N.Y. 2008) (holding YouTube's search function source code a protected trade secret); *Langdon v. Google, Inc.*, 474 F. Supp. 2d 622 (D. Del. 2007) (denying injunctive relief on the ground that it would violate Google's first amendment rights); *Search King Inc. v. Google Tech., Inc.*, No. CIV-02-1457-M, 2003 WL 21464568, at *2 (W.D. Okla. May 27, 2003) (holding search rankings to be speech protected by the First Amendment).

18 See *United States v. Microsoft Corp.*, 159 F.R.D. 318 (D.D.C.), *rev'd*, 56 F.3d 1448 (D.C. Cir. 1995), *on remand*, 87 F. Supp. 2d 30 (D.D.C. 2000), and 97

of Justice revised its guidelines for antitrust investigations in intellectual property-related matters, but the resulting document does little to unpack the questions about the power of dominant platforms that had prompted the litigation in the first place.¹⁹ Legal scholars have identified and explored a variety of discrete platform-related issues, but there has been no systematic attempt to formulate a definition of platform power or to develop a methodology for determining when platform-related advantages ripen into antitrust injuries or UDAAP violations.²⁰

Other regulatory schemes address circumstances in which high fixed costs make monopoly provision of certain services more efficient. Public utility regulation and common carrier regulation are the two principal examples. It would be inefficient, for example, to install multiple sets of water pipes or electric cables to residential neighborhoods, or to build parallel sets of railroad tracks to move freight around the country. Instead, special regulatory regimes have emerged that take a different approach to the question of market structure. Such regimes typically incorporate both rate-setting restrictions and nondiscrimination obligations.

Whether and when information platforms should be subject to common-carrier or public-utility obligations is a controversial topic. In the United States, the question now headed to both the courts and Congress concerns the Federal Communication Commission (FCC)'s ability to recharacterize Internet access providers as common carriers under the existing, substantially

F. Supp. 2d 59 (D.D.C. 2000), *aff'd in part, rev'd in part, and vacated*, 253 F.3d 34 (D.C. Cir. 2001), *cert. denied*, 534 U.S. 952 (2001), *on remand*, 231 F. Supp. 2d 144 (D.D.C. 2002), *aff'd sub nom. Massachusetts v. Microsoft*, 373 F.3d 1199 (D.C. Cir. 2004).

19 U.S. DEP'T OF JUSTICE AND FEDERAL TRADE COMM'N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (1995), *reprinted in* 4 TRADE REG. REP. (CCH) ¶ 13, 132 (1995); *see* Robert Pitofsky, *Challenges of the New Economy: Issues at the Intersection of Antitrust and Intellectual Property*, 68 ANTITRUST L.J. 913 (2001).

20 *See, e.g.*, Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149 (2008); James Grimmelman, *Speech Engines*, 98 MINN. L. REV. 868 (2014); Howard A. Shelanski, *Information, Innovation, and Competition Policy for the Internet*, 161 U. PA. L. REV. 1663 (2013); Philip J. Weiser, *The Internet, Innovation, and Intellectual Property Policy*, 103 COLUM. L. REV. 534 (2003). A promising start at thinking through the intersections between antitrust and social justice issues more generally is Jonathan B. Baker & Steven C. Salop, *Antitrust, Competition Policy, and Inequality*, 104 GEO. L.J. ONLINE 1 (2015).

obsolete statutory framework for regulating telecommunications.²¹ More fundamentally, however, the debate over “net neutrality” — the obligation to “treat all content, sites, and platforms equally”²² — raises questions about the best way of adapting industrial-era notions of common carriage and/or public utility provision to the networked information age, and neither rubric fully encompasses all of the interests and issues at stake. The telephone-based communications paradigm is too narrow to encompass all of the different activities and functions that digital networked communications enable, and different actors have very different views about what ought to be considered essential services subject to common carriage or public provision obligations.

The net neutrality debate also raises more general questions about the extent to which communications regulation should incorporate public access and social justice considerations. Notably, each side in the debate has attempted to claim the mantle of innovative liberty and economic growth. Large telecommunications companies argue that freedom to experiment with high-bandwidth delivery of premium services will foster economically productive innovation, while supporters of a net-neutrality mandate, including Internet companies, digital civil liberties groups, and consumer advocates, argue that price discrimination within closed platforms will threaten both widely distributed innovation and freedom of expression. From the business perspective, the ability to discriminate among different types of traffic may also make it easier for providers of networked information services to exert end-to-end control over the collection of consumer personal information, which is an increasingly valuable economic resource.²³ Some critics contend, however, that the proper focus of net-neutrality debates should not be innovation but rather equality of access.²⁴ Arguably, “net neutrality” is itself a neoliberally-inflected regulatory conception to the extent that it denotes reliance on market forces operating on an intraplatform basis to produce services of adequate variety and quality. Consider, for example, all of the information services that enable individual

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- 21 See Protecting and Promoting the Open Internet, 80 Fed. Reg. 19,737 (Apr. 13, 2015). The last major amendments to the statutory framework governing “telecommunications” were made in 1996, a year in which Internet services were understood as ancillary information services rather than as central components of modern communications architecture and policy. Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996), *codified as amended* in scattered sections of 18 U.S.C. and 47 U.S.C.
- 22 See *Network Neutrality FAQ*, TIM WU, http://www.timwu.org/network_neutrality.html (last visited Oct. 26, 2015).
- 23 See generally Julie E. Cohen, *The Biopolitical Public Domain* (Working Paper, 2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2666570.
- 24 See Olivier Sylvain, *Network Equality*, 67 HASTINGS L.J. 443 (2016).

consumers to seek employment, housing, and education — services that privileged consumers take for granted, but that less privileged consumers struggle to obtain. At least given current capabilities, many such services require higher bandwidth or more versatile platforms to be delivered effectively, and many lower-income consumers in marginal communities lack access.²⁵

Here again, then, the real questions concern optimal accountability for platform power. Defining the appropriate regulatory regime is not a matter of choosing government intervention versus nonintervention in networked communications markets. Even as the telecommunications industry seeks to defeat network-neutrality mandates, it benefits from other regulatory actions — for example, public auctions that allocate valuable blocks of wireless spectrum to commercial service providers.²⁶ Like so many other regulatory struggles, those over network neutrality and network access are distributional in character. They concern whether regulatory institutions should be designed to promote enhanced public accountability or whether instead they should take on configurations more responsive to informational capitalism's needs and goals.

In at least some instances, competition and data protection regulators in the European Union have engaged with information platforms and platform power more aggressively. Over the past two decades, competition regulators have initiated several investigations of Microsoft and Google for alleged anticompetitive actions.²⁷ Data protection regulators, although willing to

25 *See id.*; PEW RESEARCH CTR., THE SMARTPHONE DIFFERENCE 16-19 (2015), <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015>; Linnet Taylor, *Data Subjects or Data Citizens? Addressing the Global Regulatory Challenge of Big Data*, in FREEDOM AND PROPERTY OF INFORMATION: THE PHILOSOPHY OF LAW MEETS THE PHILOSOPHY OF TECHNOLOGY (Mireille Hildebrandt & Bibi van den Berg eds., forthcoming 2016).

26 For a review of the history of spectrum allocation in the United States and discussion of a recent shift toward open wireless spectrum allocation in certain key markets, see Yochai Benkler, *Open Wireless vs. Licensed Spectrum: Evidence from Market Adoption*, 26 HARV. J.L. & TECH. 69 (2012).

27 *See* Press Release, Eur. Comm'n, Antitrust: Commission Sends Statement of Objections to Google on Comparison Shopping Service; Opens Separate Formal Investigation on Android (Apr. 15, 2015), http://europa.eu/rapid/press-release_IP-15-4780_en.htm; Press Release, Eur. Comm'n, Antitrust: Commission Probes Allegations of Antitrust Violations by Google (Nov. 30, 2010), http://europa.eu/rapid/press-release_IP-10-1624_en.htm; Press Release, Eur. Comm'n, Commission Initiates Additional Proceedings Against Microsoft (Aug. 30, 2001), http://europa.eu/rapid/press-release_IP-01-1232_en.htm?locale=en; Press Release, Eur. Comm'n, Commission Opens Proceedings Against Microsoft's Alleged

experiment with coregulation and to allow for consumer consent to data processing, have steadfastly insisted that guarantees of transparency and purpose limitation should be meaningful and that consumer consent has limits.²⁸ The European stance on network neutrality is more complicated. European regulators generally have been inclined to view Internet service as a type of public utility, but the most recent intragovernmental agreement on key principles of proposed net neutrality regulation would exempt both certain high-bandwidth “specialised services” such as Internet TV and so called “zero-rating” schemes deployed by European Internet providers to privilege other high-bandwidth services licensed to access providers.²⁹

In U.S. legal and policy discussions, to offer European regulatory actions as valid alternative models in any context is to risk vehement and at times nearly unhinged ridicule.³⁰ In addition to arguing that the European model disfavors

Discriminatory Licensing and Refusal to Supply Software Information (Aug. 3, 2000), http://europa.eu/rapid/press-release_IP-00-906_en.htm?locale=en.

- 28 See Eur. Comm’n, Article 29 Data Protection Working Party, Opinion 03/2013 on Purpose Limitation, WP203 (Apr. 2, 2013); Eur. Comm’n, Article 29 Data Protection Working Party, Opinion 15/2011 on the Definition of Consent, WP187 (July 13, 2011); Francesca Bignami, *From Expert Administration to Accountability Network: A New Paradigm for Comparative Administrative Law*, 59 AM. J. COMP. L. 859 (2011); Dennis Hirsch, *Going Dutch? Collaborative Dutch Privacy Regulation and the Lessons It Holds for U.S. Privacy Law*, 2013 MICH. ST. L. REV. 83. *But see* Bert-Jaap Koops, *The Trouble with European Data Protection Law*, 4 INT’L DATA PRIVACY L. 250 (2014) (arguing that the European data protection paradigm is ineffective and destined to failure).
- 29 *Roaming Charges and Open Internet: Questions and Answers*, EUR. COMM’N (June 30, 2015), http://europa.eu/rapid/press-release_MEMO-15-5275_en.htm. A zero-rated app’s data usage does not count against a consumer’s billed data allowance. This arrangement incentivizes consumers to use zero-rated apps more heavily than competing apps. An Internet provider may grant a zero-rating designation in exchange for access to data about users’ in-app behavior or other favorable terms.
- 30 See, e.g., Mike Masnick, *EU Moves to Create Internet Fast Lanes, Pretends It’s Net Neutrality by Redefining Basic Words*, TECHDIRT (June 30, 2015), <https://www.techdirt.com/blog/netneutrality/articles/20150630/06594931497/eu-moves-to-create-internet-fast-lanes-pretends-net-neutrality-redefining-basic-words.shtml>; Adam Thierer, *The Problem with Obama’s ‘Let’s Be More Like Europe’ Privacy Plan*, FORBES, Feb. 23, 2012, <http://www.forbes.com/sites/adamthierer/2012/02/23/the-problem-with-obamas-lets-be-more-like-europe-privacy-plan/3/>; Jane Yakowitz, *More Crap from the E.U.*, INFO/LAW (Jan. 25, 2012), <https://blogs.law.harvard.edu/infolaw/2012/01/25/more-crap-from-the-e-u/>.

innovation, critics charge that European regulators really are attempting to institute a regime of economic protectionism that would enable European businesses to compete with American Internet giants.³¹ The historical U.S. antipathy to European-style bureaucracy does not fully explain the level of contemporary vitriol, levied indiscriminately against actions that appear to privilege dominant information providers and those that seek to restrain them.³² A more accurate explanation simply may be that the behavior of European regulators contradicts the reigning neoliberal account of optimal regulatory behavior. Protectionism can flow from underregulation as well as from overregulation, however. It is true that European regulators make no secret of their desire to see domestic businesses gain a competitive foothold, but it is also true that U.S. stances on antitrust and data protection have permitted a race to the bottom in the accumulation of platform power and that the relative U.S. laxity has disadvantaged European Internet businesses.³³

In attempting to articulate a more demanding conception of permissible market behavior, European regulators at least are contending more directly (though whether or not effectively remains to be seen) with the various kinds of external costs that platform power can create. Reinvigorating antitrust and competition law in the era of informational capitalism, however, requires a willingness to rethink major assumptions about the causes and effects of power in information markets. That project demands both more careful investigation of the kinds of power that information platforms wield and more open-minded discussion of corrective measures.

B. From Market Distortion to Infoglut

Regulatory mandates that relate to market structure also include anti-distortion rules — i.e., rules intended to ensure that flows of information about the

31 See, e.g., Mike Masnick, *EU Official Says It's Time to Harm American Companies Via Regulations . . . Hours Later Antitrust Charges Against Google Announced*, TECHDIRT (Apr. 14, 2015), <https://www.techdirt.com/articles/20150414/13235130658/eu-official-says-time-to-harm-american-internet-companies-via-regulations-hours-later-antitrust-charges-against-google-announced.shtml>; Adam Thierer, *How Attitudes About Risk and Failure Affect Innovation on Either Side of the Atlantic*, THE TECHNOLOGY LIBERATION FRONT (June 19, 2015), <http://techliberation.com/2015/06/19/how-attitudes-about-risk-failure-affect-innovation-on-either-side-of-the-atlantic/>.

32 See generally DANIEL ERNST, *TOCQUEVILLE'S NIGHTMARE* (2014).

33 See, e.g., Tom Fairless, *EU Digital Chief Urges Regulation to Nurture European Internet Platforms*, WALL ST. J., Apr. 14, 2015, <http://www.wsj.com/articles/eu-digital-chief-urges-regulation-to-nurture-european-internet-platforms-1429009201>.

goods, services, and capabilities on offer are accurate and unbiased. Some anti-distortion rules are information-forcing; rules in that category include those requiring disclosure of material information to consumers or investors. Other anti-distortion rules are information-blocking; such rules include antidiscrimination, false advertising, and insider trading prohibitions. Both information-forcing and information-blocking rules are premised on the assumptions that information is scarce and costly to obtain and convey, and that regulatory mandates therefore can produce meaningful changes in the nature and quality of information available to market participants. Information-forcing rules additionally presume that consumers and investors have the motivation and cognitive capacity to benefit from required disclosures. The difficulty currently confronting regulators is that under contemporary conditions of infoglut — of unmanageable, mediated information flows leading to information overload³⁴ — none of those assumptions is right. To achieve meaningful anti-distortion regulation under conditions of infoglut, a different set of foundational premises is needed.

The rationales behind information-forcing and information-blocking rules are straightforward. According to standard microeconomic theory, transactions between willing buyers and sellers generally will produce prices that accurately reflect the characteristics of goods and services, including any nonprice terms that meaningfully affect the quality of the good or experience. Sometimes, however, goods and services may have latent, complex or highly technical characteristics that consumers cannot fully understand or value accurately. In other cases, power imbalances or other structural imbalances may undercut or frustrate efforts to obtain more comprehensive and accurate information.³⁵ Disclosure mandates represent attempts to correct for market failures by closing information gaps. Examples of such mandates include food and drug labeling requirements and truth in lending rules. Other kinds of information flows reflect or enable systematic bias or favoritism that society views as normatively undesirable. For example, discrimination in housing, lending, and employment violates foundational commitments to equal opportunity, and insider trading and false advertising undermine confidence in the overall fairness of markets. For these and related reasons, modern systems of economic regulation typically include numerous rules targeting the information that facilitates the unwanted conduct.

34 MARK ANDREJEVIC, *INFOGLUT: HOW TOO MUCH INFORMATION IS CHANGING THE WAY WE THINK AND KNOW* 2-3 (2013); *see also* ELI PARISER, *THE FILTER BUBBLE: WHAT THE INTERNET IS HIDING FROM YOU* (2011).

35 *See generally* Shlomit Azgad-Tromer, *The Case for Consumer-Oriented Corporate Governance, Accountability, and Disclosure*, 17 U. PA. J. BUS. L. 227 (2014).

Whether the assumptions underlying the standard economic explanations ever were true is an interesting question that is beyond the scope of this Article;³⁶ under conditions of infoglut, however, they fail comprehensively. Infoglut, or information overload, results from “an unimaginably unmanageable flow of mediated information . . . available to anyone with Internet access.”³⁷ As Mark Andrejevic explains, infoglut confounds our most deeply rooted instincts about the role of information in a democratic society. Those instincts “took shape during an era of relative information scarcity,” in which many defining political battles “revolve[d] around issues of scarcity and the restriction of access to information.”³⁸ The political and epistemological dilemmas of infoglut flow instead from abundance. Techniques of critique and deconstruction increasingly become tools of the powerful, and sophisticated appeals to emotion and ingrained instinct readily overshadow reasoned argument. For example,

[t]he rejoinder to critique is not the attempt to reassert a counter-narrative about, say, the scientific consensus around global warming, but to cast doubt on any narrative’s attempt to claim dominance: all so-called experts are biased, any account partial, all conclusions the result of an arbitrary and premature closure of the debate.³⁹

Information abundance also enables new types of power asymmetries that revolve around differential access to data and to the ability to capture, store, and process it on a massive scale.⁴⁰ Under conditions of infoglut, the problem is not scarcity but rather the need for new ways of cutting through the clutter, and the re-siting of power within platforms, databases, and algorithms means that meaning is easily manipulated.

From a regulatory perspective, the problem with infoglut is that it makes information-forcing rules easy to manipulate and information-blocking rules easy to evade. Consider first the problem of how to conduct meaningful antidiscrimination regulation and enforcement under conditions of infoglut. To enforce existing antidiscrimination laws effectively, the various agencies with enforcement authority need the ability to detect and prove discrimination, yet that task is increasingly difficult when decisions about lending, employment, and housing are made via criteria deeply embedded in complex algorithms used to detect patterns in masses of data. Markers for protected class membership

36 For discussion, see *id.*; and Alon Brav & J.B. Heaton, *Market Indeterminacy*, 28 J. Corp. L. 517 (2003).

37 ANDREJEVIC, *supra* note 34, at 2-3.

38 *Id.* at 9-10.

39 *Id.* at 12.

40 *See generally id.* at 15-18.

can be inferred with relative ease and near-impunity from other, seemingly neutral data, and data-intensive methods seem naturally to support arguments about legitimate business justification that can be used to overcome a prima facie case of disparate treatment or disparate impact.⁴¹

In an era when decision-making is mediated comprehensively by so-called “big data,” regulators will have to contend with the methods by which regulated decisions are reached — i.e., with the algorithm as an instrumentality for conducting (regulated) activity. In general, the existing regulatory toolkit is poorly adapted for scrutinizing algorithmic models. One rudimentary gesture toward algorithmic accountability is the Federal Reserve’s Regulation B, which lists criteria for the Consumer Financial Protection Bureau (CFPB) to use in determining whether credit scoring systems are “empirically derived [and] demonstrably and statistically sound.”⁴² The list relies heavily on “accepted statistical principles and methodology,” but leaves unexplained what those principles and methods might be and how they ought to translate into contexts involving automated, predictive algorithms with artificial intelligence components.

Infoglut also impairs the ability to conduct effective consumer protection regulation. Consumer protection regulation typically involves both information-forcing and information-blocking strategies. Regulators seek both to require disclosure of material information about quality and other nonprice terms and to prevent marketing practices that are deceptive or that prey upon vulnerable populations. The increasing amounts of information associated with even basic consumer products can be bewildering, however.⁴³ In markets for information-related goods and services, consumer awareness is easy to manipulate more directly, and the goods and services frequently are amenable to versioning in ways that embed material nonprice terms within price discrimination frameworks.⁴⁴ With respect to nonprice terms included in stated privacy policies, the FTC has begun to consider research from behavioral economics that bears

41 See Solon Barocas & Andrew Selbst, *Big Data’s Disparate Impact*, 104 CALIF. L. REV. (forthcoming 2016).

42 12 C.F.R. § 202(p) (italics omitted); see also OFFICE OF THE COMPTROLLER OF THE CURRENCY, COMPTROLLER’S HANDBOOK: FAIR LENDING EXAMINATION PROCEDURES, APPENDIX B: CREDIT SCORING ANALYSIS (2006).

43 On the informationalization of food, see Lisa Heinzerling, *The Varieties and Limits of Transparency in U.S. Food Law*, 70 FOOD & DRUG L.J. 11 (2015).

44 See Andrew D. Gershoff, Ran Kivetz & Anat Keinan, *Consumer Response to Versioning: How Brands’ Production Methods Affect Perceptions of Unfairness*, 39 J. CONSUMER RES. 382 (2012); Hal R. Varian, *Versioning Information Goods*, in INTERNET PUBLISHING AND BEYOND: THE ECONOMICS OF DIGITAL INFORMATION AND INTELLECTUAL PROPERTY 190 (Brian Kahin & Hal R. Varian eds., 2000); Lauren

on the quality of consumer understanding, but (as discussed in Section II.A below) for the most part it lacks authority to make prescriptive rules about exactly what disclosures ought to contain and what level of comprehension they ought to produce.⁴⁵ The CFPB has greater prescriptive authority over the content of disclosures for consumer financial products.⁴⁶

Disclosures and privacy policies, however, are far from the only issues of concern to consumers. In particular, consumers' inability to self-protect is compounded when providers use predictive profiles supplied by data brokers to target offers and disclosures. Predictive profiles can convey valuable information about consumers' priorities and reservation prices, and vendors then can rely on that information to make sure that consumers see only certain marketing materials and feature packages. Scholars and social justice advocates have begun to draw attention to the linkages between the new types of pattern-based discrimination enabled by data-intensive profiling and the emergence of a seemingly permanent economic underclass.⁴⁷ Current consumer protection paradigms framed in terms of notice and choice are ill-suited to address these issues, which are fundamentally issues of economic and social inclusion.

As a final example, infoglut creates barriers to effective financial regulation. The past several decades have witnessed the emergence of increasing complexity in financial markets. Networked information and communication technologies have greatly increased overall levels of access to investment-related information, and yet access also is mediated by a variety of information providers. The resulting increase in *differential* access to market information has prompted market regulators to push for more regularized transparency to investors in traditional areas of investor concern — hence, for example, the SEC's Regulation FD, which attempts to place all investors on an equal footing with regard to major corporate announcements and disclosures by publicly traded companies.⁴⁸ Contemporary investors, however, have access to such a wealth

Willis, *Performance-Based Consumer Regulation*, 82 U. CHI. L. REV. 1309, 1321-26 (2015) (summarizing research on consumer manipulation).

45 The Children's Online Privacy Protection Act grants the FTC limited authority to prescribe conditions for the collection and processing of children's personal information. See 15 U.S.C. § 6502 (2012).

46 See Dodd-Frank Wall Street Reform and Consumer Protection Act, 12 U.S.C. § 5532 (2012).

47 See FRANK PASQUALE, BLACK BOX SOCIETY 30-33, 38-41 (2014); Nathan Newman, *The Costs of Lost Privacy: Consumer Harm and Rising Economic Inequality in the Age of Google*, 40 WM. MITCHELL L. REV. 849, 876-82 (2014); Seeta Pena Gangadharan, *Digital Inclusion and Data Profiling*, FIRST MONDAY (May 19, 2012), <http://firstmonday.org/ojs/index.php/fm/article/view/3821/3199>.

48 Securities and Exchange Comm'n, Exchange Act Release No. 43154 (Aug. 15,

of information that an equally pressing problem concerns how to make sense of it all. Likewise, both the number and variety of investment vehicles and the number and variety of market intermediaries have mushroomed. Massive databanks, sophisticated algorithms, and high-speed, proprietary networks for private trading have enabled the disintermediation of traditional points of regulatory control over securities markets.⁴⁹ Those developments also have catalyzed the emergence of markets for new, synthetic products invented by sophisticated institutional investors and traded amongst themselves.⁵⁰ Putting investors on an equal footing with respect to data processing, analytic capacity, and access to private trading venues and investment vehicles is far less feasible — and many new financial instruments are so complex that they defy efforts to describe the associated risks.⁵¹ Increasingly, it has begun to seem as though there is one set of rules for the ordinary consumer and institutional investors serving that consumer and a very different set for the financial cognoscenti. Both the SEC and the Commodity Futures Trading Commission (CFTC) have proposed new rules to increase oversight of high-frequency trading, but piecemeal reforms seem far more likely to drive well-resourced investors to seek new opportunities for regulatory arbitrage.

Information businesses have attempted to forestall more comprehensive approaches to regulating highly informationalized markets by appealing to neoliberal conceptions of innovative and expressive freedom. That strategy has had a clear effect on the regulatory dialogue. As regulators have struggled to develop adequate responses to the ways that infoglut shapes markets, the rhetoric of innovation and private choice has burrowed ever more deeply into the regulatory lexicon. Even after the global financial crisis of 2007-2008, both market participants and influential public officials habitually use the term “innovation” to describe what financial firms do.⁵² Innovation rhetoric also

2000), 65 Fed. Reg. 51,716, codified at 17 C.F.R. §§ 243.100-243.103; *see also* SECURITIES AND EXCHANGE COMM’N, EXCHANGE ACT RELEASE NO. 69279, REPORT OF INVESTIGATION PURSUANT TO § 21(A) OF THE SECURITIES EXCHANGE ACT OF 1934: NETFLIX, INC., AND REED HASTINGS (2013).

49 *See* Brummer, *supra* note 2, at 997-1034.

50 *See* Yesha Yadav, *Insider Trading in Derivatives Markets*, 103 GEO. L.J. 381 (2015).

51 *See* Henry T.C. Hu, *Too Complex to Depict?: Innovation, “Pure Information,” and the SEC Disclosure Paradigm*, 90 TEX. L. REV. 1601 (2012); Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity, and Systemic Risk*, 64 STAN. L. REV. 657 (2012).

52 For representative examples, *see* *Financial Innovation*, WALL ST. J., Dec. 14, 2009, <http://online.wsj.com/article/SB10001424052748704240504574586211537508986.html>; and *Subprime Lending and Securitization and Government-*

figures prominently in attempts to forestall or water down information privacy regulation.⁵³ The Obama Administration's proposal for a consumer privacy bill of rights relies heavily on the language of consumer choice, in seemingly willful disregard that the structure of the personal data industry disables consumers from making the kinds of choices that the proposal contemplates.⁵⁴ The track record of lawsuits challenging information-forcing and information-blocking regulations as infringements on freedom of speech is more mixed, but the antiregulatory agenda has achieved some notable successes.⁵⁵

Detached from their privileged position within neoliberal free-market ideology, the antiregulatory arguments advanced by information businesses do not withstand close scrutiny. Markets are structured by and depend on the stability of regulatory institutions, and a wealth of evidence demonstrates that throughout the modern era regulatory policy and innovation have been deeply entangled.⁵⁶ And First Amendment doctrine has long accepted the necessity of economic regulation.⁵⁷ Here again, arguments about the primacy

Sponsored Enterprises: Hearing Before the Fin. Crisis Inquiry Comm., 111th Cong. 98-99 (2010) (statement of Alan Greenspan, Former Chairman Board of Governors of the Federal Reserve System), http://fcic-static.law.stanford.edu/cdn_media/fcic-testimony/2010-0407-Transcript.pdf. For an interesting pre-crisis provocation on legal thinkers' relatively uncritical adoption of the term "financial innovation," see Charles R.P. Pouncy, *Contemporary Financial Innovation: Orthodoxy and Alternatives*, 51 S.M.U. L. REV. 505 (1998).

53 For discussion of the role of innovation discourse in regulatory debates about information privacy, see Julie E. Cohen, *What Privacy Is For*, 126 HARV. L. REV. 1904, 1918-27 (2013); and Julie E. Cohen, *The Surveillance-Innovation Complex: The Irony of the Participatory Turn*, in *THE PARTICIPATORY CONDITION IN THE DIGITAL AGE* (Darin Barney et al. eds., forthcoming 2016).

54 See White House, Administration Discussion Draft: Consumer Privacy Bill of Rights Act (2015), <https://www.whitehouse.gov/sites/default/files/omb/legislative/letters/cpbr-act-of-2015-discussion-draft.pdf>; White House, Office of the Press Sec'y, Fact Sheet: Plan to Protect Privacy in the Internet Age by Adopting a Consumer Privacy Bill of Rights (Feb. 23, 2012). See generally Florencia Marotta-Wurgler, *Some Realities of Online Contracting*, 19 SUP. CT. ECON. REV. 11 (2011); Lauren E. Willis, *When Nudges Fail: Slippery Defaults*, 80 U. CHI. L. REV. 1155 (2013).

55 See *Sorrell v. IMS Health Inc.*, 131 S. Ct. 2653 (2011); *Am. Meat Inst. v. U.S. Dep't of Agric.*, 760 F.3d 18 (D.C. Cir. 2014) (en banc); Julie E. Cohen, *The Zombie First Amendment*, 56 WM. & MARY L. REV. 1119 (2015).

56 See MARIANA MAZZUCATO, *THE ENTREPRENEURIAL STATE: DEBUNKING PUBLIC VS. PRIVATE SECTOR MYTHS* (2013).

57 See *Sorrell*, 131 S. Ct. at 2673 (Breyer, J., dissenting) (summarizing history).

of innovative and expressive freedom conceal the fact that the issues to be decided concern not whether to govern, but how.

It seems equally indisputable, however, that regulatory constructs originating in the era of information scarcity are no longer adequate to preserve equal economic opportunity and prevent predatory and destructive market behaviors. If existing antidiscrimination, consumer protection, and investor protection policies are to be preserved in the era of infoglut, regulators will need to engage more directly with methods of data processing that undermine those policies.

C. From Discrete Harms to Systemic Threats

A final major concern of economic regulation involves activities that pose threats to the public health and safety. Within the industrial-era regulatory landscape, health and safety concerns have played particularly important roles in workplace, food and drug, agriculture, and environmental protection regulation. At the turn of the nineteenth century, the harms resulting from industrialization were clear and concrete — deaths and dismemberments caused by industrial machinery, property damage caused by floods and fires, and the like. By the mid-twentieth century, first scientists and then regulators had begun to recognize other, more complex harms — for example, diseases caused by carcinogenic or teratogenic chemicals and systemic ecological damage. As societal understandings of harm have evolved to encompass more long-term and systemic effects of development, regulatory methodologies have evolved as well. The contemporary toolkit includes constructs oriented toward measuring, demonstrating, and responding to harms that are nascent and systemic, and those constructs are themselves predominantly informational. Yet as informational resources and technologies have oriented regulators toward systemic harms to be realized in the future — toward the problem of systemic threat — they have exposed the extent to which regulatory models are politically constructed.

Systemic threats are accessible — to regulators, affected industries, and members of the public — only through modeling and representation, and techniques of modeling and representation are not neutral. Models depend on assumptions about variables and parameters that are open to contestation. Representation of a systemic threat as more or less threatening requires the use of heuristics and frames to communicate the likelihood and magnitude of impending systemic changes. As threatened future harms have become more abstract, diffuse, and technologically complex, disputes about appropriate regulatory response have become struggles for control over the modeling and representation of systemic threats and over the burden of proof required to justify regulatory actions. Contemporary conditions of infoglut exacerbate the

underlying epistemological problems. Finding firm regulatory footing amid a welter of conflicting models, frames, assertions and opinions has become increasingly difficult.

From a regulatory perspective, awareness of systemic threats creates two problems. Both are well-recognized within the legal literature on regulation, but neither has been conceptualized as a potential lever for methodological change in response to shifting modes of economic and technological development.

The first problem arises because threats of harms to be realized in the future are inevitably probabilistic. Methods for modeling and assessing a range of possible future scenarios now inform regulatory approaches in fields ranging from environmental protection to financial regulation, but the shift to a probabilistic sensibility underscores a tension between risk-based and uncertainty-based approaches to evaluating asserted dangers and crafting appropriate regulatory responses. Risk-based approaches emphasize formal modeling and quantification, but not all factors bearing on the probability of future harm can be modeled and quantified. Put differently, the threat of future harm typically also involves uncertainty.⁵⁸ For example, vulnerability to data security breaches depends in part on technical configuration, in part on organizational configuration, and in part on human error, and these factors are heterogeneous and incommensurable. Computer security experts therefore have developed threat modeling protocols that explicitly incorporate both risk and uncertainty.⁵⁹ As the global financial crisis of 2007-2008 illustrates, vulnerability to systemic financial collapse also depends on a heterogeneous and incommensurable assortment of factors, including anomalous, “black swan” events outside the frame of reference of existing risk models.⁶⁰

The tension between risk-based and uncertainty-based approaches to evaluating systemic threats is both epistemological and political. As William Boyd explains, regulatory methodologies based on formal risk modeling emerged during the late twentieth century as a response to the advent of new analytical techniques that revealed potential chemical harms resulting from industrial activity to be lurking nearly everywhere.⁶¹ The discourse of risk

58 For a useful overview of the distinction between risk and uncertainty, see Jose Luis Bermudez & Michael S. Pardo, *Risk, Uncertainty, and “Super-Risk,”* 29 NOTRE DAME J.L., ETHICS & PUB. POL’Y 471, 474-75, 484-86 (2015).

59 For a useful, nontechnical explanation of the method, see Paul Ohm, *Sensitive Information*, 88 S. CAL. L. REV. 1125, 1172-77 (2015); see also ADAM SHOSTACK, *THREAT MODELING: DESIGNING FOR SECURITY* (2014).

60 See NASSIM NICHOLAS TALEB, *THE BLACK SWAN: THE IMPACT OF THE HIGHLY IMPROBABLE* (2010).

61 William Boyd, *Genealogies of Risk: Searching for Safety, 1930s-1970s*, 39 ECOL. L.Q. 895 (2012).

is conceptually crisper than that of uncertainty, and supplies a way of both describing probabilistic future harms and and quantifying — and sometimes pricing — acceptable risk thresholds. For exactly that reason, however, when risk discourses dominate threat modeling, they can become ways of black-boxing systemic threats, displacing contradictory or otherwise inconvenient scientific authority, and ratifying existing distributions of resources.⁶² Reliance on risk assessment and risk management discourses also can induce unwarranted complacency and encourage excessive risk-taking. The financial instruments and transactions that produced the economic bubble of the 2000s and the ensuing crash were triumphs of complex information processing that incorporated extensive risk calculations, but the calculations were based on self-serving assumptions and did not model the scenarios that could lead to systemic collapse, and the sheer level of complexity itself introduced new uncertainties and new sources of market failure.⁶³ Recent disputes about the Federal Reserve's protocols for administering stress tests to financial institutions are disputes about precisely whether formal risk assessment tools can adequately safeguard the financial system against future catastrophic collapse.⁶⁴ If regulators are to develop a more effective set of tools for avoiding systemic breakdown, more comprehensive engagement with threat modeling and its pitfalls is essential.

Good threat modeling protocols, however, cannot tell regulators how to resolve the tradeoffs that such models inevitably present, and the existence of tradeoffs can become a way of justifying regulatory deference to market processes. Consider another example from the domain of computer security: The security advantages of microchip-based authentication technology for credit card transactions have been well known for years (and the technology is industry-standard in European countries), but the United States has never mandated its adoption. U.S. card issuers have moved to adopt the technology only recently, and only after a series of highly publicized data breaches raised

62 Canonical works on the social construction of risk include ULRICH BECK, *RISK SOCIETY: TOWARDS A NEW MODERNITY* (Scott Lash & Brian Wynne trans. 1992), and IAN HACKING, *THE TAMING OF CHANCE* (1990).

63 See Kenneth A. Bamberger, *Technologies of Compliance: Risk and Regulation in a Digital Age*, 88 TEX. L. REV. 669, 675-76, 711-14, 718-22 (2010) (discussing the problems of technologically-driven risk-management logics and automation biases); James Fanto, *Anticipating the Unthinkable: The Adequacy of Risk Management in Finance and Environmental Studies*, 44 WAKE FOREST L. REV. 731 (2009); Judge, *supra* note 51, at 690-710 (discussing the effects of informational complexity).

64 See Mehrsa Baradaran, *Regulation by Hypothetical*, 67 VAND. L. REV. 1247 (2014); Robert Weber, *A Theory for Deliberation-Oriented Stress Testing Regulation*, 98 MINN. L. REV. 2236 (2014).

public awareness of existing systems' insecurity to levels that could not be ignored. Consistent with a general trend toward public-private collaboration in regulation (discussed in more depth in Section II.A, below), that shift reflects an intense and ongoing public-private dialogue about best practices, their projected costs, and their upside benefits.⁶⁵

The card-authentication example hints at the second problem, which relates to the threshold for regulatory action. The reorientation toward systemic threats underscores a tension between a cost-benefit approach, which assesses proposed regulations largely in terms of their concrete, monetizable impact, and other approaches that acknowledge and weigh a broader range of factors and values.

This tension too is both epistemological and political. To its adherents, cost-benefit analysis promises a neutral, rational discourse for evaluating regulatory benefits and burdens, and for charting a course between the Scylla of regulatory capture and the Charybdis of bureaucratic inefficiency.⁶⁶ Skeptics charge that cost-benefit analysis persistently undervalues threatened harms that are diffuse, cumulative, and difficult to describe in monetized, present-value terms, and that it therefore predictably works to the advantage of vested economic interests.⁶⁷ The deficiency is not hypothetical. As Frank Ackerman, Lisa Heinzerling, and Rachel Massey show, many environmental regulations now regarded as foundational would not have been adopted under the approach to cost-benefit analysis currently ascendant.⁶⁸ More generally, cost-benefit

65 See Office of the Press Sec'y, *Fact Sheet: Safeguarding Consumers' Financial Security*, WHITE HOUSE (Oct. 17, 2014), <https://www.whitehouse.gov/the-press-office/2014/10/17/fact-sheet-safeguarding-consumers-financial-security>.

66 See Michael A. Livermore & Richard L. Revesz, *Can Executive Review Help Prevent Capture?*, in PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 420, 439-44 (Daniel Carpenter & David A. Moss eds., 2014); Cass R. Sunstein, *The Limits of Quantification*, 102 CALIF. L. REV. 1369, 1375-79 (2014); Cass R. Sunstein, *The Real World of Cost-Benefit Analysis: Thirty-Six Questions (and Almost as Many Answers)*, 114 COLUM. L. REV. 167 (2014). On the history of cost-benefit analysis in U.S. government, see THEODORE M. PORTER, *TRUST IN NUMBERS: THE PURSUIT OF OBJECTIVITY IN SCIENCE AND PUBLIC LIFE* 148-89 (1995).

67 See FRANK ACKERMAN & LISA HEINZERLING, *PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING* (2004); Lisa Heinzerling, *Quality Control: A Reply to Professor Sunstein*, 102 CALIF. L. REV. 1457 (2014) (arguing that the theoretical virtues of cost-benefit analysis are not realized in practice).

68 Frank Ackerman, Lisa Heinzerling & Rachel Massey, *Applying Cost-Benefit to Past Decisions: Was Environmental Protection Ever a Good Idea?*, 57 ADMIN. L. REV. 155 (2005).

analysis is associated with an era of notable deregulation and in practice often is inflected by a distinctively neoliberal vision of regulatory minimization.

For critics of cost-benefit analysis, a more appropriate paradigm for structuring regulatory responses to systemic threats is the precautionary principle, which holds that regulators seeking to avoid foreseeable harms should err on the side of caution.⁶⁹ The environmental example suggests that precautionary regulation is particularly useful in cases where the systemic threat function includes a tipping point — a point at which gradual change suddenly produces a discontinuous jump.⁷⁰ Within a precautionary paradigm, it is easier to justify interventions designed to prevent the system from tipping. Critics argue, however, that precautionary regulation is insufficiently sensitive to the costs of regulation and may foreclose innovation that would mitigate health and safety harms.⁷¹ This deficiency too is not hypothetical; for example, the European economy's relative unfriendliness to start-up ventures is well-known. Capitalizing on that pattern and on different regulatory and political sensibilities, the financial and Internet industries and libertarian and neoliberal tech policy pundits have advanced a carefully crafted narrative that paints precautionary regulation as rigid, “mother, may I?” policymaking that threatens to stifle both liberty and economic growth.⁷²

The tension between cost-benefit and precautionary approaches — and between the different regulatory ideologies that each has come to signify — has emerged as a defining feature of the information-era regulatory landscape. Environmental law is itself a paradigmatic information-era discipline: it is fundamentally concerned with systemic threats accessible only via information-intensive modeling. Federal new drug approval processes are precautionary

69 On the history and scope of precautionary regulation, see generally INTERPRETING THE PRECAUTIONARY PRINCIPLE (Tim O’Riordan & James Cameron eds., 1994); see also Boyd, *supra* note 61, at 948-77 (describing the precautionary origins of environmental and food and drug regulation in the United States and the gradual ascendancy of approaches based on identification of “unreasonable risk”).

70 See generally P. Lamberson & Scott E. Page, *Tipping Points* (Santa Fe Inst., Working Paper No. 2012-02-002, 2012), <http://www.santafe.edu/media/workingpapers/12-02-002.pdf>. Many environmental threat models include tipping points. See Timothy M. Lenton et al., *Tipping Elements in the Earth’s Climate System*, 105 PROC. NAT’L ACAD. SCI. 1786 (2008); see also Haroon Siddique, *Disease Resistance to Antibiotics at Tipping Point, Expert Warns*, GUARDIAN, Jan. 8, 2014, <http://www.theguardian.com/society/2014/jan/08/resistance-antibiotics-tipping-point-jeremy-farrar>.

71 See generally CASS R. SUNSTEIN, *LAWS OF FEAR: BEYOND THE PRECAUTIONARY PRINCIPLE* (2005).

72 See, e.g., Thierer, *supra* note 30.

in character, as was the now-discredited separation between commercial and investment banks, instituted after the Great Depression to protect the financial system against the risk of catastrophic failure. Over the last several decades, even as cost-benefit analysis has gained currency in some academic and policy circles, a more overtly precautionary ethos has appeared (or reappeared) in multiple regulatory domains. Arguing that overly complex financial instruments can both obscure and compound systemic risk, some banking and finance scholars have proposed reintroducing structural safeguards.⁷³ In the domain of data protection, there is mounting evidence of a wide variety of systemic threats flowing from data linking and reidentification: large unsecured data reservoirs that function as “databases of ruin”; security threats resulting from flaws in protocols for transmitting passwords and associated personal information; predatory pricing and discrimination in markets for financial services and consumer goods; and so on.⁷⁴ In the face of those threats, European data protection regulators have attempted to maintain a generally precautionary stance toward personal data protection, and some scholarly interventions call for explicit adoption of the precautionary paradigm.⁷⁵ In the United States, participants in policy and scholarly debates about information privacy have begun to deploy environmental analogies as they seek to explain whether and how to regulate.⁷⁶

73 See Adam Levitin, *Safe Banking: Finance and Democracy*, 83 U. CHI. L. REV. 357 (2016); Saule T. Omarova, *License to Deal: Mandatory Approval of Complex Financial Products*, 90 WASH. U. L. REV. 63 (2012).

74 For a review of the literature on anonymization and reidentification, see Acquisti, Taylor & Wagman, *supra* note 15. On “databases of ruin,” see Ohm, *supra* note 2, at 1748; see also Danielle Keats Citron, *Reservoirs of Danger: The Evolution of Public and Private Law at the Dawn of the Information Age*, 80 S. CAL. L. REV. 241 (2007). The regulatory regime governing health privacy requires effective anonymization before certain kinds of data can be released by covered entities. See 45 C.F.R. § 164.514 (2014).

75 See Raphael Gellert, *Data Protection: A Risk Regulation? Between the Risk Management of Everything and the Precautionary Alternative*, 5 INT’L DATA PRIVACY L. 3 (2015). That stance is best encapsulated in the purpose limitation principle, which dictates that data collected for one purpose should not be used for an unrelated purpose without consent. See opinion of the Article 29 Data Protection Working Party, Opinion 03/2013 on Purpose Limitation (Apr. 2, 2013).

76 See, e.g., A. Michael Froomkin, *Regulating Mass Surveillance as Privacy Pollution: Learning from Environmental Impact Statements*, 2015 U. ILL. L. REV. 1713; Dennis D. Hirsch, *The Glass House Effect: Big Data, the New Oil, and the Power of Analogy*, 66 MAINE L. REV. 373 (2014).

Implementing precautionary regulation in the information processing context, however, also poses unfamiliar methodological challenges. Regulators are accustomed to performance-based methodologies that produce fixed targets for harmful private-sector activities — e.g., dosage limits for prescription drugs, contaminant thresholds for slaughterhouses, and particulate emissions thresholds for factories — but the idea of structural fixity sits in tension with the seemingly limitless flexibility and granularity that information-processing technologies enable. Fixed targets for such matters as capital adequacy have proved elusive and targets for personal data processing do not readily suggest themselves.⁷⁷ Here again, then, effective regulation in the information era requires creative, interdisciplinary thinking about the design of regulatory methods.

II. THE CHANGING SHAPE OF REGULATORY INSTITUTIONS

With increasing frequency over the past half century, settled ways of thinking about the appropriate modalities of administrative lawmaking have come under challenge. The regulatory problems of the information economy have proved particularly disruptive. Across a variety of information-intensive fields of economic activity — telecommunications, privacy, environmental science, biomedical research, and finance — an assortment of new institutional models has begun to emerge. Those models are procedurally informal, mediated by networks of professional and technical expertise that define relevant standards, and financialized. In some respects, those attributes align well with the information-era regulatory problems described in Part I. At the same time, they create new transparency and accountability challenges and afford new opportunities for powerful actors to shape institutional design. Institutional disruption has created new opportunities for regulated entities, including members of newly powerful industries, to engage in highly creative institutional entrepreneurship — for example, by developing private collective structures capable of performing rudimentary regulatory functions and then trumpeting the successes of “self-regulation.” Concurrently, industry groups and neoliberal think tanks have worked to shape thought processes about optimal regulatory structure in a way that reflects what some scholars have called “deep capture,” positioning privatization and competition as core governance strategies.⁷⁸

77 Cf. Friedman & Ponomarenko, *supra* note 10 (noting that Fourth Amendment doctrine traditionally asks when law enforcement action intrudes to the extent that it qualifies as a search, not whether the method of searching was permissible).

78 On deep capture, see Jon Hanson & David Yosifon, *The Situation: An*

A. The Regulatory State as Norm Entrepreneur

The model of regulation established by the federal Administrative Procedure Act envisions two general types of administrative activity: rulemaking and adjudication.⁷⁹ According to the modernist, legal-process understanding of administrative procedure that animated the model at its creation, the two types are opposites: rules are promulgated in orderly, quasi-legislative proceedings and later applied in orderly, quasi-judicial proceedings.⁸⁰ For quite a long time, however, it has been evident that the two modalities are not so much opposites as they are endpoints on a continuum, and that a great deal of agency activity occurs in the space between them. The new informality is a particularly striking feature of regulatory oversight of highly informationalized activity. Regulators have worked to develop new methods of nudging and cajoling regulated entities toward more public-regarding behavior, while regulated entities have worked to shape the new informality to their own ends.

Both formal and informal rulemaking procedures are widely acknowledged to be both too slow and insufficiently nimble for many types of regulatory problems created by networked information and communications technologies. Internet business models in particular evolve so rapidly that a proposed rule can be obsolete before the time period for submitting comments has closed (or even before the print edition of the Federal Register containing the notice of proposed rulemaking has been published).⁸¹ In addition, although initially envisioned as a neutral forum for consideration of expert evidence, rulemaking

Introduction to the Situational Character, Critical Realism, Power Economics, and Deep Capture, 152 U. PA. L. REV. 129, 212-30 (2003). On privatization and competition as governmental strategies of neoliberalism, see Nicholas Gane, *The Governmentalities of Neoliberalism: Panopticism, Post-Panopticism, and Beyond*, 60 SOC. REV. 611, 623-28 (2012).

79 Administrative Procedure Act, ch. 324, §§ 4-5, 60 Stat. 237, 238-40 (1946) (codified as amended at 5 U.S.C. §§ 553-54).

80 For discussion of this dichotomy and what it leaves out, see generally Rubin, *supra* note 1.

81 For discussion of additional difficulties that the fast-moving Internet industry has created for the FCC in particular, see Weiser, *supra* note 2, at 531-48. There is robust scholarly debate on the extent to which rulemaking processes have become ossified, on which I intend no comment. See, e.g., Richard J. Pierce, Jr., *Rulemaking Ossification Is Real: A Response to Testing the Ossification Thesis*, 80 GEO. WASH. L. REV. 1493 (2012); Jason Webb Yackee & Susan Webb Yackee, *Testing the Ossification Thesis*, 80 GEO. WASH. L. REV. 1414 (2012). My point is different, and concerns the ability of rule-makers to move at speeds roughly commensurate with the pace of change in highly informationalized sectors of our political economy.

processes are now widely acknowledged to be subject to domination by interest group participation and power. Agencies too suffer the effects of infoglut: notices of proposed rulemaking on controversial issues can elicit many thousands of submissions. One way for regulators to cut through the clutter is to focus on the relatively well-researched submissions by trade associations representing affected industries.⁸² Partly for these reasons, and partly because many information-age regulatory problems push the boundaries of existing, often decades-old statutory regimes, issued rules often bog down for years in legal challenges.⁸³

Additionally, many administrative policymaking initiatives confront a structural mismatch between the regulatory state and information-era regulatory problems that is largely beyond the scope of this Article: the jurisdictional boundaries of the existing administrative framework were drawn with industrial-era activities in mind. By this I do not mean simply that many contemporary regulatory disputes are artifacts of outdated statutory grants of authority, though that is also true. More fundamentally, many information-economy activities have developed in utter disregard of the executive branch organization chart, cascading around and across existing lines of authority. Activities such as digital content protection, pharmaceutical patenting, climate- and energy-related regulation, artificial intelligence-driven predictive profiling, regulation of health-related information services, and regulation of financial services implicate the jurisdiction of multiple entities.⁸⁴ In some cases, the executive

82 See Cynthia R. Farina et al., *Knowledge in the People: Rethinking "Value" in Public Rulemaking Participation*, 47 WAKE FOREST L. REV. 1185 (2012); Lynn E. Blais & Wendy E. Wagner, *Emerging Science, Adaptive Regulation, and the Problem of Rulemaking Ruts*, 86 TEX. L. REV. 1701 (2008).

83 See, e.g., *Michigan v. EPA*, 135 S. Ct. 2699 (2015) (invalidating power-plant emissions regulations issued in 2012); *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014) (invalidating Open Internet Order issued in 2010); *Echostar Satellite LLC v. FCC*, 704 F.3d 992 (D.C. Cir. 2013) (invalidating cable plug-and-play rule issued in 2003); *American Library Ass'n v. FCC*, 406 F.3d 689 (D.C. Cir. 2005) (invalidating broadcast flag order issued in 2003); *Nutritional Health Alliance v. FDA*, 318 F.3d 92 (2d Cir. 2003) (invalidating dosage-unit packaging rule issued in 1997); *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000) (invalidating tobacco product promotion and labeling regulations issued in 1996).

84 An emerging scholarly genre within administrative law consists of articles exploring the consequences and implications of regulatory overlap. See James C. Cooper, *The Costs of Regulatory Redundancy: Consumer Protection Oversight of Online Travel Agents and the Advantages of Sole FTC Jurisdiction* (George Mason Univ. Law & Econ. Research Paper Series, Working Paper No. 15-08,

branch has responded to structural obsolescence by creating interagency task forces and working groups. As Dan Farber and Anne O’Connell explain, those entities are an institutional manifestation unintelligible within the traditional framework of administrative law. Their lines of accountability are unclear and possibly nonexistent, and their decision-making processes are opaque and mysterious.⁸⁵

Within the space created by the limited utility and efficacy of rulemaking and the increasingly complex overlap of regulatory mandates and competencies, scholars who study administrative governance have chronicled the emergence of other, relatively unstructured processes through which agencies make policy. Rather than resort to cumbersome and expensive rulemaking procedures, many U.S. federal agencies now routinely issue “guidances” that are intended to signal regulated entities about their interpretations of governing statutes and rules and about likely enforcement stances.⁸⁶ Although courts are not required to defer to agency guidances, they may give guidances substantial weight.⁸⁷

2015), <http://ssrn.com/abstract=2579738>; Tejas N. Narechania, *Patent Conflicts*, 103 GEO. L.J. 1483 (2015); Jacob S. Sherkow, *Administrating Patent Litigation*, 90 WASH. L. REV. 205 (2015); see also Olivier Sylvain, *Disruption and Deference*, 74 MD. L. REV. 715 (2015) (discussing the authority of the Copyright Office and the FCC to supply binding interpretations of legal provisions relating to online video streaming). Regulators’ attitudes about overlapping jurisdiction vary. See, e.g., Lydia Beyoud, *FCC, FTC Promise to Work in Concert on Consumer Privacy Rules in Broadband*, BLOOMBERG BNA (Apr. 29, 2015), <http://www.bna.com/fcc-ftc-promise-n17179925915/>; Lydia Beyoud, *Ohlhausen: Congressional Action Needed to Define FCC, FTC Regulatory Spheres*, BLOOMBERG BNA (Apr. 2, 2015), <http://www.bna.com/ohlhausen-congressional-action-n17179924915/>.

85 See Farber & O’Connell, *supra* note 1, at 1155-60; see also Jody Freeman & Jim Rossi, *Agency Coordination in Shared Regulatory Space*, 125 HARV. L. REV. 1131 (2012) (proposing a template for oversight of interagency collaboration); Abbe R. Gluck, Anne Joseph O’Connell & Rosa Po, *Unorthodox Lawmaking, Unorthodox Rulemaking*, 115 COLUM. L. REV. 1789 (2015).

86 See Robert A. Anthony, *Interpretive Rules, Policy Statements, Guidances, Manuals, and the Like — Should Federal Agencies Use Them to Bind the Public?*, 41 DUKE L.J. 1311 (1992); Gluck, O’Connell & Po, *supra* note 85, at 1795 & n.24, 1803 & n.65; Thomas McGarity, *Some Thoughts on “Deossifying” the Rulemaking Process*, 41 DUKE L.J. 1385 (1992); Todd D. Rakoff, *The Choice Between Formal and Informal Modes of Administrative Regulation*, 52 ADMIN. L. REV. 159 (2000).

87 See, e.g., *ECA v. J.P. Morgan Chase Co.*, 553 F.3d 187, 197-98 (2d Cir. 2009); *Ganino v. Citizens Utilities Co.*, 228 F.3d 154, 163-64 (2d Cir. 2000); *Commonwealth v. Fremont Investment & Loan*, 897 N.E.2d 548 (Mass. 2008). See generally *Perez v. Mortgage Bankers Ass’n*, 135 S. Ct. 1199 (2015); United States

Use of guidances is an especially notable feature of contemporary financial regulation.⁸⁸ Some agencies also routinely publicize what are characterized as nonbinding staff interpretations; such documents have enormous practical impact on the conduct of regulated entities.⁸⁹ Additionally, agencies make policy by developing statements of “best practices” and by engaging regulated entities in dialogues and partnerships.⁹⁰ Collaborative (or coregulatory) proceedings typically culminate in consensus best-practice standards intended to guide both compliance and enforcement, and may rely significantly on self-regulation or private enforcement.⁹¹

Even as rules devolve increasingly toward the promulgation of guidances and best-practice standards, enforcement is becoming more rule-ish. A leading example of this phenomenon is the FTC’s practice of lawmaking through adjudication. In the realm of information privacy, the FTC has used its enforcement authority vigorously but unconventionally, filing UDAAP actions and then negotiating and publicizing consent decrees.⁹² The decrees typically include promises to adhere to industry best practices along a variety of dimensions and commitments to undergo periodic privacy audits.⁹³ According

v. Mead Corp., 533 U.S. 218 (2001). For discussion of the deference question, see David L. Franklin, *Legislative Rules, Nonlegislative Rules, and the Perils of the Short Cut*, 120 YALE L.J. 276 (2010); John F. Manning, *Nonlegislative Rules*, 72 GEO. WASH. L. REV. 893 (2004); Peter L. Strauss, *The Rulemaking Continuum*, 41 DUKE L.J. 1463 (1992).

88 See, e.g., *Supervisory Policy and Guidance Topics*, BD. OF GOVERNORS OF THE FED. RESERVE SYS., <http://www.federalreserve.gov/bankinforeg/topics/topics.htm> (last updated Nov. 24, 2014).

89 See, e.g., *Informal Interpretations*, FED. TRADE COMM’N, <https://www.ftc.gov/enforcement/premerger-notification-program/informal-interpretations> (last visited Mar. 30, 2016); *Staff Interpretations*, U.S. SECURITIES & EXCHANGE COMM., <http://www.sec.gov/interps.shtml> (last visited Mar. 30, 2016).

90 See Jody Freeman, *The Private Role in Public Governance*, 74 N.Y.U. L. REV. 543 (2000); Orly Lobel, *The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought*, 89 MINN. L. REV. 342 (2004); David Zaring, *Best Practices*, 81 N.Y.U. L. REV. 294 (2006).

91 See, e.g., NAT’L INST. OF STANDARDS & TECH., *FRAMEWORK FOR IMPROVING CRITICAL INFRASTRUCTURE CYBERSECURITY 1, 2* (2014), <http://www.nist.gov/cyberframework/upload/cybersecurity-framework-021214-final.pdf>; Joseph A. Siegel, *Collaborative Decision Making on Climate Change in the Federal Government*, 27 PACE ENV’T L. REV. 257 (2009-2010).

92 See *supra* note 11 and accompanying text.

93 For a summary of common provisions in the FTC’s privacy-related consent decrees, see Daniel J. Solove & Woodrow Hartzog, *The FTC and the New Common Law of Privacy*, 114 COLUM. L. REV. 583 (2014).

to Daniel Solove and Woodrow Hartzog, the FTC is creating what amounts to a new common law jurisprudence of unfair and deceptive conduct. Institutionally speaking, the FTC's enforcement choices likely represent a more complex calculus than that description suggests. The agency has no general Administrative Procedure Act rulemaking authority and no specific authority to issue general information privacy rules, and it has UDAAP rulemaking authority only as to practices clearly shown to be "prevalent," so it likely also is relying on its consent decree practice to fill the regulatory gaps.⁹⁴ The FTC is not the only example of an agency creatively using its enforcement powers to engage in gap-filling and norm entrepreneurship on information-economy issues, however. Amidst an ongoing dispute over its jurisdiction to promulgate net neutrality regulation that has spanned nearly a decade, the FCC has used its general enforcement authority to bring some high-profile enforcement actions against companies that have interfered with user quality of service.⁹⁵

Over the decades, U.S. regulatory agencies also have learned to exercise their enforcement authority through a variety of tools beyond litigation. Ian Ayres and John Braithwaite coined the term "responsive regulation" to describe the regulatory enforcement toolkit, which includes a range of extrajudicial sanctions beginning with persuasion and escalating through formal warnings to fines and other penalties.⁹⁶ For example, even when it chooses not to bring litigation, the SEC from time to time issues "reports of investigation" that it styles as providing it with an opportunity to "clarify" and "amplify" its views about various industry practices.⁹⁷ The FTC has relied on responsive regulation methods to shape industry best practices regarding information privacy.⁹⁸ Similar methods have long played a central role in European

94 *See* Federal Trade Commission Act Amendments of 1994, 15 U.S.C. § 57a(b)(3) (2012).

95 *See, e.g.*, In the Matter of Terracom, Inc. and YourTel America, Inc., 30 F.C.C.R. 7075 (2015); In the Matter of AT&T Services, Inc. 30 F.C.C.R. 2808 (2015); In re Formal Complaint of Free Press & Public Knowledge Against Comcast Corp. for Secretly Degrading Peer-to-Peer Applications, 23 F.C.C.R. 13,028 (2008). *But see* Comcast v. FCC, 600 F.3d 642, (D.C. Cir. 2010) (vacating the enforcement order against Comcast on jurisdictional grounds).

96 IAN AYRES & JOHN BRAITHWAITE, *RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE* (1995); *see also* Tim Wu, *Agency Threats*, 60 DUKE L.J. 1841 (2011).

97 *See, e.g.*, In re Gutfreund, 51 S.E.C. 93 (1992), 1992 WL 362753, at *15; Report of Investigation Pursuant to § 21(a) of the Securities Exchange Act of 1934: Netflix, Inc., and Reed Hastings, Exchange Act Release No. 69279, 2013 WL 5138514, at *5 (Apr. 2, 2013).

98 *See* KENNETH A. BAMBERGER & DEIRDRE K. MULLIGAN, *PRIVACY ON THE GROUND:*

regulatory practice, which places relatively lower emphasis on litigation and relatively greater emphasis on other strategies.⁹⁹

The new informality and the trend toward policymaking via public-private collaboration have been celebrated in some quarters and criticized in others. Informal, coregulatory processes may produce regulatory standards more reflective of current technological practice and therefore more feasible to implement and administer. But coregulatory processes also can emphasize inside baseball over participation by a broad range of affected interests, and at their most lopsided risk devolving into self-regulation with minimal oversight.¹⁰⁰ Although notice-and-comment rulemaking is an imperfect mechanism, at times it can elicit thorough, well-informed participation by a wider range of interested actors, and upon occasion it can elicit surprising levels of popular interest as well.¹⁰¹ On the enforcement side, it remains an open question whether campaigns such as the FTC's and FCC's have in fact been effective at ratcheting up the standards for compliance with regulatory norms. In the domain of information privacy, for example, some commentators argue that informal policymaking and enforcement techniques have meaningfully affected industry behavior, while others offer more guarded assessments.¹⁰²

DRIVING CORPORATE BEHAVIOR IN THE UNITED STATES AND EUROPE 187-91 (2015); William McGeeveran, *Friending the Privacy Regulators*, 58 ARIZ. L. REV. (forthcoming 2016).

99 Francesca Bignami, *Comparative Legalism and the Non-Americanization of European Regulatory Styles: The Case of Data Privacy*, 59 AM. J. COMP. L. 411 (2011).

100 See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, OPPORTUNITIES EXIST TO IMPROVE SEC'S OVERSIGHT OF THE FINANCIAL INDUSTRY REGULATORY AUTHORITY (2012), <http://gao.gov/assets/600/591222.pdf>; NATURAL RESOURCES DEFENSE COUNCIL, GENERALLY RECOGNIZED AS SECRET: CHEMICALS ADDED TO FOOD IN THE UNITED STATES (2014), <http://www.nrdc.org/food/files/safety-loophole-for-chemicals-in-food-report.pdf>; AMERICAN BAR ASS'N, SECTION ON ANTITRUST LAW, SELF-REGULATION OF ADVERTISING IN THE UNITED STATES: AN ASSESSMENT OF THE NATIONAL ADVERTISING DIVISION (2015), <http://www.kelleydrye.com/publications/articles/1945>.

101 See Soraya Nadia McDonald, *John Oliver's Net Neutrality Rant May Have Caused FCC Site Crash*, WASH. POST, June 4, 2014, <http://www.washingtonpost.com/news/morning-mix/wp/2014/06/04/john-olivers-net-neutrality-rant-may-have-caused-fcc-site-crash/>.

102 Compare Kenneth A. Bamberger & Deirdre K. Mulligan, *Privacy on the Books and on the Ground*, 63 STAN. L. REV. 247, 308-09 (2011) (describing the emerging corporate culture of privacy compliance), and Barbara van Schewick, *The Case for Rebooting the Network-Neutrality Debate*, THE ATLANTIC, May 6, 2014, <http://www.theatlantic.com/technology/archive/2014/05/the-case-for-rebooting-the-network-neutrality-debate/361809/> (arguing that threat of net neutrality regulation

For the most part, regulated entities have supported the shift toward less formal policymaking and enforcement techniques, but industry players also have resisted exercises of rulemaking and enforcement authority that they view as testing the outer bounds of enforcement jurisdiction.¹⁰³

The patterns of behavior by regulated entities suggest a more complicated agenda, designed both to foster self-regulation within appropriately minimalist parameters and to discipline the agency enforcement role. To the extent that industry consensus and ease of implementation have become values in themselves, that consensus suggests deep capture at work; arguably, whether a reform maximizes the comfort of regulated industries ought not to be the ultimate consideration in the regulatory calculus. The turn to informality also has raised transparency concerns in some contexts. According to Solove and Hartzog, privacy practitioners monitor the FTC's privacy consent decree practice closely and regard published decrees as quasi-precedential. Privacy practitioners, however, are a fairly well-resourced and elite group. Margo Schlanger provides evidence suggesting that enforcement practice in many other regulatory areas is much more difficult for interested parties to monitor.¹⁰⁴

B. The Regulatory State as Auditor

A more telling barometer of institutional disruption is the increasing prominence of types of regulatory activities that arguably don't fall on the rulemaking-to-enforcement continuum at all. William Simon identifies a set of emergent regulatory practices that he characterizes as "post-bureaucratic": that are based

has disciplined the quality of service provided to consumers), with Florencia Marotta-Wurgler & Daniel Svirsky, *Who's Afraid of the FTC? Enforcement Actions and the Content of Privacy Policies* (Working Paper, 2015) (finding that, with the exception of enforcement actions relating to data security representations, FTC privacy consent decrees have no measureable effect on the content of online privacy policies).

103 See sources cited *supra* note 83 (litigation over agency rules); *FTC v. Wyndham Worldwide Corp.*, 10 F. Supp. 3d 602 (D.N.J. 2014) (denying motion to dismiss on the ground that FTC lacked UDAAP enforcement authority over data security practices), *aff'd*, 799 F.3d 236 (3d Cir. 2015); *Comcast v. FCC*, 600 F.3d 642, (D.C. Cir. 2010) (vacating the FCC's enforcement order regarding Comcast's interference with customers' use of peer-to-peer file-sharing applications on the ground that Comcast lacked ancillary jurisdiction to regulate network management practices).

104 See Margo Schlanger, *Against Secret Regulation: Why and How We Should End the Practical Obscurity of Injunctions and Consent Decrees*, 59 DEPAUL L. REV. 515 (2010); Solove & Hartzog, *supra* note 93, at 607, 624-25.

on proactive planning rather than reactive rulemaking and on transparency and compliance monitoring rather than prior authorization and reactive enforcement.¹⁰⁵ Notably, the new regulatory modalities are intensively informational and technical in character. From a political economic standpoint, they are not so much post-bureaucratic as they are postindustrial, products of the “control revolution” that began with the introduction of automated information systems into industrial-era factories and businesses and continued with the increasing informationalization of economic development.¹⁰⁶ They rely heavily on regulatory competencies such as auditing and technical standard-setting that involve specialized corps of professional experts and impose new technical challenges to public accountability.

Compliance reporting and audit requirements play increasingly important roles in the contemporary regulatory landscape. Many regulatory schemes mandate periodic reporting; in other areas, including most notably consumer privacy, consent decrees requiring periodic reporting are an increasingly common component of enforcement practice.¹⁰⁷ Compliance reporting sometimes entails demonstrated satisfaction of highly technical performance targets. For example, entities covered under the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule that wish to release datasets to the public must demonstrate that the datasets have been deidentified in a way that ensures sufficiently low risk of reidentification.¹⁰⁸ Compliance reporting also frequently entails submission to audits conducted by specialized professionals.¹⁰⁹

A second strand in the emerging narrative of professionalized, informationalized regulation involves algorithmically-mediated compliance with regulatory mandates. As Kenneth Bamberger has detailed, regulatory regimes relying on information-systems mandates have become commonplace in a variety of information-intensive fields.¹¹⁰ Other industries have developed such systems absent any regulatory mandate to do so. For example, large Internet companies generally rely on automated detection and filtering systems to avoid

105 See *Simon*, *supra* note 1, at 62; see also Bignami, *supra* note 28.

106 See generally BENIGER, *supra* note 5, at 291-435; SCHILLER, *supra* note 3, at 17-57.

107 See 40 C.F.R. § 63.10(d) (2015) (EPA general reporting requirements); 21 C.F.R. § 803.10 (2015) (FDA medical device reporting requirements); 47 C.F.R. § 64.606(g) (2014) (FCC common carrier reporting requirements); 17 C.F.R. § 230.257 (2015) (SEC periodic financial reporting requirements); Solove & Hartzog, *supra* note 93, at 618.

108 See 45 C.F.R. § 164.514 (2014).

109 See 17 C.F.R. § 230.257 (2015) (SEC periodic financial reporting requirements); Solove & Hartzog, *supra* note 93, at 618.

110 See Bamberger, *supra* note 63, at 677-83.

liability for facilitating copyright infringement. A question not yet answered in the European debates over the “right to be forgotten” and “right of erasure” is whether search engines might seek to develop a similar strategy for responding to takedown requests filed by individuals. As Bamberger explains, automated processes have obvious efficiency advantages, but takedown algorithms may not align well (or at all) with applicable legal requirements that are couched in shades of gray.¹¹¹ Additionally, as the Volkswagen example in the Introduction to this Article illustrates, automation of compliance functions can facilitate evasion of regulatory oversight. The push to take human judgment out of the enforcement loop therefore raises a variety of difficult questions about how to define and audit compliance. Most of the research and development activity surrounding algorithmic enforcement and software audit originates in the private sector, where so-called “government, regulation, and compliance” technologies and services comprise a large and growing market.¹¹²

A third type of regulatory activity that is increasingly common involves technical standard-setting. Both domestically and internationally, governments have long been involved in standards policy. The National Institute of Standards and Technology (NIST) was established in 1901 to facilitate the development of measurement conventions that would enhance the global competitiveness of U.S. manufacturing and transportation industries.¹¹³ On a global scale, the International Telecommunication Union (ITU) has been active since 1865 in setting standards for telegraph interoperability; over the years, its mission expanded to encompass telephone, radio, and television broadcast technologies.¹¹⁴ In the digital era, however, technical standards have gone mainstream: they are core components of many regulatory regimes and appear as agenda items in the work of multiple agencies and international entities.¹¹⁵ Federal law mandates public-private collaboration in standards policy. Agencies must use “technical standards that are developed or adopted by voluntary

111 *See id.* at 706-10; *see also* Dan L. Burk & Julie E. Cohen, *Fair Use Infrastructure for Rights Management Systems*, 15 HARV. J.L. & TECH. 41 (2001) (discussing translation problems in the context of automated copyright enforcement).

112 *See* Bamberger, *supra* note 63, at 673-74, 689-702.

113 *The Story of NIST*, NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY, <http://www.nist.gov/timeline.cfm> (last updated Apr. 4, 2016).

114 *Overview of ITU's History*, INTERNATIONAL TELECOMMUNICATION UNION, <http://www.itu.int/en/history/Pages/ITUsHistory.aspx> (last visited Oct. 9, 2015).

115 *See, e.g.*, 45 C.F.R. §§ 164.306, 164.312 (2014) (DHHS privacy standards for electronic health information); 47 C.F.R. § 76.605 (2014) (FCC technical standards); 17 U.S.C. § 1002 (2012) (authorizing Serial Copy Management System standards to be enforced by the Copyright Office); 16 C.F.R. §§ 314.3, 314.4 (2015) (FTC data security standards for safeguarding customer data).

consensus standards bodies” unless that course of action “is inconsistent with applicable law or otherwise impractical.”¹¹⁶ NIST coordinates agency interaction with private standards bodies, and its mission has expanded to compass everything from climate change measurement and standards for alternative energy technologies to metrics for food and drug safety and data privacy and security standards.¹¹⁷ To similar effect on a global scale, the ITU (now a specialized agency of the United Nations) has been joined by an alphabet soup of Internet standards bodies whose work regularly entangles them in issues ranging from intellectual property protection to free speech policy to privacy and government surveillance.¹¹⁸

Each of these developments in regulatory practice is intimately connected to the problems of platform power, infoglut, and systemic threat discussed in Part I. In the information economy, technical protocols, algorithms, and system design practices define access to platforms and channel flows of information to, from, and about consumers and providers. Their content and implementation can heighten or reduce the systemic threats to which networked processes are vulnerable. The new regulatory modalities therefore have at least the potential to address information-economy regulatory problems more effectively than older, command-and-control modalities. In practice, however, those issues rarely are confronted head-on because more basic transparency concerns intervene.

Because the new postindustrial regulatory modalities are technically opaque and often substantially privatized, they tend to defy standard ways of thinking about regulatory accountability.¹¹⁹ Terminology developed by Lauren Willis to

116 National Technology Transfer and Advancement Act of 1995, Pub. L. 103-114, § 12(d), 110 Stat. 775 (1996), *codified as amended at* 15 U.S.C. § 272(d).

117 See 15 U.S.C. § 272(a)(3); *NTTAA*, NAT’L INST. OF STANDARDS & TECH., <https://standards.gov/NTTAA/agency/index.cfm?fuseaction=home.main> (last updated July 3, 2013); *NIST Subject Areas*, NAT’L INST. OF STANDARDS & TECH., http://www.nist.gov/subject_areas.cfm (last updated June 27, 2011).

118 Those bodies include: the Internet Assigned Numbers Authority (IANA), the Internet Corporation for Assigned Names and Numbers (ICANN), the Internet Engineering Task Force (IETF), and the World Wide Web Consortium (W3C). See generally LAURA DENARDIS, *THE GLOBAL WAR FOR INTERNET GOVERNANCE* 33-85 (2014).

119 This point dovetails with Simon’s observation that post-bureaucratic regulatory activities generally escape judicial review, see Simon, *supra* note 1, at 70-74, but it is slightly different: a court or regulator determined to review those activities more rigorously would first need to determine how to do so. See also Bamberger, *supra* note 1 (discussing accountability challenges posed by private discretion in compliance).

describe new types of information products and services is useful as a way of explaining the difficulty¹²⁰: agency rules have dashboard complexity — they may consume many pages in the Code of Federal Regulations — but they are not especially complex under-the-hood. Their provisions are developed via open proceedings to which multiple parties have input and their key terms are defined to supply publicly available points of common reference. Compliance reporting and audit requirements, automated compliance monitoring and risk management systems, and technical standards, in contrast, have dashboard simplicity but are complex under-the-hood. Reporting conventions and standard-related nomenclature can make it easy to know at a glance whether a regulated entity has met performance targets or produced technically-compliant products or services. The considerations and judgments that those results reflect, however, are typically complex and hard to translate into forms suitable for general public understanding. Moreover, although the Government in the Sunshine Act and the Freedom of Information Act are supposed to ensure adequate transparency of regulatory decisions and processes, the former's open-meeting requirements are easily avoided and both statutes contain trade secrecy exceptions that make them poorly adapted to ensuring transparency where a significant privatization component is involved.¹²¹

Consider first the interlinked topics of compliance reporting, audit, and automated monitoring and risk management. Performance-based regulation of technologically and informationally complex activities is notoriously difficult.¹²² Adequate performance in the realm of financial accounting or data security, for example, does not simply involve meeting fixed targets (e.g., of particulate emissions from a factory smokestack); instead, it more typically involves satisfaction of “best practices” standards with opaque terminology and private-sector origins (often developed via the public-private coregulatory processes described in Section II.A above). Consensus regarding the requirements for satisfactory performance may develop among members of a professionalized auditor class, but regulators and members of the public typically lack good

120 Willis, *supra* note 44, at 1317-21.

121 See Government in the Sunshine Act, 5 U.S.C. § 552b(4) (2012); Freedom of Information Act, 5 U.S.C. §§ 552(b)(4) (2012); *Critical Mass Energy Project v. Nuclear Regulatory Comm'n*, 975 F.2d 871, 878-80 (D.C. Cir. 1992) (en banc); William Funk, *Public Participation and Transparency in Administrative Law — Three Examples as an Object Lesson*, 61 ADMIN. L. REV. 171, 187-91 (2009); David Vladeck, *Information Access — Surveying the Current Legal Landscape of Federal Right-to-Know Laws*, 86 TEX. L. REV. 1787, 1817-19 (2008).

122 See generally Cary Coglianese & David Lazer, *Management-Based Regulation: Prescribing Private Management to Achieve Public Goals*, 37 LAW & SOC'Y REV. 691 (2003).

access to the processes by which private-sector professionals hold themselves accountable. In rapidly changing fields those processes may be nonexistent or disputed; in such cases, regulatory references to industry best practices may convey a degree of certainty that is unwarranted. Automation of critical compliance functions adds another layer of opacity that inheres in the coding practices and decisions through which compliance is measured and enforced.¹²³

Two well-known examples of how things can go badly wrong in highly professionalized regulatory domains come from the financial context. Professional consensus on so-called “generally accepted accounting principles” (GAAP) and on criteria for issuing and revising credit ratings proved inadequate to constrain rapid changes in accounting practice that led ultimately to the 2001 bankruptcy of billion-dollar energy company Enron. The Enron scandal exposed the need for a mechanism to ensure the accountability of those providing audit and credit rating services to publicly traded companies to limit moral hazard and consequent self-dealing.¹²⁴ More recently, the global financial crisis of 2007-2008 exposed the inadequacy of mechanisms designed to ensure that large financial institutions participating in capital markets maintained adequate capital reserves and underscored the problem of moral hazard in credit rating. The applicable standards relied on banks and credit rating agencies themselves to assess capital adequacy and creditworthiness using complex and often proprietary algorithms, and many components of the emergent “shadow banking system” were not subject to capital-adequacy requirements at all.¹²⁵ Both crises triggered increased oversight. The Sarbanes-

123 See Bamberger, *supra* note 63, at 723-26; Danielle Keats Citron, *Technological Due Process*, 85 WASH. U.L. REV. 1249 (2008).

124 See generally William W. Bratton, *Enron and the Dark Side of Shareholder Value*, 76 TUL. L. REV. 1275 (2002); John C. Coffee, Jr., *Understanding Enron: “It’s About the Gatekeepers, Stupid,”* 57 BUS. LAW. 1403 (2002). For a brief summary of the largely unregulated audit landscape prior to the Enron scandal, see Michael V. Seitzinger, Marie B. Morris & Mark Jickling, *Enron: Selected Securities, Accounting, and Pension Laws Possibly Implicated in Its Collapse* 103, 106-07, in *THE ENRON SCANDAL* 119 (Theodore F. Sterling ed., 2002). On the credit rating agencies, see Frank Partnoy, *The Siskel and Ebert of Financial Markets?: Two Thumbs Down for the Credit Rating Agencies*, 77 WASH. U. L.Q. 619 (1999).

125 See CHRIS BRUMMER, *SOFT LAW AND THE GLOBAL FINANCIAL SYSTEM: RULE MAKING IN THE 21ST CENTURY* 220-24 (2012) (identifying additional factors including lack of clarity as to the entities and activities covered by capital-reserve requirements and conflicts of interest on part of credit rating agencies); DANIEL K. TARULLO, *BANKING ON BASEL: THE FUTURE OF INTERNATIONAL FINANCIAL REGULATION* 166-72 (2008) (discussing the failure of bank capital adequacy regulation); Thomas J.

Oxley Act of 2002 created the Public Company Accounting Oversight Board (PCAOB) to oversee compliance with public accountancy standards; the Credit Rating Agency Reform Act of 2006 imposed a registration requirement on agencies issuing credit ratings for financial institutions, insurance companies, and issuers of publicly traded securities; and the Dodd-Frank Act of 2010 imposed additional requirements on credit rating agencies and gave federal regulators authority to prescribe minimum capital requirements for entities that engage in swap transactions.¹²⁶ All three regimes, however, have been criticized for deferring too greatly to accounting and finance professionals. The accounting profession retained its authority over the substance of the GAAP, and the processes by which regulators and industry representatives negotiate capital requirements remain largely opaque to the public.¹²⁷ The registration requirement failed to constrain credit rating agencies from issuing inflated ratings, including investment-grade ratings for securitizations of subprime mortgages in the run-up to the 2007-08 crisis, and as of this writing, the effects of the additional restrictions imposed in the wake of the crisis are unclear.¹²⁸

Similarly, the processes by which technical standards are developed do not readily submit to the conventional mechanisms of administrative procedure. The language of data security, digital content management, and the like is dense and technical. It resists both public comprehension and public input, and even regulatory personnel themselves may not understand the key issues well. Many U.S. agencies now employ technical experts in key positions, but their work must be translated adequately for other agency staff. In addition,

Fitzpatrick IV & Chris Sagers, *Faith-Based Financial Regulation: A Primer on Oversight of Credit Rating Agencies*, 61 ADMIN. L. REV. 557 (2009); Judge, *supra* note 51, at 665-67 (discussing the effects of the shadow banking system on risk regulation of capital markets).

126 See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, Tit. I, § 171, 124 Stat. 1376 (2010), *codified as amended at* 12 U.S.C. § 5371; Credit Rating Agency Reform Act of 2006, Pub. L. No. 109-291, § 4, 120 Stat. 1329, *codified as amended at* 15 U.S.C. § 780-7; Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, Tit. I, § 101, 116 Stat. 745 (2002), *codified as amended at* 15 U.S.C. § 7211; *About the PCAOB*, PUB. CO. ACCOUNTING OVERSIGHT BD., <http://pcaobus.org/About/pages/default.aspx> (last visited Oct. 9, 2015).

127 See Saule T. Omarova, *Bankers, Bureaucrats, and Guardians: Toward Tripartism in Financial Services Regulation*, 37 J. CORP. L. 621 (2012).

128 See Securities & Exchange Comm'n, Release No. 34-61050, Amendments to Rules for Nationally Recognized Statistical Ratings Organizations, 74 Fed. Reg. 63,832 (Dec. 4, 2009); Jeffrey Manns, *Downgrading Rating Agency Reform*, 81 GEO. WASH. L. REV. 749 (2013).

antiregulatory advocacy has coalesced around a narrative about the foolhardiness and futility of regulatory intervention in highly technical, rapidly evolving fields. As agencies like the FCC and FTC have begun to take up more technically complex issues, industry groups and pro-business think tanks have argued that direct government supervision of standards development will stifle innovation and slow economic development.¹²⁹

Industry standard-making processes, meanwhile, are lengthy, secretive, and notoriously resistant to public interest oversight. To take just one example, the invitation-only negotiations over digital copy protection standards for high-definition audiovisual content have spanned over a decade. Groups not invited to the table have been forced to rely on black-box testing and complaints from disgruntled consumers to gain information about the protocols as implemented.¹³⁰ In this regard, algorithmic enforcement is a paradigmatically new type of Schmittian administrative law, in which the power to determine exceptions does not rest with the state but rather with the technology companies that design and implement the algorithms.¹³¹

As this brief summary suggests, however, the current regulatory landscape also includes important innovations with respect to accountability and oversight. From a traditional “administrative law” perspective, the new regulatory bodies and competencies mentioned in this Section — the PCAOB, the still-emerging constellation of rules governing credit rating agencies, the administrators at the Federal Reserve who oversee bank stress testing, the administrators within the Department of Health and Human Services’ Office of Civil Rights who oversee implementation of the HIPAA rules, and some components within NIST — seem to sit on the periphery of the regulatory state. Each oversees arcane and highly technical subject matter, and each sits within and is subject to the oversight authority of a larger and more traditionally configured administrative body. In terms of their core competencies, however, they are paradigmatic information-era regulatory bodies, with at least some amount of frontline authority over decisions that have enormous systemic

129 See, e.g., Larry Downes, *A Rational Response to the Privacy “Crisis,”* 716 CATO INSTITUTE POLICY ANALYSIS (Jan. 7, 2013), <http://www.cato.org/sites/cato.org/files/pubs/pdf/pa716.pdf>; Berin Szoka & Adam Thierer, *Targeted Online Advertising: What’s the Harm and Where Are We Heading?*, PROGRESS ON POINT (Feb. 26, 2009), <http://www.pff.org/issues-pubs/pops/2009/pop16.2targetonlinead.pdf>.

130 Many results of such studies have been published at FREEDOM TO TINKER, www.freedom-to-tinker.com (last visited Oct. 26, 2015).

131 Cf. Adrian Vermuele, *Our Schmittian Administrative Law*, 122 HARV. L. REV. 1095 (2009). For a detailed exploration of some of the implications of private control of algorithmic enforcement, see PASQUALE, *supra* note 47.

impact.¹³² Each has important lessons to teach about the possible futures of administrative law, and for that reason they merit more careful study by administrative law scholars generally.

C. The Regulatory State as Manager

A functioning government requires a budget, and budgetary decisions therefore provide another locus for the exercise of regulatory authority. As the regulatory state has grown larger, more complex, and more expensive, budgetary controls have become more and more important. Once again, this should be unsurprising. Financial controls are another paradigmatic postindustrial regulatory technique: they are intensively informational and their effective implementation requires both constructed (informational) measures of soundness and technical information-processing capacity.¹³³ Because the federal Office of Management and Budget (OMB) offers a centralized point of financial control, it also affords a useful vantage point for tackling the multiagency complexity that has become an increasingly common feature of information-era regulatory activity. Like audits and technical protocols, however, financial controls have generated unfamiliar public accountability challenges. In addition, their congeniality to concrete, cost-benefit modeling has provided new points of entry for neoliberal antiregulatory efforts.

Within administrative law scholarship, interest in the OMB is a relatively recent development. Beginning in the 1980s, U.S. administrative law scholars began to pay close attention to the role that the Office of Information and Regulatory Affairs (OIRA), a subdivision of the OMB, plays in cost-benefit analysis of proposed regulations.¹³⁴ As Eloise Pasachoff explains, however,

132 This observation should not be taken as a comment on the efficacy of any of those bodies or competencies as currently constituted. It is simply a comment on their importance — and, therefore, on the importance of constituting them effectively.

133 Cf. BENIGER, *supra* note 5, at 390-425 (describing the relationship between data processing technologies and bureaucratic control of industrial processes).

134 See, e.g., Thomas O. McGarity, *Presidential Control of Regulatory Agency Decisionmaking*, 36 AM. U.L. REV. 443 (1987); Alan B. Morrison, *OMB Interference with Agency Rulemaking: The Wrong Way to Write a Regulation*, 99 HARV. L. REV. 1059 (1986). For a sampling of more recent discussion, see Lisa Heinzerling, *Inside EPA: A Former Insider's Reflections on the Relationship Between the Obama EPA and the Obama White House*, 31 PACE ENVTL. L. REV. 325 (2014); Michael Livermore & Richard Revesz, *Regulatory Review, Capture, and Agency Inaction*, 101 GEO. L.J. 1337 (2012); Cass R. Sunstein, *The Office*

OIRA is the tip of a much larger iceberg.¹³⁵ A suite of activities, including not only cost-benefit analysis but also budget oversight, grant-making authority, and various other efficiency mandates, involves OMB pervasively in executive branch regulatory activities and enables it to assert new modes of financialized control over those activities. Some efficiency mandates, most notably the Paperwork Reduction Act, give OMB leverage over even formally independent agencies.¹³⁶

Institutionally speaking, OMB's expertise is non-topical. Although program officers in its resource management offices are assigned to particular substantive areas, appointment within OMB does not require, for example, detailed familiarity with climate science, spectrum policy, or consumer finance. Rather, it requires training in "public policy, public administration, business, economics, etc."¹³⁷ The issue here is not that OMB staff lack familiarity with the technical and policy issues that are specific to the particular activities being regulated. As Pasachoff's description makes clear, OMB staff assigned to particular areas acquire expertise over time and reflect institutional memory the same way that staffers at agencies do.¹³⁸ What is significant is simply that OMB's mission calls for the involvement of a cadre of professionals whose expertise is principally oriented toward efficient management.

In theory, centralized management and budget oversight of regulatory processes might be a useful antidote to the information-era problems described in Part I, enabling more comprehensive strategies for addressing the problems of platform power and infoglut and more effective coordination of threat modeling and response. The reality has been different, however. To begin with, OMB's often-technical review and approval processes have exacerbated the problem of differential access and influence. As a result, OMB oversight sometimes has seemed merely to provide additional opportunities for regulated entities to exert influence over agency outputs.¹³⁹

of Information and Regulatory Affairs: Myths and Realities, 126 HARV. L. REV. 1838 (2013).

135 Eloise Pasachoff, *The President's Budget as a Source of Agency Policy Control*, 125 YALE L.J. (forthcoming 2016), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2775822.

136 See Paperwork Reduction Act, 44 U.S.C. §§ 3501-3521. I am indebted to Eloise Pasachoff for this point.

137 *Careers with the Office of Management and Budget*, WHITE HOUSE, https://www.whitehouse.gov/sites/default/files/omb/assets/omb/recruitment/careers_with.pdf (last visited Oct. 26, 2015).

138 See Pasachoff, *supra* note 135, pt. III.A.2.

139 See CTR. FOR PROGRESSIVE REFORM, BEHIND CLOSED DOORS AT THE WHITE HOUSE: HOW POLITICS TRUMPS PROTECTION OF PUBLIC HEALTH, WORKER SAFETY, AND THE

More fundamental questions are methodological and political. The various components of the managerial toolkit both harness and reinforce the ideal of dispassionate regulatory rationality.¹⁴⁰ That ideal has repeatedly proved illusory, and the managerial toolkit is no exception. Accounting and management methodologies rest on sets of assumptions about how to describe, measure, and account for program costs and benefits. Those assumptions are neither transparent nor inherently neutral, and merit careful scrutiny based on both the values that they enshrine and those that they elide or omit.¹⁴¹ The Government Performance and Results Act, which purports to facilitate public oversight with regard to government-wide management issues, does not join these methodological issues effectively.¹⁴²

The ongoing centralization of regulatory functions in the OMB has meshed especially well with the turn to cost-benefit analysis described in Section I.C. above, and here the political undercurrents become more powerful. Academic proponents tout cost-benefit analysis as a neutral tool for effective, politically accountable oversight of regulatory activity,¹⁴³ but cost-benefit rhetoric — and particularly rhetoric emphasizing the purportedly intractable conflict between burdensome regulation on one hand and innovation and economic growth on the other — also has become a preferred mode of public policy discourse among scholars and policymakers who advocate regulatory minimization and privatization. Because cost-benefit analysis contemplates that even serious harms may be outweighed by higher levels of overall economic benefit, and because it tends to weigh the concrete costs of regulatory implementation more heavily than the more diffuse benefits to be realized from compliance, it

ENVIRONMENT, WHITE PAPER NO. 1111 (2011), http://www.progressivereform.org/articles/OIRA_Meetings_1111.pdf.

140 See Sidney Shapiro, Elizabeth Fisher & Wendy Wagner, *The Enlightenment of Administrative Law: Looking Inside the Agency for Legitimacy*, 47 WAKE FOREST L. REV. 463 (2012).

141 On the complex relationship between accounting methodologies and economic development, see generally Trevor Hopper, *Cost Accounting, Control, and Capitalism*, in CRITICAL HISTORIES OF ACCOUNTING 129 (Richard K. Fleischman, Warwick Funnell & Stephen P. Walker eds., 2013); Michael Power, *The Audit Society*, in ACCOUNTING AS SOCIAL AND INSTITUTIONAL PRACTICE 317 (Anthony G. Hopwood & Peter Miller eds., 1994). On accounting methodologies as technologies of governance, see generally Peter Miller, *Governing by Numbers: Why Calculative Practices Matter*, 68 SOC. RES. 379 (2001).

142 Government Performance and Results Act of 1993, Pub. L. No. 103-62, 107 Stat. 285, *codified as amended at* 31 U.S.C. § 1115.

143 See, e.g., Livermore & Revesz, *supra* note 66, at 439-44; Sunstein, *supra* note 134.

offers a particularly congenial technique for achieving that result. At the same time, the increasingly tight conflation of cost-benefit review with regulatory rationality has meant that critics have found themselves placed in the unenviable role of Luddites, advancing complex conceptions of dignity and fairness to counter a simpler, more accessible narrative.

The upshot is that the modern OMB has extended its influence over thinking about regulatory efficiency and efficacy in ways both institutional and cultural.¹⁴⁴ In the absence of comprehensive scholarly and public scrutiny of the values encoded in government efficiency imperatives, the neoliberal hostility to regulation increasingly fashionable on both sides of the political aisle has enacted a kind of regulatory double movement, detaching regulatory authority from the various agencies to which it is assigned and re-embedding it under the oversight of a new, corporatized/managerial class concerned chiefly with minimizing the impact of regulation on economically productive activity. During the 2012 presidential campaign, a refrain oft-repeated by Republican candidate Mitt Romney concerned the business expertise that a former management consultant would bring to the executive branch.¹⁴⁵ But Democrats also have gotten into the act: every administration for the last four decades has imposed new initiatives to be implemented within OMB.¹⁴⁶

In the informational era, thinking about the proper relationship between government and management requires a more measured and constructively critical approach. The modes of financialized control practiced by OMB have not been embraced and systematically studied *as core regulatory modalities* — as much a part of the regulatory canon as the notice-and-comment rulemaking or the enforcement action. Put differently, financialized controls are not simply tools for achieving greater regulatory accountability. They represent a new information-era modality for the exercise of regulatory power. Exercising financialized authority responsibly and fairly requires corresponding institutional innovation. In an enterprise as large and complex as the modern executive branch, developing the capacity for efficient management of taxpayer resources is important, but how exactly financialized controls should be incorporated within regulatory institutions attuned to the information economy is open to debate.

144 On cultural capture of regulatory thinking, see James Kwak, *Cultural Capture and the Financial Crisis*, in PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 71, 78-81 (Daniel Carpenter & David A. Moss eds., 2014); see also Hanson & Yosifon, *supra* note 78, at 212-30.

145 For a good discussion, see Megan McArdle, *Romney's Business*, ATLANTIC, Dec. 2011, <http://www.theatlantic.com/magazine/archive/2011/12/romneys-business/308718/>.

146 See Pasachoff, *supra* note 135.

CONCLUSION

It is too soon to say precisely what regulatory constructs and institutions for the era of informational capitalism ought to look like, but it is nonetheless essential to understand current regulatory disputes as contests over those questions. As the basis of our political economy shifts, corresponding shifts in the nature of regulatory concepts and processes are to be expected. From that standpoint, some of the changes I have described may usefully be understood through the lens of creative destruction; outdated regulatory formations, it seems, are vulnerable to the winds of change just as outdated products and irrelevant monopolists are. Legal institutions are stickier than market arrangements, however, and not only because so many aspects of their operation are codified. If the dysfunctions now confronting the regulatory state are to be addressed in an effective and coherent way, scholars and policymakers must be willing to entertain the prospect of paradigm shifts in both the design of regulatory institutions and the formulation of regulatory mandates. In that process, moreover, it is important not to confuse the demands of informational capitalism, understood as a distinct system of political economy requiring effective oversight and guidance, with the demands of information capitalists.